

**THE ART ADHERENCE AND INTIMATE PARTNER VIOLENCE NEXUS: MODERATING
INFLUENCES OF MEANING IN LIFE, SENSE OF COHERENCE, AND SPIRITUALITY**

by

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The ART Adherence and Intimate Partner Violence Nexus: Moderating influences of Meaning in Life, Sense of Coherence, and Spirituality

I declare that the above thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the thesis to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.



05 October 2023

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Date

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ABSTRACT

In South Africa, intimate partner violence (IPV) has been associated with unfavourable outcomes for antiretroviral medication (ART) adherence, such as low treatment uptake, low ART adherence and the inadvertent virological failure, and a higher death rate. However, there is a dearth of research on factors that encourage ART adherence in people exposed to IPV.

Following this backdrop, this study examined the moderating influences of meaning in life (ML), sense of coherence (SOC), and spirituality on IPV and ART adherence among adult people living with HIV (PLWH) in Johannesburg South, South Africa. Working from a post-positivistic quantitative framework, a questionnaire was developed to gauge participants' ART adherence, exposure to IPV, perceived meaning in life, sense of coherence, and spirituality. The sample for this study was recruited through a two-stage sampling process involving purposive sampling of two ART sites, namely Diepkloof Provincial Clinic and Lenasia Nirvana Clinic, in the south of Johannesburg, and the systematic selection of participants within each ART site.

The sample involved 66 men and 134 women between the ages of 19 and 51 who were receiving ART at the two sites. To establish the moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence, regression analysis and Hayes moderation were utilised. The study revealed that IPV was negatively associated with an 18% drop in adherence ($p < .001$). While all three types of IPV had a negative association with adherence, the presence of sexual IPV had the most pronounced reduction in adherence (30%), followed by emotional IPV with a 13% reduction.

Most non-adherent participants cited being 'away from home' (100%), 'being too busy' (88%), 'avoiding being seen taking ARVs' (82%), and 'depression' (64%) among their reasons for non-adherence. Results of the moderation analysis established that spirituality ($\beta = 0.72$, $p < .005$) and SOC ($\beta = 0.53$, $p < .005$) significantly moderated the negative influence of IPV on adherence. Compared to SOC, the moderating influence of spirituality in tempering the influence of violence was more pronounced.

The findings of this study underscore the pronounced negative influence of sexual IPV on ART adherence and the value of spirituality and SOC as resources that facilitate adherence for PLWH who have been exposed to IPV. In support of previous studies, this study recommends the prioritisation of IPV screening at facilities that provide ART and psychosocial services that focus on aspects of spirituality, as well as the strengthening of SOC to improve the adherence of people exposed to IPV.

Keywords: intimate partner violence (IPV), antiretroviral therapy (ART) adherence, meaning in life (ML), sense of coherence (SOC), spirituality, moderators of IPV, people living with HIV (PLWH).

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ABBREVIATIONS

ACTG	Aids Clinical Trials Group
APA	American Psychological Association
ART	Antiretroviral Therapy
CHC	Community Health Clinic
CI	Confidence Interval
CR	Critical Realism
CoJ	City of Johannesburg
DV	Dependent Variable
EWB	Existential Wellbeing
GBV	Gender-Based Violence
GRR	Generalised Resistance Resources
HBM	Health Belief Model
HIC	High-Income Country
HIV	Human Immuno-Deficiency Virus
IMB	Information-Motivation Behavioural Skills
IPV	Intimate Partner Violence
IV	Independent Variable
LMIC	Low- to Middle-Income Country
MIC	Middle-income Country
ML	Meaning in Life
MLQ	Meaning in Life Questionnaire
MLR	Multiple Linear Regression
PLWH	Person Living With HIV
PTSD	Post-Traumatic Stress Disorder
RWB	Religious Wellbeing

SCT	Social Cognitive Theory
SOC	Sense Of Coherence
SLR	Simple Linear Regression
SWB	Spiritual Well-Being
SWBS	Spiritual Well-Being Scale
TTM	Trans-Theoretical Model
TPB	Theory Of Planned Behaviour
QOL	Quality of Life
VAWI	Violence Against Women Instrument
VL	Viral Load
WHO	World Health Organisation
UNISA	University of South Africa
USA	United States of America

Chapter 1: Background to Antiretroviral Therapy Adherence and Intimate Partner Violence in South Africa

1.1 The state of ART Adherence Globally and in South Africa

HIV/AIDS persists as a major global public health problem due to the large number of people living with HIV (PLWH) worldwide and a substantially higher prevalence (8 million) in South Africa. As a result, South Africa houses the biggest antiretroviral therapy (ART) treatment programme globally (Marsh, Eaton, Mahy, Sabin, Autenrieth, Wanyeki et al., 2019; Shisana, Rehle, Simbayi, Zuma, Jooste, Zungu et al., 2012; Joint United Nations Programme on HIV/AIDS (UNAIDS), 2018). An accumulation of studies from the last two decades, covering diverse settings, have demonstrated that ART adherence can reduce onward HIV transmission, successfully suppress HIV, and enhance the quality of life (QOL) for PLWH (Attia, Egger, Muller & Low, 2009; Cohen, McCauley, & Gamble, 2012; Grinsztejn, Hosseinipour, Ribaud, Swindells, Eron, Chen et al., 2014; Nachega, Sam-Agudu, Mofenson, Schechter, & Mellors, 2018; Nosyk, Audoin, Beyrer, Cahn, Granich, Havlir et al., 2013; Quinn, Wawer, Sewankambo, Serwadda, Li, Wabwire-Mangen et al., 2000; Tanser, Barnighausen, Grapsa, Zaidi, & Newell, 2013).

To this end, adherence levels of more than 95% are required for individuals to enjoy the benefits of ART, effectively suppress HIV, and reduce the risk of opportunistic infections (Letta, Demissie, Oljira, & Dessie, 2015; Viswanathan, Detels, Mehta, Macatangay, Kirk, & Jacobson, 2015; World Health Organization (WHO), 2016). However, due to a number of issues related to the healthcare system, structural factors, and individual challenges such as poor ART adherence, ART adherence in South Africa is still a challenge. This is despite impressive gains in increasing ART access, reducing AIDS-related morbidity, and increasing the life expectancy of PLWH (Bor, Herbst, Newell, & Barnighausen, 2013; Campbell, Masquillier, Thunnissen, Ariyo, Tabana, Sematlane et al., 2020; Eshun-Wilson, Rohwer, Hendricks, Oliver, & Garner, 2019; Fox, Shearer, Maskew, Macleod, Majuba, Macphail et al., 2012; Haas, Zaniewski, Anderegg, Ford, Fox, Vinikoor et al., 2018; Simbayi, Zuma, Zungu, Moyo, Marinda, Jooste et al., 2019; Katz, Dietrich, Tshabalala, Essien, Rough, Wright et al.,

2015; Kheswa, 2017; Naidoo & Premdutt, 2019; Nwani & Osuji, 2020; Shubber, Mills, Nachega, Vreeman, Freitas, Bock et al., 2006; Sweeney & Vanable, 2016).

Subsequently, the UNAIDS set 90-90-90 targets to enhance the management of HIV/AIDS and put an end to AIDS across the globe by 2030 (UNAIDS, 2016). This meant ensuring that 90% of PLWH were aware of their HIV status, 90% of those informed of their HIV diagnosis were on ART, and 90% were virally suppressed by the year 2020. Due to the salient number of challenges relating to retention in care, ART adherence, healthcare support, structural factors, patients' individual challenges, and the unprecedented Coronavirus (Covid-19) of 2019, the 90-90-90 targets have now been increased to 95-95-95 (Granich, Gupta, Hall, Aberle-Grasse, Hader & Mermin, 2017; Haas, Zaniewski, Anderegg, Ford, Fox, Vinikoor et al., 2018; South African National AIDS Council (SANAC), 2017).

To date, the global progress towards the target indicates that 85% of PLWH know their HIV status, 75% are on ART treatment, and 68% have an undetectable viral load (UNAIDS, 2023). South Africa has succeeded on the first 90 target but falls short on the second and third ninety. Despite having more than 5.5 million people on ART treatment, only 74% who are aware of their HIV status are on treatment, and 65% were virally suppressed in 2019 (Marinda, Simbayi, Zuma, Zungu, Moyo, Kondlo et al., 2020).

According to van Schalkwyk, Dorrington, Seatlhodi, Velasquez, Feizzadeh, and Johnson (2021), estimates for ART adherence rates in South Africa's five largest cities differ geographically: 91% in Cape Town and eThekweni, 89% in Tshwane, and 84% in Johannesburg and Ekurhuleni. Thus, Johannesburg ranks among the cities that have underperformed with respect to the UNAIDS 95-95-95 targets. This points to problems with treatment discontinuation, ART adherence, and retention in ART care. Despite the government's attempts to improve access and care, ART adherence challenges and retention in care remain a persistent concern among PLWH. One of the primary barriers to ART adherence in the HIV care and treatment cascade is exposure to intimate partner violence (IPV).

1.2 The state of IPV in South Africa

Next to HIV/AIDS, IPV is considered the second highest burden of disease in South Africa because it is so pervasive (Abrahams, Mathews, Martin, Lombard, & Jewkes, 2013; Gordon, 2016). Simultaneously, South Africa is one of the countries with the highest femicide statistics in the world, even though violence is a punishable offence (Gordon, 2016; WHO, 2021).

IPV is typically defined as the occurrence of distinctive types of violence (e.g., physical, psychological, or sexual) between current or former intimate partners (WHO, 2017). While IPV affects individuals of all identities, women are more vulnerable to victimisation than men (Chirwa, Jewkes, Van der Heijden, & Dunkle et al., 2020; Cluver, Meinck, Toska, Orkin, Hodes, & Sherr, 2018; Finneran & Stephenson, 2013; Graham, Jensen, Givens, Bowen, & Rizo, 2019; Moodley & Bowman, 2022; Nakalyowa-Luggya, Lutwama-Rukundo, Kabonesa, & Kwiringira, 2022; van Niekerk, Tonsing, Seedat, Jacobs, Ratele, & McClure, 2015; Rowlands, 2021; Sardinha, Maheu-Giroux, Stöckl, Meyer, & García-Moreno 2022; Thobejane, & Luthada, 2019; Trombetta, & Rollè, 2022). IPV committed by men far surpasses that committed by women in South Africa alone.

Compared to high-income settings like the United States of America (USA) and Europe, which have a prevalence of 25% of instances, South Africa has the highest rate of IPV prevalence in sub-Saharan Africa at 55% (Statistics South Africa (Stats SA) 2020; WHO 2021). About one in five women in South Africa have reported experiencing violence at least once in their lives (Selin, DeLong, Julien, MacPhail, Twine, Hughes et al., 2019). Although evidence from Nigeria, Uganda, the USA, and New Zealand suggests that roughly one-third of men also experience IPV at some point in their lives, estimates of IPV among men in South Africa are sparse (Mellar, Gulliver, Selak, Hashemi, McIntosh, & Fanslow, 2023; Gubi & Wandera, 2022; Rivara, Adhia, Lyons, Massey, Mills, Morgan et al., 2019; Oseni, Salam, Ilori, & Momoh, 2022). In terms of spatial differences in the prevalence of IPV in South Africa, data from a 2017 population-based survey shows that the Gauteng province had the highest prevalence (44%) of IPV among girls and young women aged 15 to 35, followed by KwaZulu-Natal and the Eastern Cape, with an estimate of 13% for each province (Mthembu, Mabaso, Reis, Zuma, & Zungu, 2021). It should be noted that because IPV is underreported, these numbers only reflect cases that have been reported. A major obstacle to reaching the 95-95-95 targets is the

detrimental effect of IPV on HIV treatment outcomes, particularly adherence and retention in HIV care.

1.3 Problem Statement: The link between ART Adherence and IPV

Literature covering the preceding two decades has reported on the relationship between IPV and adverse health outcomes, including HIV infection, morbidity, and mortality (Campbell, Baty, Ghandour, Stockman, Francisco, & Wagman, 2008; García-Moreno, Hegarty, d'Oliveira, Koziol-McLain, Colombini, & Feder, 2015; Hatcher, Smout, Turan, Christofides, & Stöckl, 2015; Jewkes, Dunkle, Nduna, Levin, Jama Khuzwayo et al., 2006; Maman, Campbell, Sweat, & Gielen, 2000). In South Africa, IPV has been shown to have a bidirectional relationship with HIV infection (Jewkes, Dunkle, Nduna, & Shai, 2010b; Jewkes, Sikweyiya, Morrell, & Dunkle, 2011; Kouyoumdjian, Findlay, Schwandt, Calzavara, 2013; Rees, Zweigenthal, & Joyner, 2014; Woollett & Hatcher, 2016). Exposure to IPV heightens vulnerability to HIV infection and transmission, particularly among women, and may delay HIV status disclosure (Dunkle & Decker, 2012; Li, Marshall, Rees, Nunez, Ezeanolue, & Ehiri, 2015; Jewkes, Dunkle, Jama-Shai, & Gray, 2015). At the same time, PLWH are more likely to experience IPV, including domestic violence, than people without an HIV-seropositive status. Evidence from systematic and meta-analytic studies shows that 36% of PLWH in sub-Saharan Africa have experienced at least one form of IPV over the past year (Cheng, Cheng, Yen, Lau, & Lau, 2023; Muluneh, Stulz, Francis, & Agho, 2020). HIV may engender violence by causing relationship conflict and arguments when one partner discloses their HIV status to another (Colombini, James, Ndwiga, & Mayhew, 2016).

In both Northern and Southern contexts, including the Global South, the burden of intimate partner violence on ART adherence has been well established (Achchappa, Bhandary, Unnikrishnan, Ramapuram, Kulkarni, Rao et al., 2017; Biomndo, Bergmann, Lahmann, & Atwoli, 2021; Hampanda, 2016; Hatcher et al., 2015; Kouyoumdjian et al., 2013; Li et al., 2014; Trimble, Nava, & McFarlane, 2013; Young, Arnos, & Matthews, 2019). In South Africa, cross-sectional studies involving young adults have found that IPV has a high likelihood of decreasing adherence by up to a fifth and that IPV increases depression and substance use (Cluver et al., 2018; Gibbs, Reddy, Closson, Cawood, Khanyile, & Hatcher, 2022; Kidman & Violari, 2018). However, different types of IPV seem to have varying effects on adherence. Studies in the United States and South Africa have discovered that sexual violence has a greater

negative effect on ART adherence, while emotional violence is correlated with non-adherence among both men and women (Fredericksen, Nance, Whitney, Harding, Fitzsimmons, Del Rio et al., 2021; Hampanda, 2016; Hatcher, Turan, Stöckl, Woollett, García-Moreno, & Christofides, 2022; Jewkes et al., 2015).

The negative effect of IPV on ART adherence has been explained by its links to poor mental health and QOL. Several studies have associated exposure to IPV with impaired physical health and poor QOL, which are also known to predict death in PLWH (Achchappa et al., 2017; Okonoda, Maigida, Audu, & Obembe, 2023; Ahmed, Saqlain, Bashir, Dujaili, Hashmi, Mazhar et al., 2021; Nowshad, Jahan, Shah, Ali, Ali, Alam et al., 2022). Poor mental health characterised by depression, anxiety, excessive substance use, suicidal ideation, and post-traumatic disorders is more common in PLWH who have encountered IPV compared to those who have not. This, in turn, affects ART adherence, immune functions, and viral suppression (Ceccon, Meneghel, & Hidakata, 2014; García-Moreno et al., 2015; Hatcher et al., 2022; Hatcher et al., 2015; LeGrand, Reif, Sullivan, Murray, Barlow, & Whetten, 2015; Sikweyiya, Addo-Lartey, Alangea, Dako-Gyeke, Chirwa, Coker-Appiah et al., 2020; Tsai, Wolfe, Kumbakumba, Kawuma, Hunt, Martin et al., 2016). It is not clear whether mental health challenges precede IPV or vice versa, but poor mental health makes it difficult for individuals exposed to IPV to cope with their experiences and stay adherent to ART treatment. These challenges are further exacerbated by HIV and IPV stigma and the social isolation and trauma of an HIV diagnosis, including IPV (Hatcher et al., 2022; McCleary-Sills, Namy, Nyoni, Rweyemamu, Salvatory, & Steven, 2016; Rice, Burnham, Mugavero, Raper, Atkins, & Turan, 2017; Yonga, Kiss, & Onarheim, 2022; WHO, 2014).

In South Africa, there is limited research regarding support initiatives specifically for people on ART who have been exposed to IPV; available research on existing interventions that support people who struggle with ART adherence has shown limited results (Bärnighausen, Chaiyachati, Chimbindi, Peoples, Haberer, & Newell, 2011). The majority of the ART interventions focus on intermittent ART counselling and typically cover topics such as information about ART use, potential side effects, barriers to ART adherence, the importance of adherence and memory recall techniques but do not address IPV (Abdul Wahab, Makmor Bakry, Ahmad, Mohamad Noor, & Mhd Ali, 2021; Damulak, Ismail, Abdul Manaf, Mohd Said, & Agbaji, 2021, Wilkinson, Duvivier, Patten, Solomon, Mdani, Patel et al., 2015; Fox, Pascoe, Huber, Murphy, Phokojoe, Gorgens et al., 2018; Karim, & Baxter, 2016; Mukumbang,

Orth, & Van Wyk, 2019; Pascoe, Fox, Huber Murphy, Phokojoe, Gorgens et al., 2019), despite the large body of evidence highlighting IPV as one of the major barriers to adherence (Cluver et al., 2018; Gibbs et al., 2022; Hampanda, 2016; Hatcher et al., 2022; Jewkes et al., 2015; Kouyoumdjian et al., 2013; Li et al., 2014; Trimble et al., 2013; Young et al., 2019). It is against this backdrop that this study examined the moderating influences of meaning in life (ML), sense of coherence (SOC), and spirituality on the association between IPV and ART adherence in PLWH in the south of Johannesburg. The rationale for why ML, SOC, and spirituality have been selected for exploration of their possible moderation is explained below and in more detail in Chapter 3.

1.4 Rationale

Examining the association between IPV and ART adherence as well as the moderating influence of ML, SOC, and spirituality among PLWH in Johannesburg is necessary for a number of reasons.

The first reason relates to high rates of poor adherence in South Africa, including Johannesburg, and an upward trend in the prevalence of IPV within the Gauteng province (Gibbs et al., 2022; Hatcher et al., 2022; Jewkes et al., 2015; Mthembu et al., 2021; Schafer, Brant, Gupta, Thorpe, Winstead-Derlega, Pinkerton et al., 2012; van Schalkwyk et al., 2021; Young et al., 2019). Evidence shows that although most PLWH generally show high levels of adherence at the beginning of treatment, these periods are typically followed by poor ART adherence and inadvertent discontinuation of care (Bangsberg, Kroetz, & Deeks, 2007; Bondarchuk, Mlandu, Adams, & de Vries, 2022; Potsane, 2023). While adherence is generally difficult to maintain, people exposed to IPV find it more challenging to adhere to ART due to poor mental health and social factors such as stigma, systemic, and socio-economic challenges (Campbell et al., 2020; Ceccon et al., 2014; Croome, Ahluwalia, Hughes, & Abas, 2017; Eshun-Wilson et al., 2019; García-Moreno et al., 2015; Kagee, Remien, Berkman, Hoffman, Campos, & Swartz, 2011; Katz et al., 2015; Lacob, Lacob, & Jugulete, 2017; LeGrand et al., 2015; Sikweyiya et al., 2020; Tsai et al., 2016).

The second reason pertains to previous literature findings regarding the negative association between IPV and ART adherence. South African and global studies that have explored the role of IPV in HIV management and care associate IPV with poor treatment uptake, poor ART

adherence, consequent virological failure, and higher mortality (Achchappa et al., 2017; Cluver et al., 2018; Hatcher et al., 2015; Kidman et al., 2018; Kouyoumdjian et al., 2013; Schafer et al., 2012). Poor adherence among PLWH has public health ramifications such as increased morbidity, mortality, antiretroviral resistance, and viral transmission. Not only does IPV affect ART adherence negatively, but it is also associated with poor mental health outcomes such as depression, anxiety, suicide attempts, post-traumatic stress disorder (PTSD), substance abuse, decreased access to or use of healthcare services, and an overall poor QOL.

The third reason for investigating the moderating influences of ML, SOC, and spirituality is the paucity of knowledge about protective psychological factors that attenuate the effects of IPV on ART adherence. It is unclear how people on ART who have been exposed to IPV are supported at healthcare facilities in South Africa (Sprague, Hatcher, Woollett, & Black, 2017). While the influences of ML, SOC, and spirituality have been documented in the literature, there is a dearth of research that examines the moderating influence of all three moderators on the IPV-ART nexus within a single study (Antonovsky, 1987; Chaiyasit, Thong-on, Piboonrunroj, & Kotta, 2019; Corless, Hoyt, Tyer-Viola, Sefcik, Kempainen, Holzemer et al., 2017; Csabonyi & Phillips, 2020; Dalmida, McCoy, Koenig, Miller, McDonnell Holstad, Thomas et al., 2018; Doolittle, Justice, & Fiellin, 2018; Frankl, 1984; Koenig, 2015; Steger, 2012; Mittelmark, Sagy, Eriksson, Bauer, Pelikan, Lindström et al., 2016; Mckie & Gaida, 2022; Mpofu, 2018; Wong, Reker, & Peacock, 2006).

Preceding literature is important in beginning to demonstrate the links between IPV and ART adherence outcomes as well as the negative influence of IPV on adherence, including structural and societal barriers that make it difficult for people to adhere to ART or relate positively to facilitators of adherence. However, a few knowledge gaps remain. The influence of psychological strengths such as ML, SOC, and spirituality on the relationship between IPV and ART adherence is not well understood. Although scanty and inconclusive, available research conducted predominantly in Western contexts shows that ML, SOC, and spirituality may provide critical resources for PLWH to improve adherence and manage IPV. Consequently, studies highlighting the distinct functions that ML, SOC, and spirituality play as resources for

people living with HIV and exposed to IPV led to the investigation of these variables as possible moderators (which is discussed in detail in Chapter 3).

ML reflects the extent to which an individual feels that their life has a purpose and that it matters or has a sense of significance (George & Park, 2016; Steger, Frazier, Oishi, & Kaler, 2006; Frankl, 1984). A combination of qualitative and quantitative studies has recognised the value of ML in PLWH. For instance, qualitative studies from the West, East, and parts of sub-Saharan Africa, including South Africa, have found that people diagnosed with HIV often report a shift in their perspective of the meaning or purpose of their lives after diagnosis (Catalan, Tuffrey, Ridge, & Rosenfeld, 2017; Igumbor, Stewart, & Holzemer, 2012; Iwelunmor, Nwaozuru, Sofolahan-Oladeinde, Conserve, & Airhihenbuwa, 2017; Nolte, 2010; Russell, Martin, Zalwango, Namukwaya, Nalugya, Muhumuza et al., 2016; Pretorius, Goldstein, & Stuart, 2005). Quantitative research has found positive associations between ML or QOL in PLWH and ART adherence (Audet, Wagner, & Wallston, 2015; Reis, Lencastre, Jonsson, & Guerra, 2019; Rosyad, Malini, & Sarfika, 2020).

In the same way, available evidence regarding the impact of SOC in PLWH seems to link SOC with their QOL. SOC reflects the individual's disposition to cope with and manage life stressors in a manner that maintains health and well-being (Antonovsky, 1987; Mittelmark et al., 2016). According to Antonovsky (1987), SOC is defined as the extent to which a person believes that life is understandable, manageable, and meaningful. Prior research conducted in East African and Southern African contexts, such as South Africa and Uganda, suggests that PLWH who have a moderate to high SOC can better manage their chronic condition and have a better QOL (Corless et al., 2017; Hoho, 2014; Nutor, Thompson, Agbadi, Tuthill, Weiser, & Anguyo, 2022; Orth et al., 2022).

Regarding the impact of SOC on IPV, the available literature is split between studies that contend that IPV is a traumatic experience that can disrupt people's SOC and others that claim that SOC has a moderating effect on the association between stress and other forms of violence, traumatic events, and psychological well-being (Daneshvar, Shafiei, & Basharpour, 2022; Hogh & Mikkelsen, 2005; Lazenbatt & Devaney, 2014; Jung, Kneer, & Krüger, 2020; Parker & Lee, 2007; Schafer, Becker, King, Horsch, & Michael, 2019; Simmons & Swahnberg, 2021;

Sitarczyk, 2013; Veronese, Fiore, Castiglioni, Kawaja, & Said, 2013; Waqas, Haider, Ahmed, Khaliq, & Selem, 2022; Zonp & Saint Arnault, 2022).

Similar to ML and SOC, prior studies that highlighted the significance of spirituality in PLWH and exposure to IPV served as the impetus for examining the moderating effect of spirituality. Recognising the many ways in which spirituality is defined and used interchangeably with religion, in this thesis, spirituality is interpreted as having a belief in a Higher Power, transcendence, purpose of life, connectedness, and interconnectedness. An established body of work recognises that spirituality enhances the QOL for PLWH and that it symbolises a kind of support for the fragility of living with HIV (Dalmida, Koenig, Holstad, & Thomas, 2015; Doolittle et al., 2018; Ironson, Kremer, & Lucette, 2016; Lee, Nezu, & Nezu, 2014; Oji, Hung, Abbasgholizadeh, Terrell Hamilton, Essien, & Nwulia, 2017). Research from the USA, Asia, and South Africa suggests that people with high spirituality are better able to manage the stress of their condition and the stigma associated with it, as well as adhere to ART more closely than people with low spirituality (Arrey, Bilsen, Lacor, & Deschepper, 2016; Dalmida et al., 2018; Grill, Wang, Cheng, & Lyon, 2020; Mutambara, Sodi, Mtemeri, & Makomo, 2021; Doolittle et al., 2018; Kaur, James, & Brown, 2022; Van Wyk & Kagee, 2023). At the same time, individuals with spiritual struggles or low levels of spirituality were more likely to feel abandoned by a Higher Power, question the existence of a Higher Power, and perceive their diagnosis as a form of punishment. Which in turn may lead individuals to discontinue treatment (Grossoehme, Szczesniak, Mrug, Dimitriou, Marshall, & McPhail, 2016; Jones, Cohen, Johnstone, Yoon, Schoop, McCormack et al., 2015).

In terms of the impact of spirituality on exposure to IPV, available evidence from North America, Iran, Asia, and South Africa suggests that an individual experiencing violence may assume spiritual practices in ways that evoke hope, minimise feelings of helplessness, and contribute to healing after exiting an abusive relationship (Braganza, Hoy, & Lafrenière, 2021; Dolatian & Sedghi, 2017; Drumm, Popescu, Cooper, Trecartin, Seifert, Foster et al., 2014; Sabri, Simonet, & Campbell, 2018; Sere, Roman, & Ruiters, 2021; Slabbert, 2017). Conversely, exposure to intimate partner violence (IPV) can cause a spiritual crisis in some people, resulting in feelings of abandonment and/or punishment (Simonič & Klobučar, 2017).

The rationale for this research is provided by the evidence previously presented regarding the detrimental effects of IPV on ART adherence, the paucity of research on factors that promote

adherence in individuals exposed to IPV, and studies that highlight the unique effects of ML, SOC, and spirituality in PLWH and exposure to IPV. Without concerted efforts to assess the impact of IPV on ART adherence and investigate ART treatment strategies that can enhance adherence for PLWH who have been exposed to IPV, it will be challenging to end AIDS as a public health hazard by 2030.

1.5 Aim and Objectives of the Research

The overall aim of the study was to investigate the moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence among PLWH in Johannesburg South, South Africa.

This broad aim was operationalised through three specific objectives:

- To estimate the association between IPV and ART adherence.
- To establish which of the three types of IPV (e.g., physical IPV, emotional IPV, and sexual IPV) strongly affects ART adherence.
- To examine the individual moderating influences of ML, SOC, and spirituality, on the association between IPV and ART adherence.

1.6 Research Questions

The preceding literature shows that IPV has adverse effects on ART adherence outcomes. However, psychological protective factors such as ML, SOC, and spirituality generally have a positive influence on health outcomes and well-being, including medication adherence among people living with chronic illnesses. Following this lead, the primary research question of the

study was: Does meaning in life, sense of coherence, and spirituality moderate the association between IPV and ART adherence in PLWH?

This main question was organised by way of three interrelated sub-questions:

- **Research question 1:** What is the estimated association between IPV and ART adherence?
- **Research question 2:** Which type of IPV, physical, emotional or sexual violence, strongly affects adherence to ART?
- **Research question 3:** Do ML, SOC, and spirituality individually moderate the association between IPV and ART adherence, and which of these strongly affects the association between IPV and ART adherence?

Given the high prevalence of IPV and problematic ART adherence in South Africa, research focusing on the impact of IPV on adherence and how different types of IPV influence adherence contributes to an understanding of how IPV impedes adherence. More immediately, the findings will assist healthcare policymakers in intensifying efforts to identify and monitor IPV within adherence care programmes. Moreover, in view of the limited knowledge of how people exposed to IPV manage the challenges of ART in South Africa (Sprague et al., 2017), research on what encourages people exposed to IPV to adhere to ART has implications for adherence care in primary healthcare clinical settings. The findings of the study may provide an understanding of how ML, SOC, and spirituality can enhance ART adherence in people exposed to IPV. Furthermore, findings from this study may lay the foundations for future studies that explore moderators of the association between IPV and ART adherence in South Africa.

1.7 Outline of the Research Methodology

The essence of the research questions formulated for the study necessitated an inquiry led by a post-positivistic paradigm that embraces critical realism (CR). Post-positivism grounded in CR proposes that human experience and behaviour are governed by general “natural” causal laws that work across individuals and contexts, which it is not possible to understand fully and absolutely except by estimation (Howell, 2013; De Vos, Strydom, Fouche, & Delport, 2011).

Post-positivistic, criticalist thought is predicated on the belief that the discovery of the human experience should be aimed at the exploration and verification of theories, where reality is investigated with the best possible methods fit for the inquiry at hand and accepted as provisional (Denzin & Lincoln, 2011; Morris, 2006). Consistent with post-positivist critical thought, this study lent itself to an exploratory correlational design to explore the influences of ML, SOC, and spirituality on the estimated associations between IPV and ART adherence in adults living with HIV.

Due to the exploratory and non-experimental designs of the study, participants were selected following a two-stage sampling process from a population of individuals living with HIV who were undergoing ART treatment at two government clinics. The exploratory and non-experimental research design meant that the independent variable (i.e., IPV) and proposed moderators (i.e., ML, SOC, and spirituality) could not be manipulated in any way but were observed as they were (Gravetter & Forzano, 2016).

Adopting a two-stage sampling process, the first step entailed the purposive selection of two clinics (Diepkloof Provincial Clinic and Lenasia Community Health Clinic) from roughly thirty public health facilities in Johannesburg (City of Johannesburg Annual Report, 2017), followed by the systematic selection of 200 individuals during fixed-appointment days for medication refills. The sample size of 200 was estimated with a priori power analysis (Noordzij, Dekker, Zoccali, & Jager, 2011).

In alignment with the paradigm guiding the study, data was collected by utilising a cross-sectional survey. The survey questionnaire consisted of six sections: 1) demographic information; 2) the Aids Clinical Trials Group (ACTG) questionnaire, which assessed ART adherence; 3) the sense of coherence-13 (SOC-13) scale; 4) the meaning in life questionnaire (MLQ); 5) the spiritual well-being (SWB) scale; and 6) the violence against women instrument (VAWI) (Antonovsky, 1987; Reynolds, Sun, Nagaraja, Gifford, Wu, & Chesney, 2007; Steger et al., 2006; Paloutzian & Ellison, 1982; WHO, 2005).

Data was collected between December 2018 and January 2020 (this period was extended due to my illness in 2019). Once collected, preliminary descriptive analysis was conducted to check for missingness, which indicated that approximately 4% was missing information from all crucial sections (i.e., ART adherence, MLQ, SOC-13, SWB, and IPV). Following Kline (2016),

who maintained that a missingness of less than 5% in a dataset is unlikely to make a substantial difference to results, 4% of the data were excluded from analysis. After missingness was addressed, the main analysis involved inferential statistics such as simple linear regression (SLR), multiple linear regression (MLR), and moderation analysis. As a characteristic of correlational research designs, regression and moderation analyses were utilised to establish and estimate the association between IPV as the independent variable and ART adherence as the dependent variable and to assess whether ML, SOC, and spirituality, as potential moderators, influenced this association (Gravetter et al., 2016). Within the post-positivist criticalist paradigm, it follows that conclusions about associations between IPV, ART adherence, and the influences of ML, SOC, and spirituality are acceptable within a probable degree, as opposed to common truth (Lobmeier, 2012). Chapter 4 of this thesis provides an in-depth description of the paradigm and methodology underpinning the study.

1.8 Definitions of Terms

- ART Adherence

Adherence is defined as the extent of an individual's ability to take medication prescribed by their doctors, which includes understanding directions, dosing regimen, and dosing time intervals (Cramer, Roy, Burrell, Fuldeore, Ollendorf, & Wong, 2008; Vrijens, De Geest, Hughes, Przemyslaw, Demonceau, Ruppert et al., 2012).

- ART non-adherence

Non-adherence to ART is defined as an individual's inability to stick to treatment plans, including taking medications as prescribed and following lifestyle recommendations from their doctors (WHO, 2003).

- Intimate Partner Violence (IPV)

Intimate partner violence is defined as the experience of physical, sexual, and psychological violence by a current or former intimate partner. It includes acts of physical, sexual violence, emotional/psychological abuse, economic abuse, and controlling behaviours (Jewkes et al., 2011; WHO, 2013).

- **Meaning in Life (ML)**

ML is explained as the extent to which one feels that their life has a purpose and that it matters or has a sense of significance (George et al., 2016; Steger et al., 2006; Frankl, 1984).

- **Sense of Coherence (SOC)**

SOC reflects the individual's disposition to cope with and manage life stressors in a manner that maintains health and well-being (Antonovsky, 1987; Mittelmark et al., 2016). It is the degree of an individual's belief that life is understandable, manageable, and meaningful (Antonovsky, 1987).

- **Spirituality and Religion**

Recognising the many ways in which spirituality is defined and used interchangeably with religion in this thesis, spirituality is operationalised as having a belief in a Higher Power, transcendence, purpose of life, connectedness, and interconnectedness. On the other hand, religion entails an organised shared system of beliefs, doctrines, and traditions intended to facilitate closeness to the Higher Power (Koenig, 2015). Spirituality and religion are used interchangeably at times in this thesis to refer to spiritual well-being.

- **Spiritual Well-being**

A measure of spirituality characterised by existential and religious/spiritual dimensions that capture the extent to which one feels connectedness with God or the Supreme Being, a sense of purpose, and satisfaction with life (Arnold, Herrick, Pankratz, & Mueller, 2006; Deka, Gopalan, & Bhave, 2019; McClain, Rosenfeld, & Breitbart, 2003).

- **Protective Psychological Factors**

Protective psychological factors are individual and environmental characteristics that are associated with positive adjustment to life-threatening conditions (Lopez, Pedrotti, & Snyder, 2019). They can also be understood as psychological characteristics that reduce the negative impact of risk factors on health outcomes.

1.9 Chapter Organisation

Chapter 1: Background to ART Adherence and IPV in South Africa

This chapter provided a glimpse of adherence rates globally in comparison with those in South Africa, specifically in Johannesburg, against the UNAIDS 95-95-95 targets and the barriers to adherence, with a specific focus on the impact of IPV on ART adherence. It also highlights the rationale, with specific emphasis on why ML, SOC, and spirituality were considered for their moderating influences, the aim of the study, the research questions, specific objectives, and the methodology underpinning this study.

Chapter 2: Literature Review of Adherence Trends, IPV as a Barrier and Contextual Factors

This is a review of in-depth literature on the current state of HIV in South Africa, how adherence is defined, and methods used to quantify it. Trends and indicators of adherence in the North-South regions and barriers to ART adherence such as IPV, including individual, systemic, structural, and contextual factors are also reviewed. A review of select literature on the three proposed moderators is covered in Chapter 3.

Chapter 3: Theoretical Framework: Behaviour Theories of ART Adherence and Influences of ML, SOC, and Spirituality

Chapter 3 deals specifically with the major conceptual and theoretical considerations on which the study is premised. The chapter begins with a review of prior theoretical work done on health behaviour theories that explain adherence, then offers theoretical views on ML, SOC, and spirituality and findings of their individual relationships with adherence and IPV.

Chapter 4: Research Methodology

The research paradigm, methodology, and design underpinning the study are described. The research aims and questions are revisited, and an outline of the hypotheses formulated for this study is provided. The chapter also provides a synopsis of the setting, sampling procedures, data collection instruments, procedures, and statistical analyses. A description of the ethical considerations, particularly informed consent, is provided.

Chapter 5: Presentation of Results

Chapter 5 presents the results drawn from the descriptive and inferential analyses employed. The participants' survey response rate, together with descriptive statistics characterising the sample composition, ART adherence, IPV, ML, SOC, and spirituality, are provided. The chapter also presents the results of the regression and moderation analysis used to answer the three research questions and hypotheses regarding the association between IPV and ART adherence and the moderation of MLQ, SOC, and SWB on this association.

Chapter 6: Discussion, Recommendations and Conclusions

This chapter contains a discussion of the findings on the influences of ML, SOC, and spirituality on the association between IPV and ART adherence within the landscape of adherence for people exposed to IPV in South Africa and the broader literature. The key limitations, contributions, and significance of the findings, practical implications, recommendations, and concluding comments are also outlined.

1.10 Summary

The background chapter of this study highlights that ART adherence in South Africa, including Johannesburg, is a persistent problem despite the implementation of several government HIV care interventions. More immediately, the growing rates of IPV in South Africa, including heightened vulnerability among PLWH and other key populations, underscore IPV as a key barrier to ART adherence. Although adherence and IPV have been widely studied in South Africa, research on the explanatory values of ML, SOC, and spirituality and the negative association between IPV and ART adherence in Johannesburg and in South Africa more generally is scanty. There is also a lack of knowledge on how people exposed to IPV undergoing ART are supported to stay adherent to treatment. Considering the accumulation of South African and international studies that have highlighted the negative effects of IPV on ART adherence, including risk factors for IPV and non-adherence, additional research exploring the influences of ML, SOC, and spirituality on the IPV-adherence nexus may add to our understanding of factors that facilitate adherence for people exposed to IPV. In the next chapter, I review the literature on trends of adherence in the North-South regions, opposing definitions of adherence and methods used to quantify it, IPV as a barrier to adherence, and other contextual barriers to adherence.

Chapter 2: Literature review of Adherence Trends, IPV as a Barrier and Contextual Factors that Influence Adherence

In the interest of situating the study within the body of scholarship concerned with adherence, I provide a review of literature dealing with ART adherence and its inherent complexities. This review serves to anchor the discussion of the results in Chapter 5. It begins with a definition of adherence, its importance, indicators, and trends in the Global North and South regions, along with methods used to quantify adherence. Secondly, I provide statistics on the prevalence of IPV, the risk factors for IPV, and the influence of IPV on adherence. Lastly, I review selected literature on contextual factors that influence ART adherence in South Africa in comparison with other parts of the world. A review of selected literature on the moderating influences of ML, SOC, and spirituality, as related to the third objective of the study, is explored in Chapter 3.

2.1 Defining ART (non)Adherence, Consequences and Benefits

The definition of adherence to ART is dynamic and evolving; this makes it difficult to provide a single comprehensive definition, due to the diversity of medication regimes, patient groups, and adherence indicators. The WHO (2003) defines adherence as people's ability to follow treatment, including taking prescribed medications and making recommended lifestyle changes. Other writers have defined adherence as the extent of an individual's ability to take medication as prescribed by their doctors; this includes understanding directions, dosing regimens, and dosing time intervals (Cramer et al., 2008; Vrijens et al., 2012). In contrast, non-adherence to ART is defined as an individual's inability to stick to treatment plans, including taking medications as prescribed and following lifestyle recommendations from their doctors (WHO, 2003). The attainment of optimal treatment may be partly, but not exclusively, contingent on the individual's adherence to ART. To fully benefit from ART, it is essential to maintain a high level of adherence.

The consequences of suboptimal adherence to ART are well documented in the literature. Not only does suboptimal adherence result in ART failure, but it also leads to treatment resistance, disease progression, and eventual death. (Bangsberg, 2008; Low, Gavriilidis, Larke, B-Lajoie, Drouin, Stover, Muhe et al., 2016; Mannheimer, Friedland, Matts, Child, & Chesney, 2002; Maphula, Laher, & Richards, 2020; Roberts, 2000; Smith, 2006). High levels of adherence

(>95%) have therefore been suggested to maintain an undetectable viral load (Viswanathan et al., 2015).

Adherence to ART is important simply because it is life-changing. The benefits of optimal adherence to ART include improved QOL, an improved immune system, and suppression of the viral load (Salleh, Richardson, Kerr, Shoveller, Montaner, Kamarulzaman et al., 2018; Shoko & Chikobvu, 2019). Some of the other benefits of adherence, which are also notable in many other chronic medical conditions, include improved health outcomes, such as reduced symptoms, improved disease control, decreased hospitalisation, and overall better life expectancy (Asche, LaFleur, & Conner, 2011; Cramer, Benedict, Muszbek, Keskinaslan & Khan, 2007; Riegel & Knaf, 2013).

Adherence monitoring is an important aspect of the HIV care continuum that was developed by the Center for Disease Control and Prevention (CDC) in 2013, and later adopted in South Africa, which included five steps of care: diagnosis, linkage to care, retention, adherence, and viral suppression (Kay, Batey, & Mugavero, 2016). Moreover, information on adherence is important for assessing whether patients are benefiting from a particular medication regimen and to identify those that may require adherence support intervention.

2.2.1 Adherence Indicators across Chronic Diseases

The WHO has suggested that adherence levels of greater than 95% are required to achieve successful viral suppression and lower the risk of opportunistic infections for PLWH (WHO, 2016). In the case of other chronic diseases, such as hypertension and diabetes, medication adherence rates of between 70-80% are usually sufficient to achieve adequate treatment, and are therefore comparatively lower than the 95% threshold required for ART.

Although the WHO has recommended a cut-off point of $\geq 95\%$ as the threshold for optimal adherence, there is evidence calling for revisions of the cut-off to ensure better virological outcomes. For instance, Bezabhe, Chalmers, Bereznicki, and Peterson (2016) conducted a meta-analysis involving 43 studies, focusing on more than 26 countries, to evaluate the relationship between the cut-off point for optimal adherence to ART ($\geq 95\%$) and virological outcomes. The study areas included sub-Saharan Africa (South Africa, Kenya, Mozambique, Cameroon, Uganda, and Zimbabwe), the United States, Canada, Europe, Asia, and Australia.

Results revealed that the mean rate of 63%, yet the risk of virological failure was low, despite the suboptimal adherence rate. Furthermore, no significant differences were noted for the pooled odds ratios for the different threshold ranges of optimal adherence, such as 98–100%, 95%, and 80–90%. Thus, Bezabhe et al. (2016) called for a redefinition of the optimal adherence cut-off point of $\geq 95\%$, and were convinced that a slightly lower optimal adherence threshold would encourage patients to start ART at an early stage of HIV infection.

In terms of long-term adherence, previous studies have argued that levels of adherence to ART may change over time. Poor medication adherence appears to be widespread across a range of health conditions, with some exceptions. In general, adherence to chronic medication seems problematic, especially in low- to middle-income countries (LMICs) with limited healthcare resources, but there are comparable adherence rates between acute and chronic medical conditions. For example, studies on acute medical conditions, such as asthma, bronchitis, or respiratory infections, have reported higher levels of adherence to medication among individuals with acute medical conditions compared to those on chronic medication (Ibrahim, Schommer, Morisky, Rodriguez, Gaither, & Snyder, 2021; Jimmy & Jose, 2011; Kasahun, Sendekie, Mekonnen, Sema, Kemal, & Abebe, 2022).

On the other hand, adherence rates for chronic conditions are between 50 to 65% (Briesacher, Andrade, Fouayzi, & Chan, 2008; Lam & Fresco, 2015), despite information that medication can improve QOL and prevent death. While there are debatable adherence comparisons between chronic conditions and acute chronic conditions, it seems HIV medication adherence may be more difficult to maintain over time, as is the case with related chronic conditions such as hypertension, diabetes, and heart disease, due to challenges that typically shape people's experiences of medication adherence (which are explained later in the chapter) (Lacob et al., 2017).

2.2.2 Global North versus Global South ART Adherence Trends

ART adherence in adults living with HIV is very similar in low- to middle-income countries (LMICs) and high-income countries (HICs). However, there is a perception that ART

adherence is poor in resource-strapped countries, or LMICs. Because of this, a brief comparison of adherence rates between LMICs and HICs is necessary.

A global overview of ART adherence can be drawn from a few meta-analytic studies that show comparisons of adherence between LMICs and HICs. This includes Mills et al. (2006), who found a 77% adherence rate among PLWH in sub-Saharan Africa, compared to 55% in North America. Similarly, in Latin America and the Caribbean, 70% adherence was reported by Costa, Torres, Coelho, and Luz (2018), while Ortego, Huedo-Medina, Llorca, Sevilla, Santos, Rodríguez et al. (2011) reported low levels of adherence in North America (59%) and Western Europe (61%). Moreover, a multi-country study by De los Rios, Okoli, Castellanos, Allan, Young, Brough et al. (2021) identified a high prevalence of suboptimal adherence in Northern America, compared to Asia, Africa (specifically South Africa), Latin America, and Europe. This showed that ART adherence in HICs is often suboptimal compared to LMICs.

In sub-Saharan Africa, ART adherence rates measured with viral load count stand at about 85% (Lecher, Fonjungo, Ellenberger, Toure, Alemnji, Bowen et al., 2021). Examples of such countries include South Africa, Cote d'Ivoire, Kenya, Lesotho, Malawi, Namibia, Tanzania, and Uganda. In South Africa specifically, the rates of adherence based on viral load counts are reported at approximately 84% for the Johannesburg municipality, 89% in Tshwane, 77% in Ekurhuleni, and 91% in eThekweni and Cape Town (Van Schalkwyk et al., 2021). The variations in regional adherence rates may be attributed to differences in HIV treatment drivers and patient profiles. Nonetheless, from a global viewpoint, the evidence seems to align with the notion that ART adherence among adults in LMICs is arguably better than in HICs, with notable variations between countries and regions.

While ART adherence in South Africa and other sub-Saharan countries seems comparatively better than in HICs, it is still lower than the standard of $\geq 95\%$ set by the WHO. This suggests that maintaining high levels of ART adherence may be difficult over time (Lacob et al., 2017). The variations and diversity of ART adherence estimates cited in the studies reviewed here reflect differences in geographic location, resource availability, study population and profile, and the methods used to assess or quantify adherence. These are some of the factors that may

offer explanations for the variations in ART adherence levels displayed in the literature. What follows is a description of common methods used to quantify adherence.

2.3 Methods of quantifying ART adherence

The challenges of defining ART adherence and its indicators have attracted more debate about how adherence can be measured. However, the consensus is that there is no ‘gold standard’ due to the biases inherent in every method. As a result, a growing body of literature has focused on the interrogation of how ‘evidence’ is formulated, approximated, and evaluated in different health contexts, with clear disagreements between quantitative and qualitative approaches (Fan & Uretsky, 2016). Naturally, qualitative studies on adherence tend to be concerned with the subjective and affective experiential aspects of medicine-taking behaviour, using comparably smaller groups.

Quantitative studies have traditionally sought more objective methods of estimating ART adherence, using statistical techniques and larger sample sizes (Hodes, Cluver, Toska, & Vale, 2020); however, the barometer for ART adherence differs widely based on considerations such as the economic setting of a study, the availability of resources, and the type of population. The most commonly used methods of quantifying adherence, in both low-to-middle-income and high-income research settings, include self-reports of patients, pill counts, pharmacy medication refill records, electronic medication monitors, and physiological methods such as viral load and CD4 count, all of which are vulnerable to unique limitations (Bisson, Gross, Bellamy, Chittams, Hislop, Regensberg et al., 2008; Damulak et al., 2021; Farley, Eng, Mbaezue, Ibe, Zamanai, Falayajo et al., 2007; Ferradini, Jeannin, Pinoges, Izopet, Odhiambo, Mankhambo et al., 2006; Nieuwkerk & Oort, 2005; Wools-Kaloustian, Kimaiyo, Diero, Siika, Sidle, Yiannoutsos et al., 2006). See Table 1 for examples of this.

Table 1:*Traditional methods used to quantify ART adherence in HIV research and clinical settings*

Method	Context of use	Advantages	Limitations
Self-report	Research	<ul style="list-style-type: none"> - Low cost - Easy implementation - Widely-available 	<ul style="list-style-type: none"> - Memory bias - Social desirability bias
Pharmacy refills	Routine clinical monitoring and research	<ul style="list-style-type: none"> - Relatively inexpensive 	<ul style="list-style-type: none"> - Need a stringent pharmacy system - Staff/labour intensive - Dependent on reliable and accurate records
Pill count	Routine clinical monitoring and research	<ul style="list-style-type: none"> - Low cost - Easy implementation 	<ul style="list-style-type: none"> - Does not explain patterns of non-adherence - Vulnerable to pill dumping
Therapeutic drug monitoring (plasma, urine or saliva)	Research	<ul style="list-style-type: none"> - Associated with virological success - Provides evidence of pill ingestion 	<ul style="list-style-type: none"> - Expensive - Requires expensive laboratory - Vulnerable to false adherence (white coat)
HIV RNA (viral load counts)	Routine clinical monitoring and research	<ul style="list-style-type: none"> - Objective - Wealth of experience 	<ul style="list-style-type: none"> - Not universally available - Infrequent monitoring - Does not provide information on adherence patterns
Electronic adherence monitoring	Research	<ul style="list-style-type: none"> - Objective - Provides patterns of adherence 	<ul style="list-style-type: none"> - Expensive - Staff/labour intensive - Has element of surveillance

Adopted from Castillo-Mancilla & Haberer (2018).

2.3.1 Self-reports

A few systematic reviews show that self-reports such as questionnaires remain the most commonly used method for evaluating ART adherence in routine clinic settings, as well as for research purposes such as cross-sectional research and randomised control trials, especially in resource-strapped settings such as Kenya, India, the Caribbean Islands, and South Africa (Costa et al., 2018; Damulak et al., 2021; Lehmann, Aslani, Ahmed, Celio, Gauchet, Bedouch et al., 2014; Ortego et al., 2011). While self-reports may be vulnerable to patient social desirability and memory bias, which can skew interpretations of adherence, they remain popular because of their practicality, easy use, low cost, and low involvement from healthcare staff for completion (Lam & Fresco, 2015; Sangeda, Mosha, Prosperi, Aboud, Vercauteren, Camacho et al., 2014; Williams, Amico, Bova, & Womack, 2013; Zhang, Li, Qiao, Shen, & Zhou, 2020). Self reports also seem to correlate with objective methods of assessing adherence, such as viral load monitoring and electronic monitors (Orrell, Cohen, Leisegang, Bangsberg, Wood, & Maartens, 2017).

2.3.2 Pharmacy Refill Records

Using clinic pharmacy records and data as a proxy for ART adherence is also common in South Africa, either as part of clinical trials or in routine clinical settings (Gachara, Mavhandu, Rogawski, Manhaeve, & Bessong, 2017; Haberer, Sabin Amico, Orrell, Galárraga, Tsai et al., 2017; Lacob et al., 2017; Lam & Fresco, 2015). The method has also been used in Ethiopia, Nigeria, Pakistan, and parts of the USA (Iversen, Qureshi, Zafar, Busz, & Maher, 2021; Mekuria, Prins, Yalew, Sprangers, & Nieuwkerk, 2016; Omonaiye, Nicholson, Kusljic, Mohebbi, & Manias, 2020; Tchakoute, Rhee, Hare, Shafer, & Sainani, 2022). In routine clinical settings, healthcare workers or pharmacists are responsible for capturing medication refill data (Kapiamba, Masango, & Mphuthi, 2016). The estimation of adherence using pharmacy records follows the assumption that patients who collect their medications regularly, as per the medication refill schedules, are adherent (Evans & Fox, 2013). This means that patients can be classified as adherent or non-adherent according to the number of times they collect their

medication over a given period (Chalker, Wagner, Tomson, Laing, Johnson, Wahlström et al., 2010).

As with self-reports, pharmacy refill data is commonly used to gauge ART adherence because it is easy to use, inexpensive, and has correlations with viral load tests (Damulak et al., 2021). Yet pharmacy refill records fall short of revealing accurate information on patients' patterns of adherence, and adherence misrepresentation may be difficult to consistently and accurately track in healthcare settings with limited human resources and high patient loads, such as those in South Africa (Henegar, Westreich, Maskew, Brookhart, Miller, Majuba et al., 2015; Hodes et al., 2020; Lacob et al., 2017; McMahon, Jordan, Kelley, Bertagnolio, Hong, Wanke et al., 2011; Sattler, Lee, & Perri, 2013). Contexts with overburdened staff and limited resources make for extremely unmotivated and overworked healthcare workers, who may be unable to consistently capture patient data over sustained periods, leading to a lot of gaps in patient files, resulting in the temptation to fabricate patient data to meet quality-control demands (Hodes et al., 2020; Kapiamba et al., 2016).

2.3.3 Pill Counting

The method of counting pills as a metric for ART adherence, usually performed by a health worker, involves enumerating the number of pills consumed over the number of pills remaining since the last refill (Hodes, Vale, Toska, Cluver, Dowse, & Ashorn, 2019). This method has been widely used, either in research or as part of routine clinical monitoring, in a number of countries, including South Africa, Zimbabwe, Kenya, and India (Chirundu, Tapesana, Magande, & Mduluza, 2018; Kendre, Gabhale, Shah, Jadhav, Nath, & Manglani, 2017; Moosa, Gengiah, Lewis, & Naidoo, 2019; Smith, Gengiah, Yende-Zuma, Upfold, & Naidoo, 2016; Vreeman, Ayaya, Musick, Yiannoutsos, Cohen, Nash et al., 2018). Adherence is then derived by subtracting the number of pills dispensed from the number returned and dividing by the number of days between the date of dispensing and the number of pills taken (Basu & Garg, 2017; Orrell et al., 2017).

As with self-reports and pharmacy refill records, the advantages of pill counting include low cost and easy implementation, which explains its popularity in under-resourced settings (Damulak et al., 2021). However, pill counts present similar shortfalls to pharmacy refills, such as the inability to explain non-adherent behaviour and the susceptibility to over-estimate

adherence because enumerating pills taken over pills remaining does not accurately show that pills were actually consumed (Deyno & Toma, 2014; Lam & Fresco, 2015). Thus, patients can manipulate the process by dumping or removing pills before their clinic visit to present themselves as adherent because they know they are being monitored.

2.3.4 Therapeutic Drug Monitoring

Therapeutic drug monitoring (TDM) involves extracting and analysing the concentration of ARV from plasma urine or saliva and hair samples (Saber, Ming, Legnitto, Neilands, Gandhi, & Johnson, 2018). This method is mainly used to measure the pharmacological efficacy of ART treatment. Due to the cost of staffing, and the laboratory equipment needed to run analyses, TDM is more common in resource-rich settings as part of project-based randomised control trials (Perrone, Cattaneo, Radice, Sangiorgi, Federici, Gismondo et al., 2014), but is not extended to routine clinical monitoring for adults.

An advantage of therapeutic drug concentration tests is their strong association with virological success because they can accurately prove medication ingestion (Gandhi, Ameli, Bacchetti, Anastos, Gange, Minkoff et al., 2011; Van Zyl, Van Mens, McIlleron, Zeier, Nachega, Decloedt et al., 2011). However, the test is costly and requires a specialised laboratory for analysis and reporting (Saber et al., 2018). Although able to show proof of medication ingestion, drug concentration tests have been criticised for their transient proof of ingestion and false adherence, also known as “white coat” adherence, i.e., tests show improved adherence immediately if medication was consumed a few days before the test, but cannot show adherence over longer periods of time (Castillo-Mancilla & Haberer, 2018). The high costs of therapeutic drug monitoring analysis may not be sustainable long-term in the context of large patient numbers in resource-strapped settings.

2.3.5 HIV Viral Load Count

Another way ART adherence can be quantified is through physiological methods such as viral load (VL) testing, which involves taking a sample of blood to detect the amount of HIV in the blood (AIDSinfo, 2013). This is the most preferred metric of ART adherence, specifically in clinical settings, for monitoring purposes and clinical trials (Damulak et al., 2021). A higher viral load indicates that there is more HIV in the blood, which accelerates the likelihood of

illness due to opportunistic infection, and subsequent death (WHO, 2016). A high VL may indicate two things: either that the current regimen of ART that the patient is following is failing to control the spread of the virus, or that the patient is not adherent to their medication. The latter is usually the case (WHO, 2016). A low HIV VL is ideal because of its ability to prevent HIV transmission, and because it represents good ART adherence (Cohen et al., 2012). In South Africa, ART is monitored with CD4 count tests and VL, specifically to monitor ART efficacy and identify treatment failure. A patient in South Africa is assessed for VL once annually, but the provision of VL testing is more easily available in urban areas than in rural areas.

In terms of methodological strengths, VL testing is undeniably effective for determining adherence to ART (WHO, 2016). It is also valuable for identifying treatment failure and may be used to reinforce adherence (Phillips, Brittain, Mellins, Zerbe, Remien, Abrams et al., 2017). However, VL testing is expensive and not always available in many resource-strapped settings (Bisson et al., 2008). Other studies have also cautioned that VL tests have a tendency to be inconsistent and may not accurately capture patterns of medication-taking behaviour (Phillips et al., 2017). In reality, correlations between ART adherence and VL tests may not be direct due to a range of factors, such as co-infections and treatment initiation baseline viral load, which have an indirect influence on immunological outcomes related to viral suppression; therefore, the assumption that a patient who is virally suppressed is adherent can be incorrect (Castillo-Mancilla & Haberer, 2018).

2.3.6 Electronic Monitoring Systems

ART adherence can also be quantified electronically or digitally with adherence event monitoring (AEM) systems, common in resource-rich settings for clinical trials (Zijp, Touw, & van Boven, 2020). This method involves using a micro-processing device or a micro-clip that is attached to the bottle cap, which records the time and date when a bottle of pills is opened (Zijp et al., 2020). In this instance, adherence to ART is estimated through bottle opening, which is interpreted as a proxy for medication consumption (Haberer et al., 2017). While the advantage of bottle-cap sensors includes accuracy in providing data about the time and date

when a pill container is opened, an open bottle does not guarantee that pills were consumed, which can lead to misclassification of adherence (Haberer et al., 2017).

Another newer electronic method of quantifying ART adherence is called the co-encapsulated pill sensor system, which is simply understood as an ingestible digital pill. A co-encapsulated pill sensor system is a device that uses an edible ingestion sensor (IS) consisting of an external wearable patch and paired mobile device that can detect and record ingestion events using Bluetooth and wi-fi, generating digitised medication ingestion records (Browne, Peloquin, Santillo, Haubrich, Muttera, Moser et al., 2018). The co-encapsulated pill sensor system is adopted mainly in high-income countries such as the USA and the UK (Daar, Wang, Siqueiros, Shen, Guerrero, Di et al., 2020; Martani, Geneviève, Poppe, Casonato, & Wangmo, 2020).

Compared to these high-technology digitised methods of tracking medication adherence, electronic adherence systems in low-income country settings may be limited to electronic health (eHealth) methods, such as instant text messaging, although these are not widely applicable in all healthcare facilities (Kemp & Velloza, 2018). Instant text messaging has been used in project-based, randomised control trials in a number of sub-Saharan countries (including South Africa, Botswana, Uganda, Cameroon, and Kenya) to remind patients about medication collection, medical check-ups, and the importance of taking ART (Barnabas, van Rooyen, Tumwesigye, Brantley, Baeten, van Heerden, et al., 2016; Govender, Beckett, Masebo, Braga, Zambezi, Manhique et al., 2019; Nsagha, Lange, Fon, Nguedia Assob, & Tanue, 2016; Reid, Steenhoff, Thompson, Gabaitiri, Cary, Steele et al., 2017; Van der Kop, Muhula, Nagide, Thabane, Gelmon, Awiti, Abunah et al., 2018).

The co-encapsulated pill sensor system appears to be preferable, compared to other electronic methods, because it is apparently pharmacologically safe, reduces healthcare worker administrative overload, and is seen as a way to ensure the accuracy, quality, and integrity of recording adherence data. The data capture is also immediate (Liu, Daar, Wang, Siqueiros, Campbell, Shen et al., 2020). Conversely, the system requires a stable internet connection to record pill ingestion and related medication-taking behaviour, rendering it less feasible in low-

income countries like South Africa, where internet coverage is more common in urban and semi-urban areas, but less so in rural areas.

In addition, ethical concerns have been raised that digitisation of medication ingestion may threaten the individual's autonomy, representing a form of surveillance, eroding privacy, and introducing treatment coercion by undermining the idea of responsibility for health (Guta, Voronka, & Gagnon, 2018; Martani et al., 2020; Swartz, 2018; Weber, Loi, Christen, & Kleine, 2018). Although ingestible digital pills are said to offer stable and rapid solutions to reliable adherence monitoring, it is difficult to ignore the fact that this innovation comes with an element of body policing that undermines individual agency and responsibility. Innovative technologies like digital ingestible pills therefore raise many questions on how the technology benefits the individual under surveillance, beyond recording their biometric data on medication ingestion.

In conclusion, the literature shows that there is a wide range of methods to evaluate and quantify ART adherence, although each method has limitations. More importantly, while there is a diversity of methods, the selection of a method often depends on the definition of ART used, the availability of resources, and the economic setting of the study. Locations with limited resources may rely on inexpensive and less intrusive methods, such as self-reports, pill counting, or pharmacy records, while those that are resource-rich may have the benefit of using more advanced technological methods, such as digitised pill ingestion. Whether conducted through blood tests, self-reports, or electronic monitoring systems, it is clear that each adherence estimate is limited in its ability to provide an accurate picture of medicine-taking behaviour, leading to diverse results on adherence levels being reported in the literature. In this respect, a few studies have emphasised the usefulness of combining multiple methods to balance the potential biases inherent in each (Henegar et al., 2015; Hodes et al., 2020; Kapiamba et al., 2016). Together with the importance of identifying representative adherence definitions and methods of evaluating its outcome, and adherence levels around the world, it is also important to provide an overview of IPV and its association with ART adherence.

2.5 IPV and ART Adherence

Intimate partner violence (IPV) is understood as violence between couples (Ellsberg, Arango, Morton, Gennari, Kiplesund, Contreras et al., 2014). IPV is a form of domestic violence (DV),

which is a broad term for other types of domestic abuse, such as child and adult abuse in a household (Ali, Dhingra, & McGarry, 2016). IPV is defined as the experience of physical, sexual, and psychological violence by a current or former intimate partner (WHO, 2013), and includes actions of physical violence, sexual violence, emotional-psychological abuse, and controlling behaviours. The term “intimate partner” denotes that violence can be enacted by either men or women, irrespective of their age, marital status, or even sexual orientation (Ali et al., 2016; Capaldi, Kim, & Shortt, 2007; Gerino, Calderera, Curti, Brustia, & Rollè, 2018). While IPV is the most prevalent type of violence worldwide, the most commonly reported types of violence are emotional violence (also understood as psychological violence) and physical violence (Achchappa et al., 2017; Ali, Mittal, Schroder, Ishman, Quinton, & Boekeloo, 2017; Nicodimos, 2013). On the other hand, sexual violence is usually the least reported type of violence (Nicodimos, 2013; Koen, Wyatt, Williams, Zhang, Myer, Zar, et al., 2014).

In Africa, systematic and meta-analytic studies show that 36% of PLWH have experienced at least one form of IPV over the past year, with emotional IPV being the most prevalent (Cheng et al., 2023; Muluneh, Stulz, Francis, & Agho, 2020). This is also the situation in South Africa, where emotional IPV is the most commonly reported, followed by physical IPV (Bernstein, Phillips, Zerbe, McIntyre, Brittain, Petro et al., 2016; Kidman et al., 2018; Meskele, Khuzwayo & Taylor, 2021; Okafor, Barnett, Zar, Nhapi, Koen, Shoptaw et al., 2021). Despite IPV being a punishable criminal offence, South Africa persistently has some of the highest rates of IPV in the world, with a disproportional burden on women, including a heightened vulnerability for pregnant women (Katz et al., 2015; Sprague et al., 2017; Statistics South Africa, 2017; Yonga et al., 2022). This includes an upward trend of physical violence affecting young girls and women aged 13–23 (García-Moreno et al., 2015; Sprague et al., 2017; WHO, 2013). The location of the current study, Gauteng province, has the highest recorded incidences of both IPV and HIV (Gauteng Department of Health Annual Report, 2016).

2.5.1 Risk factors of IPV

The available literature shows intersections between prior experiences of IPV and factors such as childhood abuse, demographics, social and socio-economic characteristics, excessive use of substances, and poor mental health (Gass, Stein, Williams, & Seedat, 2011; Goodman, Smyth, Borges, & Singer, 2009; Hatcher et al., 2022; Kapiga, Harvey, Muhammad, Stöckl, Mshana,

Hashim et al., 2017; Makongoza & Nduna, 2021; Nduna, Jewkes, Dunkle, Shai, & Colman, 2010; Schaefer, Howell, Sheddan, Napier, Shoemaker, & Miller-Graff, 2021; Seedat, Van Niekerk, Jewkes, Suffla, & Ratele, 2015; Zakar, Zakar, Mikolajczyk, & Krämer, 2012).

In terms of childhood abuse, the evidence argues that children who experience or witness violence within the home or in broader society have a heightened vulnerability to experiencing IPV as adults. For instance, women who witness IPV or experience sexual and/or physical abuse in childhood are more prone to experience IPV as adults (Afifi, Mota, Sareen, & MacMillan, 2017; Madruga, Viana, Abdalla, Caetano, & Laranjeira, 2017). Conversely, with men, exposure to domestic violence and abuse during childhood increases the likelihood of becoming perpetrators of IPV (Cluver et al., 2018; Costa, Kaestle, Walker, Curtis, Day, Toumbourou et al., 2015). The perpetrators of violence in intimate relationships are mostly men, and it is evident that there are close connections between childhood abuse and domestic violence (Riedl, Beck, Exenberger, Daniels, Dejacó, Unterberger et al., 2019).

Social or societal factors that increase the risk of IPV are often related to gender norms. A few studies, including South African studies, argue that gender roles that promote the acceptance of male dominance or gender inequitable masculinity within relationships are the primary source of IPV (Di Napoli, Procentese, Carnevale, Esposito, & Arcidiacono, 2019; Jewkes & Morrell, 2010a; Sere et al., 2021; Sikweyiya et al., 2020). Patriarchal beliefs not only explain partner violence but also influence the normalisation of violence among couples, and the social acceptance and legitimisation of IPV in communities; this further reduces the chances of a systemic social response towards IPV.

Socio-demographic factors, such as level of education and employment, also appear to be linked to the risk of exposure to IPV. Studies in Europe, Iran, Ethiopia, and South Africa have demonstrated that having a low level of education and being unemployed place women at a greater risk of exposure to IPV (Ahmadi, Soleimani, Jalali, Yousefnezhad, Roshandel Rad, & Eskandari, 2017; Reichel, 2017; Tusa, Kebede & Weldesenbet, 2022; Zembe, Townsend, Thorson, Silberschmidt & Ekstrom, 2015). Such socioeconomic disparities also intersect with cultural norms, that not only affect women generally, but also disproportionately affect women

living with HIV. Thus, women who experience socio-economic disparities, are exposed to IPV, and live with HIV carry a triple burden.

Poor mental health is also considered a risk factor for IPV, in that direct links have been identified between experiencing abuse or witnessing IPV during childhood, and depression, anxiety, and excessive substance abuse (García-Moreno et al., 2015; Hatcher et al., 2022; Hatcher et al., 2015; Sikweyiya et al., 2020). Whether mental health challenges precede or arise from IPV, poor mental health makes it difficult for individuals exposed to IPV to manage and cope with their experiences. Furthermore, the prevalence of psychological challenges, such as mood disorders (e.g., depression and anxiety), PTSD, and related emotional challenges, is higher among PLWH who have been exposed to IPV compared to those who have not (Cecon et al., 2014; LeGrand et al., 2015; Tsai et al., 2016). This has been attributed to HIV and IPV stigma, social isolation, and trauma (Hatcher et al., 2022; McCleary-Sills et al., 2016; Rice et al., 2017; WHO, 2014; Yonga et al., 2022). In addition to the mental and general health risks associated with IPV among PLWH, associations between IPV and ART adherence have also been drawn, which will be discussed below.

2.5.2 The impact of IPV on ART adherence

The impact of IPV on ART adherence has been well established, including correlations with low ART treatment uptake, and engagement with HIV care services, particularly among women (Hampana, 2016; Hatcher et al., 2015; Kouyoumdjian et al., 2013; Li et al., 2014; Trimble et al., 2013; Young et al., 2019).

The impact of IPV on ART adherence is notable globally. In the Global North, the negative influence of IPV on ART adherence and low viral suppression was evidenced in a systematic review of thirteen studies in the USA that examined the odds of engagement in HIV care and treatment among women living with HIV exposed to IPV (Hatcher et al., 2015). Likewise, in the Global South, the association between IPV and non-adherence was also recorded in studies in India (Achchappa et al., 2017), Kenya (Biomndo et al., 2021), and South Africa (Cluver et al., 2018; Gibbs et al., 2022). While IPV generally impedes adherence to ART, different types of violence may have varying effects on adherence. For instance, in the USA and South Africa, higher rates of emotional violence are correlated with non-adherence to ART among both men

and women, although the effects of all types of violence tend to be more potent for women (Fredericksen et al., 2021; Hatcher et al., 2022; Jewkes et al., 2015).

Frequent physical IPV violence has been found to be another predictor of non-adherence (Lopez, Jones, Villar-Loubet, Arheart, & Weiss 2010), while sexual violence has been argued to have a greater negative effect on adherence than physical violence, despite being the least reported type of violence (Hampana, 2016; Hatcher et al., 2022; Jewkes et al., 2015; Nicodimos, 2013; Tsai et al., 2016).

Despite the growing evidence highlighting the impact of IPV on ART adherence in South Africa, rates of IPV and femicide continue to climb (Katz et al., 2015; Sprague et al., 2017). Even though the statistics appear discouraging, there is evidence of a few services that are available in South Africa to assist individuals exposed to IPV, specifically women, which this paper will turn to now.

2.5.3 Interventions for IPV in South Africa

Interventions for IPV in South Africa seem to be a mixture of efforts between government and non-government institutions, with no clear, formalised interventions at the primary healthcare level for PLWH who have encountered IPV (Sprague et al., 2017). Most interventions prioritise IPV awareness and prevention, and the provision of support, which includes police or law enforcement interventions, community-level violence awareness and campaigns, health system screening, and referral interventions attached to randomised trials (Sprague et al., 2017). The outcomes of the inventions vary from identification of violence, reporting violence, leaving violent relationships, reducing partner violence, and the empowerment of women through short-term counselling. However, most of the interventions are sporadic and have not been integrated into the South African primary healthcare plan.

At an individual level, legal interventions for domestic violence include issuing restraining orders (temporary or permanent) against the perpetrators. These may lead to arrests, followed by court fines or imprisonment, if orders are violated (Fapohunda, Masiagwala, Stiegler, & Bouchard, 2021). In addition, there are non-government organisations that provide temporary shelter and counselling for women (South African National Strategic Plan on Gender-based Violence, n.d).

In terms of community interventions, there is evidence that non-government, community-level interventions, such as domestic violence awareness and prevention campaigns, may be successful in changing harmful gender norms and reducing the prevalence of IPV. Examples of these programmes include the Sonke Change intervention, based in Johannesburg and aimed at behaviour change in men who abuse their partners. This initiative was reported to be effective at reducing IPV perpetration among men (Christofides, Hatcher, Rebombo, McBride, Munshi, Pino et al., 2020). Another example is a group-based intervention called Stepping Stones and Creating Futures. A study of this initiative evaluated whether it would reduce IPV perpetration and strengthen livelihoods in eThekweni Municipality, Durban, South Africa (Gibbs, Washington, Abdelatif, Chirwa, Willan, Shai et al., 2020). The intervention included a curriculum aimed at reducing women's economic dependence on men in contexts of poverty, along with strategies to strengthen livelihoods. The study found the intervention effective in reducing men's self-reported perpetration of IPV and strengthening women's livelihoods, but not women's experiences of IPV.

At the primary health level, interventions for IPV in South Africa may involve routine one-time screening, once-off counselling, or referrals to other support services attached to research trials, depending on the healthcare resources and location (Rees et al., 2014; Sprague et al., 2017). However, these services are often offered as part of research projects which have a short life-cycle, because they are limited to the duration of the project. Such efforts are therefore sporadic and not formalised throughout all primary healthcare institutions in South Africa.

Although some successes have been noted in IPV awareness due to the collective efforts of IPV interventions in South Africa, including decreases in self-reported perpetration, these prevention-based and help-seeking interventions have not been successful at reducing the prevalence of IPV, nor have they been integrated within HIV and adherence interventions in primary healthcare systems nationally.

2.6 Contextual factors influencing ART adherence

In addition to IPV, a few systematic reviews have shown several contextual factors that may act as either barriers or enablers of people's ART adherence. These include individual factors,

socio-economic, treatment-related and health system factors, and psychosocial and sociocultural factors (Damulak et al., 2021; Sweeney & Venable, 2016).

Table 2:
Barriers and facilitators of adherence to ART

Classification	Barrier	Facilitator
Individual factors	<ul style="list-style-type: none"> - Age (being younger) - Sex (male) - Recent HIV diagnosis - Shorter period on treatment 	<ul style="list-style-type: none"> - Age (being older) - Sex (female) - Living with HIV for longer - Longer time on treatment
Socio-economic factors	<ul style="list-style-type: none"> - Poor literacy - Unemployment - Poverty and food insecurity 	<ul style="list-style-type: none"> - Health literacy reinforcement - Source of income
Treatment and Health system factors	<ul style="list-style-type: none"> - Perceived side effects (experiencing them or fear of experiencing them) - Long waiting times - Medication stockouts - Hostile interaction with healthcare worker - Stigmatised medication collection rooms 	<ul style="list-style-type: none"> - Side effects management - Perceived wellness - Shorter waiting periods - Availability of sufficient supply - Friendly and forgiving healthcare worker interactions
Psychosocial factors	<ul style="list-style-type: none"> - Stigma and discrimination - Lack of support - Fear of unintentional disclosure - Poor mental health - Forgetfulness - Substance use 	<ul style="list-style-type: none"> - Acceptance - Support from family/loved ones - Telling at least one person - Psychosocial support - Device-led reminders (e.g., SMS) - Health literacy reinforcement
Socio-cultural factors	<ul style="list-style-type: none"> - Cultural beliefs - Alternative indigenous treatment - Religious beliefs 	<ul style="list-style-type: none"> - Integrated healthcare practices - Support from family

Source: Adapted from Mukumbang et al. (2019).

2.6.1 Individual Demographic Factors

The most frequently cited individual factors that seem to have a relationship with adherence to ART include age, sex, treatment, and time since HIV diagnosis.

- **Age of the PLWH**

The consensus in the literature is that medication adherence for chronic conditions generally increases with age (Gast & Mathes, 2019; Lemay, Waheedi, Al-Sharqawi, & Bayoud, 2018). Studies from different settings focusing on HIV medication have also pointed to age as a significant predictor of ART adherence, with better adherence observed among patients aged 35 years and above compared to younger patients (Beer, Heffelfinger, Frazier, Mattson, Roter, Barash et al., 2012; Benning, Mantsios, Kerrigan, Coleman, Golub, Blackstock et al., 2020; Crim, Tie, Beer, Weiser, & Dasgupta, 2020; Minwagaw, Akenie, Tewabe, Tegegne, & Beyene, 2021; Onoya, Nattey, Budgell, van den Berg, Maskew, Evans et al., 2017; Ortego et al., 2011; Soares, Brito, Lima, & Lapa, 2020; Tchakoute et al., 2022; Wasti, Simkhada, Randall, Freeman, & van Teijlingen, 2012).

Evidence regarding the interplay between age and adherence was found in a systematic and meta-analytic review by Heestermans, Browne, Aitken, Vervoort, and Klipstein-Grobusch (2016) that examined determinants of non-adherence in sub-Saharan Africa. The review of 146 studies from Central and East Africa, Southern Africa, and West Africa reported age as a strong determinant of adherence, with better adherence seen in older patients (>35 years) and a decrease in adherence with younger age (15–35 years). Similar outcomes were observed in central Haiti (Dorcélus, Bernard, Georgery, & Vanessa, 2021). Comparative outcomes were noted in a cross-sectional study of 297 participants in the EtheKwini Metro, which is situated on the east coast of KwaZulu-Natal province in South Africa (Naidoo & Premdutt, 2019). In agreement with previous studies, Naidoo and Premdutt (2019) found that over 53% of participants aged 18–23 were non-adherent to ART. Non-adherence was linked to younger participants' reports of feeling ashamed to take their medication in public.

The link between age and adherence seems to have wide variations and is not absolute. For example, in India, a systematic review of factors associated with ART adherence rendered

mixed results; it was found that, although older age had associations with good adherence, declines were also observed with old age (Chakraborty, Hershow, Qato, Stayner, & Dworkin, 2020). Similarly, in Korea and Asia, it was noted that individuals under 19 years of age or above 49 were at higher risk of suboptimal adherence, compared to those between the ages of 30 and 39 years old (Kim, Lee, Park, Bang, & Lee, 2018).

The evidence presented suggests that, while adherence improves with age, there are distinct variations in adherence experiences between adolescents, young adults, and the elderly. Adherence among the elderly may decrease, owing to declines in cognitive factors like memory, which often come with ageing (Ghidei, Simone, Salow, Zimmerman, Paquin, Skarf et al., 2013; Karpiak & Havlik, 2017). Better adherence in middle-aged people may be attributed to gradual familiarity with the disease in general, the routine of taking medication, and the priority of preserving survival. However, it appears that this group's ability and commitment to long-term adherence may be challenged by other life stressors, such as socio-economic issues, mental health, and stigma, including the inevitable neurological factors like forgetfulness.

On the contrary, the disparities in adherence found among younger people appear to be impacted by similar issues to those that affect the middle-aged, intensified by the developmental issues that arise when transitioning to adulthood, alcohol use, and exposure to domestic violence (Bondarchuk et al., 2022; Cluver, Shenderovich, Toska, Rudgard, Zhou, Orkin et al., 2021; Merrill, Campbell, Decker, McGready, Burke, Mwansa et al., 2021). Therefore, adherence appears to have a concave relationship with age, being lowest in both very young and very old people.

- **Sex and Adherence**

The relationship between sex and adherence to ART appears to be contentious. Previous studies from different regions of the world not only indicate sex as a determinant of ART uptake, but also show that females tend to be more adherent to ART than males (Chakraborty et al., 2020; Kekwaletswe & Morojele, 2014; Moosa et al., 2019; Neupane, Dhungana, & Ghimire, 2019). For instance, in China, females were more likely to achieve virological suppression (a proxy for adherence) and remain in treatment (Chen, Dou, Wang, Wu, Zhao, Gan et al., 2017). Similar outcomes were observed in Nigeria (Musa, Garbatib, Nashabarua, Yusuf, Nalado, Ibrahim et

al., 2017). Similarly, in the city of Johannesburg (CoJ) in South Africa, a cross-sectional study that explored ART non-adherence and its associations among 1,224 individuals living with HIV also identified that non-adherence was associated with being male (Laher, Richards, Paruk, & Venter, 2021). These studies suggest that the females in the study had better adherence to ART than the males.

However, other recent studies indicate the opposite. Positive associations between being male and adherent have been shown in a systematic review by Azmach, Hamza, and Husen (2019), in a seven-year national longitudinal survey in Korea (Kim et al., 2018), and in Canada, based on another 14 year longitudinal survey (Puskas, Kaida, Miller, Zhang, Yip, Pick et al., 2017), which showed that males are more adherent compared to females. While it seems that the literature on sex and ART adherence is incongruous, other studies have found inconclusive associations between sex and adherence to ART (Andronescu, Zulu, Jackson, Hachaambwa, Claassen & Stafford, 2019; Boullé, Kouanfack, Laborde-Balen, Boyer, Aghokeng, Carrieri et al., 2015; Kioko & Pertet, 2017; McCoy, Waldrop-Valverde, Balderson, Mahoney, & Catz, 2016).

The relationship between sex and ART adherence is known to be impacted by a number of factors, which may explain these polarised findings, and it seems that adherence has variable intersections with gender norms. On the one hand, the results of females showing being more adherent than males may be explained by the societal positioning of females as primary caregivers and males as financial providers, which tends to create inequalities in how males and females participate in HIV care (Bhagwanjee, Govender, Reardon, Johnstone, George, & Gordon, 2013; Wouters & De Wet, 2016). Within this context, the role of caring for the household, and not having formal employment, may afford females more time for clinic medication collections and subsequent adherence (Chakraborty et al., 2020; Okoronkwo, Okeke, Chinweuba, & Iheanacho, 2013).

On the other hand, evidence of males being non-adherent may be explained through the intersections of masculinity and HIV stigma (Campbell et al., 2020; Mburu, Siu, Bitira, Skovdal & Holland, 2014; Sikweyiya, Jewkes & Dunkle, 2014; Zissette, Watt, Prose, Mntambo & Moshabela, 2016). It seems that, for males, identifying as having HIV threatens masculinity through the associated need for medical support and subsequent clinic attendance, which is

traditionally perceived as a feminine space. As a result, seeking HIV care may be sacrificed to maintain a masculine identity until one becomes visibly sick.

2.6.2 Treatment Duration, Years of living with HIV and Adherence

- **Treatment Duration and Adherence**

An individual's number of years on ART treatment, and the number of years they have lived with HIV, have also been identified as individual factors predictive of adherence. In terms of treatment duration, studies show that adherence varies with time on ART treatment, with some researchers arguing that a longer period on HIV treatment has favourable adherence outcomes, while others maintain the opposite. The effect of a longer time on and adherence to ART can be observed in Asia, according to a study by Jiamsakul, Kumarasamy, Ditangco, Li, Phanuphak, Sirisanthana et al. (2014), who examined factors associated with suboptimal adherence to ART among 1316 individuals from five regions of Asia (Thailand, Hong Kong, Malaysia, the Philippines, and Indonesia). Jiamsakul et al. (2014) identified that suboptimal adherence decreased with a longer duration on ART, implying that adherence increases with a longer time on treatment. A similar pattern was observed in Durban, South Africa. Moosa et al. (2019), who conducted a retrospective study to examine adherence over a period of five years among 270 individuals, reported that adherence improved with a longer time on treatment.

However, there is also evidence suggesting that a shorter duration on ART may yield better adherence. One example was a retrospective, cross-sectional study that investigated the prevalence of ART adherence and associated factors of adherence among 370 participants in the region of Afar, north of Ethiopia (Belayihun & Negus, 2015). This study found that, the longer people stayed on treatment, the less adherent they became. Similar outcomes were observed in Manhiça, in the south of Maputo, in Mozambique (Rupérez, Pou, Maculuve et al., 2015).

Overall, the mixed evidence regarding the duration of ART and adherence seems to suggest that, although people may be able to achieve good adherence within the first few years of initiating treatment, this changes over time (longer than five years). Adherence improving over time has been explained by longer exposure to the routine of taking medication (Amour,

Sangeda, Kidenya, Balandya, Mmbaga, Machumi et al., 2022). However, over time, new challenges emerge, which may explain reports of a shorter time on treatment contributing to better adherence generally. Qualitative studies seem to point to treatment fatigue as one of the reasons why people who have been adherent for a long time may stop taking medication (Bukonya, Mayanja, Nakamanya, Muhumuza, & Seeley, 2019). It appears that somewhere along the treatment continuum, people experience feeling tired of the monotony of endlessly taking medication. However, treatment fatigue also appears to be a symptom of other factors, such as stress, stigma, belief in alternative indigenous HIV treatment options, and divine healing from God or a Supreme Being (Bukonya et al., 2019; Bijker, Jiamsakul, Kityo, Kiertiburanakul, Siwale, Phanuphak et al., 2017; Hong, Fanelli, Jonas, Gweshe, Tjituka, Sheehan et al., 2014).

- **Time living with HIV and Adherence**

Apart from the length of treatment, the number of years one has lived with HIV may also influence ART adherence. However, the literature on this also varies, with some studies suggesting that adherence is more likely to increase when one has been living with HIV for a longer time, and others suggesting the opposite. For instance, in Nepal, a duration of more than three years living with HIV was associated with better adherence compared to living with HIV for less than three years (Neupane et al., 2019). Interestingly, in Texas, USA, a study that compared adherence over the course of ten years reported that the likelihood of adherence was twice as high in people who had been living with HIV for between five and ten years, in contrast with those who had been living with the disease for more than ten years (Sok, Mgbere, Pompeii, & Essien, 2021). This highlights that, while a period of more than five years living with HIV may improve adherence, a period of more than ten years could yield the opposite.

Conversely, some studies have argued that a longer period of living with HIV may not always translate into better adherence. This can be observed in a study by Hughes, Mattson, Scheer, Beer, and Skarbinski (2014), conducted in different regions of the USA, including California, Georgia, Illinois, Indiana, New Jersey, New York, North Carolina, Puerto Rico, and Washington. Investigating the prevalence and reasons why people discontinue ART, the study found that a timeframe of more than five years since HIV diagnosis was among the factors associated with ART discontinuation. Similarly, a study conducted in Cape Town, South Africa, examined sociodemographic and psychosocial factors that predicted long-term ART

adherence among 324 participants. The study found that individuals who had lived with HIV for a longer period before starting ART treatment were more likely to have suboptimal adherence (Davis, Pala, Nguyen, Robbins, Joska, Gouse et al., 2021).

Thus, the literature regarding the association between time spent living with HIV and ART adherence seems complicated. While some studies have argued that a shorter time living with HIV improves adherence (Davis et al., 2021; Neupane et al., 2019), others have argued the opposite (Hughes et al., 2014; Foresto, Melo, Costa, Antonini, Gir, & Reis, 2017; Sok et al., 2021). Even so, there seem to be variations in how this affects adherence. A qualitative study in Malawi that explored barriers and facilitators of ART uptake and adherence documented participants' reluctance to start ART treatment because they needed more time to think about or process their HIV diagnosis (Kim, Zhou, Mazenga, Ahmed, Markham, Zomba et al., 2016).

Based on these studies, it seems that it is more complicated than just measuring the length of time an individual has lived with HIV, highlighting the importance of adjusting to the reality of an HIV diagnosis. Additionally, optimal adherence due to a longer time living with HIV may be influenced by longer living experiences with ART treatment, owing to the ability to manage side effects, experience with integration of ART use in daily life, social support, and longer exposure to healthcare services (Makhado & Mongale, 2019). While this is so, an individual's experience of learning to live with HIV, gained over time, may be challenged by other socioeconomic and psychosocial factors, such as unemployment, poor mental health, and stigma (Dorcélus et al., 2021).

2.6.3 Socio-economic Vulnerabilities and Adherence

Socio-economic vulnerability is explained as a combination of characteristics that determine the extent to which the livelihood of a person or group is susceptible to natural occurrences in society (Wisner, Blaikie, Cannon, & Davies, 2004). In this case, socioeconomic vulnerability is defined as a combination of socioeconomic characteristics that impact an individual's likelihood of adherence or non-adherence to ART treatment. Studies, particularly in LMICs, have commonly cited socioeconomic characteristics, such as level of education, poverty, unemployment, lack of money for transportation, and food insecurity, among predictors of adherence to ART (see Kagee et al., 2011; Katz et al., 2015; Kekwaletswe & Morojele, 2014;

Mweemba, Musheke, Michelo, Halwiindi, Mweemba, & Zulu, 2015; Peltzer & Pengpid, 2013).

2.6.3.1 Literacy and Level of Education

A few systematic reviews of studies undertaken in LMICs and HICs have demonstrated that an individual's level of education has an intricate association with ART (Azmach et al., 2019; Campbell et al., 2020; Heestermans et al., 2016; Makhado & Mongale, 2019; Peltzer & Pengpid, 2013; Perez, Chagas, & Pinheiro, 2021). It has been shown to affect adherence in two ways: through medication or health literacy (a surrogate for the level of education), and communication with healthcare professionals. Health literacy is a subset of overall literacy skills (reading, writing, and oral literacy), which is understood as the extent of an individual's capacity to acquire and comprehend basic health information and services, to make the necessary health choices (Parker, Ratzan, & Lurie, 2003).

Research on chronic illnesses like HIV, diabetes, and cardiovascular diseases suggests that health literacy skills are important mediators of medication adherence behaviours and treatment outcomes (Miller, 2016). However, the relationship between health literacy and ART adherence is complex in that, while a higher level of education has been reported to influence adherence positively, low literacy seems to both negatively and positively influence it.

Having a higher level of education has been highlighted as one of the independent socioeconomic predictors of ART adherence, mainly because it enables understanding of treatment instructions and consequences of non-adherence, expressiveness, and confidence to communicate with healthcare workers about concerns and medication experiences (Foresto et al., 2017; Letta et al., 2015; Mabunda, Ngasama, Babalola, Zunza, & Nyasulu, 2019; O'Connor, Gardner, Mannheimer, Lifson, Esser, Telzak et al., 2013). Conversely, a low level of education has been associated with poor adherence to PLWH in Athens, Greece (Pontiki, Sarantaki, Nikolaidis, & Lykeridou, 2022), Bonga, Ethiopia (Angelo & Alemayehu, 2021), and Durban, South Africa (Naidoo & Premdutt, 2019).

In South Africa, a cross-sectional study of 297 participants in Durban demonstrated a significant association between education, the ability to manage taking medication, and ART adherence (Naidoo & Premdutt, 2019). It was observed that participants who had secondary

and tertiary education were more expressive and could communicate more easily with healthcare professionals about how they manage taking ART. In turn, this was observed to improve adherence. At the same time, it is not uncommon for individuals who do not have a higher level of education to have blind faith in healthcare professionals, because of their associated positions of power and authority (Atibioke, Osinowo, & Taiwo, 2018).

A possible qualitative explanation for the influence of limited literacy on adherence is that it amplifies communication incongruence between patients and healthcare workers. This, in turn, engenders professional dominance from healthcare workers, and diminished self-confidence from patients to manage the process of taking medication. Patients also feel it is shameful to ask questions or request help from family and/or healthcare workers about related treatment challenges or lived experiences of HIV, including doubt regarding the efficacy of the medicine itself (Devraj, Herndon & Gryphon, 2013; Mgbako, Conard, Mellins, Dacus & Remien, 2022; Phillips & Arya, 2016).

On a positive note, it has been shown that, when patients experience positive communication, culturally sensitive medical language, and shared decision-making, they tend to have greater trust in their healthcare providers and treatment (Budhwani, Gakumo, Yigit, Rice, Fletcher, Whitfield et al., 2022; Mogobe Shaibu, Matshediso, Sabone, Ntsayagae, Nicholas et al., 2016; Naidoo & Premdutt, 2019). Communication incongruence that is intensified by limited literacy may create challenges to the effective participation of individuals in healthcare, which may explain their disengagement from healthcare and medication adherence. It appears that limited literacy not only creates inequalities in HIV treatment experiences that may partly explain non-adherence but also has intersections with stigma and mental health, as well as poverty.

2.6.3.2 Poverty, Unemployment and Adherence

In addition to level of education, socioeconomic vulnerabilities such as poverty and unemployment are known barriers to accessing HIV care and treatment services (Centers for Disease Control and Prevention, 2014). The global burdens of HIV and economic insecurity are more concentrated in resource-limited settings (Kharsany & Karim, 2016; Kagee et al., 2011). Thus, although unemployment and lack of money have been cited as major determinants of ART adherence by numerous studies in LICs and HICs, it is more severe in the former (see Abaynew, Deribew & Deribe, 2011; Bogart, Chetty, Giddy, Sypek, Sticklor, Walensky et al.,

2013; Katz et al., 2015; Kunihiro, Nuwaha, Mayanja, & Peterson, 2010; Layer, Kennedy, Beckham, Mbwapo, Likindikoki, Davis et al., 2014; Nachega, Uthman, Peltzer, Richardson, Mills, Amekudzi et al., 2014; Papageorgiou, Davies, Cooper, Singer & Ward, 2022; Peltzer & Pengpid, 2013).

A systematic and meta-analytic study of 30 out of 4118 studies from Central Africa, East Africa, West Africa, and South Africa, which examined predictors of failure to treatment follow-up (or ‘drop-out’) in individuals receiving ART, highlighted unemployment among socioeconomic reasons for treatment dropout (Kebede, Mwanri, Ward & Gesesew, 2021). According to Kebede et al. (2021), patients who are unemployed are more likely to drop out of treatment compared to their employed counterparts.

Qualitative studies that explored the relationship between unemployment, lack of income, and adherence in Zimbabwe and South Africa highlighted that financial constraints affect adherence, since most individuals miss clinic medication collections or follow-up appointments due to a lack of money for transportation (Kheswa, 2017; Van Wyk & Moomba, 2019). It seems that not having enough money makes it difficult for people to access transportation to the health facility for medication collection (Semvua, Orrell, Mmbaga, Semvua, Bartlett & Boule, 2017). While the South African government provides free ART treatment for all PLWH, individuals living far away from clinics often have to incur out-of-pocket costs for public transport. This applies especially in cases where patients choose clinics far away from their residences, out of fear of being seen by people they know (Kheswa, 2017). As an ongoing issue, this draws attention to the effect of stigma on adherence. This will be discussed in more detail in section 2.6.5 below.

In addition to high unemployment, most people living below the poverty line also have to deal with larger household sizes, indigence, and general poor health (Mazenda, Molepo, Mushayanyama, & Ngarava, 2022). Within this context, transportation costs therefore also have to compete with other living expenses, resulting in missing medication collection, or even

selling medication for supplementary income to buy food or supplies, highlighting further intersections between non-adherence, poverty, unemployment, and food insecurity.

2.6.3.3 Food Insecurity and Adherence

As indicated in the previous section, the literature emphasises that poverty has high correlations with food insecurity, which makes it more difficult for PLWH to adhere to ART. Food insecurity is defined as inadequate access to sufficient food, or the altering of food intake or eating patterns because of a lack of money and other resources (Nord, Andrews, & Carlson, 2005). Food insecurity in South Africa, as in many countries, was heightened in 2020 during the Covid-19 pandemic: economies were disrupted as a result of lockdown periods, and this contributed to losses of livelihood and income, further increasing unemployment. Almost 23.6% of people in South Africa experienced moderate to severe food insecurity in 2020 (Statistics South Africa, 2022). Despite the misconception that food insecurity occurs only in rural areas, urban and peri-urban areas have become increasingly food insecure (Crush, Frayne, & Pendleton., 2012). In Gauteng, the richest province in South Africa, 36% of households were living below the average poverty line, skipping meals because of insufficient food or money for food in 2021 (Mazenda et al., 2022).

Food insecurity not only heightens the risk of HIV exposure and infection, but also raises the risk of ART non-adherence, resulting in adverse clinical outcomes such as increased HIV replication, accelerated disease progression, reduced viral load suppression, and increased morbidity (Chop, Duggaraju, Malley, Burke, Caldas, Yeh et al., 2017; Damulak et al., 2021; Kagee et al., 2011; Musumari, Wouters, Kayembe, Kiumbu Nzita, Mbikayi, Suguimoto et al., 2014; Singer, Weiser, & McCoy, 2015). It therefore comes as no surprise that food insecurity, in the context of the high unemployment rate and poverty, is considered an exponential barrier to adherence to ART throughout sub-Saharan Africa (Nwani & Osuji, 2020).

The link between food insecurity and non-adherence was noted in a systematic and meta-analytic review by Aibibula, Cox, Hamelin, McLinden, Klein, and Brassard (2017), covering eleven studies undertaken in parts of North America, Brazil, and Uganda. The review noted that experiences of food insecurity contributed to lower odds of achieving complete HIV viral suppression (a proxy for adherence). Likewise, in South Africa, people who are on ART have

been observed foregoing medication when there is not enough food (Makhado & Mongale, 2019).

The literature shows that food insecurity, engendered by unemployment and poverty, negatively affects people's capacity to actively engage in HIV treatment and care. However, once again, the association between food insecurity and medication adherence extends beyond the argument that people prioritise stretching food over taking medication due to a lack of money. People who do not have enough food may intentionally skip medication, based on fears of or actual experiences of increased hunger and physical side effects when ART is taken on an empty stomach (Bukenya et al., 2019; van Wyk & Moomba, 2019). When hunger or side effects from HIV medication are heightened by a lack of food, intentionally skipping medication becomes a reasonable trade-off to avert such unwanted symptoms. Despite ART care being free in public health institutions in South Africa, not having enough food to take with medication makes daily adherence difficult, inadvertently leading people to disengage from care.

2.6.4 Treatment Characteristics and Health System Factors

Aside from demographic and socio-economic factors, the influence of ART treatment characteristics and health system factors on adherence is equally and thoroughly researched.

- **Side effects and Perceived Wellness**

The experience of medication side effects is the most commonly cited ART treatment characteristic associated with non-adherence (Croome et al., 2017; Heestermans et al., 2016; Renju, Moshabela, McLean, Ddaaki, Skovdal, Odongo et al., 2017). The most reported side effects include diarrhoea (especially when medication is taken without food), rash, headaches, dizziness, and body changes (Elul, Basinga, Nuwagaba-Biribonwoha, Saito, Horowitz, Nash et al., 2013; Fonsah, Njamnshi, Kouanfack, Qiu, Njamnshi, Tagny et al., 2017; Shubber, Mills, Nachega, Vreeman, Freitas, Bock, Nsanzimana et al., 2016; Yang, Lee, & Kim, 2015).

The impact of ART side effects on adherence has been demonstrated by several studies. A systematic review investigated the QOL of PLWH who were undergoing ART in Indonesia, India, Ethiopia, Kenya, Botswana, Zimbabwe, Zambia, and South Africa. Based on a sample

of 15 out of 40 articles, the reviews showed that experiences of ART side effects negatively affected the QOL (and more immediate adherence) of PLWH (Sari, Martawinarti, Lataima, & Berhimpong, 2019).

Several factors explain the association between ART side effects and adherence. As pointed out in the previous section, food insecurity seems to heighten vulnerability to side effects, by either heightening appetite or causing diarrhoea (Bukonya et al., 2019; Elul et al., 2013; Kheswa, 2017; van Wyk & Moomba, 2019). Intentionally skipping medication to avert such side effects therefore seems like a natural decision when there is a lack of food. It also appears that people's experiences of unpleasant side effects from the medication make them question the efficacy of ART, engendering mistrust in Western medicine, and ultimately causing them to disengage from care (Kim et al., 2016). It is therefore possible to draw intersections between experiences of side effects, doubt in the efficacy of ART, and non-adherence.

To counter the negative impact of side effects on ART adherence, other studies suggested that counselling or education on medication side effects might build people's tolerance towards adherence. Following this rationale, a study in the Arsi zone in Ethiopia, which examined the effectiveness of peer education and counselling on ART non-adherence, revealed that peer counselling did not improve tolerance towards ART side effects and adherence, despite counselling being provided to participants who reported being non-adherent because of side effects (Hussein, Dibaba, & Wonda, 2020). This suggests that counselling people on how to manage the side effects of ART might not make a big difference to adherence when people struggle with ongoing issues like food insecurity caused by unemployment and poverty.

As much as experiencing side effects from ART is reported to negatively affect adherence, the absence of side effects or feeling well may also influence people to stop taking medication. An in-depth, multi-country, qualitative study explored the bodily and relational experience of taking ART and its subsequent effect on retention in HIV care in six sub-Saharan African countries: Kenya, Uganda, Tanzania, Malawi, Zimbabwe, and South Africa (Renju et al., 2017). This study found that participants who reported feeling physically well before starting ART were typically less able to tolerate side effects, which subsequently triggered their

disengagement from HIV care; therefore, the influence of perceived wellness on the likelihood of starting, continuing, or stopping treatment should also be noted.

- **Factors relating to Health Systems**

In addition to treatment characteristics, the impact of health system factors on ART adherence has been widely documented. A few systematic reviews from LMICs have highlighted several health system factors associated with ART adherence, which include models of care, adequate and accessible service delivery, resource constraints, health institution infrastructure, and patient-provider engagement (Ahmed, Autrey, Katz, Fox, Rosen, Onoya et al., 2018; Campbell et al., 2020; Croome et al., 2017; Eshun-Wilson et al., 2019; Shubber et al., 2016). The three most consistently associated with ART adherence are service delivery, infrastructure, and patient-provider engagement.

The severity of the influence of health system factors, such as poor service delivery, on adherence can be noted from a qualitative systematic review of 20 studies from LMICs. These explored the reasons why people who were eligible for ART did not initiate treatment, and the review by Ahmed et al. (2018) identified long waiting periods and poor quality of care as significant. In South Africa, health system factors that are known to undermine ART adherence include those cited above, as well as poor health worker-patient interactions (Croome et al., 2017; Heerstemans et al., 2016; Makhado & Mongale, 2019; Shubber et al., 2016).

With respect to health worker attitudes towards patients, evidence from a qualitative systematic review of 59 studies from 17 countries in sub-Saharan Africa, including South Africa, highlighted that punitive and unfriendly health workers often leave people feeling shamed and disrespected, which in turn may discourage them from care (Eshun-Wilson et al., 2019). This is supported by Ho, Jacob, and Tangiisuran (2017), who suggested that a patient-provider relationship characterised by trust, collaboration, and respect is an essential element of adherence across chronic diseases in general.

In addition, health infrastructure that is not accommodative can intensify patients' fears of a confidentiality breach. In South Africa and other LMICs, health facilities where people collect their medication usually have designated ARV medication collection rooms or spaces (Makhado & Mongale, 2019). Consequently, people intentionally forgo medication collection

out of fear of being seen entering the ARV collection spaces by others, and unintentionally having their HIV status disclosed. While poor service delivery and infrastructure, and poor health provider-patient interactions, tend to discourage adherence, health system factors that are known to facilitate adherence include assurances of confidentiality, respectful healthcare worker-patient relationships, shorter intervals between consultations, the availability of regular medication, and satisfaction with the quality of healthcare (Carvalho, Barroso, Coelho, & Penaforte, 2019; Heerstemans et al., 2016).

It should be noted that poor healthcare worker-patient interaction may be intensified by unsatisfactory health system conditions for healthcare workers themselves, such as demanding workloads, incapacitation, staff shortages, and inadequate support, which may partly explain the compromised quality of healthcare and health provider interactions experienced by patients (Crowley, Mokoka, & Geyer, 2021).

In summation, the literature shows that a combination of treatment characteristics and health system factors influence adherence. Specifically, treatment characteristics such as ART side effects, the absence of side effects, or perceived wellness may negatively influence medication adherence. However, the relationship between side effects and adherence appears to be coloured by food insecurity. In terms of health system factors, it seems that dysfunction within the health system, characterised by negative health worker attitudes towards patients, poor health worker-patient interactions, and medication collection spaces labelled HIV care, pose a risk to ART adherence, by intensifying patients' mistrust and lack of confidence in the efficiency of the care provided. It appears that patients' concerns about ART-designated medication collection rooms at health facilities stem primarily from fears of unwanted disclosure of their status. This illustrates that the influence of health system factors and treatment characteristics on people's non-adherence may be underscored partly by fear of disclosure and stigma.

2.6.5 Psychosocial Factors

Apart from structural problems, it is well known that PLWH also experience several psychosocial challenges that are associated with negative HIV treatment outcomes, including adherence. Some of the known psychosocial difficulties PLWH encounter include vulnerability to stigma and discrimination, difficulty revealing their status, a lack of social support, and

social acceptance of the disease. These psychosocial difficulties may heighten vulnerability to mental health issues, such as depression, anxiety, and poor QOL in general (Ahmed et al., 2021; Selamu, Singhe, & Assefa, 2017; de los Rios et al., 2021).

2.6.5.1 Stigma and Adherence

HIV-related stigma is defined as the devalued status attached by society to PLWH, which is characterised by discrimination by family and relatives, their communities, and healthcare providers (Goffman, 2009). Since stigma is a social construct, PLWH are more likely to experience it as a shift in attitude by their partners, family, and friends (Alonzo & Reynolds, 1995; Devine, Plant, & Harrison, 1999), resulting in labelling, discrimination, and loss of status (Turan, Hatcher, Weiser, Johnson, Rice, & Turan, 2017). PLWH experience stigma in the form of being gossiped about, insulted, or physically assaulted in communities, by partners, and in healthcare settings (Stangl, Lloyd, Brady, Holland, & Baral, 2013). This stigma is partly due to debates around the acquisition of HIV and personal accountability for contracting HIV, visibly looking ill, and fear of getting HIV/AIDS (Alonzo & Reynolds, 1995; Lee, Kochman, & Sikkema, 2002; Novick, 1997). Thus, HIV-related stigma is also associated with and experienced at the intersection of other stigmas, such as sexual infidelity, homosexuality, and intravenous drug use (Brown, Macintyre, & Trujillo, 2003; Crawford, 1996; Novick, 1997).

Systematic and meta-analytic studies from low-to-middle and high-income contexts highlight stigma as a salient barrier to HIV care and sustained adherence to ART (Croome et al., 2017; Katz, Ryu, Onuegbu, Psaros, Weiser, Bangsberg et al., 2015; Lowther, Selman, Harding & Higginson, 2014; Onono, Odwar, Abuogi, Owuor, Helova, Bukusi, Turan et al., 2020; Rueda, Mitra, Chen, Gogolishvili, Globerman, Chambers et al., 2016; Wetzell, Tembo, Abrams, Mazenga, Chitani, Ahmed et al., 2021). In sub-Saharan Africa, including South Africa, an established body of literature composed of cross-sectional, qualitative studies and systematic reviews has reported on the negative association between HIV stigma and adherence to ART medication (Hoffman, Tymejczyk, Kulkarni, Lahuerta, Gadisa & Remien, 2017; Jones, Floyd, Stangl, Bond, Hoddinott, Pliakas et al., 2020; Kalichman, Mathews, El-Krab, Banas & Kalichman, 2021; Makhado & Mongale, 2019; Ramlagan, Peltzer, Ruiters, Barylski, Weiss, &

Sifunda, 2018). More particularly, HIV stigma is the barrier to adherence to ART most frequently reported by patients (Croome et al., 2017).

There are various explanations regarding the pathways through which stigma affects adherence, including mental health, religion, and cultural factors. Previous studies have proposed that poor mental health may be responsible for the inverse relationship between stigma and adherence (Rueda et al., 2016; Sweeney & Vanable, 2016; Turan, Rice, Crockett, Johnson, Neilands, Ross, et al., 2019). Earnshaw and Chaudoir (2009) even hypothesised that stigma may heighten vulnerability to mental health difficulties such as depression, which may in turn affect motivation to maintain optimal health through adherence. The association between mental health and ART adherence is discussed later in the chapter.

Although the South African Department of Health has done a lot of work around HIV awareness, prevention, and treatment (UNAIDS, 2016), these advances have unfortunately not been matched by progress in social acceptance of the disease. Research has shown that personal values and beliefs ingrained in religious dogma have powerful intersections with stigma and adherence (Agha, Hutchinson, & Kusanthan, 2017). Religious values regarding sexual relationships and marriage may engender stigma in instances where HIV is perceived as a result of marital infidelity or having multiple partners. This adds another layer to people's experiences of judgement, stigma, and discrimination, which influence their engagement with HIV care. PLWH may therefore want to avoid stigma and unwanted disclosure by forgoing medication in social spaces where they might be seen taking ARVs.

Aside from the negative influence of stigma on adherence, it seems that adherence can be supported through disclosure and social support.

2.6.5.2 Social Support, Disclosure and Adherence

Social support is well-documented as a key driver of health outcomes across chronic illnesses in general (Shubber et al., 2016). Naturally, for PLWH, social support, mediated by disclosing one's HIV status, may reduce HIV stigma in ways that facilitate health-seeking behaviours and better health outcomes (Adegbola, Marincowitz, Govender & Ogunbanjo, 2016; Loeliger, Niccolai, Mtungwa, Moll & Sheno, 2016; Mendenhall & Norris, 2015). Thus, disclosure to family and friends is important for obtaining social support (Atuyambe, Ssegujja, Ssali,

Tumwine, Nekesa, Nannungi et al., 2014). However, disclosure of one's HIV status is a process impacted by factors such as perceptions of stigma, discrimination, and mental health (Rotzinger, Locatelli, Reymermier, Amico, Bugnon, Cavassini, & Schneider, 2016).

Research from both LMICs and HICs has reported favourable ART outcomes regarding the association between disclosure and social support (Dessie, Wagnew, Mulugeta, Amare, Jara, Leshargie et al., 2019; Langebeek, Gisolf, Reiss, Vervoort, Hafsteinsdóttir, Richter et al., 2014). It seems that disclosure facilitates greater social support, and encourages openness about living with HIV and a shift in adherence behaviour (Atuyambe et al., 2014; Evangeli & Wroe, 2017; Yonah, Fredrick, & Leyna, 2017). In South Africa, studies show that, although disclosure facilitates ART adherence and retention in care, there are individuals who choose not to disclose primarily due to HIV stigma, fear of rejection, and discrimination (Abdool Karim, Dellar, Bearnot, Werner, Frohlich, Kharsany et al., 2015; Hargreaves, Krishnaratne, Mathema, Lilleston, Sievwright, Mandla et al., 2018; Klopper, Stellenberg & Van der Merwe, 2014; Knight & Schatz, 2022).

Thus, the connection between disclosure, social support, and non-adherence is marked by stigma. While telling a trusted friend or family member may elicit support, it may also cause stigma. Individuals may therefore choose not to disclose their status to avoid stigma and to protect themselves by maintaining their privacy (Hlongwane & Madiba, 2020). In some instances, non-disclosure may be linked to the need to have some level of privacy and normality without the fear of rejection. At the same time, fear of disclosure is engendered by fear of being stigmatised and discriminated against, which may lead to social isolation, leaving the individual feeling hopeless and depressed (Eshun-Wilson et al., 2019).

The literature on the relationship between social support, disclosure, and adherence suggests that, while disclosure through social support may encourage adherent behaviour among PLWH, fear of disclosure caused by HIV stigma is a considerable ongoing threat to ART adherence,

particularly in South Africa. Moreover, fear of disclosure may heighten vulnerability to other psychological challenges, such as mental health issues.

2.6.5.3 Mental Health

PLWH are subject to heightened vulnerability to mental health problems due to the stigma they experience, which in turn influences their ART treatment outcomes and overall QOL (Boyes, Cluver, Meinck, Casale, & Newnham, 2019; Kagee et al., 2011; Mayston, Kinyanda, Chishinga, Prince & Patel, 2012; Rogers, Lee, Bainter, Bedoya, Pinkston & Safren, 2020). Mental health problems in general are more common in PLWH than in those who do not live with HIV (Duko, Toma, Asnake, & Abraham, 2019; Ford, Shubber, Meintjes, Grinsztejn, Eholie, Mills et al., 2015). Not only does poor mental health negatively affect adherence, but it also impairs one's ability to resist illness, which further heightens the risk of mortality (Aguocha, Uwakwe, Duru, Diwe, Aguocha, Enwere et al., 2015).

The negative impact of poor mental health on ART adherence has been shown in a combination of systematic and meta-analytic studies and cross-sectional studies covering middle- to high-income settings, including parts of sub-Saharan Africa (Bernard, Dabis, & De Rekeneire, 2017; de los Rios et al., 2021; Uthman, Magidson, Safren, & Nachega, 2014). Specifically, mental health problems like depression and anxiety are associated with ART non-adherence, with depression as the most cited of these (Garriga, Trujillo, Del Romero, Montero, Pérez-Elías, Lévano et al., 2020; Necho, Belete, & Tsehay, 2021; Wykowski, Kemp, Velloza, Rao, & Drain, 2019). In South Africa, a national survey that examined associations between adherence and mental health among 2155 PLWH found that non-adherence was high among participants with severe psychological distress (Marinda, Zungu, Chikovore, Mthembu, Magampa, Mathentamo et al., 2021).

While depression may be attributable to several factors, among PLWH, it appears to be connected to stigma and socio-economic vulnerabilities. Psychological distress caused by the structural conditions discussed above, such as food insecurity and unemployment, may impair people's motivation and cognitive functioning, leading them to forgo ART (Pinheiro, Souza, Motta, Kelbert, Souza, Martins et al., 2016; Sin & DiMatteo, 2014; Tesfaye, Kaestel, Olsen, Girma, Yilma, Abdissa et al., 2016). At the same time, experiences or fear of rejection and discrimination may heighten internalised HIV stigma and feelings of shame, leaving

individuals feeling hopeless and dejected, and seeing no purpose in staying healthy and continuing with ART treatment (Eshun-Wilson et al., 2019; Hlongwane & Madiba, 2020; Maeri, El Ayadi, Getahun, Charlebois, Akatukwasa, Tumwebaze et al., 2016; Turan et al., 2017).

For others, feelings of depression may emanate from personal beliefs regarding taking medication indefinitely; in such cases, continuous adherence to ART is likened to the feeling of being trapped in a monotonous life sentence (Down, Prestage, Triffitt, Brown, Bradley, & Ellard, 2014). As a coping mechanism, such people resort to deliberately ‘forgetting’ to take ART to escape the ‘prison’ of adherence (Spiers, Smith, Poliquin, Anderson, & Horne, 2016). This draws attention to the dynamically interwoven connections between structural factors, psychological challenges, and non-adherence, creating a vicious cycle. It also highlights further connections between non-adherence, poor mental health, and forgetfulness as maladaptive behaviours leveraged to deal with adherence.

2.6.5.4 Forgetting to take ART and Adherence

Since the beginning of the HIV pandemic, forgetting to take ART doses has been one of the most frequently cited reasons given by PLWH to explain suboptimal adherence (Barfod, Sorensen, Nielsen, Rodkjær, & Obel, 2006; Chesney, 2000; Harzke, Williams, Nilsson-Schönnesson, Ross, Timpson, & Keel, 2004; Saucedo, Neilands, Johnson, & Saberi, 2018). The association between forgetting and non-adherence has been shown in studies from Nigeria (Okuku & Dan-Jumbo, 2021), India (Basti, Mahesh, Bant & Bathija, 2017), the USA (Crim et al., 2020), and South Africa (Laher et al., 2021). Forgetting is also a common symptom of neurological decline among people ageing with HIV, as well as ageing in general (Antinori, Arendt, Becker, Brew, Byrd, Cherner et al., 2007; Ghidei et al., 2013; Karpiak & Havlik, 2017). However, studies discussed earlier show better adherence among older than younger PLWH (Ademola, Caroline, & Ishola, 2019; Dorcéus et al., 2021). The association between forgetting to take ART and adherence is not a straightforward one.

Given the evidence pointing to forgetfulness as the most commonly reported cause for non-adherence, the literature began calling for adherence interventions to assist people with managing it; most of these were designed around reminders that promoted health education, such as calendars, alarms, text messaging, and smartphone apps (Amico, Harman, & Johnson,

2006; Mayer & Fontelo, 2017; Neupane et al., 2019; Ware, Wyatt, Pisarski, Bwana, Orrell, Asimwe et al., 2020). However, other studies argue that such approaches focused mainly on individual cognitive behaviour, and fell short of improving ART adherence in the long term (Kalichman, Kalichman, & Cherry, 2017; Magidson, Blashill, Safren, & Wagner, 2015; Sumari-de Boer, Ngowi, Sonda, Pima, Masika, Sprangers et al., 2021).

As a result, more studies began to suggest that forgetting to take ART was more than just a simple memory lapse, but might reflect deeper psychological challenges and mental health issues that might have associations with substance use and distrust of medical interventions (Cichowitz, Maraba, Hamilton, Charalambous & Hoffmann, 2017; Kalichman et al., 2017). The interplay between psychological distress and forgetfulness was proposed in a systematic review that examined factors that influenced non-adherence in South Africa, which highlighted that patients reported forgetting to take medication because of worry about having HIV (Makhado & Mongale, 2019). This is similar to a qualitative study that described the perspectives of African American and Latino PLWH on factors that influenced forgetting to take ART. The study discovered that participants described forgetting as a means of managing negative emotions like HIV stigma, layered with mental health distress triggered by circumstances such as poverty and inadequate housing, all of which disrupted adherence (Freeman, Gwadz, Francis, & Hoffeld, 2021). This highlights psychological distress as a possible explanation for the association between forgetfulness and non-adherence.

While evidence highlights that forgetting to take ART might be an outcome of psychological distress primarily triggered by stigma and socioeconomic vulnerabilities, forgetfulness is also a strong correlate of substance use, which is known to negatively affect ART adherence.

2.6.5.5 Substance Abuse and Adherence

The association between substance abuse, forgetfulness, and ART adherence has been reported in several studies from LMICs and HICs (Anyaike, Oladele, Omotoso, Bolarinwa, Durowade, Ogundiran et al., 2019; Fuster-RuizdeApodaca, Castro-Granell, Laguía, Jaén, Cenoz & Galindo, 2020; González-Álvarez, Madoz-Gúrpide, Parro-Torres, Hernández-Huerta &

Mangado, 2019; Kalichman et al., 2017; Ramsey, Ames, Uber, Habib, Clark & Waldrop-Valverde, 2019; Tsega, Srikanth & Shewamene, 2015).

A systematic review involving 36 studies that investigated the effects of alcohol use on non-adherence to ART in sub-Saharan Africa identified that the odds of non-adherence were twice as likely in people who used alcohol compared to those who did not (Velloza, Kemp, Aunon, Ramaiya, Creegan, & Simoni 2019). Similarly, studies in South Africa (Kekwaletswe & Morojele, 2014; Ndirangu, Gichane, Browne, Bonner, Zule, Cox et al., 2021) reported on the negative effect of excessive alcohol use on ART adherence. This suggests that alcohol use, forgetting, and adherence are inversely related.

The mechanisms by which excessive alcohol use affects cognitive functioning are well-documented in the literature. It is known that active abuse of alcohol affects the frontal cortex of the brain, which is responsible for an individual's executive functioning: planning ability, organisation, memory, and decision-making (Abernathy, Chandler, & Woodward, 2010; McKinney & Coyle, 2004). Within this context, excessive alcohol consumption may impair judgement and induce impulsivity and forgetfulness, which are important functions for optimal adherence to ART. While excessive alcohol use is commonly related to non-adherence, there is more evidence suggesting that excessive alcohol use may be used as a coping mechanism for psychological distress triggered by stigma, which was discussed in the previous section. For example, a South African study has proposed that PLWH may use alcohol to cope with internalised HIV stigma (Regenauer, Kleinman, Belus, Myers, Joska, & Magidson, 2022) and that stigma around drinking while on ART may exacerbate the relationship between drinking and adherence (Kalichman, Banas, Kalichman, & Mathews, 2020).

Overall, the literature on the association between forgetfulness, substance use, and non-adherence reflects that forgetting to take ART may be an outcome of an interplay between three factors, rather than simply being a memory lapse. Forgetfulness therefore has intersections with

mental health challenges, mostly triggered by stigma and excessive alcohol consumption, which encourages non-adherence.

2.6.6 Socio-cultural Factors

- **Cultural Beliefs and Adherence**

Aside from the challenges of psychosocial vulnerabilities, such as stigma, poor mental health, forgetfulness, and excessive alcohol use, the influence of culture and people's beliefs regarding ART treatment has been firmly established (Kagee et al., 2011; Mogobe et al., 2016; Ondwela, Mothiba, Mangi & Ter Goon, 2019; Peltzer, Friend-du Preez, Ramlagan & Anderson, 2010; Shahin, Kennedy & Stupans, 2019). Cultural beliefs are explained as a set of behavioural patterns related to thoughts, manners, and actions that members of society have shared and passed on to succeeding generations (Jamal, Borges, & Stronza, 2006). Cultural beliefs have been known to affect adherence to medication in chronic diseases by influencing patients' decisions on whether or not to take prescribed medication (Hatah, Lim, Ali, Mohamed Shah, & Islahudin, 2015).

Within some Eastern, African, and other traditional settings, cultural beliefs about chronic disease can manifest as people stopping or not accessing medication, depending instead on herbal medicine received from traditional healers, consulting traditional healers, and the belief that disease symbolises dissatisfaction from the ancestors (Huang, Shiyanbola & Smith, 2018; Ku & Kegels, 2015; Ondwela et al., 2019; Zuma, Wight, Rochat & Moshabela, 2018). With HIV, the influence of cultural beliefs on adherence has been noted in studies in Australia, Tanzania, Uganda, and Zambia, where it was found that alternative herbal medicines and consultations with traditional healers or herbalists were among the predictors of poor ART adherence (Denison, Koole, Tsui, Menten, Torpey, Van Praag et al., 2015; Mey, Plummer, Dukie, Rogers, O'Sullivan, & Domberelli, 2017). Similarly, in South Africa, cultural beliefs have been identified as negatively affecting ART adherence (Ondwela et al., 2019).

Qualitative studies exploring the role of cultural beliefs in adherence to ART have offered explanations for this relationship. For example, in a qualitative study undertaken in Belu, Indonesia, that explored the use of traditional treatment of HIV among PLWH, participants explained how the reliance on traditional medicines and healers to treat diseases like HIV/AIDS

was a common inter-generational practice in the community (Fauk, Mwanri, Hawke, & Ward, 2022).

In Durban, South Africa, another study described barriers to and facilitators of treatment, following a socio-ecological model. The study found that people would stop their ARV in exchange for consultation with traditional healers because of easy access and privacy, but primarily because of the belief that their HIV diagnosis had a spiritual origin (Iwuji, Chimukuche, Zuma, Plazy, Larmarange, Orne-Gliemann et al., 2020). Studies show diverse ways in which cultural beliefs, enacted through faith in traditional healing sources, continue to influence people's engagement with healthcare and the treatment of HIV. Moreover, these studies draw attention to ongoing polarities between Western ways of making knowledge and how they dominate medicine, and faith in indigenous knowledge systems in a manner that dismisses the influence of cultural orientations on how people experience health and disease.

It seems that, despite the legacy of colonisation and the dismissal of cultural beliefs and practices, many people in Africa and other traditional communities continue to rely on cultural orientations to make sense of and understand disease, including HIV diagnosis (Nemutandani, Hendricks, & Mulaudzi, 2018). This, in turn, influences their experiences and engagement with HIV care and adherence. It is well known that the perceptions of health and cultural values of traditional or indigenous communities differ vastly from Western medical views of health (Eh, McGill, Wong, & Krass, 2016), and it is common for traditionalists to see traditional healers as reliable and better able to explain and treat disease (Hennink, Ordóñez, John, Ngubane-Joye, Hampton et al., 2014; Layer et al., 2014; Nakanwagi, Matovu, Kintu, Kaharuza & Wanyenze, 2016). While there is no simple solution to ART adherence, the literature highlights an increasing need for Western healthcare approaches to respond to the need for HIV care by adopting a decolonised approach that is sensitive to and inclusive of cultural diversity. Thus, contextualising individuals' cultural beliefs about HIV in adherence care may be an important driver of optimal adherence among PLWH (Mogobe et al., 2016; Nemutandani et al., 2018).

2.7 Summary

The evidence reviewed in this chapter suggests that adherence to ART is a complicated process that is influenced by individual, systemic, and contextual factors. Methods used to evaluate adherence also come with inherent methodological limitations, which may, at least in part,

explain the diverse estimates of adherence observed in the literature. The review also highlights the negative influence of IPV, particularly how different types of IPV affect adherence, and the pathways through which it happens. In addition, evidence of contextual factors that facilitate better adherence, and those that impede adherence, was reviewed, including mixed results regarding factors that influence adherence. Within this vast literature, we learn some important lessons from the science of adherence.

Firstly, while the definition of adherence is constantly evolving, there is no question that adherence to ART is a pre-condition to ensure virological success in HIV treatment. Specifically, the absence of a representative definition of adherence challenges the formulation of a single optimal method of quantifying or assessing adherence. In consequence, the use of a variety of methods is advised, such as self-report measures, pill counts, pharmacy refill dates, physiological methods such as viral load tests, and advanced digital electronic monitors.

We also learn that, within the wide range of methods used to assess adherence, the selection of a method typically depends on the adopted definition of adherence, the intended use of the data (e.g., for research purposes or routine clinical monitoring), the availability of resources, and the economic setting of the study. Naturally, inexpensive methods like self-reports and pharmacy refill records, despite their limitations, such as social desirability, adherence overestimation, and inconsistent data capture, remain attractive in resource-strapped locations, such as South Africa. While technologically advanced monitoring methods, such as ingestible digital pill systems, are more used in resource-rich Western settings due to their supposed accuracy and reliability in capturing adherence data, despite the cost, there are undertones of surveillance and the policing of bodies that undermine people's agency about health, which is inherent in such innovations.

Secondly, we learn that, even though IPV in South Africa is a punishable criminal offence, its prevalence is growing disproportionately for women, with heightened vulnerability among pregnant women. Though LMICs have a high prevalence of IPV in general, South Africa ranks the highest for both IPV and HIV, with Gauteng having the highest recorded incidences of IPV

in South Africa (Gauteng Department of Health Annual Report, 2016). What is even more concerning is that IPV is associated with non-adherence, with some variations.

While emotional and physical violence are the most commonly reported types of violence, sexual violence has the most profound negative influence on adherence, even though it is the least reported. We also learn that, while the mixture of prevention-based and help-seeking IPV campaign interventions in South Africa has gained some success in decreasing self-reported IPV, these interventions have fallen short in reducing the psychological effects of violence. More importantly, these interventions are not formalised within the health care system, warranting further research to explore how people who have been exposed to violence in intimate relationships manage to stay adherent to ART.

Thirdly, the literature has highlighted that, while IPV is a notable barrier to adherence, there are also general contextual factors that colour people's experiences of ART adherence. Specifically, we learn that the challenges of maintaining adherence are magnified by individual factors, socio-economic conditions, health system shortcomings, and psychosocial and socio-cultural factors. Individual factors that facilitate adherence are marked by persistent disparities in age, sex, and time since HIV diagnosis and treatment. However, a longer time living with HIV appears to have a positive influence on ART adherence, attributable to longer-lived experiences of the disease, learning to manage side effects, longer exposure to healthcare services, improved health, and learning to make meaning out of having HIV.

In addition, socio-economic disparities in education, income, and employment opportunities, which are disproportionately weighted against PLWH, also shape people's adherent behaviour towards medication. Non-adherence can be heightened by inequalities such as limited literacy, food insecurity, and unemployment. Having limited literacy amplifies communication barriers with healthcare professionals and confusion about medication instructions, which, in turn, alienates individuals from care. Moreover, South Africa's soaring unemployment rates engender food insecurity and create further challenges for adherence, such that patients may be compelled to choose between spending money on supplies or taking medication. Poverty

and employment are therefore notable predictors of non-adherence, and are reflected in inequalities in people's experiences of HIV treatment and care.

Fourth, treatment factors that negatively affect adherence include experiencing side effects of ART, the absence of side effects, and poor quality of health-worker and patient interactions. However, it seems that patients' perceived wellness determines their level of tolerance for side effects and their likelihood of starting or continuing treatment. Also, the fear of experiencing side effects is heightened by food insecurity, engendered by unemployment. This draws attention to intersections between fear of experiencing side effects and socioeconomic disparities in food insecurity and unemployment. At the same time, poor quality health-worker and patient interactions, intensified by competing high workloads, staff shortages, and inadequate training, are some of the challenges raised by the South African health system; these cause further frustration, mistrust of healthcare, and disengagement from care.

Fifth, we learn that, although people's adherence to ART is coloured by psychosocial factors such as fear of disclosure, poor mental health, forgetfulness, and excessive substance use, it seems that stigma is intrinsically interwoven with this dynamic. While it is clear that disclosure through social support encourages adherence among PLWH, fear of disclosure, worsened by HIV stigma, is a persistent challenge that negatively affects ART adherence in South Africa. Fear of disclosure and stigma also heighten vulnerability to poor mental health. Consequently, poor mental health may engender intentional forgetfulness as a coping mechanism to manage adverse experiences of living with HIV and the responsibility of adhering to ART. Thus, even though forgetfulness is the most commonly cited reason for non-adherence by individuals on ART, strong evidence suggests that it is more than a memory lapse, and rather an outcome of psychological distress triggered mainly by stigma and excessive alcohol use. Thus, stigma should be noted as a profound, ongoing threat to ART adherence, despite the groundwork done by the South African Department of Health around HIV awareness, prevention, and treatment.

Lastly, the review shows that, despite advances in Western science in educating people about ART medication, many South Africans, citizens of other sub-Saharan African countries, and traditionalist communities, continue to rely on cultural orientations for making meaning of disease, as they do with other traumatic life experiences. The influences of cultural beliefs, enacted as consultations with traditional healers for healing and the use of traditional herbal medicines, are preferred over ART, and this disrupts participation in HIV care. As such,

cultural beliefs appear to have a profound influence on how people engage with ART care and adherence. This highlights an increasing need and opportunity for biomedical health systems and indigenous methods of faith to co-exist and harmonise the different ways of understanding diseases to facilitate optimal adherence for PLWH.

A wealth of research highlights that it is difficult to maintain adherence, and it can be complicated by poverty, unemployment, treatment and health system challenges, stigma, mental health problems, and competing cultural beliefs. At the same time, the persistence of IPV in South Africa makes ART adherence even more difficult. Evidence on the current IPV prevention programmes in South Africa shows some gains in terms of broadening awareness of this problem, including reporting it and providing empowerment programmes for women. However, there is limited knowledge of how people exposed to IPV on ART are supported to stay adherent, because evidence shows that many individuals still struggle to leave violent relationships, despite the efforts of initiatives to counter IPV and gender-based violence (GBV).

While the solution to long-term, sustained ART adherence is not simple, research that identifies psychological protective factors can assist in highlighting pathways for how to manage adherence to ART. It is within this context that this study set out to investigate the moderating influences of ML, SOC, and spirituality on the association between IPV and adherence to ART.

In the following chapter, I present the major conceptual and theoretical views on ML, SOC, and spirituality, the findings of their individual relationships to adherence and IPV, and my rationale for focusing on them as potential moderators of adherence. I begin by reviewing existing theoretical work on health behaviour theories that explain adherence.

Chapter 3: Theoretical Framework: Behaviour Theories of ART Adherence and Influences of ML, SOC and Spirituality

In the preceding chapter, I defined ART adherence and reviewed the multiple factors that seem to influence it. In this chapter, I discuss selected theories on non-adherence to ART. The review of theories provides a context for this study, recognising prior work done on ART adherence and the rationale for why they were not used to address the third objective of this study, which relates to moderation. To this end, I discuss the underlying assumptions and claims offered by the health belief model (HBM), the social cognitive theory (SCT), the information-motivation-behavioural skills theory (IMB), the theory of planned behaviour (TPB), and the transtheoretical model (TTM).

I then present a critique of the various theories, highlighting their limitations. In the latter part of this chapter, I present the concepts and reviews of the individual influences of ML, SOC, and spirituality as resources that together constitute a conceptual framework for my analysis. The review is consistent with the third objective of this study, to examine the individual moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence. I conclude the chapter with a proposed framework and illustration of moderation of ML, SOC, and spirituality on the IPV-ART adherence nexus.

3.1 Prior Work on Health Behaviour Theories of ART Adherence

3.1.1 The Health Belief Model (HBM)

The HBM endeavours to describe and predict health behaviour by assessing the attitudes and beliefs people have towards health behaviour (Glanz, Rimer, & Lewis, 2002). The premise of the model is that health behaviours indicate an individual's desire to avoid illness and a belief that taking a particular action will prevent or relieve illness (Janz & Becker, 1984). The HBM proposes that health behaviours are influenced by perceived susceptibility (belief about getting a disease or condition), perceived severity (belief about the seriousness of the condition), perceived benefits (belief about the potential positive aspects of a health action), perceived barriers (belief about the potentially negative aspects of a health action), cues to action (events, people, or things that move people to change behaviour), and self-efficacy (the belief that one

can achieve the behaviour required to execute the outcome) (Hayden, 2009; Stanhope & Lancaster, 2015).

When applied to ART adherence, the HBM assumes that individuals will adhere to ART if they feel their health is threatened, and that the benefits of adherence outweigh the disadvantages of non-adherence, including perceived barriers (Adegoke, 2018). Perceived barriers are factors that an individual perceives as obstacles to taking medication and staying adherent. As previously discussed, some of the major barriers that make it difficult for people to stay adherent include poverty, unemployment, health system challenges, poor mental health, stigma, and IPV (Damulak et al., 2021; Sweeney & Venable, 2016).

The HBM has been applied in studies conducted in the USA, Iran, and Indonesia to understand how beliefs and attitudes may be predictive of ART adherence during initial screening for treatment (Addo, Aboagye, & Tarkang, 2022; Agustin, Prasetyo, & Murti, 2018; Felsher, Szep, Krakower, Martinez-Donate, Tran, & Roth, 2018; Khan, Brien, & Aslani, 2020; Khazaeian, Navidian, Sanavi & Hadipoor, 2020; Mayeye, Goon, & Yako, 2019; Nwogwugwu, Hossain, Bronner & Ogbolu, 2019). Subsequently, those prior studies identified positive correlations between ART adherence and individuals' beliefs about the perceived severity of their disease and the efficacy of treatment. Studies in South Africa have used the HBM in HIV prevention and to assess determinants of HIV care. One study that assessed enablers of HIV disclosure to intimate partners found that the HBM can be used in HIV care to identify perceived barriers to disclosure and enhance the perceived benefits of disclosure to fast-track ART initiation (Seroto & Van Rensburg, 2022).

3.1.2 The Social Cognitive Theory (SCT)

The SCT evolved from the social learning theory introduced by Albert Bandura. The theory proposes that behaviour is a product of interactions between environmental, behavioural, and personal factors, including those that are cognitive and biological (Bandura, 1988). SCT proposes that behaviour change depends primarily on five interconnected elements: knowledge of health risks, benefits of change, self-efficacy, outcome expectations, facilitators and barriers (Chisholm-Burns & Spivey, 2010). A change in behaviour depends on how well one masters each of these elements. The central concept of SCT is self-efficacy, which is explained as belief or confidence in one's ability to perform a particular behaviour under various circumstances

(Bandura, 1977). The SCT hypothesises that self-efficacy is one of the important determinants of any change in health behaviour, such as adherence to medication (Bandura, 2004; Dunbar-Jacob & Mortimer-Stephens, 2001; Munro, Lewin, Swart, & Volmink, 2007).

In the context of ART adherence, self-efficacy is understood as an individual's belief in the necessity of continuing to take antiretrovirals (ARVs), regardless of the myriad challenges they may encounter. Therefore, the greater the individual's level of self-efficacy to consistently take ART, the higher the likelihood of ART adherence. To this end, positive attitudes about medication use and self-efficacy have been associated with improved ART adherence (Brittain, Remien, Mellins, Phillips, Zerbe, Abrams et al., 2018; Houston, Mikrut, Guy, Fominaya, Tatum, Kim et al., 2016; Parsons, Rosof & Mustanski, 2007; Zhang, Li, Lin, Jacques-Tiura, Xu, Zhou et al., 2016).

The tenets of SCT, such as self-efficacy, have been incorporated into various HIV prevention and adherence intervention studies involving adult and youth populations in the United States, China, Nepal, Kenya, and South Africa (Brown, Littlewood, & Venable, 2013; Chimoyi, Chikovore, Musenge, Mabuto, Chetty-Makkan, Munyai et al., 2022; Golin, Knight, Carda-Auten, Gould, Groves, White et al., 2016; Jia, Jiao, Ma, Liao, Wang, Kang et al., 2022; Nall, Chenneville, Rodriguez & O'Brien, 2019; Poudel, Buchanan, & Poudel-Tandukar, 2015). A South African study applied the social modelling tenet of SCT to examine the impact of a peer navigation intervention programme on the engagement outcomes of HIV care (Steward, Sumitani, Moran, Rathagana, Morris, Isidoro et al., 2018). The study found that the programme was successful in identifying barriers to care, but engagement in care and adherence were hindered by shame and HIV stigma. Steward et al. (2018) acknowledged that such an intervention programme would be difficult to reproduce in routine HIV care due to the human resources required, and the constraints of tailoring support to meet client needs, which exceeded the capacity of most government health facilities.

3.1.3 Information-motivation-behavioural skills (IMB) theory

The IMB theory is a subset of the SCT and proposes that providing patients with information encourages health-promoting behaviour, which facilitates motivation and eventually more positive health behaviours, like medication adherence (Fisher, Fisher, & Harman, 2003). The theory proposes that behaviour change is facilitated by information, motivation, and behaviour

skills. Information simply refers to basic knowledge about a medical condition, which is a prerequisite for behaviour change, while motivation entails the extent to which an individual is motivated to act towards changing specific health behaviours and the reasons for pursuing the change, including the support available. The theory claims that people's attitudes of adherence, perceived social support, subjective norms, and self-efficacy may be harnessed as sources of motivation (Fisher et al., 2003). Behavioural skills refer to the cognitive-motor and interpersonal skills required to assist people with integrating treatment into their daily lives.

In terms of ART adherence, the IMB theory suggests that people can achieve higher levels of adherence when they have adequate knowledge of HIV and ART, and high levels of personal and social motivation, including health coaching to assist with integrating medications into a daily routine (Morowatisharifabad, Movahed, Farokhzadian, Nikooie, Askarishahi, Bidaki & Hosseinzadeh, 2019; Pomeroy, Thompson, Gober & Noel, 2007). The IMB theory has been applied in HIV prevention, ART initiation, and adherence promotion by studies in the USA, the United Kingdom (UK), Iran, China, and South Africa (Ameri, Movahed, & Farokhzadian, 2020; Gordon Hoffman, Azhar, Ramirez, Schneider & Wagner, 2021; Hawkins, Prevost, & Judd, 2016; Horvath, Smolenski & Amico, 2014; Morowatisharifabad et al., 2019; Peltzer et al., 2010; Peng, Chen, Wei, Yu, Liu, Wang et al., 2023; Prakot, Fink, Culbert & Visudtibhan, 2022). However, the results have been variable. In Iran, the IMB successfully predicted diet adherence but did not predict medication adherence (Ameri et al., 2020). In China, information through behavioural skills had an indirect effect on ART adherence, while motivation did not have a direct effect on ART adherence (Peng et al., 2023). In one South African study, tenets of the IMB were used to ascertain factors related to HIV transmission risk behaviour among PLWH on ART (Kiene, Fisher, Shuper, Cornman, Christie, MacDonald et al., 2013).

These findings supported the logic of the IMB theory, in which HIV prevention information and motivation worked through HIV prevention behavioural skills to influence HIV preventive behaviour. Thus, the IMB is useful in explaining how adherence and HIV prevention occur, based on information, motivation, and behavioural skills, but its utility in predicting adherence still needs exploration.

3.1.4 Theory of Planned Behaviour (TPB)

The central tenet of the TPB is that the closest predictor of behaviour is the intention of the individual to execute that behaviour. The intention is influenced by attitudes, such as positive or negative evaluation of the behaviour, subjective norms, such as perceived social pressure or expectations to perform the behaviour, and perceived behavioural control to perform the behaviour (Ajzen, 1991). The ability of an individual to adhere to ART is predicated on their intention to take medication as prescribed, and their perceived control to adhere (Adefolalu, 2018). In addition, attitudes and beliefs influence motivation to start and stay adherent to ART and, in turn, are influenced by many other factors, such as education, length of diagnosis, socio-economic factors, sociocultural norms, stigma, and mental health (Boateng, Kwapong, & Agyei-Baffour, 2013; Damulak et al., 2021; Sweeney & Vanable, 2016).

The TPB has been used in studies conducted in the United States (Vissman, Hergenrather, Rojas, Langdon, Wilkin & Rhodes, 2011), Indonesia (Pangerti, Pawito & Prasetya, 2019), India (Kumar & Sharma, 2022), and Canada (Côté, Cossette, Ramirez-Garcia, De Pokomandy, Worthington, Gagnon et al., 2015). In general, they demonstrate the utility of TPB in identifying factors that enhance adherence. A meta-analysis that reviewed the application of TPB in HIV prevention and management in sub-Saharan Africa explained that factors such as attitudes, intentions, and condom use are significantly associated with ART adherence in most sub-Saharan countries, including South Africa (Saal & Kagee, 2012; Tarkang, Adu-Gyamfi, Sackey, & Duodu, 2023). The review concluded that understanding people's intentions to adhere to medication was central to understanding ART adherence and disparities in adherence.

While TPB is useful for understanding determinants of adherence and intention, it has also been criticised for its primary focus on cognitive processes rather than behaviour, and for not recognising the influence of other behavioural factors, such as emotion and environmental and economic context, on the intention-behaviour nexus (Afe, Motunrayo, & Gbadebo, 2017). Similarly, it does not adequately explain the 'intention-behaviour discrepancy', or why individuals may not act or behave in alignment with their intentions.

3.1.5 The Transtheoretical Model (TTM)

The TTM was originally developed by Prochaska and DiClemente in the late 1970s to characterise behaviour changes. Its initial purpose was to explain behavioural changes in stopping smoking, and it was later applied to other health phenomena, such as cancer and stroke, and finally to medication adherence (DiClemente, Prochaska, Fairhurst, Velicer, Velasquez & Rossi, 1991; Garner & Page, 2005).

The focus of TTM is on the individual's readiness to change their health behaviour. The model holds that this occurs before the actual behaviour changes, through a series of steps, namely, stages of change, processes of change, decisional balance, and self-efficacy (Arafat & Ibrahim, 2018). These stages of change included pre-contemplation, which involves an early stage of diagnosis in which the individual is not sincere about changing their behaviour. Contemplation is when the individual is thinking about a change, including awareness of the advantages and perils that may be involved in the change. The preparation and action stage is where an individual is actively engaged in modifying their behaviour. The maintenance stage is where a new health behaviour is integrated into the individual's way of life (Genberg, Lee, Rogers, Willey & Wilson, 2013; Prochaska & Norcross, 2010; van Leer, Hapner & Connor, 2008).

The TTM has been used in the contexts of HIV testing, peer education, and adherence in the USA, Ethiopia, and South Africa, to characterise readiness for HIV testing and adherence (Dinaj-Koci, Wang, Naar-King, & MacDonell, 2019; Lowane, 2019; Moges, Adesina, Okunlola, & Berhane, 2020). However, the TTM has been criticised for its inability to adequately capture the nuances inherent in the various steps of readiness required for actual changes in behaviour, such as adherence (Grimes & Grimes, 2010).

3.2 Review of Health Behaviour Theories

Each of the theories I review above varies in its emphasis on explaining factors that may account for adherence. Whereas the HBM explains that adherence is an outcome of an individual's high perceived threat of HIV progression, low barriers to ART adherence, and high perceived benefits, the SCT is based on the belief that adherence is a product of the individual's belief in their ability to take medication as prescribed. On the other hand, the IMB maintains that adherence is an outcome of information about adherence, high motivation, and

behavioural medication-taking skills, while TPB theories view adherence as the product of an individual's intention to take medication as prescribed, and their perceived control to adhere. Finally, the TTM suggests that adherence is influenced by the level of an individual's motivation and readiness to change, which can be characterised through a series of steps.

Studies that have utilised these theories typically demonstrate their usefulness in identifying predictors of adherence during initial screening for treatment, maintenance of adherence, and identifying characteristics of HIV testing and prevention (Brown et al., 2013; Chimoyi et al., 2022; Dinaj-Koci et al., 2019; Lowane, 2019; Moges et al., 2020; Prakot et al., 2022; Saal & Kagee, 2012; Tarkang et al., 2023).

Despite the many indicated explanatory values, HBTs are limited in several respects. For example, the HBM may be useful in explaining how perceptions and attitudes predict adherence, but it is not really useful when discussing people exposed to IPV, as it states that adherence is partly a result of an individual's perception of low barriers (Addo et al., 2022; Afe et al., 2017; Agustin et al., 2018; Felsher et al., 2018; Khazaeian et al., 2020; Mayeye et al., 2019; Nwogwugwu et al., 2019). The literature maintains that IPV is one of the major barriers to adherence for PLWH (Achchappa et al., 2017; Biomndo et al., 2021; Cluver et al., 2018; Gibbs et al., 2022; Hampanda, 2016; Hatcher et al., 2015; Kidman et al., 2018; Kouyoumdjian et al., 2013; Li et al., 2014; Trimble et al., 2013; Young et al., 2019). Thus, HMB is not very effective for the purposes of this study.

On the other hand, although the SCT, IMB, TPB, and TTM are also helpful in explaining predictors of adherence, they have been criticised for their inability to adequately explain how the mechanisms between their different proposed constructs interact to produce the expected adherence outcome, and what accounts for differences in adherence behaviour (Afe et al., 2017; Chisholm-Burns & Spivey, 2010; Grimes & Grimes, 2010). For instance, the IMB does not explain how mechanisms between constructs (i.e., intervention, information, and context) interact to produce the expected adherence outcome. Patients receive adherence information related to the regimen, including how to correctly take ART, possible side effects, and the importance of adequate adherence, as part of their intervention. What is missing is an

explanation of what accounts for non-adherence in people with adequate knowledge of adherence, including its importance, and the consequences of non-adherence.

Through its primary focus on cognitive processes behind adherence (intention and control), the TPB has also been criticised for ignoring the influence of other behavioural factors such as emotion, psychological factors such as spirituality, and environmental factors on the intention-behaviour nexus (Enwereji & Eke, 2016). The TPB does not explain the ‘intention-behaviour discrepancy’ adequately, as it does not account for why individuals do not act or behave in alignment with their intentions (Afe et al., 2017). Although the TTM describes the likelihood of adherence for individuals beginning therapy, it was challenging to apply to this study because its goal was to look at adherence in people who were already receiving treatment. Additionally, the TTM does not take into account other protective psychological factors like spirituality, and intrapersonal factors like IPV, both of which have been shown to have an impact on adherence (Abdul Wahab et al., 2021; Dalmida et al., 2018; Doolittle et al., 2018; Grimes & Grimes, 2010; Mpofu, 2018; Sutton, 2001; West, 2005).

So, in their various aspects, the health behaviour theories discussed above seem to frame ART adherence as a product of rational decision-making that needs to be incorporated into an individual’s daily schedule, implying that adherence is simple behaviour. The complexity of living with HIV in the context of high levels of stigma and IPV, along with unemployment, poor mental health, and other structural challenges, can significantly impair a person’s daily motivation to adhere to medication (Campbell et al., 2020; Ceccon et al., 2014; Croome et al., 2017; Eshun-Wilson et al., 2019; García-Moreno et al., 2015; Kagee et al., 2011; Katz et al., 2015; Lacob et al., 2017; LeGrand et al., 2015; Mutwa, Van Nuil, Asimwe-Kateera, Kestelyn, Vyankandondera, Pool et al., 2013; Tsai et al., 2016). While these health behaviour theories appear to describe and explain determinants and predictors of ART adherence, they do not emphasise facilitators of adherence in the presence of other potential variables.

Another reason why it was difficult to use health behaviour theories for this study was because most of them have been applied to general populations of PLWH, and not to PLWH who have been exposed to IPV. The latter is the target population of this study (Dinaj-Koci et al., 2019; Kiene et al., 2013; Lowane, 2019; Moges et al., 2020; Peltzer et al., 2010; Saal & Kagee, 2012; Seroto & Van Rensburg, 2022; Steward et al., 2018; Tarkang et al., 2023). It makes sense to believe that PLWH who have experienced IPV may have different adherence motivators than

the broader PLWH community. Given these limitations, together with the wide-ranging focus of preceding health behaviour theories, it was difficult to apply their logic to examining the moderating influences of ML, SOC, and spirituality within the nexus of IPV and ART adherence.

The target population of this study is PLWH receiving ART who have also experienced IPV. In this context, the current study sought to explore the independent moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence. A discussion of these three theoretical frameworks follows.

3.3 Meaning in Life (ML)

ML is the first proposed moderator in this study. It is a concept proposed by Viktor Frankl (1984), who believed that people have an intrinsic ability to find meaning and purpose in any life circumstance, which helps them cope with adversity. The central dictum of Frankl's theory is that of hope and how ML can be found even in the most painful and dispiriting of circumstances, such as the diagnosis of HIV or exposure to IPV. ML is explained as the extent to which an individual perceives that their life has a purpose and that it matters or has a sense of significance (George & Park, 2016; Steger et al., 2006). Frankl (1988) was convinced that the measure of this is how one responds to adversity. Frankl's work references two dimensions of life meaning: the experience of having meaning, which is understood as the 'presence of meaning,' and the 'search for meaning' (Steger et al., 2006). Both presence and search for meaning contribute to an overall sense of ML and may influence behaviour in different ways.

The presence of meaning can be broadly defined as the extent to which people perceive themselves as having a mission or purpose that gives them a reason for living (Byron & Miller-Perrin, 2009; Frankl, 1984; Steger et al., 2006). Frankl (1984) proposed that having an identified purpose in life may provide an individual with a reason to withstand adversity, whereas those without a perceived presence of meaning may struggle to cope with difficult life circumstances. People without an identified sense of purpose may experience an existential crisis, or sense of meaninglessness, and may rely on maladaptive ways to cope with adversity (Frankl, 1984). On the other hand, the search for meaning is defined as the extent of an individual's desire to create or enhance meaningfulness in their life (Steger, 2009; Steger, Kashdan, Sullivan, & Lorentz, 2008). The extent to which people search for meaning differs;

for instance, people may search for meaning through creative expression in hobbies, exploration of personal identity, altruism, and work, including exploration of spiritual beliefs. The presence of meaning can be broadly defined as the extent to which people perceive themselves as having a mission or purpose that gives them a reason for living (Byron & Miller-Perrin, 2009; Frankl, 1984; Steger et al., 2006). Frankl (1984) proposed that having an identified purpose in life may provide an individual with a reason to withstand adversity, whereas those without a perceived presence of meaning may struggle to cope with difficult life circumstances. People without an identified sense of purpose may experience an existential crisis, or sense of meaninglessness, and may rely on maladaptive ways to cope with adversity (Frankl, 1984). On the other hand, the search for meaning is defined as the extent of an individual's desire to create or enhance meaningfulness in their life (Steger, 2009; Steger et al., 2008). The extent to which people search for meaning differs; for instance, people may search for meaning through creative expression in hobbies, exploration of personal identity, altruism, and work, including exploration of spiritual beliefs.

Frankl's theory on ML resonates with the study's primary aim of investigating the moderating influences on the association between IPV and ART adherence among PLWH in a few ways. Firstly, Frankl's proposition that people have the inherent ability to search for and find a meaningful purpose for their existence, especially during adversity, makes the concept of ML particularly applicable to PLWH who have been exposed to IPV and are on antiretroviral treatment, because both of these experiences are difficult. Secondly, Frankl's opinion that the presence of ML is inherent, even in the face of dispiriting life conditions, suggests that it is possible for meaning to be found amidst the social stigma of HIV, exposure to IPV, psychological, and other structural challenges that many PLWH experience. Frankl's propositions imply that having an identified sense of ML may play a major influence on how people manage the difficulties of living with HIV and encountering IPV, including taking responsibility for one's wellbeing by engaging in health-promoting behaviours, such as seeking treatment and making generative decisions about adherence. Following Frankl's views about ML, in this study I explore whether or not ML moderates the relationship between IPV and

adherence, starting with research showcasing the association between ML and living with HIV, including managing ART adherence.

3.3.1 The influence of ML on ART Adherence

Research on ML shows that meaning is an important resource for healing, resilience, and well-being (Wong & Wong, 2012; Wong, 2013). In general, the significance of ML has been observed in recovery from such conditions as substance abuse and cancer. It has been demonstrated to support psychological health, enhanced quality of life, and the ability to cope (Chaiyasit et al., 2019; Csabonyi & Phillips, 2020; Steger, 2012; Wong et al., 2006). However, the role of ML has been less explored in HIV medication adherence, especially in South Africa.

Literature from outside South Africa has demonstrated positive associations between ML and QOL among PLWH (Audet et al., 2015). In Padang City, West Sumatra, Indonesia, a mixed-methods study that explored the association between ML and ART adherence among men who have sex with men (MSM) found that ML, along with related aspects such as purpose in life, spirituality (faith in a Supreme Being), and motivation, had significant correlations with adherence (Rosyad et al., 2020). Similarly, in Portugal, ML was identified as a predictor of the psychological well-being aspect of QOL, which in turn influenced ART adherence in PLWH (Reis et al., 2019).

In the Wakiso District, Uganda, a mixed-methods study explored factors that contributed to effective self-management of HIV and enhanced a sense of well-being among people taking ART. The study identified positive links between HIV medication adherence, supportive networks, hope, and ML (Russell et al., 2016). Factors such as supportive relationships with healthcare workers and supportive networks provided people with hope and the motivation to manage adherence, which in turn facilitated finding ML.

In South Africa, research on the relationship between ML and ART adherence is somewhat limited. A few studies have indicated that the diagnosis of HIV may deepen the search for ML, and that the presence of ML can improve QOL among PLWH (Catalan et al., 2017; Igumbor et al., 2012; Iwelunmor et al., 2017; Nolte, 2010; Pretorius et al., 2005). Such studies suggest that the diagnosis of HIV can either facilitate the search for meaning or lead to a sense of meaninglessness. On the one hand, it seems the diagnosis of HIV may accelerate an

individual's search for ML through participation in altruistic activities (e.g., HIV-support community outreach), engagement with supportive social and family structures and compassionate clinical staff, pursuing personal goals, and a commitment to spiritual goals (Alawiyah, Lindayani, & Herdiman, 2021; Chaiyasit et al., 2019; Kremer & Ironson, 2014). On the other hand, the diagnosis itself, coupled with the social stigma of HIV and psychological factors, such as poor mental health and socioeconomic disadvantage, may disrupt an individual's perception of the coherence of life and sense of meaning (Audet, McGowan, Wallston, & Kipp, 2013). Individuals who feel their lives have no meaning may deal with the trauma of being diagnosed with HIV in maladaptive ways, such as forgoing ARVs and missing clinic appointments.

3.3.2 The Relationship between ML and IPV

A limited number of studies outside South Africa have found that, although exposure to IPV tends to reduce survivors' global orientation that their life matters (ML), survivors of violence sometimes display a remarkable capacity to cope with the experiences of violence (Gross, Laws, Park, Hoff, & Hoffmire, 2019; Nasution, Sutatminingsih, & Marhamah, 2020; Parker et al., 2007; Valdez & Lilly, 2019). Although the mechanisms of coping are not clear, studies suggest that, besides producing fear and anxiety, experiences of IPV that cause psychological trauma can leave survivors with a constant overwhelming feeling that life is unjust, and a sense of self-blame, unworthiness, and negative self-perception (Bryngeirsdottir & Halldorsdottir, 2022; Chadambuka, 2021; Gross et al., 2019).

Despite this, it seems that resilient responses to experiences of violence may help survivors restore their sense of self-worth, which is an important facilitator to finding ML when encountering violent traumatic experiences (Park, 2010). Studies from the USA and Australia also indicate that self-kindness and self-compassion during periods of pain and suffering arising from exposure to violent relationships may facilitate psychological well-being and a sense of ML for survivors (Dale, Pierre-Louis, Bogart, O'Cleirigh, & Safren, 2018; Samios, Raatjes, Ash & Langdon, 2020; Wong & Yeung, 2017). The available evidence therefore suggests that resilience through self-kindness and self-compassion during encounters of

violence may assist in restoring the self-worth of people exposed to IPV. This, in turn, may restore the sense that their life matters.

Self-compassion is correlated with the basic elements of a meaningful life, which include emotional intelligence, acceptance of one's circumstances, and feelings of social connectedness (Neff, Pisitsungkagarn, & Hsieh, 2008). There is evidence that self-compassionate individuals who hold an acceptance-based perspective towards their difficulties are less likely to feel detached from their challenges and tend to evaluate them in comparison with those of others (Daneshvar et al., 2022). Such individuals avoid assuming a catastrophic and exceptional assessment of the vicissitudes that they experience. In the context of IPV, self-kindness and compassion are integral to adaptive strategies for restoring self-worth and ML, as well as improving well-being and making the decision to leave the violent relationship. It seems that the assumption of resilient coping strategies in situations of IPV may help survivors to resist negative self-assessments; survivors who help others in similar situations or aspire to 'a better life' for their children are known to be able to activate a process of self-healing, hope, meaning, and purpose for themselves (D'Amore, Martin, Wood, & Brooks, 2021).

To this end, the selection of available literature on ML appears to be mixed. On the one hand, it seems that an HIV diagnosis, coupled with the social, psychological, and socio-economic challenges encountered by PLWH, may disrupt an individual's sense of meaning. On the other hand, higher experiences of meaning, enacted through spiritual pursuits, hope, and participation in altruistic activities, can facilitate better QOL and adherence in PLWH. Likewise, the literature regarding the association between ML and IPV also appears to be inconclusive. It seems that exposure to IPV through trauma may reduce people's opinion that their lives matter. However, meaning-making strategies, such as resilience, self-kindness, self-compassion, and positive framing, may be important building blocks for restoring self-worth, and a sense of self-worth enables the restoration of purpose in life, which are important elements of ML.

3.4 Sense of Coherence (SOC)

SOC is the second proposed moderator in this study. It was developed by Aron Antonovsky (1987) and is a key concept of his model of salutogenesis, which breaks from the perspective of pathogenesis and places the accent on factors that promote health, well-being, and QOL (Antonovsky, 1996; Kickbusch, 1996; Mittelmark et al., 2016). The salutogenic perspective is

based on the premise that everyone is exposed to stressful life events that can change their movement toward health. Within this perspective, SOC refers to the individual's ability to cope with and manage life stressors in a manner that maintains health and well-being (Antonovsky, 1987; Mittelmark et al., 2016). The central proposition of SOC is that individuals with a higher belief in their ability to understand things that happen to them, have the necessary resources to manage adversity, and believe that life is meaningful, are able to engage in healthy behaviours (Antonovsky, 1987).

SOC comprises three dimensions: comprehensibility, which is the ability of individuals to understand the challenges they face; manageability, which relates to an individual's ability to identify the resources or assets required to cope with challenges; and meaningfulness, which relates to the extent to which individuals believe challenges are worth investing time and energy in (Antonovsky, 1993; Bull, Mittelmark, & Kanyeka, 2013).

It was argued that the manageability of SOC can be increased with generalised resistance resources (GRRs); these include income, socioeconomic status, biological factors, culture, supportive relationships or networks, and cognitive and valuative-attitudinal factors that an individual can mobilise to assist with managing stressors and to strengthen their SOC (Antonovsky, 1987; Eriksson & Lindstrom, 2007; Mittelmark et al., 2016). Within this stance, people with a strong SOC and adequate GRRs may be able to cope effectively with life challenges. In contrast, those with a lower SOC may have difficulty managing the difficulties they encounter and, in turn, use maladaptive means of coping (Antonovsky, 1987; Kleiveland, Natvig, & Jepsen, 2015). The value of SOC as a coping resource during adversity has been researched in QOL studies, including living with cancer, work-related stress, sexual abuse, violence in the form of bullying, political violence, and life with HIV (Abu-Kaf & Braun-Lewensohn, 2019; Braun-Lewensohn & Al-Sayed, 2018; Nilsson, Nordenstam, Green, Wetterhall, Lundin & Svedin, 2015; Omiya, Yamazaki, Shimada, Kazuko Ikeda, Ishiuchi-Ishitani & Ohira, 2017; Palm & Eriksson, 2018; Rohani, Abedi, Sundberg & Langius-Eklöf, 2015; Veronese & Pepe, 2017).

The concept of SOC was also applicable in this study; it was used to assess its moderating influences on the association between IPV and adherence for a number of reasons. According to Antonovsky (1987), health is not the absence of diseases and adversity, but a result of our continuous, everyday interactions and how we cope with disease. Antonovsky positioned SOC

as a protective factor that explains why some people can maintain good health under considerable stress, while, under an equal amount of stress, others do not. The literature has shown that PLWH experience ongoing stressors such as exposure to IPV, stigma, poor mental health, and socioeconomic problems. Studies of SOC seek to understand the positive aspects of coping experiences in the presence of disease and stress.

Thus, SOC research might explain how people manage to adhere to ART in the presence of stressors such as IPV and living with HIV. Literature demonstrating the association between SOC, IPV, and ART adherence is explored below.

3.4.1 The Influence of SOC on ART Adherence

The literature adequately addresses the role of SOC in the management of chronic medication, much like it does for ML. Evidence from studies from low-to-middle-income and high-income settings covering the management of chronic diseases in general, including HIV, indicates that individuals with a moderate to high SOC can effectively manage to live with a chronic condition and have a better quality of life (Qiu, Zhang, Pan, Zhao & Wu, 2020; Sawma & Sanjab, 2022). For example, a multisite study that examined mediators of ART adherence in PLWH in Canada, China, Namibia, Puerto Rico, Thailand, and the USA established that people with a high SOC were able to cope with and manage stressors such as depression, stigma, and long-term adherence to ART (Corless et al., 2017). Similarly, in Uganda, a qualitative study utilised the salutogenic model of health, from which SOC was derived, to explore the GRRs that postpartum women on ART used to manage adherence (Nutor et al., 2022). The study found that GRRs, such as self-determination, hope, support from others and concern about children's health, seemed to motivate them to stay in care and adhere to ART.

Research on SOC and ART adherence in South Africa is limited. However, the available literature does recognise the importance of SOC for managing life with HIV. For example, in the Eastern Cape Province, a cross-sectional study that explored SOC and resilience among 40 university students living with HIV identified that participants with moderate levels of SOC and resilience were coping with living with HIV (Hoho, 2014). Relatedly, a qualitative photovoice study involving 43 adolescents and young adults living with HIV in the Western Cape, South Africa, identified that SOC emerged as an example of mental wellness, that shaped experiences of living with HIV and adherence to ART (Orth et al., 2022). The six themes

identified were SOC, connectedness, spirituality, social coherence, self-esteem, and self-acceptance. While research highlighting the role of SOC in ART adherence may be scarce in South Africa, select quantitative and qualitative studies suggest that having a high SOC not only improves long-term wellness and QOL among PLWH, but may also motivate people to stay adherent to ART.

3.4.2 The Relationship between IPV and SOC

The available evidence on the association between IPV and SOC is mixed. On the one hand, there is evidence that IPV is a traumatic experience that can disrupt people's SOC. On the other hand, studies claim that SOC has a moderating effect on the association between stress and other forms of violence, traumatic events, and psychological well-being (Hogh & Mikkelsen, 2005; Veronese et al., 2013; Waqas et al., 2022).

While South African research on SOC and IPV is scarce, studies conducted in Western and Eastern contexts show that IPV can violate individuals' SOC (Daneshvar et al., 2022; Lazenbatt & Devaney, 2014; Sitarczyk, 2013; Zonp & Saint Arnault, 2022) and suggest that exposure to violent intimate relationships destroys self-confidence and self-efficacy, which in turn evokes anxiety and depression (Gibbs, Jewkes, Willan, & Washington, 2018; Pakhomova, Dietrich, Closson, Smit, Hornschuh, Smith et al., 2021; Woollett, & Hatcher, 2016). Simultaneously, while violence may engender depression, underlying poor mental health, in and of itself, is a notable risk factor for continued long-term violence between partners and perpetual cycles of violence (García-Moreno et al., 2015; Hatcher et al., 2015; Hatcher et al., 2022; Sikweyiya et al., 2020).

In contrast to these findings, which highlight the deleterious consequences of experiences of violence on SOC, studies from Germany, the USA, and Sweden suggest that people who have a strong SOC may be able to show resilience and post-traumatic growth after their experiences of IPV (Jung et al., 2020; Parker et al., 2007; Schafer et al., 2019; Simmons & Swahnberg, 2021). A possible pathway through which a strong SOC may engender resilience and post-traumatic growth appears to be through social support. This can strengthen SOC during experiences of violence, which in turn improves self-confidence to cope with such negative life experiences (Sitarczyk, 2013). Within this context, an individual with a strong SOC, aided by

social support, may perceive IPV as a challenge they can overcome, while one with a disrupted SOC may feel hopeless and not confident that their reality can change.

As with ML, the evidence reviewed regarding SOC as a coping resource during difficult life experiences also shows parallel findings regarding the value of SOC on adherence and in people exposed to IPV exclusively. In terms of the relationship between SOC and adherence, it seems that people who have a high SOC also experience better QOL, reflected by improved psychological well-being and better management of HIV-related stressors such as stigma, and active engagement in health-seeking behaviours such as adherence to ART, including retention in care. Conversely, with SOC and IPV, it is clear that the traumatic experience of IPV can disrupt an individual's SOC by distorting their self-confidence, self-efficacy, and sense of worth, which may engender anxiety and depression. Despite this, other studies argue that SOC has psychological value to moderate the effects of traumatic experiences of IPV on well-being. The suggestion is that social support and cognitive reframing are some of the ways through which PLWH's SOC can be strengthened, which may help them to cope better with experiences of IPV, become resilient, and even achieve post-traumatic growth.

3.5 Spirituality

Spirituality is the third proposed moderator, and it is also recognised as an important aspect of health and QOL for PLWH. Research has shown that spirituality is a coping resource for PLWH and that it influences their decisions about health, including adherence to medical treatment (Abdul Wahab et al., 2021; Arrey et al., 2016; Dalmida et al., 2018; Kendrick, 2017; Mckie & Gaida, 2022; Mpofu, 2018; Mutambara et al., 2021). However, spirituality is a complex construct that is defined in several ways (Lun & Bond, 2013). Two definitions resonate with the objectives of this study: those by Joseph, Ainsworth, Mathis, Hooker, and Keller (2017), and Weathers, McCarthy, and Coffey (2011). Joseph et al. (2017, p. 506) propose that spirituality should be understood as a “more general, unstructured, personalised, and naturally occurring phenomenon where a person seeks closeness and/or connection between himself or herself and a Higher Power or purpose.” Weathers et al. (2011, p. 93) define spirituality as “a way of being in the world in which a person feels a sense of connectedness to

self, others, and/or a Higher Power of nature; a sense of ML; and transcendence beyond self, everyday living, and suffering.”

These definitions of spirituality and religion are not necessarily interchangeable. While spirituality includes belief in a Higher Power, the ideas of transcendence, meaning and purpose of life, connectedness, and interconnectedness, religion refers to an organised, shared system of beliefs, doctrines, and traditions designed to facilitate closeness to the transcendent (Koenig, 2015). The transcendent or a Higher Power may be referred to as the Supreme Being in African spirituality, God, Allah, or Adonai in Abrahamic traditions, or as manifestations of a higher truth or awareness, as with Buddhism, the Dao, and other Eastern traditions (Koenig, 2012; Mbiti, 1975). The distinction lies in the fact that belief in a transcendent being or state, characterised by spirituality, can be enacted outside of organised religion, and the expression of connectedness to the Higher Power or the transcendent can manifest through non-religious activities, but it may also include traditional religious practices (O’Brien, 2003). Therefore, spirituality is a far broader term than religion. Examples of spiritual practices that are also broadly shared by religions include faith in a Higher Power, attending religious services, prayer, meditation, and scripture reading (Szaflarski, 2013).

Since spirituality is difficult to define, it can be viewed through the concept of spiritual well-being, which represents a lens through which one experiences connectedness to a Higher Power, connectedness to others, reverence for life, meaning, and purpose in life. Paloutzian and Ellison (1982) propose that spiritual well-being encompasses existential and religious/spiritual dimensions, which are organised as religious well-being (RWB) and existential well-being (EWB). Religious well-being refers to the extent of one’s wellness in the relationship with God or a Higher Power (not limited to any type of religious orientation), while EWB refers to the extent to which one has an inner sense of purpose and satisfaction with life (Arnold et al., 2006; Deka et al., 2019; McClain et al., 2003). In the context of the current study, the focus was on determining whether spirituality, assessed on a scale of spiritual well-being, could moderate the relationship between IPV and ART adherence among PLWH. Though not necessarily the same, I use the terms spirituality and religion interchangeably in this dissertation to refer to spiritual well-being.

It was necessary to explore the value of spirituality as a moderator because an established body of work recognises that spirituality symbolises a kind of support for the fragility of living with

HIV and stigma; it also enhances the QOL for PLWH (Dalmida et al., 2015; Doolittle et al., 2018; Ironson et al., 2016; Lee et al., 2014; Oji et al., 2017). Many people in sub-Saharan Africa subscribe to spiritual or religious institutions, and religious plurality is common (Arrey et al., 2016; Victor-Aigbodion, 2020).

In South Africa, religion and spirituality connect people of different races, classes, and nationalities, including PLWH. Thus, spiritual beliefs and practices have an important influence on how people perceive situations, attitudes, and lived experiences, including how people frame problems, such as managing adherence despite being survivors of violence.

3.5.1 Religiosity, Spirituality and ART Adherence

While religion and spirituality may differ for each person, PLWH who subscribe to high levels of religiosity and/or spirituality have been reported to cope better with the disease and with stigma compared to those who do not. They also demonstrate better ART adherence and slowed progression of the disease (Arrey et al., 2016; Dalmida et al., 2018; Grill et al., 2020; Mutambara et al., 2021). A systematic review by Doolittle et al. (2018), covering 15 studies that investigated the association between religiosity or spirituality and clinical outcomes, showed that religious practices and spirituality were positively associated with generative HIV clinical outcomes, such as increased CD4 cell count and increased viral loads (a proxy for adherence).

Similarly, the positive influence of religious practices on adherence was also observed in South Carolina, USA, in a cross-sectional study that examined coping and ART adherence self-efficacy among 402 PLWH (Kaur et al., 2022). The study found that religious commitment correlated positively with ART adherence and self-efficacy. The study concluded that religious involvement was an important coping resource that can improve an individual's confidence in their ability to adhere to ART (ART adherence self-efficacy). In Somerset West, South Africa, a qualitative study explored how PLWH coped with mental health challenges and treatment adherence (Van Wyk & Kagee, 2023). The study identified that participants mostly used

religion (e.g., participation in religious activities) to manage the stress (particularly stigma) of living with HIV.

Despite the complexities defining religiosity and spirituality, a body of studies indicates that religious beliefs may facilitate better adherence among PLWH, as well as better outcomes for those with mental disorders and chronic illnesses, such as cancer and diabetes (Abdul Wahab et al., 2021; Koenig, 2013; Oliveira, Vasconcelos, Amaral et al., 2021; Unantenne, Warren, Canaway et al., 2013). Studies suggest that, while the availability of ART treatment provides hope and a sense of being given a second chance to live, prayer and a sense of acceptance, evoked through participation in religious activities, may engender feelings of connectedness and having a purpose in life (Brandão, Angelim, Marques et al., 2020; Chaiyasit, et al., 2019; Kelly-Hanku, Aggleton, & Shih, 2018; Orth et al., 2022).

In contrast to these generative influences of religiosity and spirituality on the diagnosis of HIV, individuals may question the existence of God, may feel abandoned by God, and so may consider the diagnosis as punishment due to the stigmatising nature of the disease. Such assessments may compromise individuals' understanding of the disease and may lead them to discontinue treatment (Grossoehme et al., 2016; Jones et al., 2015). Despite the differing ways in which PLWH may engage with religious and spiritual resources, the evidence suggests that, in the main, religion and spirituality offer critical resources for PLWH to improve their QOL, adhere to treatment, and ameliorate mental health challenges related to their HIV diagnosis.

3.5.2 Religiosity, Spirituality and IPV

Similar to the association between ART adherence and spirituality, evidence shows that individuals experiencing IPV may move between spiritual attachments and detachments. On the one hand, individuals experiencing such violence may assume spiritual practices in ways that evoke hope, minimise feelings of helplessness, and contribute to healing once they exit the abusive relationships (Anderson, Renner, & Danis, 2012; Drumm et al., 2014; Finfgeld-Connett, 2017; Khangholi, Mohtashami, Hosseini, & Saberi, 2019; Simonič, 2021). It is

believed that spirituality can provide vital support to survivors of IPV and to those who are considering ending their relationship as a part of their healing process (Istratii & Ali, 2023).

On the other hand, their experience of IPV may provoke a spiritual crisis for an individual, which may manifest in a sense of being abandoned and/or punished, simply because the traumatic experience of IPV can devastate an individual's belief systems and faith that there is a natural and divine order (Simonič & Klobučar, 2017). There are also recorded instances of religious teachings that are deliberately misconstrued, or conflated with problematic and patriarchal social norms to justify IPV (Little, 2017; Perales & Bouma, 2019; Westenberg, 2017). Thus, spirituality does not always contribute to positive outcomes for people exposed to IPV.

Despite the maladaptive and problematic ways in which religion and spirituality may function in situations of IPV, the empirical evidence tends to point to the positive ways in which they can influence how people respond to and cope with IPV, regardless of religious orientation. Research from North America, Iran, and Asian countries suggests that belief in a Higher Power offers people a sense of inner strength, faith, and hope, and counters feelings of isolation (Braganza et al., 2021; Dolatian, & Sedghi, 2017; Drumm et al., 2014; Sabri et al., 2018). People exposed to IPV may find that church attendance and/or personal prayer offer privacy and a sense of safety, so they avoid seeking public forms of help, like counselling or police services, for fear of being victimised again (Akangbe, 2020; Chadambuka, 2021; Conroy, 2014; Oyewuwo-Gassikia, 2020; Simonič, 2021; Wong, Fong, Choi, Tiwari, Chan, & Logan, 2016). South African studies suggest that participation in religious activities, such as church attendance or membership in a religious community, provides women exposed to violence with a sense of support, meaning, belonging, and security, especially when the violent partner tries to isolate their victim from others. Thus, higher levels of spirituality, enacted through participation in religious or spiritual activities, appear to generate positive emotions and subjective well-being (Sere et al., 2021; Slabbert, 2017).

3.6 The Conceptual Framework of the Study

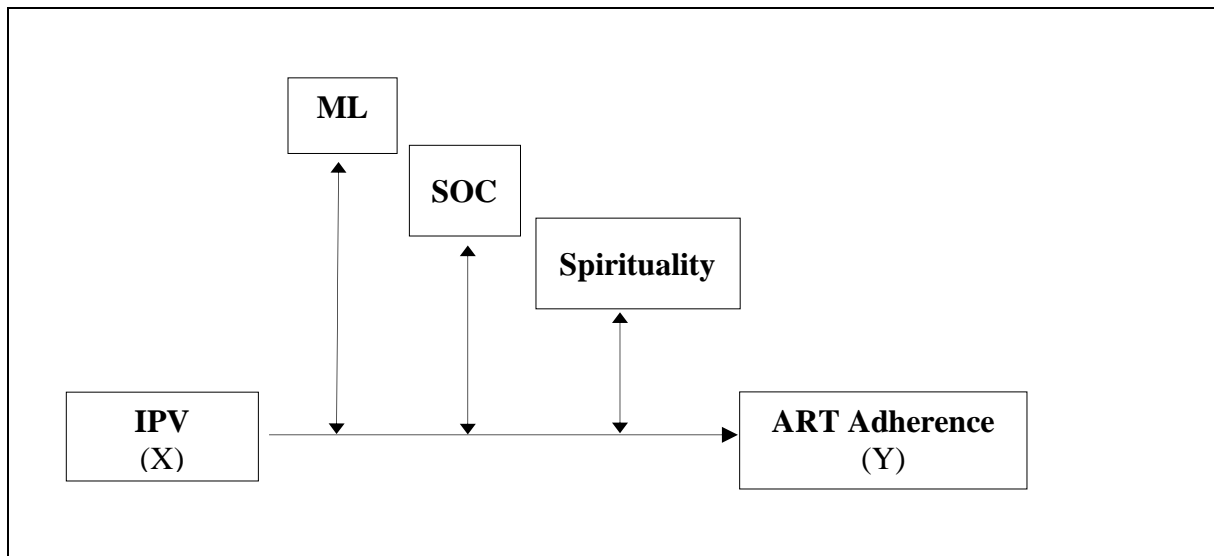
In this penultimate section, drawing on the preceding review of theoretical and conceptual explanations of the influence of ML, SOC, and spirituality on health-promoting behaviour, adherence, and IPV, I present the conceptual framework for my study. This is composed of

several interrelated theories regarding the influences of ML, SOC, and spirituality on ART adherence and IPV. Several aspects underlie my rationale for concentrating on these elements in particular as moderators.

For one, there is limited literature in South Africa that reports on psychological moderators of the relationship between IPV and ART adherence. The available literature reports the risk factors of IPV and barriers to ART adherence adequately, including facilitators of adherence, such as optimal mental health, social support, income, health information, and self-efficacy. In addition, although previous health behaviour theories help explain cognitive factors that account for adherence, they fall short of engaging with moderating factors that facilitate adherence in the presence of other possible variables, such as IPV.

Within existing literature on the influences of ML, SOC, and spirituality, there is also a paucity of studies that examine the moderating influence of all three on the IPV-ART nexus. Previous literature tends to showcase the influences of each of the proposed moderators exclusively on adherence, or IPV, but seldom links them together. For this reason, this study emerged from an analysis of literature that accentuated ML, SOC and spirituality and their roles as resources of support for PLWH and those exposed to IPV. An illustration of how ML, SOC, and spirituality are operationalised according to the third objective is presented below in Figure 1:

Figure 1: *Conceptualisation of the proposed moderation of ML, SOC, and spirituality on the relationship between IPV and adherence*



As previously mentioned, the broad aim of this study was to examine the moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence. In view of the literature reviewed above, it seemed plausible that these factors might moderate the influence of IPV on ART adherence individually. I have hypothesised that the individual positive effects of ML, SOC, and spirituality reported in ART adherence and IPV literature may also moderate the negative association between IPV and ART adherence.

While IPV and ART adherence share similar determinants, such as stigma, poverty, employment, and cultural influences, which create parallel effects and limitations on people's capacity to manage, it is worthwhile exploring the protective factors of healthy behaviours in the presence of such difficult experiences. ART adherence and IPV literature highlight the potential of ML, SOC, and spirituality to become coping resources at such difficult times.

Without minimising the impact of IPV on health and well-being, and the stress of consistent adherence to medication, the evidence suggests that experiences of ML, SOC, and spirituality can transform PLWHs' experiences of IPV and ART, and facilitate a process of healing, hope, and restoration of coherence and meaning. To this end, the moderating effect of ML, SOC, and spirituality on the association between IPV and ART adherence is premised on the basis that

they can be resources of support that motivate PLWH who have been exposed to IPV to adhere to ART.

In South Africa, little is known about how people exposed to IPV manage the challenges of ART. Moreover, not much research has been done to evaluate the potential influence of ML, SOC, and spirituality on the association between IPV and ART adherence. An understanding of what protects individuals exposed to IPV in a manner that facilitates adherence can be used by healthcare workers to minimise the negative effect of IPV on patient health. How the study's aim was operationalised and investigated is outlined in the next chapter.

Chapter 4: Research Methodology

This chapter provides an overview of paradigms used in the social sciences, before explaining the one selected for this study, as well as the ontological, epistemological, and methodological assumptions behind the paradigms and how they influenced my selection of a single paradigm. I also outline the aim, research questions, and hypotheses that formed the basis of this research. The methodology and research design that I used to answer the research questions are also explained.

To provide context, I describe the research setting where the study took place, along with the population of interest, and the sampling methods I used to identify the sample size required, the data collection tools and their psychometric merit, and the data collection process and methods. I conclude the chapter with an overview of the ethical considerations that informed the study.

4.1 Research Paradigm

The broad aim of the study was to investigate the moderating influence of ML, SOC, and spirituality on the link between IPV and ART adherence among PLWH. According to Creswell (2014), a paradigm influences the researcher's philosophical orientation regarding the subject of inquiry. Following this reasoning, it is appropriate to provide an overview of the common paradigms in the social sciences, and an account of how their paradigmatic ontologies, epistemologies, and methodological assumptions influenced my own approach to this study, including the research design.

There are many definitions of a paradigm, but for the purposes of this dissertation, it refers to the philosophical assumptions, knowledge claims, and/or the basic set of beliefs that guide the researcher's decisions and approaches to studying social, health, or natural phenomena (Lincoln, Lynham, & Guba, 2011). Putting it simply, Collis and Hussey (2014) defined a research paradigm as a philosophical framework that steers how research should be undertaken. There has been considerable debate regarding the classification of the main research paradigms (Lincoln et al., 2011). However, research paradigms in the social sciences fall largely into three broad categories: positivism/post-positivism, interpretivism, and critical realism (Blumberg,

Cooper, & Schindler, 2011; Gephart, 1999; Lincoln et al., 2011). For this study, I adopted a post-positivistic paradigm, based on the nature of the research questions.

Before discussing the focus of the different paradigms, it is important to explain the central characteristics that contribute to their development. According to Howell (2013), a paradigm can be characterised by the following factors, which are unique to each: the ontology, epistemology, and methodology of research. Distinguishing between these factors assisted me in making the decision to select post-positivism as the most suitable paradigm for approaching the overall aim and research questions behind this study.

4.1.1 Ontology, Epistemology and Methodology

The ontology of a paradigm is concerned with the question of what the nature of reality is or what constitutes reality (Crotty, 1998). According to Creswell (2014), the researcher's ontological stance is reflected in how they view the world, which is influential in shaping the search for understanding. On the other hand, epistemology relates to assumptions about how people can gain and make knowledge of what they assume to know (Lincoln et al., 2011). Other scholars consider epistemology to be a criterion for establishing knowledge about the world (Hallebone & Priest, 2009). Simply put, epistemology can be used to describe how we come to know the truth about the nature of phenomena, or reality. According to Furlong and Marsh (2010), both ontology and epistemology have an influence on how the researcher approaches a subject of inquiry. However, Bhaskar (1978) argues that, aside from the researcher's ontological and epistemological beliefs about reality, the research questions determine the methodology most suitable for answering them.

The methodology of a paradigm is the broad term used to refer to the strategy, research design, methods, and procedures used to explore the subject of inquiry (Keeves, 1997). It is concerned with the question of how research should be undertaken (Grix, 2004). Methodology guides the researcher in deciding the type of data that may be needed, and the data collection tools most appropriate for answering their questions about reality. To summarise, the ontology, epistemology, and methodology of a paradigm provide us with a frame for what we think exists out there, how we can identify this knowledge, and tools for how we can do so (Grix, 2004;

Guba, 1990). Together, these play a fundamental role in the development of the paradigms that are applied in social science research.

In the following section, I provide a brief description of positivism, critical realism, and post-positivism, along with my argument for choosing post-positivism for the purposes of this study.

4.1.2 Positivism

The ontological assumption of positivism is that objective reality exists outside of personal experiences, with its own set of cause-and-effect relations that govern behaviour in a linear way (Babbie & Mouton, 2008; Muijs, 2011; Neuman, 2006). Epistemologically, positivism is based on the idea that reality or knowledge of the world can be learned through observation and objective measurement for the purpose of making objective generalisations about reality (Neuman, 2006). Furthermore, positivists hold the conviction that the researcher and the subject of inquiry can be separated by using objective data collection tools. Following this premise, positivism uses a prescribed scientific method that bases knowledge generation purely on observation and measurement.

In summary, a positivistic paradigm can be characterised as follows: it is an ontological assumption of a single independent reality, an objective epistemology independent of the observer, through utilisation of the scientific method, and uses quantitative data collection instruments and statistical analysis techniques for confirmation or testing of theory (Guba & Lincoln, 1994).

Some aspects of positivism were applicable to the aim of the current study. Firstly, positivism's ontology regarding the existence of an independent reality, governed by its own set of cause-and-effect relationships, was applicable to some extent to the aim of this study. Furthermore, positivism would have been ideal in its use of quantitative research methods and statistical analysis to provide answers to my questions. However, I do not fully share positivism's ontology of an objective and fixed reality, or agree with its epistemological conviction that the researcher and the subject of inquiry can be separated completely. While I believe that some level of distance between the researcher and the subject can be achieved by utilising objective data collection instruments, complete separation is not possible. For example, my personal

inclinations in the selection of the theories and instruments I used to study the researched topic were a subjective process. I will enlarge on this in a later section.

4.1.3 Interpretivism

In comparison, the interpretivist paradigm subscribes to the ontological assumption that human experience and action are governed by the subjective meanings that people construct within their unique socio-cultural contexts (Neuman, 2006). Reality is believed to be relative, multiple, and socially constructed, and this is why this paradigm is sometimes referred to as the constructivist paradigm.

Epistemologically, the focus of interpretivist research is to capture meanings to understand people's social reality (Babbie & Mouton, 2008). Interpretivism contends with positivism's cause-and-effect principles in explaining social phenomena by arguing that the circumstances and conditions surrounding social phenomena are transient (Blumberg et al., 2011), and we can never know reality in its totality. The framework of interpretivism is used to explore people's constructs, represented by thoughts, feelings, and beliefs about the phenomenon under study (Neuman, 2006). Within this framework, interpretive research methodologies, rooted in phenomenology and ethnography, are typically used with the aim of gaining an understanding of reality. Moreover, according to interpretivism, the researcher is not detached from the subject of inquiry, as contended by positivism. Instead, the researcher sees themselves as a participant in the situation they investigate (Edge & Richards, 1998). Interpretivism is therefore based on the belief that the researcher's involvement in the process of the inquiry enables them to obtain a thorough description of the situation at hand.

The interpretivist paradigm was considered a poor fit for achieving the broad aim of the study, primarily because my intentions were not to gain broad understandings of people's constructions of IPV, ART adherence, ML, SOC, and spirituality but to investigate the relatedness and the closeness of the association of these factors. I acknowledge that participants' perceptions and interpretations of all variables are inherently subjective, including my own. However, due to its epistemological stance about using interpretive and phenomenological methods to understand reality, the interpretive paradigm would have fallen

short in establishing the associations between these factors, outside of human perceptions about them.

4.1.4 Critical Realism

Critical realism (CR) holds an ontology that reality is coloured and stratified by social structures, which can be known fallibly (Bhaskar, 2008). As such, the intention of research from a CR perspective is to understand how these social structures interact to produce a particular behaviour, as well as bring about change through personal involvement by the researcher (activism) (Wynn Jr. & Williams, 2012). Consistent with the ontology, CR posits that reality can be studied in multiple ways (Wynn Jr. & Williams, 2012). CR occupies a position between positivism and interpretivism, accepting positivism's ontology about the existence of an objective reality independent of human thought, and embracing interpretivism's assertion that we can never study this reality entirely objectively, given its transient multiplicity and subjective nature (Mingers, 2001). However, CR disagrees with the positivist and interpretivist epistemological assumptions, which can misconstrue perceptions of reality for reality itself (Gorski, 2013; Malherbe, Seedat, & Suffla, 2021).

What is critical about CR is the call to recognise that, due to the transient and multiple nature of reality, we may not necessarily be able to perceive it in the moment that we are trying to study it (Malherbe et al., 2021). In terms of studying reality, CR is not prescriptive about any particular type of research methodology (Malherbe et al., 2021). Instead, CR requires a method called retrodution, which is defined as “a mode of analysis in which events are studied with respect to what may have, must have, or could have caused them. Hence, it implies inquiring why occurrences happen in the way they do” (Olsen & Morgan, 2004, p. 25).

However, the research question(s) should determine the methodology, with the overall aim of exploring and expanding understanding of the causal mechanisms that underlie reality. More importantly, CR suggests that the study of reality should be theory-laden and context-dependent, rather than theory-driven (Fletcher, 2017).

A noteworthy takeaway from CR and the applicability of the paradigm to the research aim underpinning this study lies in its ontological views about the nature of reality and how we can know it. For one, I recognise that participants' perceptions about IPV, ART adherence, ML,

SOC, and spirituality are coloured by their different contexts; thus, I subscribe to the ontological assumption of CR that participants' perceptions can only be known imperfectly. However, a CR approach, beyond an understanding of social phenomena, involves an inquiry that facilitates social change through the researcher becoming part of the inquiry, and the current aim of this study is not aligned with this goal.

4.1.5 Post-Positivism

Post-positivism emerged from opposition levelled at the paradigmatic assumptions of positivism regarding ontological and epistemological views about reality (Wagner, Kawulich, & Garner, 2012). However, post-positivism is generally understood to occupy a position on the continuum between the positivist and interpretivist paradigms (Hunter & Leahey, 2008). According to Guba and Lincoln (2005), those who work within a post-positivist framework hold a critical realist ontology. As mentioned above, CR is a philosophy that celebrates the existence of multiple realities independent of human thought, which can only be known within some level of probability (Groat & Wang, 2002). Notable scholars such as Johnson (2009), Letourneau and Allen (1999), and Niewenhuis (2007) concur with Guba and Lincoln (2005), while the critical realist philosophy is implied in the work of others (for example, Phillips, 2004; 2005; Yeung, 1997). There is therefore no clear consensus that explicitly explains the connection between post-positivism and CR (for example, Yu, 2005).

On the other hand, post-positivism is sometimes grouped into a single paradigm with positivism. It therefore made sense to provide a brief discussion of the key distinctions between post-positivism and positivism in relation to CR. Understanding the differences between the two paradigms was central to my selection of post-positivism for the current study.

4.1.6 The difference between positivism and post-positivism

Positivism and post-positivism are sometimes (erroneously) grouped in a single paradigm, mainly because post-positivism, as suggested in the prefix, arose from the former. Creswell (2009) thought of post-positivism as an extension of positivism because it deliberately challenged the notion of the absolute and objective truth of knowledge proposed by positivism.

However, the difference between post-positivism and positivism lies in their ontological and epistemological perspectives.

Firstly, the openness of post-positivism to embrace the philosophy of CR is the cornerstone that distinguishes it from positivism (Yeung, 1997). Post-positivism rejects positivism's assumption of a single, independent reality that can be known only by measurement of the cause-and-effect principles that govern all behaviour (Ryan, 2006). The post-positivist paradigm is based on the ontological critical realist acceptance that all human experience and action are governed by "natural" causal laws that operate across individuals and contexts (Howell, 2013). As with CR, post-positivists assume that reality is conditional and can be understood in different ways (Ryan, 2006).

Secondly, post-positivism disagrees with positivistic ontology regarding an objective reality that can be known accurately and completely through measurement by applying the scientific method (Ryan, 2006). Still resonant with the philosophy of CR, post-positivism argues that, due to the inherent bias of perception, it is not possible to understand reality fully and absolutely, but only to estimate (De Vos et al., 2011). Post-positivists therefore argue that objectivity should not be the golden principle of the scientific method, as it is with positivism; instead, objectivity should be a regulatory ideal, where the researcher strives to eliminate as much bias as possible by showing awareness of the values and biases that may interfere with the neutrality of their research (Miller, 2005).

Thirdly, the epistemological stance of positivism is that the knower (the researcher) and the known (reality) are separate entities (Strawson, 2014), so it is possible to separate reality or inquiry from the one observing it by adopting a detached position (Morris, 2006). Conversely, as with CR, post-positivism accepts the interpretivist view that it is not possible to separate the researcher from the inquiry, let alone claim the complete objectivity of their findings. In the view of post-positivism, subjectivity is an integral part of any given inquiry about human phenomena (Phillips & Burbules, 2000). For example, the researcher's background and values may affect their decisions regarding what subject to study, the methods of data collection, or which aspects of the data to emphasise or publish (Field, 2009; Kirby & Dempster, 2012). For

these reasons, post-positivism emphasises research aimed at the exploration and verification of theories, where reality is acceptably probabilistic and provisional (Denzin & Lincoln, 2011).

Lastly, positivism includes the idea that reality can only be known by applying the scientific method. Post-positivism is epistemologically different, advocating for the use of multiple methods and embracing both quantitative and qualitative approaches (Denzin & Lincoln, 2011). Once again, this resonates with the philosophy of CR: post-positivism argues that there can never be a perfect research method because every method is subject to its own limitations and shortcomings (Panhwar, Ansari, & Shah, 2017).

Notwithstanding its advocacy of mixed methods, post-positivism still tends to use quantitative methodologies for establishing causal relationships between phenomena (Furlong & Marsh, 2010), where hypotheses are used to explore and verify existing theories (Saunders, Lewis, & Thornhill, 2009; Wilson, 2014). Ultimately, in agreement with CR's methodological non-prescriptions (Malherbe et al., 2021), the onus is on the researcher to follow a post-positivistic paradigm to select the best possible methods for the inquiry (Morris, 2006). However, the methodology is fundamentally determined by the research question, and for the post-positivistic researcher, the inquiry should begin with a research question and/or a hypothesis (Morris, 2006).

I proceed to outline my arguments for settling on post-positivism as the paradigm used in the current study, together with my adoption and use of post-positivism's ontology, epistemology, and methodological assumptions, in accordance with the aim of this study.

4.1.7 Application of Post-Positivism in the current study

The study's goal of examining the moderating effects of ML, SOC, and spirituality on the relationships between IPV and ART adherence among PLWH seemed more aligned with post-positivism. With this goal in mind, my ontological stance within the post-positivistic paradigm is that, rather than confirmation, there is partial truth regarding the moderating effects of these components on the relationship between IPV and ART adherence. Using a post-positivist

paradigm helped me to be more critical in identifying how my topic and my own values and interests are mutually influential (Phillips & Burbules, 2000; Grover, 2015).

I am deeply interested in the subject of ML and spirituality, as well as questioning what makes life worth living during times of profound adversity, and this interest, along with supportive literature, influenced my selection of Frankl's theory of ML and salutogenesis (Antonovsky, 1988), as well as of the instruments I used to study the influences of ML, SOC, and spirituality on the association between IPV and ART adherence among PLWH.

Post-positivism's ontological principle, that the perception of reality is variable and context-dependent, required reflection on how this could apply in the context of the study. I acknowledge that the theories and instruments that I used to measure the constructs of IPV, ART adherence, ML, SOC, and spirituality were mostly developed in European and North American contexts, so it is possible that South African participants may have comprehended these concepts differently, requiring caution in interpreting the outcomes of the study. I explain this more in the limitations section of this dissertation.

Epistemologically, the research questions formulated for the study called for a post-positivistic quantitative research approach. The epistemology of a post-positivistic inquiry demanded that the methodology be determined by the research question(s) (Morris, 2006). The overall goal of the study, as reflected in the research questions, was to estimate the associations between IPV, ART adherence, and moderation of ML, SOC, and spirituality. By definition, estimation and moderation are quantitative concepts; therefore, a quantitative research methodology was better aligned with the research questions.

In conclusion, based on the arguments stated above, post-positivism as a paradigm was considered to be the most appropriate for the study. The research methodology that was adopted is explained in the following section.

4.2 Methodology

The term methodology is defined as a strategy of inquiry that moves from the underlying ontological and epistemological assumptions to research design and data collection (Myers,

2009). Consistent with the paradigm guiding the study, a researcher who works within a post-positivist paradigm that embraces CR must select the overall methodology based on the research questions behind the study (Morris, 2006). I therefore utilised a quantitative research methodology located within a post-positivistic paradigm to investigate the moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence. According to Furlong & Marsh (2010), quantitative methodologies that are utilised within post-positivistic research, in which hypotheses are used to explore and verify existing theories, are useful for estimating connective associations between phenomena. Following this reasoning, it makes sense to reiterate the research questions and hypotheses at this point, starting with the overall aim underpinning the study.

4.3 Aim and Objectives of the Research

The aim of the study was to investigate the moderating influences of meaning in life (ML), sense of coherence (SOC), and spirituality on the association between IPV and ART adherence among adults (men and women) living with HIV in Johannesburg, South Africa.

This broad aim was operationalised through three specific objectives:

- To estimate the association between IPV and ART adherence.
- To establish, of the three types of IPV (physical IPV, emotional IPV and sexual IPV), which one strongly affects ART adherence.
- To examine the individual moderating influences of ML, SOC and spirituality, on the association between IPV and ART adherence.

4.4 Research Questions

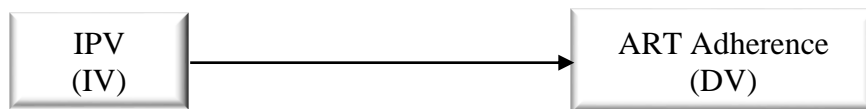
The research questions are informed by literature highlighting the negative effects of IPV on ART adherence, as well as the favourable influences of ML, SOC, and spirituality on health behaviours during adversity (see examples, Antonovsky, 1987; Cluver et al., 2018; Dalmida et al., 2018; Dunkle & Decker, 2012; Frankl, 1984; Gibbs et al., 2022; Hatcher et al., 2015; Hatcher et al., 2022; Jewkes et al., 2015; Kouyoumdjian et al., 2013; Mittelmark et al., 2016;

Mpofu, 2018; Paloutzian & Ellison, 1982; Rees et al., 2014; Steger, 2012). The three research questions are:

- **Research question 1:**

What is the association between IPV and ART adherence?

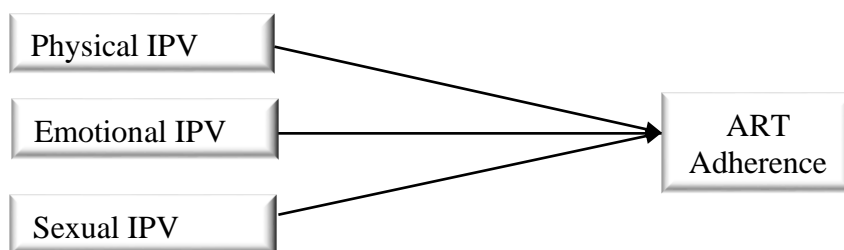
Figure 2: *Visualisation of research question 1: IPV and ART adherence*



Research question 2:

Which type of IPV, physical, emotional or sexual, strongly affects adherence to ART?

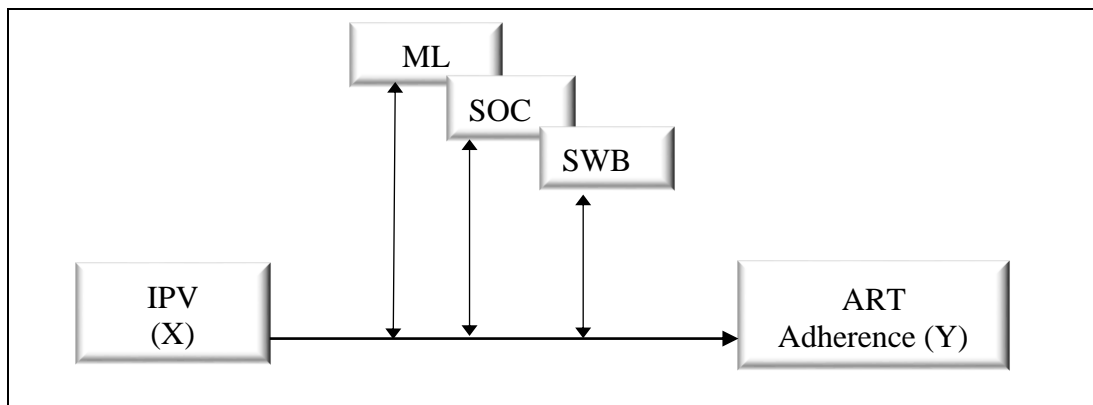
Figure 3: *Visualisation of research question 2: Type of IPV and ART adherence-one multivariable model*



- **Research question 3:**

Do meaning in life (ML), sense of coherence (SOC), and spirituality individually moderate the association between IPV and ART adherence, and which of these strongly affects the association between intimate partner violence and ART adherence?

Figure 4: *Visualisation of Moderation of ML, SOC, SWB on IPV and ART adherence*



4.5 Hypotheses

The post-positivistic paradigm suggests that hypotheses should be formulated to address the research questions with the goal of verifying the theory underpinning the study (Furlong & Marsh, 2010; Morris, 2006). With this in mind, the following hypotheses and sub-hypotheses were formulated based on the primary aim and research questions underpinning the study:

Hypothesis 1: The nature of association between IPV and ART Adherence

- h₀: IPV has no association with ART adherence.
- h₁: IPV is negatively associated with ART adherence.

Hypothesis 2: Type of IPV and ART Adherence

- h₀: There is no difference in the influence of physical, emotional and sexual violence on ART adherence.
- h₁: There is a difference in the influence of physical, emotional and sexual violence on ART adherence.

Hypothesis 3: ML, SOC and Spirituality do moderate the association between IPV and ART Adherence.

h₀: There is no moderation of ML, SOC and spirituality on the association between IPV and ART adherence.

h₁: ML, SOC and spirituality do individually moderate the association between IPV and ART adherence.

4.6 Delineation of Variables

It is necessary to provide a delineation of the variables of interest under study to understand how I formulated the hypotheses outlined above.

4.6.1 Dependent Variables

According to Gravetter & Forzano (2016), a dependent variable (DV), sometimes called outcome, is a variable that the research aims to observe in relation to other variables. As such, the dependent or outcome variable under observation in the study was ART medication adherence. As discussed in Chapter 1, ART adherence was defined as the extent to which participants adhered to their medication according to the instructions of the healthcare provider (Chesney, 2000).

4.6.2 Independent Variables

An independent variable (IV), sometimes called the predictor, is understood to stand on its own, independent of the phenomena being studied (Gravetter & Forzano, 2016). Following the logic of the broad research question underpinning the study, the independent variable in this study was IPV, which was defined as physical, sexual, or psychological abuse perpetrated by a man or woman towards a partner within an intimate relationship (WHO, 2010).

4.6.3 Moderator Variables

A moderator variable (also known as an intervening variable) is a variable that interrupts the influence of the IV on the DV (Frey, 2018). Moderating variables change the strength or direction of the relationship between X (independent) and Y (dependent) variables. When the

intervention of the moderator is successful, the association between the independent variable (IPV) and the dependent variable (ART adherence) may change. The moderators in the study, which are investigated separately, are ML, SOC, and spirituality.

As explained in Chapter 3, ML is the extent to which people comprehend, make sense of, or see significance in their lives, accompanied by the degree to which people perceive themselves to have a purpose, mission, or overarching aim in life (Steger, 2009). SOC was explained as the individual's disposition to cope with and manage life stressors, and the degree to which people feel that life is meaningful, comprehensible, and manageable (Antonovsky, 1987).

Spirituality is characterised as a belief in a Higher Power, an idea of transcendence, the meaning and purpose of life, connectedness, and interconnectedness (Koenig, 2012). Below is a description of the research design I utilised to examine the moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence.

4.7 Correlational Research Design

I utilised a non-experimental, correlational design located within a post-positivist paradigm to answer the three research questions. A research design is understood as a framework for the creation of findings that answer research questions underpinning a research inquiry (Bryman & Bell, 2015; Malhotra, Birks, & Wills, 2012). Within the broad scope of non-experimental designs, a correlational research design was best aligned with the aim of investigating the moderating influences of ML, SOC, and spirituality on the IPV-ART adherence nexus. Supporting this idea are Gravetter and Forzano (2016), who stated that correlational designs are applicable when the research question or objective aims to determine the degree of association between variables. This associative relationship is usually demonstrated by what is known as a correlation coefficient, which is a measure of closeness in the relationship between two or more variables (Gravetter & Forzano, 2016).

4.8 Strengths and Limitations of the Research Design

Although considered appropriate for this study, every research design is subject to its own shortcomings. The adoption of a correlational design limits our ability to make any claims regarding causality between IPV, ART, ML, SOC, and spirituality. However, it is important to

remember that, within the framework of post-positivism, the study's objectives were centred around estimating the association between IPV and ART adherence and the possible moderating influences of ML, SOC, and spirituality in this relationship.

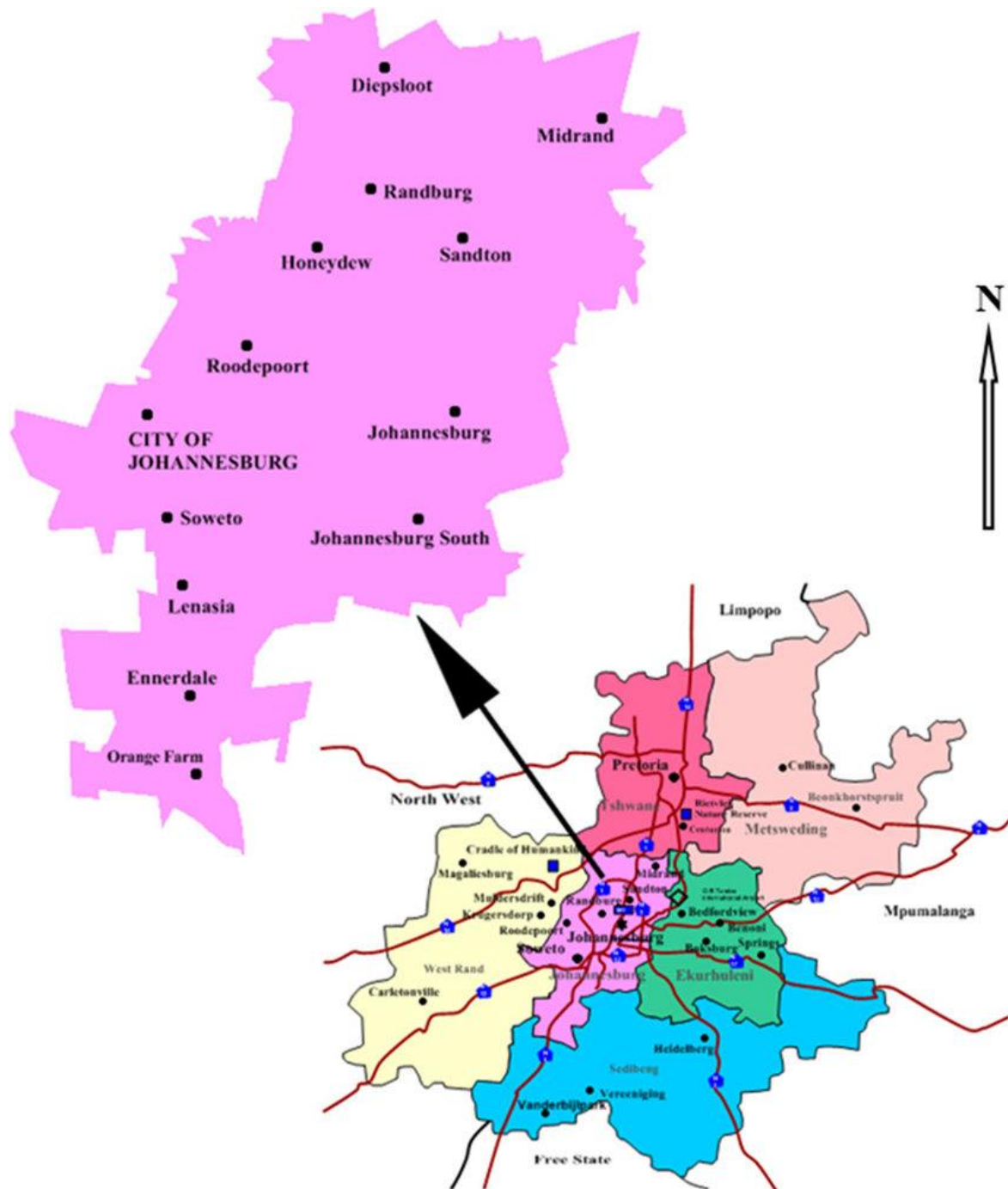
Another limitation inherent in non-experimental designs relates to the threat of internal validity, which may occur when the relationship between factors under study is explained by multiple factors outside of the study (Lobmeier, 2012). Since it is almost impossible to control all the coexisting variables, the internal validity of the research design should be noted as a limitation of the current study.

Despite the limitations accompanying a non-experimental correlational design, there are benefits to it. One of the advantages of correlational designs is their allowance of non-probability sampling techniques, and no control or interference (manipulation) with the independent variable during the research process. Compared to experimental designs, where the independent variable and selection of participants are controlled (random assignment), non-experimental designs are considered to exhibit stronger external validity. This is supported by Lobmeier (2012, p. 8), who argued that, "given that non-experimental designs are often conducted with pre-existing interventions with real people in the real world rather than participants in a laboratory, the findings are often more likely to be true to other real-world situations." Thus, a correlational design was useful to examine the moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence.

4.9 Research Setting

Data for the current study were collected at two public health facilities, namely, Nirvana Community Health Clinic (CHC), situated in Lenasia, and Diepkloof Provincial Hospital (DPH), in Soweto. These areas are found in the southern part of the South African province of Gauteng, which is home to the City of Johannesburg (CoJ). Figure 5 shows Gauteng province, and specifically the City of Johannesburg.

Figure 5: Map 1 of Gauteng Province, specifically the CoJ



Gauteng, located in the north-central part of the country, has the fastest-growing population in South Africa, with an estimated population of 15.2 million people (Statistics South Africa, 2020). The CoJ has an estimated 5 million people registered as residents. In Johannesburg, ART is administered at government-funded clinics located around the city. Compared with other regions in Gauteng, Johannesburg has the highest prevalence of HIV, with an estimated

663,657 PLWH, of whom 45% were on ART treatment in 2017. Johannesburg has a network of approximately 80 public clinics, with about 30 clinics that provide ART treatment (CoJ Annual Report, 2018).

Geographically, both Lenasia (Nirvana CHC) and Soweto (DPH) are situated in close proximity to each other in the south of Johannesburg (see Figure 6). The two are part of the network of public facilities that provide ART in Johannesburg (National Strategic Plan, 2017).

Figure 6: Map of Johannesburg metropolitan municipality showing Soweto and Lenasia



4.10 Population and Sample

The population of a study is defined as all of the people that possess characteristics of interest to the researcher (Gravetter & Forzano, 2016). The population of interest was adult individuals living with HIV in South Africa who were on ART treatment. The target population for this study was PLWH who were undergoing ART at DPH in Soweto and Nirvana CHC in Lenasia.

The two healthcare facilities belong to the Johannesburg municipality, which has approximately 355 000 residents on ART (CoJ Annual Report, 2018). The exact patient numbers are not known because it was difficult to obtain these at each facility at the time of the study. The sampling method that I used to select the sample is described below.

4.10.1 Sampling Method

Sampling involves the selection of a portion of the study population that is representative of the entire population (Durrheim & Painter, 2008). I used a two-stage sampling process. The first stage entailed purposive sampling of two clinics (DPH and CHC) from about 30 public health facilities in Johannesburg. These clinics are representative of the public health clinics serving the population of ART recipients.

The second stage of sampling was the selection of participants. On systematically chosen days of the week, all the individuals scheduled for medication refills were approached. On meeting the prospective participants who expressed a willingness to take part in the study, I explained the aims, objectives, and possible public policy implications of the study. Consenting participants were included. This process is further explained in 4.13 under the data collection procedure.

4.10.2 Inclusion Criteria and Sample Size

Consistent with the aims and objectives of the study, individuals were considered eligible for inclusion if they were 18 years old or older and had been receiving ART for more than six months.

Power analyses are often used to determine an adequate sample size for conducting a study. According to Noordzij et al. (2011), researchers can determine a sample size using any of three factors, such as statistical significance level (α), effect size, which is the size of the effect one wishes to detect (δ), sample size (n), variability of the study outcome (σ), and power level ($1-\beta$), which are also called parameters.

I used an a priori power analysis and considered significance, power level, and effect size to calculate a sample size of 200 for this study. The significance level (α) is understood as the

value used to test the hypothesis of a study (Aron, Lewandowski, Mashek, & Aron, 2013). Typically, an alpha level of .05 is the standard convention in psychological research (Dienes, 2014). A significant level of alpha .05 was set for the study. Power level refers to the likelihood of a study rejecting the null hypothesis, provided the null hypothesis is false (Dienes, 2014). For instance, if a study is conducted 100 times, how many studies out of 100 would reject the null hypothesis? Power is typically set at 80%, 90%, or 95% (Harvey & Lang, 2010). Most researchers use a power of level .80 (80%) as the minimum; therefore, the power level was set at 80% in the current study. Effect size is defined as the size of the effect one wishes to detect. Effect size for power analysis is usually derived from means and standard deviations from previous studies (Noordzij et al., 2011). Effect sizes generally range from small (0.10) to large (0.50) (Cohen, 1988). However, the rule of thumb is to use a medium effect size of 0.3 (Cochran, 1977), and an effect size of 0.36 was set for this study.

To summarise, in order to explore the primary research hypothesis that IPV is related to ART adherence, a sample size of 200 was determined as the minimum necessary to compare the mean ART adherence between those experiencing IPV and those not, using a one-sided alpha of 0.05, effect sizes of 0.30 to 0.40, and a power level of 80%. Table 3 below displays the calculations.

Table 3

Sample size estimate: Numeric results for two-sample T-Test assuming equal variance

Power	N1	N2	N	δ	σ	Alpha
0.68054	100	100	200	0.30	1.0	0.050
0.70529	100	100	200	0.31	1.0	0.050
0.72912	100	100	200	0.32	1.0	0.050
0.75194	100	100	200	0.33	1.0	0.050
0.77370	100	100	200	0.34	1.0	0.050
0.79433	100	100	200	0.35	1.0	0.050
0.81381	100	100	200	0.36	1.0	0.050
0.83210	100	100	200	0.37	1.0	0.050
0.84919	100	100	200	0.38	1.0	0.050
0.86508	100	100	200	0.39	1.0	0.050
0.87978	100	100	200	0.40	1.0	0.050

Alternative Hypothesis: $\delta > 0$

4.11 Instrument, Data Collection and Scoring

I collected data through self-administered questionnaires, which is an approach consistent with a non-experimental correlational research design (Gravetter & Forzano, 2016). The questionnaire comprised previously standardised measures, which are leveraged for their established reliability and validity (Fox, Hunn, & Mathers, 2009). In line with the objectives and research questions formulated for the study, the questionnaire included a total of five standardised instruments, along with a brief demographic section that provided context. The instruments were the AIDS clinical trials group (ACTG) adherence questionnaire, the WHO violence against women instrument (VAWI), a meaning in life questionnaire (MLQ), a sense of coherence (SOC) questionnaire, and a spiritual well-being scale (SWBS) (see Appendix D, page 203). A description of all the instruments, the scoring, their psychometric properties, and my arguments for using them over others are described in the following section.

4.11.1 Demographic Section

The demographic section of the questionnaire collected information relating to each participant's age, sex, and HIV history, such as years since HIV diagnosis and duration of ART treatment.

4.11.2 Antiretroviral Therapy Adherence Questionnaire

As stated above, the participants' adherence to ART was measured using the adopted AIDS Clinical Trials Group (ACTG) adherence follow-up questionnaire, developed by Chesney (2000) (see Appendix D). The ACTG questionnaire was designed to measure adherence using various methods, such as pill dose recall calculation, reasons for non-adherence, and the prevalence of adherent behaviour. I adopted the pill dosage recall and the reasons for non-adherence sub-sections of the ACTG questionnaire because it is brief and the literature has reported that the method is commonly used for measurement of adherence (Reynolds et al., 2007). Time constraints and overall questionnaire length were additional reasons why the pill dosage recall sub-section of the ACTG questionnaire was used for assessing adherence.

Using pill dose recall, participants' level of adherence was obtained by asking them to point out the number of doses they skipped over the four days prior their clinic visit at the time of

the survey (e.g., “doses missed yesterday, the day before yesterday, 3 days ago, and 4 days ago”). (Reynolds et al., 2007).

Participants who indicated missing any dose of medication were prompted to explore the reasons why. The reasons for non-adherence section consisted of 14 items that asked participants how often their medications were missed for each of the 14 “reasons” listed within the past month. These questions were assessed on a four-point Likert scale, ranging from “never” to “often.” Participants’ reasons for non-adherence were obtained for the purpose of characterising non-adherence.

Notwithstanding risk factors, such as social desirability and memory bias, that generally accompany the self-report measures mentioned in Chapter 3 (Bangsberg, 2008), I elected to use the ACTG questionnaire to measure ART adherence because of its popularity in HIV medication adherence literature. The popularity of the ACTG questionnaire is due to reports of its strong associations with viral load responses (Sweeney & Vanable, 2016). In addition, my reason for using the ACTG questionnaire was its strong psychometric merit and contextual relevance.

- **Psychometric Properties of the ACTG Questionnaire**

The ACTG questionnaire has consistently demonstrated adequate reliability and validity, thereby confirming the instrument as a strong measure of ART adherence. For example, international studies have reported a reliability of .85 (see Gay, Portillo, Kelly, Coggins, Davis, Aouizerat et al., 2011) and has also been validated for use in resource-limited settings such as sub-Saharan Africa, including South Africa (see Boogaard, Lyimo, Boeree, Kibiki & Aarnoutse, 2011; Kekwaletswe & Morojele, 2014; Ncama, McInerney, Bhengu, Corless, Wantland, Nicholas et al., 2008; Peltzer et al., 2010). In the current study, the ACTG maintained a good item reliability of α .87.

The internal consistency of this instrument was confirmed in this study and matches that (α .85) reported by previous studies (Gay et al., 2011), including those conducted in South Africa (Boogaard et al., 2011; Kekwaletswe & Morojele, 2014; Ncama et al., 2008; Peltzer et al., 2010; Reynolds et al., 2007).

- **Scoring of the ACTG Questionnaire**

Participants' levels of adherence to ART following pill dosage recall were thus scored following the method suggested by Reynolds et al. (2007):

$$Adherence = \frac{\text{number of doses consumed over 4 days}}{\text{number of doses prescribed over 4 days}} \times 100$$

A single dose denoted two consumed pills. This is because, at the time, participants were receiving two sets of pills (one in the morning and one at night) as a single dose. Successful consumption of a single dose was only considered if participants had taken both sets of pills. Thus, one pill consumed out of two prescribed for a single day denoted a missed dose (e.g., adherence ratio calculated as 1 = no missed dose; 0 = missed dose; see Reynolds et al., 2007). Consequently, ART adherence was calculated by dividing the number of antiretroviral doses that participants had consumed over four days before their clinic visit by the number of doses they had been prescribed over four days and multiplying this number by one hundred. Thus, optimal ART adherence was represented by no missed doses over four days, while missing any dose within the period of four days indicated suboptimal adherence. This scoring method has been widely accepted and utilised by numerous studies (see Kekwaletswe, Jordaan, Nkosi, & Morojele, 2014; Morowatisharifabad et al., 2019; Neupane et al., 2019; Reynolds et al., 2007).

4.11.3 Intimate Partner Violence

I assessed participants' exposure to intimate partner violence (IPV) with the VAWI, developed by the WHO (2005). Although VAWI was initially developed to assess IPV among women, it was later adopted for use in male populations (Nybergh, Taft, Enander, & Krantz, 2013). The VAWI was adapted from the WorldSafe questionnaire, initially developed to measure physical IPV (Hassan, Sadowski, Bangdiwala, Vizcarra, Ramiro, De Paula et al., 2004), but later expanded to include other forms of IPV, such as emotional and sexual violence (WHO, 2005). The VAWI specifically measured violence on the current date or within the previous 12 months within intimate partner relationships, and consisted of 13 questions, divided into three subscales that assessed exposure to three types of violence. The subscales assessed physical violence (experiences of being slapped, hit, kicked, and beaten), emotional or psychological

violence (intimidation and humiliation), and sexual violence (experiences of forced intercourse and other forms of coerced sex) (WHO, 2005).

Using a dichotomous yes (1) and no (0) rating, the VAWI assessed these three types of violence, asking whether participants had experienced specific acts of violence done by an intimate partner during the previous 12 months. The physical violence subscale comprised six items that measured physical violence, with questions such as, “*Has your partner slapped you or thrown something that could have hurt you?*”

The emotional violence subscale comprised four items, using statements such as “*Has your partner insulted you in a way that made you feel bad about yourself?*” and “*Has he or she belittled or humiliated you in front of other people?*” Lastly, the sexual violence subscale constituted three items, with questions such as “*Did you ever have sexual intercourse when you didn't want to because you were afraid of what he or she might do?*”

I considered the VAWI appropriate for assessing IPV because of its ease of administration, good psychometric merit, and cultural comparability. The VAWI has been widely used around the world, particularly in low- to middle-income countries, including South Africa (Dunkle, Jewkes, Brown, Grey, McIntyre & Harlow, 2004; Gass, Stein, Williams & Seedat, 2010; Jewkes et al., 2010). It has also been used in sexual and reproductive health studies (García-Moreno et al., 2015; Jewkes et al., 2010a), particularly in studies of women's experiences of IPV and mental health (Lövestad, Löve, Vaez, & Krantz, 2017). However, the VAWI has also been used in male populations (Nybergh et al., 2013).

- **Psychometric Properties of the VAWI**

Overall, the VAWI has reported item reliability with a Cronbach's alpha of .88, with the following reliabilities for the subscales: psychological violence subscale (α .74), physical violence subscale (α .86), and sexual violence scale (Nybergh et al., 2013). In the current study, the VAWI demonstrated item reliability of α .94. Though slightly higher, the reliability of VAWI in the study matched the alpha of .88 reported by previous studies in South Africa (Brown et al., 2003; Dunkle et al., 2004; Gass et al., 2010; Jewkes et al., 2010a), which further confirmed the instruments' stability in reliably measuring IPV. In terms of validity, the VAWI

has supported construct and content validity, with test-retest scores above $r = .66$, $p \leq .001$ (Azadarmaki, Kassani, Menati, Hassanzadeh & Menati, 2016; Nybergh et al., 2013).

- **Scoring of the VAWI**

Based on the guidelines suggested by the WHO (2005), the method I used to score the VAWI was as follows: exposure to IPV was dichotomised into a score of (1), represented by a response of ‘yes’ to at least 1 of 13 questions from the instrument, and (0), which denoted no exposure to IPV. To establish the type of violence (physical, emotional, and sexual), additional scoring per subscale was performed. The presence of physical violence was further dichotomised into a score of 1, which represented ‘yes’ on any of the questions on the physical violence subscale, while 0 denoted no encounters of physical violence. The same process was followed to derive a score for emotional violence and sexual violence.

4.11.4 Meaning in Life Questionnaire (MLQ)

I utilised the MLQ developed by Steger et al. (2006) to obtain participants’ perceived ML. The MLQ is a ten-item scale that is divided into two subscales, namely the search for meaning in life (MLQ-S), and the presence of meaning in life (MLQ-P). The questionnaire is measured with a 7-point Likert rating of between 1 (“absolutely untrue”) and 7 (“absolutely true”). In terms of contents of the subscales, the MLQ-P consists of five items in the form of statements that measure the degree to which respondents felt their lives had meaning, e.g., “My life has a clear sense of purpose,” “I have a good sense of what makes my life meaningful,” and “I have discovered a satisfying life purpose.” The MLQ-S was represented by five items (items 2, 3, 7, 8, and 10) that measured the degree to which participants strove to find and deepen meaning in their lives.

I elected to utilise the MLQ because of its brevity, ease of administration, and free use for research purposes (Steger et al., 2006). The MLQ’s extensive usage in capturing perceived ML, together with its good psychometric properties (discussed below), also convinced me to use it in the study. It should be noted that the use of MLQ in studies that have specifically examined ART adherence is scarce. This may be because most of the earlier research on ML has been predominantly within the broad scope of wellbeing (Steger, 2012). However, over the years,

the topic of ML has begun to spread into sub-disciplines, such as QOL studies among PLWH (see Audet et al., 2015; Nolte, 2010; Reis et al., 2019).

- **Psychometric Properties of MLQ**

In terms of reliability, the MLQ has a reported internal consistency in the range of .80s to .90s (Steger et al., 2006). For example, South African studies that have used the MLQ reported Cronbach's alpha in the range of .78 to .84 (Boshoff, 2012; Nolte, 2010; Schutte, Wissing, Ellis, Jose, & Vella-Brodrick, 2016; Temane, Khumalo, & Wissing, 2014; Van der Walt, 2019). In other countries, such as China and Portugal, studies also reported reliability of between .83 and .87 (Liu & Gan, 2010; Simões, Oliveira, Lima, Vieira & Nogueira, 2010; Wang & Dai, 2008). In the current study, the MLQ also demonstrated a high reliability of α .91 and was consistent with previous studies (see Boshoff, 2012; Liu & Gan, 2010; Steger et al., 2006; Temane et al., 2014; Van der Walt, 2019). In terms of validity, the MLQ has supported convergent and criterion-related validity, with scores above $r = .61$, $p \leq .001$ (Steger et al., 2006).

- **Scoring of MLQ**

The scoring of the MLQ was performed following the method suggested by Steger et al. (2006). To derive how participants perceived ML, the sums of the ten items were totalled. Scores generally ranged between 10 and 70, with low scores denoting low levels of ML and higher scores denoting high levels of ML. The MLQ does not have a particular cut-off score for measures (Steger et al., 2006).

4.11.5 Sense of Coherence (SOC)

To capture participants' SOC, I used the SOC-13 scale developed by Antonovsky (1987), revised from the original SOC-29 that was initially developed by Antonovsky in 1987. Essentially, the SOC-13 comprised 13 items, divided into three subscales, that examined the participants' confidence in managing life's stressors from three perspectives or dimensions, namely, that life is comprehensible, manageable, and meaningful. The three sub-scales were comprehensibility, which was represented by five items (items 2, 6, 8, 9, 11) using questions such as "Has it happened that you were surprised by the behaviour of people whom you thought

you knew well?"; manageability, which was measured by four items (items 3, 5, 10, 13) using questions such as "Has it happened that people on whom you counted on disappointed you?"; and meaningfulness, which was also measured by four items (items 1, 4, 7, 12) using questions such as "Do you have the feeling that you don't really care about what goes on around you?" In terms of measurement, the SOC-13 utilised a seven-point Likert rating of 1 to 7 (Antonovsky, 1987).

In addition to having good psychometric properties, my motivation for utilising the SOC-13 depended on the scale's versatile application in a variety of research settings, such as public health and human resources research (Eriksson & Lindström, 2005). This rendered the instrument adaptable for use in various fields, and its adaptability in different contexts strengthened my inclination to use it. For example, the SOC-13 has been used in more than 32 countries, such as South Africa, Thailand, China, Japan, and various European countries (Sardu, Mereu, Sotgiu, Andriassi, Jacobson, & Contu, 2012). In SA, specifically, use of the SOC scale in HIV medication adherence research was used in earlier studies (Corless, Wantland, Bhengu, McInerney, Ncama, Nicholaset al., 2009), while more recent studies have extended its use to research around resilience and coping among PLWH (Hoho, 2014; Peer, Lombard, Steyn, Lombard, Steyn & Levitt, 2020; Super, Wagemakers, Picavet, Verkooijen & Koelen, 2016).

- **Psychometric Properties of the SOC-13**

The SOC-13 has excellent psychometric properties, with a good item reliability of Cronbach's alpha in the range of 0.83 to 0.97 (Eriksson & Lindström, 2005; George & Mallery, 2003). Similarly, in South Africa, the scale has demonstrated adequate item reliability, with Cronbach's alpha ranging between .52 and .97 (Bezuidenhout & Cilliers, 2010; Boshoff, 2012; Johnston, De Bruin, Geldenhuys, Gyorkos, Massoudi, & Rossier, 2013; Katalan, 2003; Nolte, 2010; Wissing & Van Eeden, 2002; Wissing, Thekiso, Stapelberg, van Quickelberge, Choabi, & Moroeng, 2010). In the current study, the SOC-13 also showed high reliability of α .85, and demonstrated item reliability with a Cronbach's alpha of .85, which is consistent with reliability in the range of .83 to .97 previously reported in other studies (Boshoff, 2012; Johnston et al., 2013; Wissing et al., 2010). In terms of the validity of SOC-13, a systematic review by Eriksson

& Lindström (2005) supports the scale as valid, with convergent and criterion validity scores above $r = .66$ and $p \leq .001$.

- **Scoring of the SOC-13**

I scored the SOC-13 scale following Antonovsky's (1987) guidelines, wherein items 1, 2, 3, 7, and 10 were reversed before scoring. SOC-13 scores ranged from 13 to 91, with high scores indicating good SOC (Antonovsky, 1987).

4.11.6 Spirituality

The participants' spirituality was assessed by the spiritual well-being (SWB) scale, developed by Paloutzian and Pals (1982) to assess aspects of a person's spiritual life that transcend any specific religion. It comprises a 6-point Likert scale ranging from 1 ("strongly agree") to 6 ("strongly disagree"). In this case, the scale consisted of 20 items, with two subscales that assessed religious well-being (RWB) and existential well-being (EWB). The RWB subscale measured relationship with God or a Higher Power, and assessed the relationship with God or a Higher Power with ten items, represented by statements such as "I believe that God or the Higher Power loves me and cares about me". The original scale only references God as a transcendent being. The inclusion of the Higher Power was done to accommodate participants who may not have identified with the word God. On the other hand, the EWB subscale of ten items measured the dimension of wellbeing in relation to being in the world, life purpose, and life satisfaction (Paloutzian & Ellison, 1982).

As with the aforementioned instruments, my choice of the SWB scale was owing to its easy administration, free access, contextual relevance, and versatility. The SWB scale has been used in a wide range of South African studies covering psychological wellbeing and associated constructs, such as ML (Khumalo, Wissing, & Schutte, 2014), spirituality (Wissing, 2006), mental health (Jacobs, Viljoen, & Van der Walt, 2012), and subjective wellbeing (Boshoff, 2012). In comparison, international studies have previously used the SWB scale in ART adherence studies alongside quality-of-coping strategies and life factors in PLWH (Dalmida, Holstad, DiIorio, Holstad, DiIorio & Laderman, 2009; Dalmida, Holstad, DiIorio, Holstad, DiIorio & Laderman, 2011). It has also been used in research around medication adherence and hope in other chronic illnesses, such as kidney failure and cardiovascular diseases (Musavi,

Mohammadian, Mohammadi, Mohammadi Nezhad, & Kiarsi, 2020; Yagoobzadeh, Soleimani, Allen, Chan, & Herth, 2017). My selection of the SWB scale for assessing participants sense of spirituality was also motivated by the scale's good psychometric properties.

- **Psychometric Properties of the SWB Scale**

The SWB scale has reported item reliability of between .86 and .96 (Ellison, 2006). As stated above, the scale has been used in various South African studies, which consistently reported reliability in the range of .79 to .91 (Boshoff, 2012; Jacobs et al., 2012; Khumalo et al., 2014). In the current study, the SWB scale also displayed a good reliability of α .73, which is consistent with previous studies (Boshoff, 2012; Ellison, 2006; Wissing, 2006). Additionally, the SWBS has supported construct validity and criterion validity ($r = .70$; $p \leq .001$) (Abhari, Fisher, Kheiltash & Nojomi, 2018; Ellison, 2006; Sharif Nia, Pahlevan Sharif, Boyle, Yagoobzadeh, Tahmasbi, Rassool et al., 2018).

- **Scoring of the SWBS**

Following the method suggested by Ellison (2006) to score the scale, I added up the numerical values for each response in each of the subscales, namely EWB and RWB. The values for the subscales were then summed to reveal total spiritual well-being. Scores ranged from 20 to 120 on the SWB scale. Higher scores reflected a higher perception of spiritual well-being, while lower scores reflected a lesser perception.

4.12 Questionnaire Testing

The overall questionnaire containing all the measures used in the study was piloted before the main data collection could commence. McMillan and Schumacher (2016) maintain that a pilot study provides the researcher with an opportunity to identify potential procedural challenges, and gauge any modifications to instruments that may be necessary prior to the main data collection (Terr Blanche, Durrheim, & Painter, 2006). Thus, the pilot allowed me to probe whether the questionnaire was understood by the participants, since it was in English, and to

estimate how long it took to complete. It also provided me with the opportunity to forecast the general direction of the research process.

The questionnaire was piloted at one of the clinics included in the final study, namely Diepkloof Provincial Clinic. The questionnaire that was tested included the six main sections used in the final study among 20 conveniently selected participants (13 women and seven men). The pilot sample was approximately 10% of the sample of PLWH who were targeted for this study (Kombo & Tromp, 2009). The selected participants possessed similar characteristics to those who were selected in the final study but were not included in the final data collection. For instance, they were older than 18, able to understand English, and had been undergoing ART treatment at the clinic for more than six months.

The participants were asked to provide constructive feedback and comments regarding their understanding and the clarity of the questions. I also recorded the overall time it took to complete the questionnaire. Generally, participants found the questionnaire easy to understand and follow, except for a few questions on the ACTG questionnaire and the intimate partner violence instrument (VAWI).

From the pilot study, the feedback regarding the questionnaire can be summarised as follows: In the reasons for non-adherence section of the ACTG, questions arose from items 8 and 16 of the medication adherence instrument. On question 8, the original item was “had too many pills to take.” Most participants asked if “pills” included all the other medication they might be taking, such as vitamins, in addition to their ARVs, or medication for comorbid conditions. This prompted me to rephrase the question as “had too many ARV pills to take.” On question 16, the same word replacement was applied, e.g., “had problem taking pills at specified times (with meals, on an empty stomach, etc.)?” which was revised to “had problem taking ARV pills at specified times (with meals, on an empty stomach, etc.)?”

Participants’ feedback on the VAWI was primarily related to the gender bias of the questionnaire. Naturally, participants who had queries on this aspect of the questionnaire were men. The male participants raised concerns that most of the questions (numbers 66 to 72) on the instrument were gender-biased. An example reads, “Over the last 12 months, has he belittled or humiliated you in front of other people?” Most of the male participants expressed concern that the phrasing of the question is suggestive of the idea that only men can be

perpetrators of violence and not women. As a result, I was prompted to rephrase the gendered language on the intimate partner violence instrument.

Based on feedback from participants, the previously mentioned aspects of the ACTG reasons for non-adherence questionnaire and VAWI were considered and subsequently applied in the final questionnaire. Most participants completed the questionnaire within 45–60 minutes. The procedure that was followed for the pilot was also carried out in the main data collection, which is described below.

4.13 Data Collectors and Collection Procedure

I collected data for this study with the help of an assistant, who helped with the administration of the questionnaire. The research assistant was an honours degree graduate in psychology, had a background in survey data collection, and is fluent in two of the languages spoken within the region of the data collection site, namely Sesotho and IsiZulu, to ensure that participants were comfortable responding. However, the questionnaire was administered in English.

To ensure standardisation in the administration of the questionnaire, and to control the data collection process, I provided brief training for the research assistant. This training included the administration of the questionnaire, obtaining consent, and ethical considerations that applied to this research, as well as handling queries related to support resources that participants could have asked about.

The main data were collected in December 2018 and January–February 2020. The reason for this one-year gap is because I took ill at the beginning of 2019 and deteriorated as the year progressed. Consequently, I was on sick leave for approximately six consecutive months after I was diagnosed with a debilitating illness in mid-2019. However, most of the questionnaires (150) were distributed in December 2018, with the exception of 100 that were later distributed in 2020. The questionnaires were administered during eight mornings at the two data collection sites. By invitation from the clinics' management, my research assistant and I visited the clinics to distribute questionnaires on the day of medication refills. This was a regular monthly date on which patients attended the clinics to refill their ARV medication. The clinics both had a section dedicated to ART management and consultations with patients, operated by healthcare

workers and nurses. On a day of medication collection, patients organise themselves into a seated queue and take turns to see the adherence nurse. This is the same process at both clinics.

On the morning of data collection (2018 and 2020), I first contacted the ART adherence contact person at the clinics, who played a managerial role in the clinic's ART programme. Later, the adherence contact person introduced me to the patients who were waiting in a queue for their medication refills. I introduced myself and my research assistant, explaining the purpose of our visit, providing information about the study and the potential pros and cons of participating in it. Informed consent was then obtained from those who indicated an interest in participation. After that, the research assistant and I circulated the questionnaires, which the participants began to complete while waiting in the queue. Most of the participants were able to complete the questionnaire on their own while seated in the queue, with the exception of a few, within the average time of 45 minutes. This was the same at both clinics.

4.14 Data Analysis Techniques

I used the Statistical Package for Social Sciences (SPSS) version 24, manufactured by IBM, to analyse the data (IBM Corp. 2016). Before analysis could begin, questionnaires were assessed for missingness with a frequency distribution of all the variables in the study, which indicated about 4% (9 out of 210) that had missing information on all crucial sections: ART adherence, MLQ, SOC-13, SWBS, and IPV. The 9 questionnaires were completed in the demographics section only; I therefore excluded them from analysis. This is supported by Kline (2016), who opined that a missingness proportion of less than 5% on a dataset is unlikely to make a big difference. After the issue of missing persons was addressed, the analysis plan ensued.

In alignment with non-experimental correlational designs, I leveraged the usefulness of statistical analysis to attend to the research questions and verify hypotheses that I formulated regarding IPV, ART adherence, ML, SOC, and spirituality. Specifically, I used inferential statistics (regression and moderation analyses) to establish the existence of a relationship between IPV and ART adherence and to assess whether ML, SOC, and spirituality had an influence on this association (Gravetter & Forzano, 2016). I used descriptive statistics mainly for summarising the composition of the sample graphically and with a table. Descriptive statistics were useful to understand the demographic context of the sample at the time of the

study (Vetter, 2017). Below, I explain how regression and moderation techniques were used in responding to the three research questions.

4.14.1 Simple Linear Regression (SLR) Analysis

In alignment with the non-experimental correlational design of the study, I used a simple linear regression (SLR) analysis to address research question 1 and hypothesis 1, which sought to establish the association between IPV and ART adherence. Linear regression analysis belongs in the category of regression analysis, which is a statistical technique for ascertaining whether there is a relationship between one continuous dependent variable (i.e., ART adherence) and one categorical independent variable (i.e., IPV = exposure to violence and no exposure) (Gogtay, Deshpande, & Thatte, 2017). Therefore, I deemed an SLR technique suitable to reveal the type of association that exists between IPV and ART adherence.

4.14.2 Multiple Regression Analysis (MLR)

After conducting an SLR, I applied multiple linear regression (MLR) analysis to respond to research question 2 and hypothesis 2, which were concerned with ascertaining which type of IPV (physical, emotional, or sexual) strongly affected adherence to ART-independent variables. Still within the principle of linear regression, MLR analysis is applicable when the dependent variable is continuous (i.e., ART adherence) with the accommodation of two or more categorical independent variables (i.e., physical, emotional, and sexual violence) (Gogtay et al., 2017).

I considered MLR analysis appropriate in responding to the second research question or hypothesis, based on a few reasons. Firstly, MLR allowed me to examine which of the three types of violence (psychological, emotional, and sexual) significantly affected adherence to ART. Secondly, MLR analysis assisted in assessing whether one would be able to predict adherence to ART based on the three types of IPV. Overall, multiple regression analysis was useful to assess patterns of association and the extent of the influence of IPV on ART adherence.

Whitley and Kite (2012) maintain the importance of ensuring that the assumptions of MRL are met prior to utilising the technique as a prerequisite for regression analysis, and to ensure that

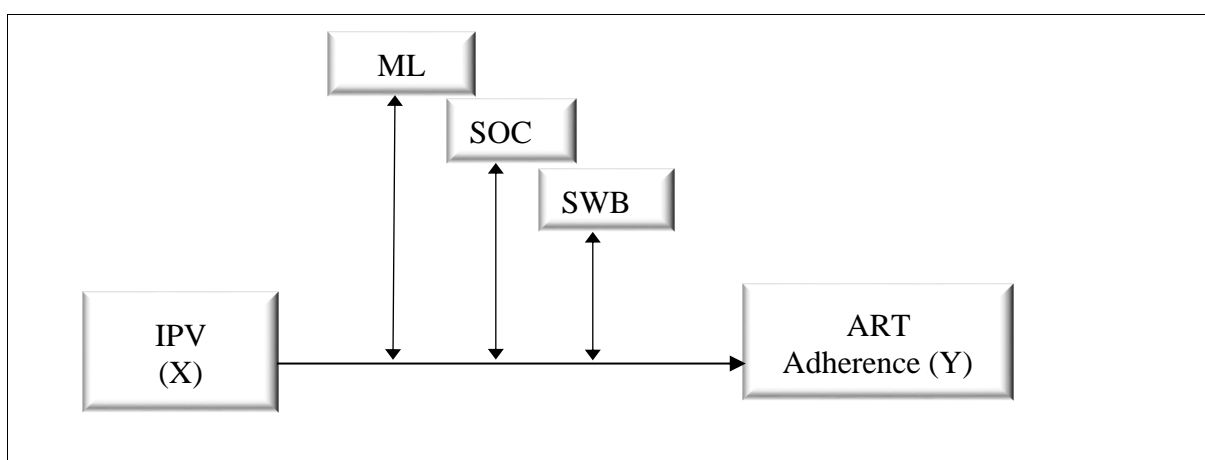
the analysis is accurate. As such, before conducting MRL analysis, I tested the primary assumptions of MLR on normality, linearity, homoscedasticity, and multicollinearity to ensure that these assumptions were not violated. The preliminary results of these assumptions are discussed in Chapter 5, along with the overall findings of the study.

4.14.3 Moderation Analysis

To respond to the third research question and hypothesis (Figure 7): “Do meaning in life (ML), sense of coherence (SOC), and spirituality individually moderate the association between intimate partner violence (IPV) and ART adherence?”, I applied moderation analysis with Process Model 1 by Hayes (2013). Theoretically speaking, a moderator is a variable that is expected to alter the strength and direction of the influence of the independent variable (IV) on the dependent variable (DV) (Wu & Zumbo, 2008). Thus, moderation analysis assesses the process through which the moderator interrupts the influence of the independent variable on the dependent variable (Frey, 2018).

The premise of moderation analysis is drawn from existing theories (MacKinnon, Fairchild, & Fritz, 2007). Following the conceptual framework (explained in Section 3.5), I hypothesised that ML, SOC, and spirituality may moderate the association between IPV and ART adherence among PLWH (see Figure 7).

Figure 7: Moderation of ML, SOC and SWB on IPV and ART adherence



With this in mind, I expected that the interaction between ML, SOC, and SWB would weaken the association between IPV and ART adherence, when the levels of ML, SOC, and SWB were

high. The individual effects of ML, SOC, and SWB were considered significant at $p < .05$ and if the 95% bootstrap confidence intervals (CI) were above zero (Mallinckrodt, Abraham, Wei, & Russell, 2006).

4.15 Ethical Considerations

In line with the requirements of the American Psychological Association (APA) regarding ethical considerations when conducting research with human participants (Goodwin, 2008), I applied the following ethical principles in the study: compliance with professional obligations through acquiring permission, informed consent, voluntary participation, anonymity, confidentiality, no harm guarantee and data protection.

4.15.1 Permissions

Firstly, compliance with professional obligations in protecting participants' welfare was applied by seeking institutional permissions for the study. I obtained permission from the Ethics Committee of the Department of Psychology at the University of South Africa (UNISA) (Annexure A) and the Gauteng Department of Health, which governs the clinics where the study was carried out (Annexure B).

4.15.2 Informed Consent and Voluntary Participation

Informed consent entails providing participants with full information about the research, the risks involved, their roles in the research, and granting their permission for their participation (Gravetter et al., 2016). I obtained informed consent from the participants prior to data collection with a letter (Annexure C, page 300), in which participants were provided with information about the research and told that my study was a requirement for a doctoral degree that I was enrolled in at UNISA. The participants were also made aware that participation was voluntary, that they had a right to withdraw at any point of data collection, and that any refusal to participate would not affect their relationship with the clinic in a negative way. The principle

of voluntary participation ensures that participants understand that their decision to participate should be their personal choice, made without any coercion (Admur & Banker, 2011).

4.15.3 Confidentiality

To adhere to the principle of confidentiality, all information obtained from participants was treated with the utmost confidentiality. Confidentiality entails respect for participants' privacy by not disclosing any personal or identifiable information that can be linked to participant data (Coffelt, 2017). Accordingly, participants were informed through the consent form that their information would be held in the strictest confidence and that it would not be possible to link them with the data they provided, as the questionnaires did not contain any identifiable markers, such as names or identity numbers.

4.15.4 No harm to participants

The principle of no harm relates to the researcher's responsibility to ensure that the welfare of participants is protected, by referring participants who may experience adverse psychological reactions as a result of participation in research (Patton, 2015). Given the sensitivity of the topic of this research, I was aware that some participants may experience uneasiness and discomfort as a result of responding to the questionnaire. In compliance with the principle of no harm, referral options to psychological and other counselling services were communicated in the consent letter (Annexure C, page 300). Furthermore, I reassured patients verbally that I would refer them to counselling services at the nearby local public hospital (Chris Hani Baragwaneth Hospital) if they experienced any discomfort in the process of data collection. Prior arrangements were made with the hospital's psychological team.

4.15.5 Data Protection

The dataset is stored on a device that is password-protected, and hard copies of the completed questionnaires are kept in locked storage in my office. The data will be kept for five years, in alignment with UNISA's data storage policy.

4.16 Summary

This chapter explains the foundations of the post-positivistic paradigm, embedded in a critical realist philosophy, as the basis of the current research. In explaining my rationale for selecting post-positivism, different research paradigms were evaluated. Following this, the broad aim, objectives, research questions, and hypotheses were outlined. Based on the hypotheses, centred on the broad aim of investigating the moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence, a non-experimental, correlational design was utilised.

Aligned with the correlational design, I described the quantitative data collection tools utilised, along with my justification for their selection, and for the use of statistical inferential analysis for answering the research questions. For context, a description of the study's location and population was provided, along with the sampling techniques followed to estimate the sample size for this study. The chapter ended with a description of the ethical considerations implemented for the protection and welfare of the research participants. The following chapter presents results from the statistical analysis.

Chapter 5: Results on ART Adherence, Intimate Partner Violence and Moderators of ART Adherence

The study sought to investigate the moderating influences of meaning in life (ML), sense of coherence (SOC), and spirituality on the association between intimate partner violence (IPV) and antiretroviral therapy (ART) adherence among adults living with HIV in Johannesburg. This chapter presents the answers to the research questions and hypotheses that were organised around this aim. I begin by presenting the participants' response rate to the questionnaires that were distributed. After that, for the purpose of establishing context, I provide an overview of the sample composition according to demographic characteristics and HIV treatment adherence profile, along with a description of ART adherence scores, reasons for non-adherence, and occurrences of IPV.

In addition, I provide an overview of participants' scores on the MLQ, SOC, and SWBS used to gauge spirituality, and a description of statistical tests conducted to check whether the data meet the distributional assumptions for the various analyses undertaken. Finally, I present the findings from the statistical analysis that was used to answer the three research questions and hypotheses regarding the association between IPV and ART adherence, and the influences of MLQ, SOC, and SWB on this association.

5.1 Participants' Response Rate

Two hundred and fifty questionnaires were administered. Of these, 31 questionnaires were not returned, giving the study an 88% response rate. Out of the 219 questionnaires that were returned, 10 were returned blank, while 9 had missing information. Hence, findings were drawn from the 200 (80%) returned and completed questionnaires.

5.2 Demographic Characteristics and HIV Treatment Adherence Profile

The demographic characteristics of the 200 participants are presented in Table 4. Of the 200 participants who responded to the questionnaire, most were female ($n = 134$, 67%), between the ages of 22 and 50 (91%), with 50% between the ages of 31 and 40. Participants' mean years living with HIV were 3 years ($SD = 1.80$), with most (41%) reporting having lived with HIV for a period of 3 to 4 years. Regarding ART treatment duration, the mean number of years

participants had been on ART treatment was 2 years (SD = 1.41), with most (45%) having been on ART treatment for 1 to 2 years.

Table 4
Characteristics of Study Participants (n = 200)

Variable	Frequency	Percent	\bar{x}	SD
Sex				
Male	66	33.0		
Female	134	67.0		
Age			34.90	7.90
19 - 21 years	8	4.0		
22 - 30 years	48	24.5		
31 - 40 years	99	49.5		
41 - 50 years	35	17.5		
51+ years	10	5.0		
Years living with HIV			3.49	1.80
1-2 years	68	34.0		
3-4 years	81	40.5		
+5 years	51	25.5		
Duration of ART Treatment			2.48	1.41
< 2 years	89	44.5		
< 4 years	71	35.5		
≥ 5 years	40	20.0		

5.2.1 ART Adherence

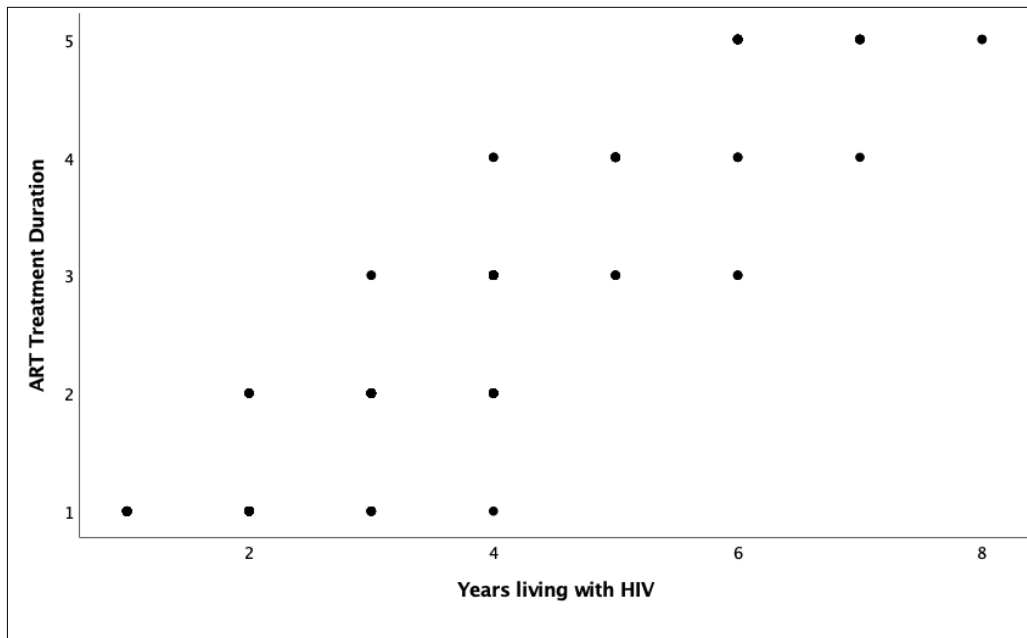
On average, participants scored low on the Aids Clinical Trials Group (ACTG) questionnaire that assessed adherence to ART. Results revealed a mean adherence percentage of 79% (SD = 23.70). In terms of range, the minimum adherence score on the ACTG was 25%, with a maximum of 100%.

5.2.2 Comparison between Years living with HIV and Treatment Duration

I also performed a scatter plot to examine the relationship between ART treatment duration and the number of years living with HIV (YLHIV). As depicted in Figure 8 below, the results revealed a positive correlation between YLHIV and treatment duration. The results show that

an increase in the number of years living with HIV in turn increases the number of years in treatment (ART treatment duration) by 0.7 years (95% CI: 0.68 years to 0.72 years, $p < .001$).

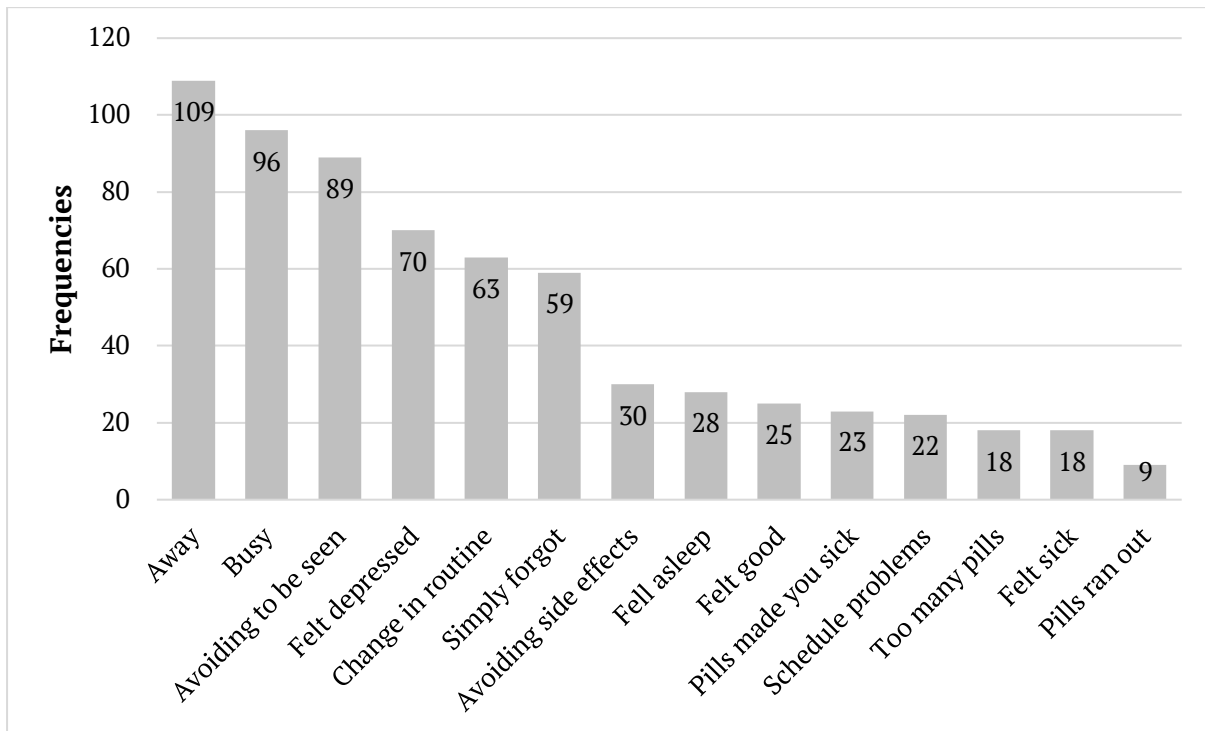
Figure 8: *Years living with HIV and treatment duration*



5.2.3 Reasons for Non-Adherence

I analysed participants' reasons for non-adherence and have summarised frequencies in Figure 9 below. Participants were asked how often their medications were missed for each of the 14 reasons for non-adherence listed within the past month. Participants' most common reasons for non-adherence are presented in the graph below. Participants were allowed to cite more than one reason.

Figure 9: *Reasons for non-adherence (n= 109)*



Note: multiple reasons could have been mentioned by a participant.

Overall, results (n = 109) in Figure 9 revealed that the most common reasons reported by participants for skipping medication were being away from home (100%), busyness (88%), avoiding being seen taking ARVs (82%), feelings of depression (64%), and changes in routine (55%).

5.2.4 Intimate Partner Violence (IPV)

Descriptive statistics for IPV and type of violence are presented in Table 5 below.

Table 5:

Number of participants reporting IPV (n = 102)

Variable	Frequency	Percentage
No exposure to IPV	98	49.0
Exposure to IPV	102	51.0
Exposure to IPV by sex		
Females exposed to IPV	68	66.7
Males exposed to IPV	34	33.3
Type of IPV exposure (n=102)*		
Physical	50	49.0
Emotional	91	89.2
Sexual	45	44.1

* Note that the percentages are among both males and females with exposure to IPV

Results show that half of the participants (51%, n = 102) reported being exposed to IPV. Of those who reported exposure, the results revealed that more females (67%) reported exposure to IPV than males. In terms of exposure to specific types of IPV, among those reporting some exposure to IPV, most (89%) reported being exposed to emotional violence, followed by physical violence (49%). Sexual violence was the least reported type of IPV (44%).

5.2.5 Meaning in Life Questionnaire (MLQ)

Participants' overall score distribution on MLQ is summarised in Table 6

Table 6

Meaning in life questionnaire descriptive statistics

	N	Min.	Max.	\bar{x}	SD
Meaning in life questionnaire (MLQ)	200	20	70	44.90	13.44
MLQ Subscales					
MLQ-Search for meaning in life	200	10	35	21.84	7.99
MLQ-Presence of meaning in life	200	10	35	22.67	8.99

The results show that scores on the MLQ ranged between 20 and 70. Participants' scores on MLQ leaned towards a high ML ($\bar{x} = 44.90$, $SD = 13.44$). In terms of the MLQ subscales, participants' mean score on the search for meaning in life subscale (MLQ-S) and participants' mean score for the presence of meaning in life subscale (MLQ-P), where both scored towards the higher end of the meaning in life subscales ($\bar{x} = 21.84$ and $\bar{x} = 22.67$, respectively).

5.2.6 Sense of Coherence (SOC)

Table 7 presents the participants' SOC scores, overall and by subscales.

Table 7:

Sense of coherence (SOC-13) descriptive statistics

	N	Min.	Max.	\bar{x}	SD
Sense of coherence (SOC-13) questionnaire	200	30	89	51.49	15.80
Comprehensibility	200	10	33	17.33	6.07
Manageability	200	10	28	17.04	5.40
Meaningfulness	200	10	28	17.08	5.36

Note: SOC-13 subscales = comprehensibility, manageability, and meaningfulness

Overall, the results revealed that participants' scores on the SOC-13 questionnaire were between 30 and 89. Results also showed that participants' scores leaned towards higher SOC, with a mean score of 51.49 and a standard deviation of 15.80.

5.2.7 Spiritual Well-being Scale (SWBS)

Regarding spirituality, participants' score distribution is depicted in Table 8, below.

Table 8:

Spiritual well-being scale (SWBS) descriptive statistics

	N	Min.	Max.	\bar{x}	SD
Spiritual well-being scale (SWBS)	200	20	109	67.41	17.27
Religious well-being (RWB) subscale	200	10	55	33.92	8.77
Existential well-being (EWB) subscale	200	10	54	33.48	8.94

Results showed that participants' scores on the SWBS leaned towards the higher end ($\bar{x} = 67.41$, $SD = 17.27$), with the lowest score at 20 and the highest at 109. In terms of the SWB subscales, results revealed that participants' mean score on the RWB and EWB subscales also sat towards higher scores respectively ($\bar{x} = 33.92$ and $\bar{x} = 33.48$).

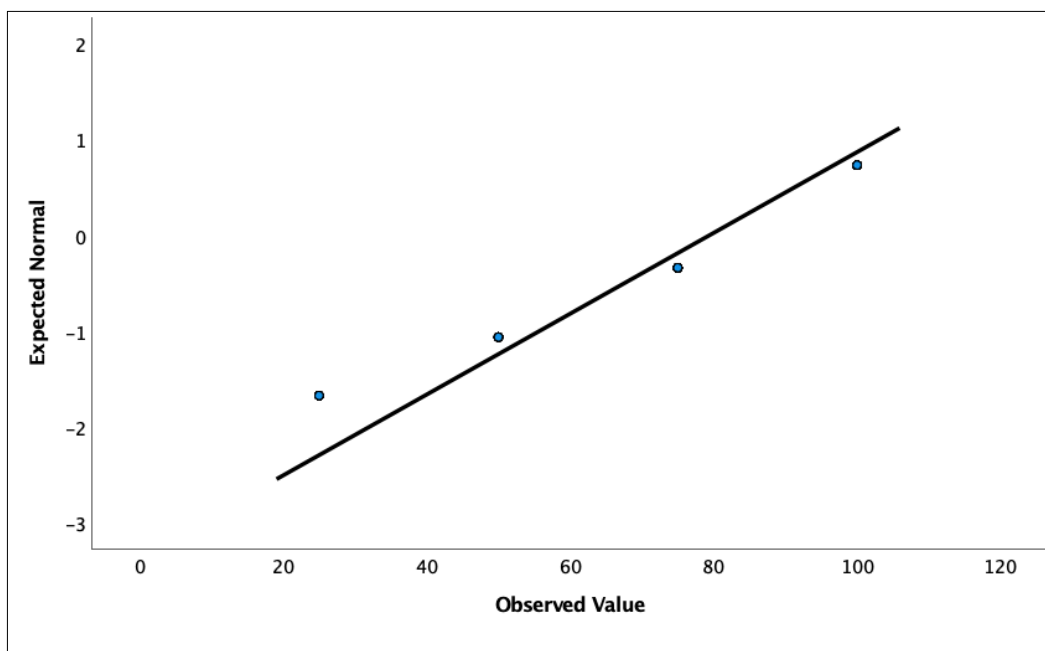
5.3 Testing Assumptions for Normality

As mentioned in Chapter 4, it is crucial and a prerequisite to check that a set of assumptions are met by the data to ascertain the fitness of the data for the selected conditions of the analysis plan. In this case, regression and moderation analyses constituted the planned analyses to answer the main research questions. As supported by Field (2009; 2018), when parametric tests such as regression are performed on non-parametric data, the results are likely to produce misleading findings. I conducted normality, homoscedasticity, and multicollinearity tests.

5.3.1 Normality of Data Distribution

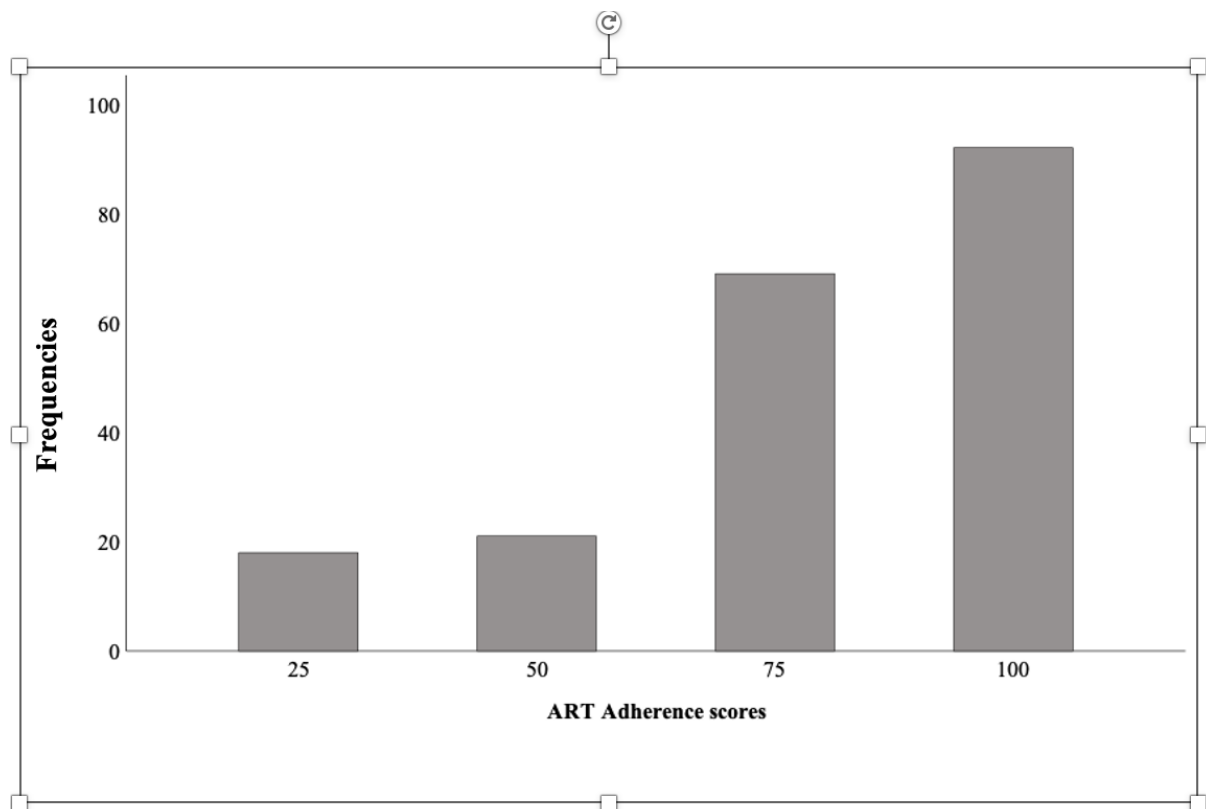
Firstly, I checked for a normal distribution of ART adherence data with a few tests, namely a Q-Q plot and a bar chart. A bar chart was used to depict adherence because, though adherence is thought of as a continuous variable from 0 to 100%, in this study it was measured as an ordinal 4 value variable (e.g., 25%, 50%, 75%, and 100%). Then I assessed measures of skewness and kurtosis. These tests were selected on the basis that they are the most commonly used to establish the normality of data for parametric statistical analysis (Demir, Saatçioğlu, & İmrol, 2016; Miot, 2017; Orcan, 2020; Park, 2008; Razali & Wah, 2011).

Figure 10: *Q-Q Plot: ART adherence score distribution*



The Q-Q plot presented in Figure 10 showed a relatively normal distribution of ART adherence scores, as indicated by the distribution line depicting all scores of ART adherence. The general rule of thumb here for the best fit of data is that the points should be as close to the regression line as possible. Therefore, as shown in Figure 10 above, the assumption of normality was met.

Figure 11: Bar Chart: ART adherence scores



After assessing the Q-Q plot, I assessed the distribution of adherence scores as the dependent variable, using a bar chart. As depicted in Figure 11, the distribution of adherence scores was skewed to the right, showing that most participants scored between 75 and 100 on ART adherence, thus indicating that the distribution of the data was not normal (Field, 2009). Seeing that the bar chart did not indicate a normal distribution, I conducted further skewness and kurtosis tests.

5.3.2 Skewness and Kurtosis

I assessed the tests of skewness (symmetry of the distribution) and kurtosis (peakedness of the distribution of the data) to ascertain the distribution of ART adherence scores shown in Table 9 below (Hair, Black, Babin, & Anderson, 2014; Kline, 2016). According to Kline (2016), skewness with absolute values larger than 3 is considered highly skewed, thereby indicating a non-normal distribution. On the other hand, kurtosis values with absolute values greater than 10 indicate a peaked distribution, and values larger than 20 suggest a more serious or severe

problem. The results show that the distribution of ART adherence scores was within acceptable levels of skewness (-1.00) and kurtosis (0.06), respectively, as suggested by Kline (2016).

Table 9:

Skewness and kurtosis statistics

	N	\bar{x}	SD	Skewness	SE	Kurtosis	SE
ART							
Adherence	200	79.37	23.70	-1.001	0.172	0.066	0.342

5.3.3 Homogeneity of Variance

Homogeneity of variance, which is also called homoscedasticity, speaks to the assumption of equal variability of the dependent variable at different values of the independent variable (Tabachnick & Fidell, 2007). In this case, homoscedasticity refers to the assumption that the spread or variance of ART adherence scores was roughly equal among IPV-exposed and IPV-non-exposed participants. I used Levene’s test to check for equal variance (see Table 10 below). According to Field (2009), the assumption of equal variance is met if the Levene’s test is not significant ($p >.05$). On the other hand, a significant p value ($p \leq .05$) implies that the variance of the scores is not equal, indicating a violation of the assumption.

Table 10:

Test of homogeneity of variance

		Levene’s Statistic	df1	df2	P
ART	Based on Mean	1.947	1	198	0.164
Adherence					

Results from Levene’s test, presented in Table 10 suggest that the variances of ART adherence mean scores were relatively equal among IPV-exposed and IPV-non-exposed participants [F (1, 198) = 1.947, p =.164]. The assumption of homoscedasticity was also met.

5.3.4 Multi-collinearity

Multi-collinearity simply refers to a situation where predictors or independent variables (especially when there are multiple) are correlated with each other (Jensen & Ramirez, 2013). This assumption is deemed important to meet because, when variables are correlated among themselves (multi-collinearity), this may erroneously increase or decrease the coefficients of the variables of interest in the regression model (O’Brien, 2007). The simplest way to examine multi-collinearity is by observing the tolerance and variance inflation factor (VIF) in the regression model. According to Jensen and Ramirez (2013), tolerance and VIF assess how much the variance of an estimated regression coefficient increases if independent variables are correlated.

Table 11:

Collinearity statistics

Model 1	Collinearity statistics	
	Tolerance	VIF
Intimate partner violence (IPV)	1.000	1.000

When assessing collinearity, O’Brien (2007) suggested that a tolerance value less than 0.1 indicates multi-collinearity, while a tolerance greater than 0.1 or 0.2 is deemed acceptable. However, VIF between 5 and 10 indicates a high likelihood of collinearity, which could be problematic (O’Brien, 2007). I inspected multi-collinearity (between ART adherence and IPV) using collinearity coefficients such as tolerance and VIF statistics reported in a linear regression

(see Table 11 above). As depicted in Table 11 the results revealed acceptable tolerance and VIF values of ≤ 1.00 , indicating that the assumption of multi-collinearity was met.

5.4 Simple Linear Regression (SLR) Analysis

After the conditions of linear regression were met, as described in the previous section, an SLR was conducted to ascertain the association between IPV and ART adherence, as related to research question 1:

RQ1: What is the association between intimate partner violence and ART adherence?

The model summary for IPV and ART adherence is captured in Table 12 under Model 1. ART adherence scores were entered as a dependent variable, while IPV (exposure and non-exposure) was entered as an independent variable. As indicated in Table 9, the overall model for IPV accounted for a small variance of 14% in ART adherence [$F(1, 198) = 33.243, p < .001$].

After ascertaining the model significance of IPV on ART adherence, I continued to assess the individual influence of IPV on ART adherence. As noted in Table 12, the results revealed that exposure to IPV had a strongly negative association with ART adherence (18% reduction), despite accounting for a small (14%) proportion of its variance. Results identified that individuals who reported exposure to IPV reported 18% lower adherence. Moreover, not only did IPV have a negative influence on ART, but this influence was significant ($p < .001$).

Table 12*Models of ART adherence –Beta coefficients*

Variables	Model #1	Model #2	Model #3	Model #4
	Research question #1 (unadjusted)	Research question #2	Demographic variables, Treatment profile and ART adherence (adjusted)	Exploring confounding variables
	N=200 Model R ² = 0.14, SE 21.98, p < 0.001	N =200 Model adjusted R ² = 0.45, SE 17.50, p < 0.001	N =200 Model adjusted R ² = 0.37, SE 18.72, p < 0.001	N = 200 Model adjusted R ² = 0.45, SE 17.69, p < 0.001
Exposure to IPV	-17.92 [-24.06, -11.79]	–	–	-12.61 [-17.72, -7.64]
Exposure to physical IPV	–	-9.54 [-15.75, -3.34]	–	–
Exposure to emotional IPV	–	-12.53 [-18.81, -6.25]	–	–
Exposure to sexual IPV	–	-29.71 [-37.94, -21.47]	–	–
Sex (ref. = female)	–	–	-6.98 [-12.47, -1.27]	-4.91 [-10.34, -0.35]
Age (continuous)	–	–	0.58 [0.03, 1.12]	0.55 [0.57, 1.05]
Years living with HIV (continuous)	–	–	4.18 [0.16, 8.19]	4.23 [0.47, 8.03]
ART treatment duration (continuous)	–	–	2.01 [-2.92, 6.95]	1.24 [-3.41, 5.92]

5.5 Multiple Linear Regression (MLR)

I applied MLR to ascertain which type of violence (physical IPV, emotional IPV, and sexual IPV) strongly affected adherence to ART, as related to the second research question. The model summary showing the association between type of IPV (physical, emotional, and sexual) and ART adherence is captured in Table 12 under Model 2.

RQ2: Which type of IPV, namely physical, emotional, and sexual violence, strongly affects adherence to ART?

Overall, the model depicting the association between type of IPV and ART adherence was significant and accounted for 45% of the variance in ART adherence [$F(3, 196) = 56.336, p < .001$]. After the model significance was identified, I inspected the individual effects of the three types of IPV (physical, emotional, and sexual) on ART adherence. In order to assess and compare the effect of each type of violence, I inspected standardised regression coefficients (β). In addition, the p value was also observed to assess the significance of the influence of each type of violence on ART adherence. The results are expressed in Table 13 below.

Table 13:

Type of IPV and ART adherence

Variable	B	SE	95% CI		P
			LL	UL	
Exposure to physical IPV	-9.54	3.14	-15.75	-3.34	.003
Exposure to emotional IPV	-12.53	3.18	-18.81	-6.25	.001
Exposure to sexual IPV	-29.71	4.17	-37.94	-21.47	.001

5.5.1 Physical Violence

The results summarised in Table 13 above indicate that all three types of violence (physical IPV, emotional IPV, and sexual IPV) have a negative influence on ART adherence. However, the influence of sexual IPV on ART adherence was almost three times higher ($\beta = -29.7$) than physical IPV, and two times higher than emotional IPV ($\beta = -12.5$). The influence of physical

violence was $\beta = -9.5$ ($p < .001$), thus indicating that the presence of physical violence was associated with a 10% drop in ART adherence.

5.5.2 Emotional Violence

Similar to physical violence, emotional violence also had a negative influence on ART adherence (Table 13). Results showed that the presence of emotional violence was negatively associated, with a 13% reduction in adherence ($p < .001$). Moreover, the influence of emotional violence on ART adherence was slightly higher compared to physical violence.

5.5.3 Sexual Violence

Of the three types of violence, results showed that sexual violence had the most pronounced negative influence on ART adherence (see Table 13). The results revealed that the presence of sexual violence was associated with a significant 30% drop in ART adherence ($\beta = -29.7$, $p < .001$). Compared to physical and emotional violence, results showed that the influence of sexual violence on ART adherence was significantly higher ($p < .001$).

In summary, the results showed that all types of IPV have a strong negative influence on ART adherence. However, the influence of sexual violence was significantly higher ($\beta = -29.7$), followed by emotional violence ($\beta = -12.5$), while physical violence showed the least influence ($\beta = -9.5$) on ART adherence.

5.6 Supplementary Analysis on Demographic Variables and ART Adherence

Seeing that the overall effect of exposure to IPV on ART adherence accounted for a small variance of 14%, I conducted additional analysis of the demographic variables. This was done to compare how much variance demographic variables accounted for in ART adherence. Therefore, sex, age, years living with HIV, and ART treatment duration were simultaneously entered into the MLR model to ascertain their value (if any) in explaining ART adherence.

The results revealed that when sex, age, years living with HIV and treatment duration were included in the model, the demographic factors significantly increased model accuracy (see Table 12). For example, the inclusion of demographic factors accounted for 37% of ART

adherence [$F(4, 195) = 31.004, p = .001, R^2 = .376$], versus 14% when IPV was entered into the model alone.

5.6.1 Sex, Age, Treatment Duration and Years living with HIV

After establishing the model variance and significance of the demographic variables on ART adherence, I continued to assess their influence individually. This is indicated in Table 14, below:

Table 14:

Demographic factors and ART adherence

Variable	B	SE	95% CI		P
			LL	UL	
Sex ref. = female	-6.98	2.84	-12.47	-1.27	.016
Age	0.58	.276	0.03	1.12	.037
Years living with HIV	4.18	2.03	0.16	8.19	.041
Duration of treatment on ART	2.01	2.50	-2.92	6.95	.421

Sex was coded as 0 = female and 1 = male, while age, years living with HIV, and ART treatment duration were entered as continuous variables in the model. Results revealed that sex had a significant influence (7% reduction) on ART adherence ($p = .016$). Additionally, age was significantly associated with ART adherence (increase of 0.6%, $\beta = .58, p = .037$). Lastly, the number of years living with HIV was also significantly associated with a 4% improvement in ART adherence ($p = .041$). On the other hand, ART treatment duration had a substantial influence of 2% on ART adherence but was not significant.

In essence, the results confirmed that, except for ART treatment duration, sex, age, and years living with HIV were significantly associated with ART adherence. Sex (particularly among males) was associated with a 7% drop in ART adherence ($\beta = -6.98$), while age was associated with a 0.6% increase in adherence ($\beta = 0.58$). The number of years an individual had been living with HIV was also significantly associated with a 4% improvement in ART adherence.

In addition, results demonstrated that the number of years living with HIV had a higher influence on ART adherence than age, sex, or ART treatment duration.

I then re-entered IPV scores into the multiple regression model, together with demographic factors, to check whether they still had an influence on ART adherence. Results showed that the influence of IPV on ART adherence remained significant (see Model 4 in Table 12). However, the magnitude of confounding demographic factors was reduced from the crude effect of -17.9 to an adjusted effect of -12.6. Adjusting for demographic variables, results indicated the presence of IPV was associated with a 13% drop in ART adherence (95% CI: -17.72% to -7.64%, $p < .001$).

5.7 Moderation Analysis

The third and final research question sought to examine whether ML, SOC, and spirituality individually moderated the association between IPV and ART adherence. I report on the moderation analysis that was conducted to address this question.

RQ3: Do ML, SOC and spirituality individually moderate the association between IPV and ART adherence?

Specifically, which moderator (ML, SOC, spirituality) strongly affects the association between IPV and ART adherence?

5.7.1 Moderation of ML between IPV and ART Adherence

To ascertain whether ML, SOC, and spirituality moderated the association between IPV and ART adherence, I used moderation analysis with model 1 of Hayes' PROCESS macro (Hayes, 2013). The dependent variable was entered as ART adherence, and the independent variable for the analysis was IPV. The moderators that were examined were ML, SOC, and spirituality. The moderators were entered into the model one at a time as continuous variables. According to Hayes and Rockwood (2017), moderation is considered successful if a proposed moderator significantly interacts or interferes with the effects of X on Y by assessing the regression coefficients (β) and parameters of the 95% confidence intervals. The results of the moderation analysis are presented further below.

Table 15:*Model summary MLQ, SOC and SWB: Moderation analysis (n = 200)*

Variables	R ²	Df	F	P
Model #1				
Meaning in life	0.37	3 (196)	38.943	0.001
Model #2				
Sense of coherence	0.30	3(196)	28.941	0.001
Model #3				
Spirituality	0.54	3 (196)	77.669	0.001

As noted in Table 15, the overall model for ML as a moderator accounted for 37% of the variance in participants' ART adherence. The results also showed that the model was significant [F (3, 196) = 38.942, $p < .001$, $R^2 = .37$]. After I had established that the model for ML as moderator was significant, I continued to assess the interaction of ML on IPV and ART adherence, which is presented in Table 16:

Table 16*Interaction of ML on IPV and ART adherence: Moderation output*

	B	SE	T	P	95% CI	
					LL	UL
IPV→ART Adherence	-7.90	2.92	-2.69	0.007	-13.67	-2.12
ML→ART Adherence	0.72	.147	4.89	0.001	0.43	1.01
IPV*ML → ART Adherence (Int_1)	0.39	.219	1.82	0.069	-0.03	0.83

As depicted in Table 16 the results of the moderation analysis revealed that the presence of IPV was associated with an 8% reduction in ART adherence ($\beta = -7.90$, $p = 0.007$), while ML was significantly associated with a 0.7% improvement in ART adherence ($\beta = 0.72$, $p < .001$). To assess for moderation, I inspected the interaction term (Int_1) of ML on IPV and ART adherence. Results revealed that the interaction between ML, IPV, and ART adherence was non-significant ($p > .05$), though the influence of ML as a moderator was arguably considerable ($\beta = 0.39$, 95% CI = -0.03% to 0.83%). Thus, results identified that, even though ML did not

significantly moderate the association between IPV and ART adherence, its influence of 0.4% was considerable, based on Hayes and Rockwood’s (2017) guidelines.

5.7.2 Moderation of SOC between IPV and ART Adherence

As summarised in Table 15 earlier, the overall model for SOC as a moderator accounted for 30% of variance in participants’ ART adherence. Furthermore, the results indicated that the model was significant [F (3, 196) = 28.941, $p < .001$, $R^2 = .30$]. Upon establishing the model variance and significance of SOC as a moderator, I assessed the interaction term between SOC, IPV, and ART. The results of the interaction output are summarised in Table 17 below.

Table 17:

Interaction of SOC on IPV and ART: Moderation output

	B	SE	T	P	95% CI	
					LL	UL
IPV→ART Adherence	-6.46	3.28	-1.96	0.050	-12.94	0.01
SOC→ART Adherence	0.45	0.12	3.57	0.001	0.20	0.71
IPV*SOC → ART Adherence (Int_2)	0.53	0.21	2.50	0.013	0.11	0.96

As depicted in Table 17 the results revealed that the presence of IPV had a negative association, with a 6% drop in ART adherence ($\beta = -6.46$, $p = .050$). Moreover, SOC was positively associated with ART adherence (0.5% improvement, $\beta = 0.45$, $p < .001$).

Subsequently, I observed the interaction term of SOC (Int_2) on the association between IPV and ART, which showed that the interaction of SOC between IPV and ART was significant ($p = .013$), with an influence of 0.5% ($\beta = 0.53$, 95% CI = 0.11% to 0.96%).

After identifying that SOC was a significant moderator in the association between IPV and ART adherence, I further assessed the influence of this moderation with plots derived from Model 1 results. The plots assisted in examining the conditional influence of IPV on ART adherence at different levels of SOC (low, average and high). In addition, they provided a

visual graph to understand at which values of the moderator (SOC) the influence was more pronounced (see Figure 12 below).

Figure 12: Moderation plot: Different levels of SOC, IPV and ART adherence

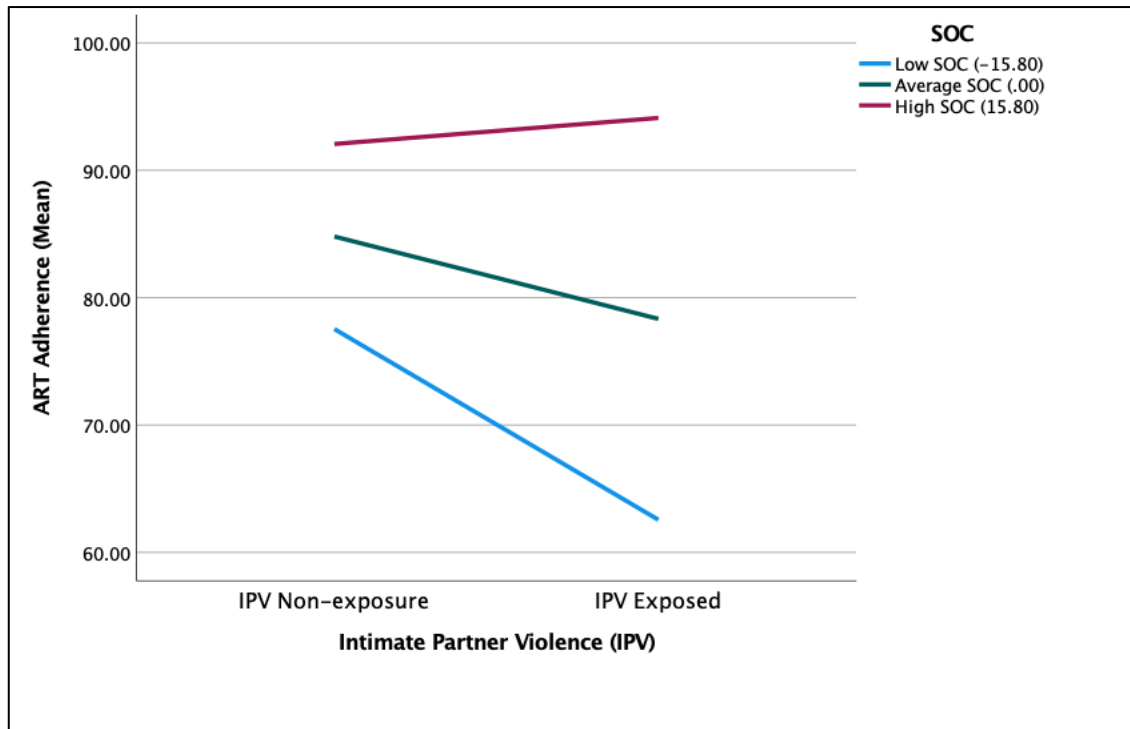


Figure 12 shows that, at low levels of SOC (from -15.80 SD below the mean), the presence of IPV was associated with a 15% drop in ART adherence. On the other hand, at average levels of SOC, exposure to IPV was also associated with a drop of 6% in adherence. When compared to low and average SOC, high levels of SOC (from 15.80 SD above the mean) were associated with a 2% improvement in adherence. The results identified that SOC was a substantial moderator in the association between IPV and ART adherence.

5.7.3 Moderation of Spirituality between IPV and ART Adherence

The overall model for spirituality as a moderator, assessed with the SWB scale, accounted for 54% of the variance in participants' ART adherence (see Table 15 page 142). The results showed that the model was significant [$F(3, 196) = 77.669, p < .001, R^2 = .54$]. As I did with

SOC, after ascertaining the model variance and significance of spirituality as a moderator, I proceeded to inspect the interaction term between spirituality, IPV, and ART adherence.

Table 18:

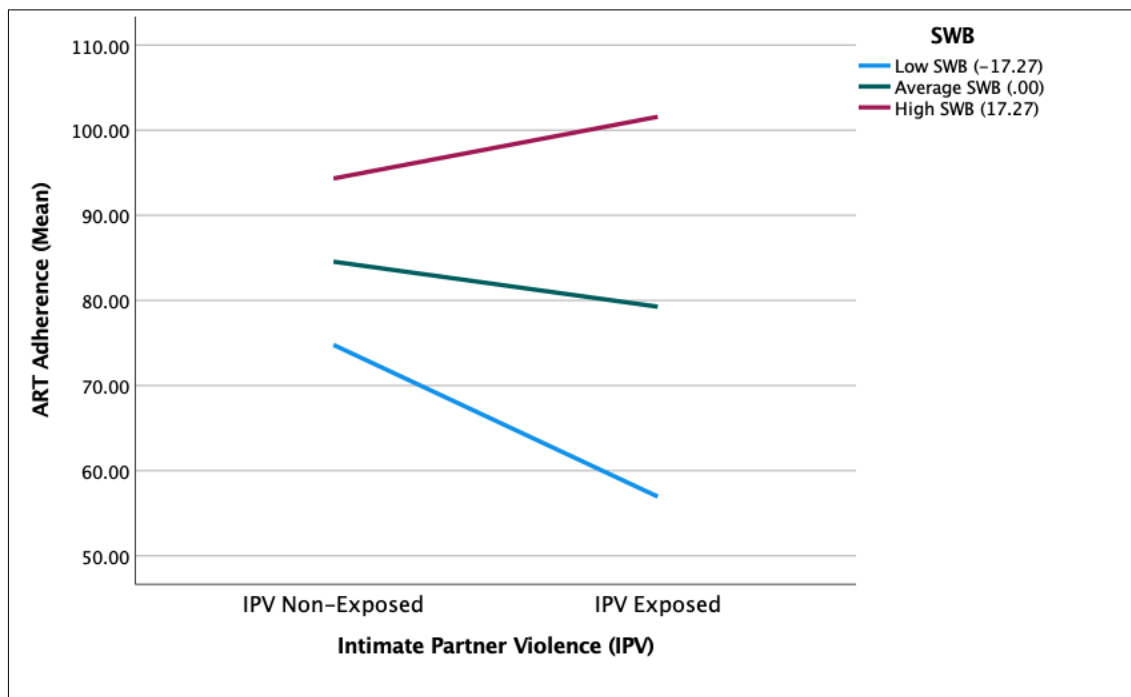
Interaction moderation of spirituality on IPV and ART adherence

	B	SE	T	P	95% CI	
					LL	UL
IPV→ART Adherence	-5.28	2.49	-2.12	0.035	-10.20	-0.37
SWB→ART Adherence	0.56	0.09	5.93	0.001	0.37	0.75
IPV*SWB→ ART Adherence (Int_3)	0.72	0.14	4.96	0.001	0.43	1.01

The results, summarised in Table 18 above, showed that the presence of IPV was negatively associated with ART adherence (5% reduction, $\beta = -5.28$, $p = .035$). Moreover, spirituality (SWB) significantly improved adherence by 0.6% ($p < .001$). Afterwards, I examined the interaction of spirituality with the association between IPV and ART. The results revealed that the interaction of spirituality (SWB) with IPV and ART was significant, with an influence of 0.7% ($\beta = 0.72$, 95% CI = 0.43% to 1.01%, $p < .001$).

In addition, the conditional influence of IPV on ART adherence at different levels of spirituality (low, average and high) was summarised with plots (see Figure 13 below). Results revealed that, at low levels of spiritual well-being (from -17.27 SD below the mean), the presence of IPV had significant reductions of 17% in ART adherence ($\beta = -17.80$). At average levels of spirituality, the influence of IPV on ART adherence was significantly negative by 5% ($\beta = -5.24$). When compared to low and average spirituality, high levels of spirituality (from 17.27 above the mean) had substantial 7% improvements in ART adherence ($\beta = 7.24$). Overall, the results revealed that spirituality was a positive and significant moderator in the association between IVP and ART adherence.

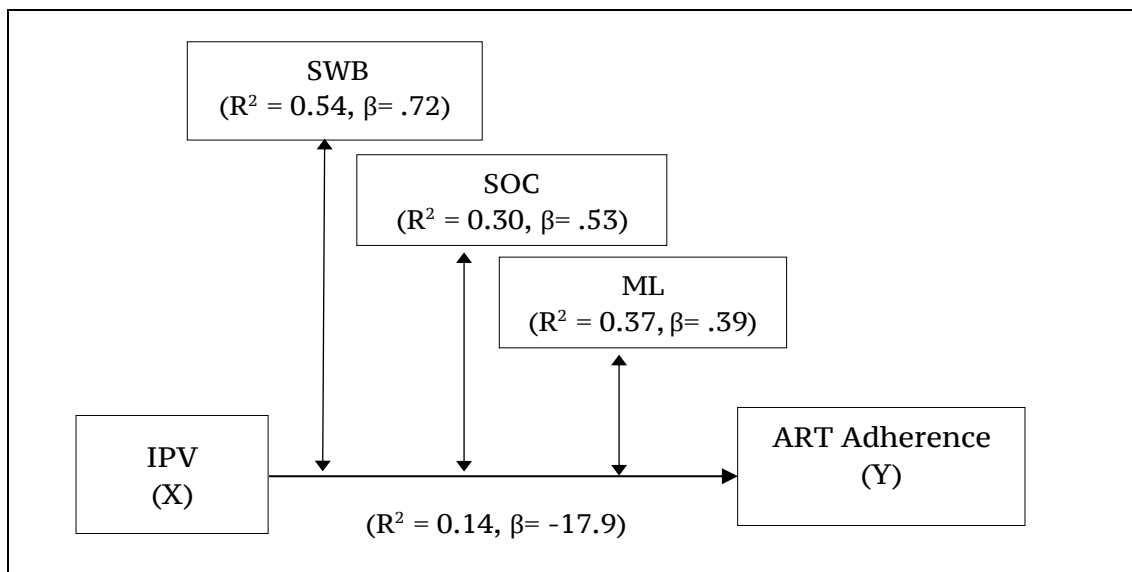
Figure 13: Moderation plot: Different levels of SWB, IPV and ART adherence



5.7.4 Ascertaining the Strongest Moderator

RQ3.1: Which moderator (ML, SOC or spirituality) strongly affects the association between IPV and ART adherence?

Figure 14: Which moderator (ML, SOC or spirituality) strongly affects IPV and ART adherence?



To ascertain which among ML, SOC, or spirituality most strongly moderated the influence of IPV on ART adherence, I assessed the value of β (regression coefficients) of the interaction term and the R square change within the models to make the comparison. Thus, three model interactions were observed. Results, as shown in Figure 14, identified that spirituality (SWB) had a relatively stronger interaction ($\beta = 0.72$, $R^2 = 0.54$) with IPV and ART adherence, followed by SOC ($\beta = 0.52$, $R^2 = 0.30$). On the other hand, ML had the least influence ($\beta = 0.39$, $R^2 = 0.37$) on the association between IPV and ART adherence. Overall, results identified that, compared to ML and SOC, spirituality (SWB) strongly moderated the influence of IPV on ART adherence.

5.8 Study Hypotheses

Since hypotheses were formulated for each of the research questions presented in the previous section, in this section, I provide a summary of findings in relation to these three hypotheses.

This focuses on the direction of the association between IPV and ART adherence and ML, SOC, and spirituality, as hypothesised in Chapter 4.

5.8.1 Hypothesis 1

H₁ (1): Intimate partner violence (IPV) is negatively associated with ART adherence

Hypothesis 1 was explored with an SLR, as presented earlier. Results identified that the presence of IPV has a negative association with ART adherence, which was indicated by a reduction of 18% in adherence ($\beta = -17.93, p < .001$). The results indicate that people who were exposed to IPV were less likely to adhere to ART. Thus, hypothesis 1 was supported.

5.8.2 Hypothesis 2

H₁ (2): There is a difference in the influence of physical, emotional, and sexual IPV violence on ART adherence

Hypothesis 2 was answered by the results of the multiple regression analysis, also presented earlier in this chapter. Of the three types of IPV (physical, emotional, and sexual), results identified that all types of IPV have a negative influence on adherence to ART. However, sexual IPV had the most substantial influence, with a 30% reduction in ART adherence. ($\beta = -29.71, p < .001$), followed by emotional IPV ($\beta = -12.53, p < .001$). Comparably, physical IPV had the least substantial influence on ART adherence ($\beta = -9.54, p < .001$). The results suggest that, in general, all types of IPV have a negative influence on adherence to ART. However, the impact of sexual IPV is comparably higher (30% reduction) than emotional and physical violence.

5.8.3 Hypothesis 3

H₁ (3): ML, SOC and spirituality does individually moderate the association between IPV and ART adherence.

Hypothesis 3 was explored with moderation analysis, and the results are summarised in Table 19 below. Moderation was ascertained by observing the interaction of the moderators (ML,

SOC, and SWB) on the association between IPV and ART adherence. As previously mentioned, this was done by assessing the regression coefficients (β) of the interaction term and the 95% CI to compare the interaction size of each moderator. Moderation was deemed successful if β was different from zero and the 95% CI parameters did not contain zero for each moderator.

Table 19:

Moderation of MLQ, SOC, SWB on IPV and ART adherence

Hypothesis	Hypothesised relationship	B	SE	95% CI		P
				LL	UL	
H ₁ (3)	IPV → ML → ART Adherence	0.39	0.21	-0.03	0.83	0.069
	IPV → SOC → ART Adherence	0.53**	0.21	0.11	0.96	0.013
	IPV → SWB → ART Adherence	0.72***	0.14	0.43	1.01	0.001

Note: ** $p < 0.05$; *** $p < 0.01$

As noted in Table 19 SOC and spirituality (SWB) were significant moderators of the association between IPV and ART adherence, but ML was not a significant moderator. The interaction of SOC was different from zero ($\beta = 0.53$) and the 95% CI did not contain zero (95% CI = 0.96% to 0.01%). Furthermore, the interaction of SOC was significant ($p < .01$). Similarly, the interaction of spirituality was also different from zero ($\beta = 0.72$), coupled with 95% CI that did not cross zero as well (95% CI = 0.43% to 1.01%). The interaction of spirituality was also significant ($p < .001$). Although both SOC and spirituality significantly positively interacted with the association between IPV and ART adherence, spirituality was observed as a relatively stronger moderator ($\beta = 0.72$). As such, results identified that spirituality had the most pronounced influence on the association between IPV and ART adherence. Hypothesis 3 was also partially supported.

5.9 Summary

In this chapter, I presented a comprehensive report on the results of the survey that focused mainly on the association between IPV and ART adherence and the moderating effects of ML, SOC, and spirituality on these variables. I first used descriptive and parametric inferential statistics to summarise participants' demographic characteristics, ART adherence profile, and

occurrences of IPV. A descriptive account of participants' scores on MLQ, SOC, and SWB was also provided.

The evaluation of 200 completed questionnaires showed that most of the participants were female, with an average age of 34, who had been living with HIV for 3.4 years and had been on ART treatment for 2.4 years. Participants' mean adherence was 79%, with a positive correlation between the number of years an individual had been living with HIV and the number of years on ART treatment. Participants' most frequently cited reasons for ART non-adherence included being away from home, busyness, avoiding being seen taking ART, feelings of depression, and changes in routine. Exposure to IPV was mostly reported by women. Of the participants (both men and women) who reported exposure to IPV, emotional IPV was more frequently reported than physical or sexual IPV. Participants reported higher levels of spirituality compared to SOC and ML.

Parametric assumptions were then explored, most of which ascertained the fitness of the data for progression to regression and moderation analysis that were outlined for the three research questions of this study. Research questions and hypotheses that focused on the association between IPV and ART (RQ1) and type of violence and ART adherence (RQ2) were analysed with simple and multiple linear regression. The third research question (RQ3) and hypothesis, that investigated whether ML, SOC, and spirituality individually moderated the association between IPV and ART adherence, were analysed with moderation analysis.

In terms of RQ1, the results showed that the presence of IPV has a negative association with ART adherence, which also supported hypothesis one. When the influence of all three types of IPV on ART adherence was assessed and compared (RQ2), it was found that all types of IPV have a variable negative influence on ART adherence. However, sexual IPV was associated with the most significant drops in ART adherence, further identifying that sexual IPV strongly heightens the likelihood of non-adherence to ART compared to physical and emotional IPV. Hence, hypothesis two was also supported.

Regarding moderation of ML, SOC, and spirituality (RQ3) and hypothesis 3, the results identified that SOC and spirituality interacted with the influence of IPV on ART adherence. The interaction between ML, IPV, and ART adherence was considerable but not statistically significant. However, of the two moderators that significantly moderated the association

between IPV and ART adherence, spirituality was identified as the strongest moderator, suggesting that, compared to ML and SOC, spirituality is more likely to have a stronger influence on the association between IPV and ART adherence. To this end, H3 was partially supported.

In the next chapter, I present a detailed discussion and interpretation of the findings, as referenced against the salient literature on ART adherence, my conceptual and theoretical framework, and the study's research questions, aims, objectives, and hypotheses.

Chapter 6: Discussion, Recommendations and Conclusion

South Africa has made steady progress towards the new UNAIDS 95-95-95 targets of scaling up HIV/AIDS treatment and eradicating AIDS by 2030 (Marinda et al., 2020; UNAIDS, 2023; van Schalkwyk et al., 2021). However, such goals may be compromised by poor ART adherence, which in turn may be threatened by high rates of IPV. A body of literature from low- to-middle income and high-income settings has highlighted the negative impact of exposure to IPV on ART adherence, and other risk factors that may contribute to non-adherence. Despite the contributions of such literature, we have limited knowledge about what facilitates adherence among people exposed to IPV, including the possible moderating influences of ML, SOC, and spirituality on adherence in the context of IPV. Noting this gap, this study investigated the moderating influences of these three factors on the association between IPV and ART.

For ease of reading, I will briefly revisit the aims, research questions, hypotheses, and methods, then discuss all the salient findings as they relate to the key research questions and objectives. I will then discuss the implications of the findings regarding adherence care in primary healthcare, and specific areas of contribution the study has made to the ART adherence literature, including limitations. To conclude the chapter, I will also outline possible research topics and practical recommendations for improving adherence for people exposed to IPV.

6.1 Aims, Research Questions, Hypotheses and Methods re-visited

The primary aim of this correlational study was to investigate the moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence among adults living with HIV in Johannesburg South, South Africa. This broad aim was organised through three inter-related research questions:

- Research question 1: What is the estimated association between IPV and ART adherence?
- Research question 2: Which type of IPV (physical, emotional or sexual violence) strongly affects adherence to ART?

- Research question 3: Do ML, SOC and spirituality individually moderate the association between IPV and ART adherence, and which of these strongly affects the association between IPV and ART adherence?

Aligned with the post-positivistic paradigm adopted for this study, three hypotheses were also formulated to address the research questions, with the intention of verifying the theory underpinning the study (Morris, 2006; Furlong & Marsh, 2010). The three hypotheses were as follows:

Hypothesis 1:

h₀: (1a) IPV has no association with ART adherence.

h₁: (1b) IPV is negatively associated with ART adherence.

Hypothesis 2:

h₀: (2a): There is no difference in the effect of physical, emotional and sexual violence on ART adherence.

h₁: (2b): There is a difference in the influence of physical, emotional and sexual violence on ART adherence.

Hypothesis 3:

h₀: (3a): There is no mediation of ML, SOC and spirituality on the association between IPV and ART adherence.

h₁: (3b): ML, SOC and spirituality do individually moderate the association between IPV and ART adherence.

6.2 Key findings: ART (non)Adherence, Violence, Co-variants and Moderating Influences

In order to contextualise the main findings related to the three research questions of this study, I will first discuss the findings relating to ART adherence obtained from the Aids Clinical Trials Group (ACTG) questionnaire that was used to quantify participants' adherence. I will also discuss findings regarding exposure to IPV according to the sex distribution of the

participants, including the commonly reported types of IPV and the participants' reasons for non-adherence to ART.

6.2.1 Characterising ART Adherence and IPV

Based on the responses of the 200 participants, who were mostly female (66%), the mean adherence of the participants was 79%, which is similar to prior South African studies that reported short-term ART adherence rates of 63% and 88% (Laher et al., 2021; Moosa et al., 2019). Conversely, a study in Kenya reported 95% adherence levels (Biomndo et al., 2021). Possible reasons for these differences in ART adherence rates might be the different study populations used, sample sizes, the methods used to quantify adherence, and other factors, such as IPV, socio-economic status, and substance use. For instance, the Biomndo et al. (2021) study used post-partum women, while the Moosa et al. (2019) study utilised individuals who had experience with being surveyed.

In terms of exposure to IPV, results from this study identified that half (51%) of the participants had been exposed to IPV during the current year. Exposure to IPV was reported by more females (67%) compared to males. Notwithstanding the skewed sex distribution of the sample, the finding that females reported IPV more frequently is consistent with findings reported by previous South African and global studies (see Boonzaier & Gordon, 2015; Hatcher et al., 2022; Jewkes et al., 2015; Sprague et al., 2017; WHO, 2013).

6.2.1.1 Most Commonly Reported type of IPV

The study found that of the three types of IPV, emotional violence (i.e., verbal abuse, insults, humiliation, and threats of violence) was the most commonly reported (89%), followed by physical IPV, characterised by experiences of being slapped, hit, kicked, and beaten (49%). Sexual violence was the least reported type of IPV (44%), which was also expected based on literature reports of under-reporting of sexual violence. The findings mirror previous studies from South Africa that pointed out that emotional violence was more frequently reported than

physical and sexual violence (Gibbs et al., 2018; Koen et al., 2014; Meskele et al., 2021; Okafor et al., 2021).

Emotional violence is also the most commonly reported type of IPV in East African countries (Tanzania and Kenya) and European countries (Portugal and Germany) (Biomndo et al., 2021; Capinha, Rijo, Pereira, & Matos, 2022; Jud, Grafe, Meshkova, Kavemann, Meysen, Hoffmann et al., 2023; Muluneh et al., 2020). Studies also report that emotional and physical IPV have close links, in that emotional IPV may serve as a precursor to physical or sexual IPV (Capaldi & Owen, 2001; Feldbau-Kohn, Heyman, & O'Leary, 1998; Outlaw, 2009; Renner, Habib, Stromquist & Peek-Asa, 2014). The occurrence of emotional IPV in intimate relationships often heightens the likelihood of frequent physical IPV. It was no surprise that participants in the study reported physical IPV as the second most common type of violence that they had experienced that year.

The findings indicated that sexual IPV was the least reported type of IPV; this aligned with prior studies in South Africa, and it is suspected that this is mainly due to under-reporting (Bernstein et al., 2016; Kidman et al., 2018; Okafor et al., 2021). Similar studies in Namibia and India have also identified under-reporting of sexual IPV, particularly among women (Bikinesi, Mash, & Joyner, 2017; Luoga, Harris, Gibson & Kwesigabo, 2019). Although sexual IPV seems to be the least reported in South Africa and other LMICs, its prevalence is still generally higher than in HICs (WHO, 2017).

It is not clear why emotional violence is more commonly reported than other forms of IPV, although it might be because of the method of assessing IPV. However, previous South African studies, and those conducted in other sub-Saharan countries, attribute experiences of IPV, either through victimisation or perpetration, to factors such as histories of childhood abuse, family violence, past IPV exposure, inequitable gender norms, adverse socio-economic conditions, hegemonic masculinities, alcohol misuse, and other dimensions of disadvantage (Gass et al., 2011; Gibbs et al., 2018; Hatcher, Colvin, Ndlovu, & Dworkin, 2014; Jewkes et al., 2010b; McCloskey, Boonzaier, Steinbrenner, & Hunter, 2016; Peltzer & Pengpid, 2017; Sprague et al., 2017; Zembe et al., 2015).

Despite increasing awareness in South Africa of sexual violence and rape in intimate relationships, lower reports of sexual IPV in the study might be explained by fear of

victimisation, stigma, societal acceptance of violence, denial, and beliefs about sex (Bornman, 2015; Jewkes, 2002; Kaufman, Williams, Grilo, Marea, Fentaye, Gebretsadik et al., 2019; Mphaphuli & Smuts, 2021). It is very common for women and men to feel shame, stigma, and loyalty to their partners, and perceive IPV as a private matter; these factors may, in part, explain underreporting of sexual violence (Bikinesi et al., 2017; Fulu, Jewkes, Roselli & García-Moreno, 2013; James, 2012; Stern, Buikema & Cooper, 2015). In addition, subconscious defences, such as denial and rationalisation that male partners have the right to sex, may also cause under-reporting of sexual IPV, especially among women (Jewkes, Penn-Kekana, Levin, Ratsaka, & Schrieber, 2001).

6.2.1.2 Common Reasons for Missing Medication

In addition to examining adherence levels and incidents of exposure to IPV, non-adherent participants (n = 109) were asked about their reasons for not taking medication. Commonly reported reasons for missing medication included being ‘away from home’ (100%), which was frequently reported together with ‘being too busy’ (88%), and ‘avoiding being seen taking ARVs’ (82%), which was frequently mentioned alongside ‘depression’ (64%). Thus, non-adherence for people exposed to IPV may be explained by a combination of reasons, such as being away from home, busyness with other things, stigma, and depression. These findings partly resonate with previous studies conducted in South Africa and other African countries, which identified common reasons why PLWH skip medication (see Bukenya et al., 2019; Croome et al., 2017; Marinda et al., 2021).

The finding that most non-adherent people reported having skipped medication mainly because they were away from home, busy, avoiding being seen, and depressed may be explained in several ways. For one, experiences of IPV generally create a disorganised living environment (Field, Onah, van Heyningen, & Honikman, 2018; Kretchy, Owusu-Daaku, & Danquah, 2014; Nicodimos, 2013). During encounters of violence, some people may be chased or forced to flee from home. Within this stressful situation, and preoccupation with prioritising safety, individuals may forget to pack their medication (Biomondo et al., 2021; Lazenbatt & Devaney, 2014). If they do remember to pack it, their new refuge may also make it difficult to maintain their schedule of taking medication or even keeping clinic appointments. Also, stigma and depression are known correlates of non-adherence. HIV stigma is one of the most frequent patient-reported barriers to ART adherence in South Africa (Croome et al., 2017; Hoffman et

al., 2017; Jones et al., 2020; Kalichman et al., 2021). Along with this, studies from South Africa, Ethiopia, and Tanzania have highlighted that PLWH have heightened vulnerability to poor mental health (Ceccon et al., 2014; Kapiga et al., 2017; Marinda et al., 2021; Necho et al., 2021; Tsai et al., 2016).

One possible explanation for the link between depression, stigma, and non-adherence seems to be the interplay of structural challenges. It seems that experiences of high levels of stigma, coupled with structural conditions such as food insecurity and unemployment, may heighten vulnerability to poor mental health and may, in turn, impair people's motivation to take HIV medication consistently (Eshun-Wilson et al., 2019; Hlongwane & Madiba, 2020; Maeri et al., 2016; Pinheiro et al., 2016; Sin & DiMatteo, 2014; Tesfaye et al., 2016). As a result, it is important to recognise that psychological distress triggered mainly by stigma and structural challenges should be noted as a persistent threat to ART adherence.

6.2.2 Discussion of Main Findings: The Estimated Influence of IPV and Moderates of the IPV-ART Adherence nexus

In this section of the discussion, I focus on the main findings regarding the estimated influence of IPV on ART adherence, the variable effects of types of IPV on ART adherence, and the moderating influences of ML, SOC, and spirituality.

6.2.2.1 The Influence of IPV on ART Adherence

RQ1: What is the Association between IPV and ART Adherence?

The results of the study revealed that exposure to IPV has a negative association with ART adherence. A thorough examination of the β coefficient statistic further revealed that exposure to IPV was associated with a significant 18% drop in ART adherence. This demonstrates that exposure to IPV is associated with negative adherence outcomes. These results are similar to previous South African studies that have linked IPV with poor adherence (Cluver et al., 2018; Gibbs et al., 2022). Similar negative associations between IPV and ART adherence have also

been documented by studies conducted in Zimbabwe, India, and the United States (Achchappa et al., 2017; Hampanda, 2016; Hatcher et al., 2015).

The negative influence of IPV on ART adherence found in this study may be explained by various factors. Previous literature has linked IPV with a disorganised home environment (Field et al., 2018; Kretchy et al., 2014; Nicodimos, 2013), including poor mental health, psychological distress and depression, which are also predictors of poor ART adherence (García-Moreno et al., 2015; Hatcher et al., 2015; LeGrand et al., 2015; Nduna et al., 2010; Tsai et al., 2016). Previous research on women exposed to IPV explains that people may be chased or forced to flee from their homes during encounters of IPV, which may cause extreme distress (Biomndo et al., 2021; Lazenbatt & Devaney, 2014). As noted above, people may forget to pack their medication, or their new place of safety may also make it harder to maintain their medication-taking schedule or attend clinic appointments for medication collection. Additionally, if the abusive partner is in denial about their HIV diagnosis, one might have to hide their medication or avoid taking treatment at strategic moments to minimise violent altercations (Kosia, Kakoko, Semakafu, Nyamhanga, & Frumence, 2016).

Poor mental health is another possible explanation. Extensive literature in South Africa has highlighted that non-adherent PLWH experience higher levels of psychological distress than their counterparts. They also show that PLWH who have experienced IPV are more vulnerable to poor mental health than their counterparts (Ceccon et al., 2014; LeGrand et al., 2015; Marinda et al., 2021; Tsai et al., 2016). This also seems common in Ethiopia and Tanzania (Kapiga, 2017; Necho et al., 2021). Although it is not clear whether or not poor mental health precedes experiences of IPV, poor mental health among PLHW may be engendered by structural, systemic, and social conditions, such as food insecurity, unemployment, poor patient-healthcare worker interactions, and stigma (Croome et al., 2017; Hatcher et al., 2022; Kalichman et al., 2021; Kebede et al., 2021; Pinheiro et al., 2016; Sin & DiMatteo, 2014; Tesfaye et al., 2016).

Thus, poor mental health and dysfunctional home environments related to IPV may explain the negative impact of IPV on ART adherence (Field et al., 2018; Garriga et al., 2020; Marinda et al., 2021; Uthman et al., 2014), although it is difficult to confirm a causal relationship between poor mental health and exposure to IPV.

6.2.2.2 Variable Influence of type of IPV on ART Adherence

RQ2: Which type of IPV, namely physical, emotional, and sexual violence, strongly affects adherence to ART?

Regression results identified that, in general, all types of IPV have a strong but variably negative influence on adherence to ART. Sexual violence had the strongest influence (30% reduction), even though it was the least reported type of violence. Emotional violence, which was the most commonly reported type of IPV, had the second-highest influence, with a 13% reduction in adherence, while physical violence was the least influential (10% reduction) of the three types of IPV. Thus, even though sexual violence was the least reported, it strongly heightens the likelihood of non-adherence to ART compared to emotional and physical IPV.

These findings are corroborated by preceding studies from South Africa, which highlighted the more pronounced effects of sexual IPV on adherence, compared to physical and emotional IPV (Hatcher et al., 2022; Jewkes et al., 2015). Studies conducted in Zimbabwe and India showed that sexual violence in intimate relationships was associated with a greater negative effect on ART adherence among women (Hampana, 2016; Nicodimos, 2013).

- **Sexual IPV and Adherence**

The pronounced negative influence of sexual violence on adherence found by the study seems explainable through the influence of mental health. The most common psychological consequences of IPV include depression, PTSD, and substance use disorders (García-Moreno et al., 2015; Hatcher et al., 2015; LeGrand et al., 2015; Nduna et al., 2010). It seems that the trauma and psychological distress arising from experiences of sexual IPV may compromise a survivor's mental health and provoke depression. In Uganda, Tsai et al. (2016) identified significant associations between forced-sex victimisation, severe depression, and poor mental health-related QOL in a sample of 173 women living with HIV. Simultaneously, poor mental health appears to intersect with an individual's history of IPV. This was evident in a meta-analytic study by Chen, Murad, Paras, Colbenson, Sattler, Goranson et al. (2010), which found

significant associations between a history of sexual abuse and mental health disorders, such as depression, anxiety, and sleeping disorders and PTSD among women.

Two South African studies conducted in KwaZulu-Natal and Gauteng provinces also found associations between poor mental health indications, such as depression, anxiety, and experiences of perpetration of IPV by young men, and past experiences of IPV among young women (Hatcher et al., 2022; Pakhomova et al., 2021).

Literature maintains that the relationship between poor mental health and violence is a vicious cycle, coloured by inequitable gender norms, childhood experiences of abuse, poverty, and the social acceptance of violence (García-Moreno et al., 2015; Jewkes et al., 2010b; Sikweyiya et al., 2020). Low self-esteem, social withdrawal, IPV stigma, and a sense of helplessness may amplify vulnerabilities to mental health problems in people exposed to violence, especially women (Hatcher et al., 2022; McCleary-Sills et al., 2016; Rice et al., 2017; WHO, 2014; Yonga et al., 2022). Simultaneously, poor mental health, possibly characterised by the same mood and cognitive aspects described above, not only compromises an individual's ability to access social and emotional resources, but also perpetuates their vulnerability to further re-victimisation (Field et al., 2018; Sikweyiya et al., 2020; Yonga et al., 2022). Thus, the evidence suggests that the association between sexual IPV and poor mental health may be bidirectional in nature, although it is not possible to confirm a direct link between them.

- **Emotional IPV and Adherence**

Emotional IPV, compared to physical IPV, appears to have a more pronounced influence on ART adherence, which is understandable because of its links with poor mental health. Second to sexual IPV, emotional IPV has also been associated with trauma, depression, suicide ideation, and PTSD, which are mechanisms by which emotional IPV may engender non-adherence (Breet, Seedat, & Kagee, 2019; Lagdon, Armour, & Stringer, 2014; Okafor et al., 2021). For example, a systematic review by Dokkedahl, Kirubakaran, and Bech-Hansen (2022) identified that PTSD, compared with depression and anxiety, is strongly associated with psychological violence in both women and men. In South Africa, emotional IPV has been independently associated with immune system decline and a low CD4 count among women living with HIV (Jewkes et al., 2015). Suicidal tendencies are also commonly reported among women exposed to violence in South Africa (Gibbs et al., 2018). In comparison, the association

between emotional IPV and symptoms of severe depression, particularly among women, is also well established in American and European countries (Barros-Gomes, Kimmes, Smith, Cafferky, Stith, Durtschi et al., 2019; Lövestad et al., 2017).

As previously pointed out, depression, anxiety, and poor mental health in general are known correlates of ART non-adherence (Ceccon et al., 2014; Fredericksen et al., 2021; LeGrand et al., 2015; Tsai et al., 2016). It should also be noted that people who report depression, PTSD, suicidality, and emotional IPV have also experienced higher levels of perceived stigma (Hatcher et al., 2022; Matseke, Rodriguez, Peltzer, & Jones, 2016; Rice et al., 2017; Yonga et al., 2022). These studies partly explain how trauma, depression, suicidality, and stigma are the reasons why the effect of emotional IPV on adherence eclipses that of physical IPV.

- **Physical IPV and Adherence**

Compared to emotional and sexual IPV, physical IPV seemed to have less influence on adherence, which may be due to the interplay of social and patriarchal norms, socioeconomic vulnerabilities and the normalisation of violence.

Social norms and beliefs play a profound role in how people perceive and respond to violence. An example of the influence of social norms on the normalisation of violence can be observed in a mixed-method study involving pregnant women's experiences of IPV in South Africa, in which participants implied that violence, which typically began with arguments, is normal between couples (Field et al., 2018). In another mixed-methods South African study in the Western Cape that examined correlates of IPV, men reported that it was permissible to hit women and violence was seen as a love language among women, so they would sometimes instigate physical violence to access emotional responses from men (Zembe et al., 2015). In a similar vein, a cross-sectional study in Nigeria revealed that women who had experienced IPV in marriage were also more likely to report acceptance of violence, and men who reported community acceptance of physical violence on women were more likely to have perpetrated IPV (Shakya, Cislighi, Fleming, Levtoy, Boyce, Raj et al., 2022).

In addition, the influences of patriarchal societies and hegemonic masculinity may be attributed to social acceptance of violence and the relatively lesser influence of physical IPV on adherence (Di Napoli et al., 2019; Jewkes, 2010a; Sere et al., 2021; Sikweyiya et al., 2020). For instance,

patriarchal societies, such as South Africa and many LMICs, are often characterised by traditional masculine norms such as male dominance and the suppression of emotional vulnerability, where violence is endorsed by both men and women, and might explain social acceptance of physical IPV perpetrated by men (Babcock, Costa, Green & Eckhardt, 2004; Jewkes, 2002; Kalichman, Simbayi, Kaufman, Cain, Cherry, Jooste et al., 2005).

Socio-economic vulnerabilities such as poverty and unemployment also have strong associations with cultural norms of acceptance of violence, apart from also being a stressor that may lead to perpetration of and exposure to violence (Ahmadi et al., 2017; Reichel, 2017; Tusa et al., 2022; Zembe et al., 2015). Conversely, the perpetration of violence by women on men seems associated with alcohol abuse by women, men's socioeconomic status (e.g., less income), and histories of exposure to parental violence (Ahnlund, Andersson, Snellman, Sundström & Heimer, 2017; Malik & Nadda, 2019). These studies suggest that dominant social and patriarchal norms and socio-economic vulnerabilities are responsible for the normalisation and legitimisation of physical violence in intimate relationships, which may be one explanation for why the influence of physical violence on adherence is not as pronounced as that of sexual and emotional violence.

6.2.3 Demographic and Other Covariates of ART Adherence

Much of the literature highlights demographic characteristics associated with medication adherence; therefore, characteristics such as sex, age, years living with HIV, and ART treatment duration were simultaneously entered into an MLR model to explain ART adherence. Given that the overall influence of exposure to IPV on ART adherence in the regression model had a small variance of 14%, the additional analysis of the demographic variables and their influence on adherence was considered salient.

When sex, age, years living with HIV, and treatment duration were included in the model, the demographic characteristics significantly increased the model's accuracy in explaining adherence (see Table 12). The inclusion of demographic factors accounted for 37% of ART adherence ($p < .001$), versus 14% when IPV was entered into the model alone.

The results showed that, except for ART treatment duration, sex, age, and years living with HIV were significantly associated with ART adherence. While the majority of participants in

the study were female, males were the most non-adherent; this resonated with previous research in South Africa that found males to be more non-adherent to ART than their female counterparts (Laher et al., 2021; Moosa et al., 2019). Studies in other LMICs and HICs have reported the same trend (Chen et al., 2017; Musa et al., 2017; Neupane et al., 2019). One reason for these differences may be that more women tend to enrol in ART care and display health-seeking behaviours (Chakraborty et al., 2020; Kekwaletswe & Morojele, 2014; Moosa et al., 2019). Other writers explain that, within hyper-masculinised contexts, men protect their masculine identities and may sacrifice HIV care and not attend clinics, which are traditionally perceived as feminine spaces, seeking care only once they become visibly sick (Campbell et al., 2020; Mburu et al., 2014; Sikweyiya et al., 2014; Zissette et al., 2016).

In addition to sex, the study's analysis also revealed that an increase in age improves adherence by 0.5%. These findings are compatible with previous literature on ART adherence and other chronic medications that indicates improved adherence with age (Gast & Mathes, 2019; Heestermans et al., 2016; Lemay et al., 2018). Likewise, cross-sectional studies in South Africa have identified that ART adherence gets better with age (Adeniyi, Azimov, & Burluka, 2018; Naidoo & Premdutt, 2019; Onoya et al., 2017).

While the study did not aim to establish causal links between age and adherence, it seems that better adherence by older age groups (>35 years) may be attributed to growing familiarity with the routine of taking medication, and to the priorities of self-preservation and survival. However, the ability and commitment to maintain adherence long-term may gradually be challenged by other life stressors, such as unemployment, poor mental health and stigma (Croome et al., 2017; Kagee et al., 2011; Kebede et al., 2021; Marinda et al., 2021; Ramlagan et al., 2018). Adherence among young people (15 to 35 years) in South Africa seems to be influenced by developmental issues related to transitioning to adulthood, alcohol abuse and exposure to domestic violence (Bondarchuk et al., 2022; Cluver et al., 2021; Merrill et al., 2021).

The findings revealed that, the longer individuals have been living with HIV, their reported adherence to ART improves by 4%. An assessment regarding which of the four significant demographic variables had a greater influence on adherence revealed that the number of years

an individual has been living with HIV had a relatively pronounced positive association, compared to sex, age, and the number of years on ART treatment.

These findings vary from those of another South African study, which reported that suboptimal adherence was associated with a greater number of years an individual has been living with HIV before starting treatment (Davis et al., 2021). A possible reason for the difference in findings between this study and that of Davis et al. (2021) may be the methodologies used to assess adherence. Adherence, in this doctoral study, was assessed with the self-report ACTG questionnaire, which estimated adherence based on a four-day recall; this entailed asking participants about the number of times medication was taken during the previous four days. In contrast, Davis et al. (2021) assessed adherence using a self-report adherence instrument developed by Wilson, Lee, Michaud, Fowler, and Rogers (2016), that queried the number of times medication was missed during the previous 30 days.

While both are vulnerable to recall bias, it is possible that it is more difficult to recall with accuracy the number of times medication was taken 30 days ago compared to four days ago (Cowan, 2017). Thus, the method of adherence used by Davis et al. (2021) could have been more prone to memory lapses and recall bias, which may have skewed their adherence results. That is not to say that the current study did not suffer from possible social desirability itself; I will discuss this among the limitations of the study (Section 6.4).

It should be noted that optimal adherence associated with a longer time that an individual has been living with HIV seems to be attributable to a number of factors. People may have adjusted to the reality of having HIV, have integrated ART use into daily life, have improved their experience of utilising healthcare services, and have learned to make meaning out of living with HIV (Makhado & Mongale, 2019; Neupane et al., 2019; Shubber et al., 2016; Sok et al., 2021).

This study also found that an individual's duration of treatment was not significantly associated with ART adherence ($p = .421$). The findings of earlier studies on this appear to be mixed: some indicate that a longer period of ART treatment increases adherence, and others point to the opposite. For instance, a retrospective study from South Africa by Moosa et al. (2019) showed that adherence can improve with a longer time on ART, while a study conducted in

Ethiopia found that the longer people stayed on treatment, the less adherent they became (Belayihun & Negus, 2015).

The inconsistencies between studies may be accounted for by the variations in methodologies and samples. For instance, the South African study by Moosa et al. (2019) used pill counts to evaluate adherence, which is a method prone to patient manipulation. Additionally, the study targeted patients who had previously been involved in randomised trials, so patients who were familiar with the pill count assessment may have misrepresented their adherence by returning an inaccurate number of remaining pills to appear 'adherent'. In contrast, the Ethiopian study by Belayihun et al. (2015) assessed adherence with a self-report questionnaire administered to individuals who were undergoing ART at an HIV clinic and were arguably less sensitised to being surveyed.

After assessing the independent influence of demographic characteristics (sex, age, number of years living with HIV, and treatment duration), IPV was re-entered, together with demographic factors, into the multiple regression model to assess its influence on ART adherence when demographic variables were taken into account (see Table 12 Model 4). The findings revealed that IPV remained significantly associated with ART non-adherence, even after demographic factors were controlled. This implies that the influence of demographic factors on ART adherence is not as salient as that of IPV. Despite the influences of demographic factors, such as sex, age, and the number of years one has been living with HIV and on ART treatment, the negative influence of IPV on ART adherence remains particularly pronounced. This is consistent with other studies highlighting exposure to IPV as a profound threat to ART adherence (Achchappa et al., 2017; Cluver et al., 2018; Hatcher et al., 2015; Kouyoumdjian et al., 2013; Rees et al., 2014; Young et al., 2019).

6.2.4 Moderators of the IPV-ART Adherence Nexus

I will now discuss which of the three possible moderator influences (ML, SOC, and spirituality) strongly affects the association between IPV and ART adherence, to answer Research Question 3, restated below:

RQ3: Do ML, SOC and spirituality individually moderate the association between IPV and ART adherence?

6.2.4.1 Moderating Influence of ML on the relationship between IPV and ART Adherence

An analysis of the moderation of ML in this study revealed that the interaction between ML, IPV, and ART adherence was non-significant ($p > .05$). However, based on the β coefficient static, the influence of ML was arguably considerable ($\beta = 0.39$). According to Hayes and Rockwood (2017), moderation is considered successful if a proposed moderator (M) significantly changes the effects of X on Y through size (value of β), direction, and sign (p value).

Thus, while the influence of ML was not significant, the size ($\beta = 0.39$) of its influence is worth considering. This study's finding, that ML was not a significant moderator, was surprising, even though it made sense to some degree. This was because previous literature suggests that, although ML improves the QOL and adherence patterns of PLWH, people without an identified sense of purpose can experience an existential crisis or meaninglessness, which manifests in maladaptive ways of coping, such as refusal to take ART (see Catalan et al., 2017; Frankl, 1984; Nolte, 2010; Pretorius et al., 2005; Reis et al., 2019).

Given the difficulty and trauma of experiences with both the diagnosis of HIV and IPV, it is not uncommon for people to experience denial of their reality, which has been linked with maladaptive coping behaviours, such as refusing to accept medical care (Audet et al., 2013; Frankl, 1984; Jones et al., 2020; Lanagan, Jaquier, Overstreet, Swan, & Sullivan, 2014; Mey et al., 2017). It is therefore possible that people exposed to IPV, and who struggle to find meaning in their lives, may find it difficult to stay adherent to medication, as illustrated by the findings of this study. In contrast, previous studies in South Africa that explored ML in relation

to the QOL of PLWH identified that, while the diagnosis of HIV may be frightening initially, it can also deepen one's search for ML, which in turn may facilitate health-seeking behaviours, including ART adherence (Catalan et al., 2017; Igumbor et al., 2012; Iwelunmor et al., 2017; Nolte, 2010).

6.2.4.2 Moderating Influence of SOC on the relationship between IPV and ART Adherence

Findings of the moderation analysis revealed that SOC moderated the association between IPV and ART adherence ($p = .013$; $\beta = .53$). However, moderation plots derived from the analysis identified that, although significant, the influence of SOC was conditional. Specifically, the plots highlighted that, at low and average levels of SOC, the presence of IPV was associated with a 15% drop in ART adherence. In other words, when their SOC score is low to moderate (scores of between 30 and 45), individuals exposed to IPV are more likely to be non-adherent.

These findings are consistent with studies that suggest that individuals with a lower SOC generally have difficulty managing life stressors, which in turn heightens their vulnerability to maladaptive coping behaviours (Antonovsky, 1987; Kleiveland et al., 2015). Following this logic, it would be expected that people exposed to IPV with low levels of SOC were non-adherent. The current study's findings are also supported by literature from Western and Eastern contexts, which have reported links between a low SOC and poor health-seeking behaviours (Daneshvar et al., 2022; Lazenbatt & Devaney, 2014; Sitarczyk, 2013; Zonp & Saint Arnault, 2022).

In contrast to low levels of SOC, a high SOC has been linked with better ART adherence. When compared to low and average SOC, the findings of the moderation plots from the current study revealed that high levels of SOC improved ART adherence by 2%. Individuals who had high SOC (scores of 89 and above) were more likely to adhere to ART, despite being exposed to IPV. Based on Hayes and Rockwood's (2017) guidelines for moderation, it was observed that, with a strong β coefficient static of 2.04, SOC was a substantially positive moderator of the association between IPV and ART adherence. This finding resonates with outcomes of earlier studies, undertaken in countries including Uganda, Thailand, China, the USA, and Canada, that linked a high SOC with better long-term adherence and mental health outcomes (Corless et al., 2017; Nutor et al., 2022). Similarly, a few studies in South Africa also reported that a high SOC

not only improves long-term wellness and QOL among PLWH, but may also motivate people to stay adherent to ART (Hoho, 2014; Orth et al., 2022).

Two pathways that may explain how SOC moderates the negative association between IPV and adherence seem to be social support and meaning. Though the current study did not assess the influences of social support on SOC and IPV, previous studies suggest that having social support improves self-confidence and facilitates cognitive reframing, resilience, and post-traumatic growth in individuals exposed to traumatic experiences like IPV (Jung et al., 2020; Parker et al., 2007; Schafer et al., 2019; Simmons & Swahnberg, 2021). In addition, Antonovsky (1987) theorised that, although SOC is variable for each individual, the meaningfulness component of SOC is the most motivational feature for active adaptation to stressful life experiences. Therefore, social support and finding meaning in difficult experiences may explain how some individuals can have some semblance of SOC and subsequently remain adherent to ART, despite being exposed to IPV.

6.2.4.3 Moderating Influence of Spirituality on the relationship between IPV and ART Adherence

In terms of the moderating influence of spirituality on the association between IPV and ART adherence, the results revealed that spirituality (SWB) significantly moderated this association, with a relatively strong influence of 0.7% ($p < .001$).

The moderation plots showed that the moderating influence of spirituality on the association between IPV and ART adherence was variable; at low and average levels of SWB (20 to 59), the presence of IPV was associated with an 18% reduction in ART adherence. On the other hand, high levels (a score of 109) of spiritual well-being significantly improved ART adherence by 7%. The results suggest that low to moderate levels of spirituality cannot buffer the negative influence of IPV on adherence, but higher levels of spirituality seem to do so.

These findings cohere with previous studies that reported on the protective impact of spirituality for PLWH in terms of ART adherence in South Africa (Sere et al., 2021; Slabbert, 2017) and the US (Arrey et al., 2016; Doolittle et al., 2018; Kaur et al., 2022). These findings

highlight the value of spirituality in enhancing adherence among people exposed to IPV (Dalmida et al., 2018; Mutambara et al., 2021; van Wyk et al., 2023).

However, it should be noted that, while spirituality can facilitate improved adherence, the HIV diagnosis by itself may also introduce difficult existential questions or a kind of spiritual struggle, leading to treatment refusal, discontinuation, and non-adherence due to the highly stigmatised nature of HIV (Grossoehme et al., 2016; Jones et al., 2015). This may partly explain the study's findings that successful moderation of spirituality occurs only at high levels, as opposed to low to moderate levels. According to prior studies, positive spiritual representations, such as prayer, having a deep personal relationship with a Higher Power, and participation in spiritual activities, may facilitate hope, strength, and a sense of safety during encounters of violence in intimate relationships (Anderson et al., 2012; Braganza et al., 2021; Dolatian & Sedghi; Drumm et al., 2014; Finfgeld-Connett, 2017; Khangholi et al., 2019; Sabri et al., 2018; Sere et al., 2021; Simonič, 2021; Slabbert, 2017). Thus, it would seem that higher levels of spirituality can buffer the negative effect of IPV on adherence.

6.2.5 Comparing the Three Moderators

In this section, I discuss which of the three moderators most strongly influences the association between IPV and adherence, as inspected through their regression coefficients from the moderation analysis. The discussion is related to Research Question 3.1:

RQ3.1 Which moderator (ML, SOC and spirituality) strongly affects the association between IPV and ART adherence?

Moderation analysis showed that, compared to ML and SOC, spirituality had a pronounced moderating impact, tempering the influence of IPV on ART adherence. These findings are resonant with prior research (Abdul Wahab et al., 2021; Anderson et al., 2012; Arrey et al., 2016; Dalmida, et al., 2018; Doolittle, et al., 2018; Drumm et al., 2014; Finfgeld-Connett, 2017; Grill et al., 2020; Ironson, et al., 2016; Kaur, et al., 2022; Kendrick, 2017; Khangholi et al.,

2019; Lee et al., 2014; Mckie & Gaida, 2022; Mpofu, 2018; Mutambara et al., 2021; Oji et al., 2017; Simonič, 2021; van Wyk & Kagee, 2023).

A recent South African qualitative study that investigated how PLWH coped with mental health challenges and treatment adherence identified that participants mostly used spirituality (e.g., faith and connectedness to God) to manage the stress (particularly stigma) of living with HIV (Van Wyk & Kagee, 2023). In line with this, previous quantitative studies have identified positive correlations between ART adherence and spirituality (Doolittle et al., 2018; Kaur et al., 2022). It seems that the availability of ART treatment provides hope and a sense of being given a second chance to live, while prayer and reflection facilitate a sense of acceptance of the disease, engendering feelings of connectedness and a purpose in life (Brandão et al., 2020; Chaiyasit et al., 2019; Kelly-Hanku et al., 2018; Orth et al., 2022).

In terms of IPV, empirical evidence has pointed to positive ways in which spirituality may influence how people respond to and cope with IPV. South African studies have shown that participation in spiritual activities, such as attending a spiritual institution (e.g., church) and belonging to a spiritual community, provides women exposed to violence with a sense of support, meaning, belonging, and security (Sere et al., 2021; Slabbert, 2017). It also appears that individuals exposed to IPV may prefer to go to church or prayer groups that offer privacy and a sense of safety, and allow them to avoid seeking public forms of help, such as counselling or police services, for fear of being revictimised (Akangbe, 2020; Chadambuka, 2021; Conroy, 2014; Oyewuwo-Gassikia, 2020; Simonič, 2021; Wong et al., 2016). Research from North America, Iran, and other Asian countries has also reported that belief in a Higher Power appears to offer a sense of inner strength, faith, and hope, and counter feelings of isolation for people exposed to violence (Braganza et al., 2021; Dolatian & Sedghi, 2017; Drumm et al., 2014; Sabri et al., 2018). Thus, spirituality, as a generative resource, appears to promote positive emotions and subjective well-being for people exposed to IPV and living with HIV.

6.3 Reflective Summary

The primary aim of this study was to investigate the moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence among PLWH in Johannesburg South. This was informed by examining the literature on the relationship between exposure to IPV and adherence, including theoretical claims regarding the value of ML, SOC, and

spirituality as sources of support during difficult life encounters. In view of this, three interrelated research questions arose.

The first research question was aimed at finding the association between IPV and ART adherence. The alternative hypothesis was that IPV is negatively associated with ART adherence, and the findings supported this, which implied that people who encountered IPV were unlikely to adhere to ART. This is consistent with previous studies from South Africa, India, and the US, which have linked IPV with poor adherence (Achchappa et al., 2017; Cluver et al., 2018; Gibbs et al., 2022; Hatcher et al., 2015). It seems that the negative influence of IPV on ART adherence may be explained by poor mental health and a dysfunctional home environment, which are known to impair people's motivation and ability to stay adherent to medication (Field et al., 2018; Garriga et al., 2020; Marinda et al., 2021; Uthman et al., 2014). Thus, Hypothesis 1 was supported by the preceding literature.

The second research question focused on ascertaining which type of IPV, namely physical, emotional, or sexual, strongly affected adherence to ART. The hypothesis for this question was that the three types of IPV influenced adherence differently. The results of the regression analysis identified that all types of IPV have negative but variable influences. Sexual IPV had the most pronounced negative influence, indicated by 30% reductions in adherence, even though it was the least reported type of violence. Emotional IPV was the most reported type of IPV and had the second-highest negative influence, with 13% reductions in adherence, while physical IPV showed the least influence (10% adherence reduction) of all three types of IPV.

These findings are corroborated by preceding studies from South Africa, Zimbabwe, and India, which documented that the influence of sexual IPV on adherence tends to be more pronounced compared to physical and emotional IPV (Hampananda, 2016; Hatcher et al., 2022; Jewkes et al., 2015; Nicodimos, 2013). This may be due to the interplay between poor mental health and trauma. Some of the most common psychological consequences of sexual IPV include depression, shame, stigma, PTSD, suicidality, and substance use disorders, which not only compromise people's access to social and emotional resources but may also engender non-adherence (Ceccon et al., 2014; Field et al., 2018; Fredericksen et al., 2021; Hatcher et al.,

2022; LeGrand et al., 2015; Nduna et al., 2010; Sikweyiya et al., 2020; Tsai et al., 2016; Yonga et al., 2022).

Additionally, dominant social and patriarchal norms that promote hegemonic masculinity, coupled with socio-economic vulnerabilities that engender legitimisation of physical violence in intimate relationships, may explain why physical IPV seems to have a lesser impact on adherence compared to other types of IPV. To this end, these studies support hypothesis two.

The third research question asked whether ML, SOC, and spirituality could, individually, moderate the association between IPV and ART adherence. The working hypothesis was that ML, SOC, and spirituality individually moderate this association. To confirm this hypothesis, moderation of each factor was conducted, which began with ML. The evaluation of ML as a moderator of the influence of IPV on adherence was guided by Frankl's (1984) proposition that people have the inherent ability to search for and find ML, even in the face of dispiriting life conditions. However, someone who struggles to identify or find a sense of purpose may experience an existential crisis or meaninglessness and depend on maladaptive ways to deal with adversity.

Frankl's proposition was supported by the reviewed literature, which highlighted the usefulness of ML as a protective resource during encounters with violence, because it can facilitate a better QOL for PLWH and promote well-being and medication adherence (Alawiyah et al., 2021; Catalan et al., 2017; Chaiyasit et al., 2019; Dale, et al., 2018; D'Amore, et al., 2021; Daneshvar, et al., 2022; Gross et al., 2019; Igumbor et al., 2012; Iwelunmor, et al., 2017; Kremer & Ironson, 2014; Nasution, et al., 2020; Nolte, 2010; Park, 2010; Parker et al., 2007; Pretorius et al., 2005; Reis et al., 2019; Rosyad et al., 2020; Russell, et al., 2016; Samios et al., 2020; Valdez & Lilly, 2019; Wong & Yeung, 2017). However, other studies argue that the diagnosis of HIV and trauma from IPV may disrupt an individual's sense of meaning (Audet et al., 2013; Bryngeirsdottir & Halldorsdottir, 2022; Chadambuka, 2021; Gross et al., 2019). Although contrary to the initial expectations of the current study, the results established that ML did not significantly moderate the association between IPV and ART adherence.

SOC was also individually evaluated for possible moderation. Consideration of the moderating influence of SOC was guided by Antonovsky's (1987) hypothesis that people who have a higher SOC cope with and manage life stressors, including engaging in health-seeking

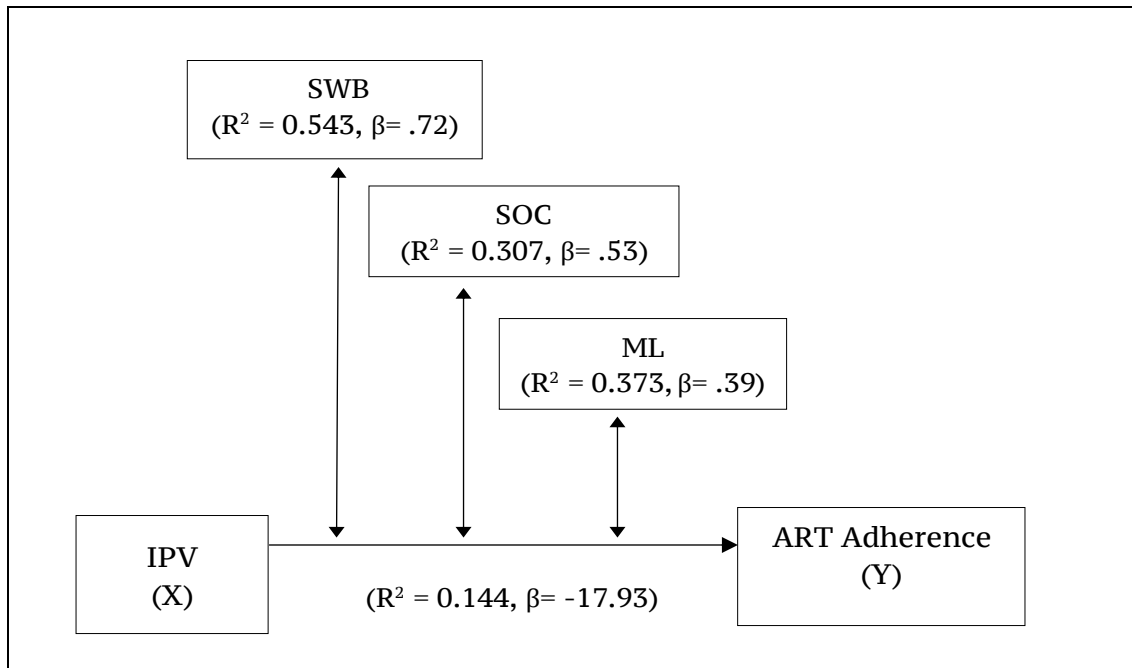
behaviour. Conversely, those with a lower SOC may have difficulty managing life's difficulties and turn to maladaptive ways of coping (Antonovsky, 1987). This was also supported by literature that showcased the value of SOC as a protective resource for PLWH, cancer, managing work-related stress, experiencing sexual abuse, violence in the form of bullying, and political violence (Abu-Kaf & Braun-Lewensohn, 2019; Braun-Lewensohn & Al-Sayed, 2018; Nilsson et al., 2015; Omiya et al., 2017; Palm & Eriksson, 2018; Rohani et al., 2015; Veronese & Pepe, 2017). The results of this study showed that, compared to low and moderate levels of SOC, high SOC moderated the association between IPV and adherence.

Consideration of spirituality as the third proposed moderator was guided by literature that recognised spirituality as a coping resource for PLWH and individuals experiencing IPV (Abdul Wahab et al., 2021; Anderson et al., 2012; Arrey et al., 2016; Drumm et al., 2014; Finfgeld-Connett, 2017; Kendrick, 2017; Khangholi et al., 2019; McKie & Gaida, 2022; Mpofo, 2018; Mutambara et al., 2021; Simonič, 2021). In line with the argument that spirituality can be a coping resource, the literature proposes that PLWH with high levels of spirituality, characterised by connectedness with a Higher Power, prayer, and participation in spiritual activities, may cope better with the disease and with stigma, have better ART adherence, and have slower disease progression (Arrey et al., 2016; Dalmida et al., 2018; Doolittle et al., 2018; Grill et al., 2020; Ironson et al., 2016; Kaur et al., 2022; Lee et al., 2014; Mutambara et al., 2021; Oji et al., 2017; Van Wyk & Kagee, 2023).

In addition, spiritual pursuits during encounters of violence may move individuals towards a spiritual perspective that evokes hope, minimises feelings of helplessness, and contributes to healing once they exit the abusive relationships, and protect against feelings of being abandoned or punished by God (Anderson et al., 2012; Drumm et al., 2014; Finfgeld-Connett, 2017; Khangholi et al., 2019; Simonič, 2021). In accordance with former studies, the results of this study revealed that, compared to low and moderate levels of spirituality, high levels of spirituality significantly moderated the association between IPV and ART adherence.

In summation, the results of the moderation analysis revealed that, although the SOC ($\beta = 0.53$) and spirituality ($\beta = 0.72$) significantly moderated the negative relationship between IPV and ART adherence, the moderating influence of spirituality was relatively more pronounced. To this end, hypothesis 3 (expressed in Figure 15) was also partially supported.

Figure 15: Strongest moderator between ML, SOC and spirituality



6.4 Limitations of the Study

The post-positivistic perspective guiding this study requires me to recognise the shortcomings inherent in my own research design (Grover, 2015; Hallebone & Priest, 2009). I will highlight and discuss a few of these relating to the design, self-report instruments, and external factors that may have influenced the interpretation of the findings.

6.4.1 Cross-section Design and Instruments

The cross-sectional nature of the study meant that one cannot make any causal inferences about the association between IPV and ART adherence, or the moderating influences of ML, SOC, and spirituality. The investigation captured only a snapshot of past experiences of IPV over twelve months and recent ART adherence (over four days), including ML, SOC, and spirituality. This limits the ability to make inferences about the effect of short-term experiences with IPV on suboptimal ART adherence for longer than four days. A longitudinal study would be required to assess the effect of lifetime or long-term exposure to violence on ART adherence,

and the variations in the combination of ML, SOC, and spirituality on this association over an extended period of time.

Another limitation relates to the instruments that I used. In terms of spirituality, the RWB subscale assumed that all individuals have a relationship with God. Thus, the wording of some items (i.e., “I don’t get much personal strength and support from God or the Higher Power”) might not have been applicable for individuals who did not believe in God or a Higher Power, which might have led to information bias. Additionally, all three instruments (MLQ, SOC-13, and SWBS) were originally developed in European or American contexts, and although they each have a good record of reliability and validity, it is possible that the South African participants in this study experienced the concepts differently. For this reason, this study’s findings may be provisional (Mertens, 2009).

Seeing that the data for this study was collected over two time frames due to my illness, the time difference may have affected the results in other ways, so the findings should be interpreted with caution.

6.4.2 Self-reported data, Social Desirability bias and Self-selection bias

This study relied on self-report questionnaires to collect sensitive information on violence and ART adherence, thus creating the potential for recall bias that could lead to overestimation of adherence levels and underreporting of IPV. Even though the questionnaires were anonymous, the experience of IPV is often stigmatised and considered a private family matter (Bornman, 2015; Jewkes et al., 2001; Jewkes et al., 2002; Kaufman et al., 2019; Mphaphuli & Smuts, 2021). Thus, it is possible that participants were not entirely open about the true extent of their experiences with IPV. Additionally, participants had to complete the questionnaires while sitting next to each other in a queue, which may have influenced their openness. I therefore recognise that adherence data may have been influenced by social stigma and possible under-reporting of IPV.

Seeing that participants were informed of their control of participation or refusal to participate in this study as a requirement of research ethics involving humans, this study may have been vulnerable to self-selection bias. Self-selection bias occurs whenever the group of individuals under study have control over whether or not to participate in it (Olsen, 2011). For this reason,

participants who had the inclination to participate may have over-represented the sample of PLWH who were studied, thus skewing the results.

6.4.3 The Influence of Confounders

The study did not assess socio-economic status; it is therefore possible that socio-economic confounders, such as education, income, or employment, could have influenced the moderation of spirituality and SOC on the association between IPV and ART adherence that was observed. Thus, education and employment could have been the connective pathways explaining the moderating influences of spirituality and SOC.

6.5 Contributions of this Research

Despite the aforementioned limitations, there are several strengths attached to the study. To my knowledge, this study was the first to investigate the moderating influences of ML, SOC, and spirituality on the association between IPV and ART adherence among adult males and females living with HIV in Johannesburg. I believe the findings are useful in terms of their evidence that showcases the positive impact of spirituality and SOC on ART adherence for PLWH who have experienced IPV.

Secondly, the analysis is based on data from both males and females of diverse ages (18–51 years) who were receiving ART treatment from two different HIV clinics at government health facilities in Johannesburg, South Africa, where rates of IPV and HIV are high. To some extent, this indicates that the sample accounted for the diverse characteristics of males and females receiving ART in Johannesburg. Previous studies have typically focused on key HIV-infected populations, women only, pregnant women, participants in clinical trials, and participants in experimental interventions, which can limit the generalisability of results.

Previous studies have focused on the effect of IPV on ART adherence, and risk factors of IPV and non-adherence, but there has been very little exploration of factors that facilitate adherence in people exposed to IPV. The current study therefore fills this gap by exploring the impact of facilitators of adherence in the context of IPV. Furthermore, the findings of this study may lay

foundations for future studies in South Africa looking to explore moderators of the association between IPV and ART adherence.

6.6 Implications for ART Adherence Care

The benefits drawn from the findings raise several implications for adherence care in primary healthcare clinical settings. Firstly, given the indicated IPV-ART adherence dynamics, it seems that adherence may be promoted through the implementation of IPV screening, and provision of trauma and counselling services. Women living with HIV and at risk for violent traumatisation may require psychosocial support to increase adherence to ART. The current study's suggestion of implementing IPV screening and providing psychological services in ART care echoes similar suggestions that were made in previous studies from South Africa (see Bernstein et al., 2016; Cluver et al., 2021; Gibbs et al., 2018; Hatcher et al., 2022).

Considerable progress has been made in South Africa to reduce IPV, GBV, and domestic violence at the level of policies, but this falls short on the provision of services for dealing with IPV at the primary healthcare level (Sprague et al., 2017). Also, within the diverse models of care supporting adherence among people on ART, there is no formalised primary healthcare intervention for PLWH who have been exposed to IPV (Bango, Ashmore, Wilkinson, van Cutsem & Cleary, 2016; Mukumbang et al., 2019; National Department of Health, 2016; Sprague et al., 2017).

While it is recognised that the suggestion of standardised routine screening adds to the workload of healthcare providers, who are already overburdened with time constraints, high patient volumes, and insufficient training, previous studies show that there is general acceptance of IPV screening by both healthcare practitioners and individuals exposed to IPV (Biomndo et al., 2021; Joyner & Mash, 2012; Young et al., 2019). Some of the reported benefits of IPV screening and counselling services include improved mental health, better QOL, and a reduction in incidents of abuse (Rivas, Ramsay, Sadowski, Davidson, Dunne, Eldridge et al., 2015).

Secondly, the recommended psychosocial support services could be extended to re-evaluate the ways in which stigma and experiences of depression undermine people's ability to adhere to medication. Stigma and depression were among the more common reasons cited by study

participants for their non-adherence. Stigma and depression have been linked with non-adherence in previous South African studies, as well as some from Malawi, India, and Kenya (Hlongwane & Madiba, 2020; Kalichman et al., 2017; Luoga et al., 2019; Onono et al., 2020; Wetzel et al., 2021). These findings are supported by the persistently high prevalence of stigma and depression in South Africa, despite several HIV-awareness interventions implemented by the South African Department of Health (Croome et al., 2017; Hoffman et al., 2017; Jones et al., 2020; Kalichman et al., 2021; Marinda et al., 2021; Ramlagan et al., 2018; UNAIDS, 2016). The findings of this study support previous calls to address depression and renew existing psychosocial HIV awareness interventions to reduce stigma.

Thirdly, the study's finding that spirituality and SOC significantly moderated the association between IPV and ART adherence has implications for the content and structure of the recommended psychosocial services. Healthcare workers, including nurses and para-professionals working as counsellors at ART centres, may enhance the quality of the care they provide by assisting patients to capitalise on spiritual and SOC-promoting activities that enhance mental health. Counselling could focus on helping patients to adhere through mobilising spirituality and SOC. Healthcare professionals could capitalise on spiritual practices or beliefs that have been shown to improve subjective well-being and mental health, such as prayer, meditation, reflection and consultation with spiritual leaders (Chadambuka, 2021; Chaiyasit et al., 2019; Orth et al., 2022; Oyewuwo-Gassikia, 2020). Some of the most reported positive mental health outcomes of spirituality include providing people with a sense of support, meaning, community, acceptance and belonging, which have been shown to improve adherence to medication adherence, including ART (Brandão et al., 2020; Dalmida et al., 2018; Doolittle et al., 2018; Koenig, 2015; Mutambara et al., 2021; Oliveira et al., 2021; Sabri et al., 2018; Simonič, 2021).

In addition, individuals may be encouraged to strengthen their SOC through activities that enhance meaning in their lives, despite their experiences with IPV. Evidence has shown that people's SOC can be strengthened and supported through spiritual pursuits, compassionate and less-stigmatising clinic staff, supportive networks, and participation in altruistic activities,

which, in turn, have been shown to facilitate ART adherence and coping with HIV (Nutor et al., 2022; Omiya et al., 2017; Orth et al., 2022; Sitarczyk, 2013).

To summarise, the findings of the study, in support of suggestions from prior studies, call for prioritising the implementation of IPV screening within ART facilities, and providing psychosocial support that encourages users of ARTs to mobilise spirituality and SOC-building activities to enhance their adherence.

6.7 Recommendations for Future Studies

Based on the findings of this study, I offer four suggestions for future studies that may deepen our understanding of the IPV-ART nexus and the moderating influences on ART adherence in the context of violence.

Seeing that the study only assessed brief exposure to IPV (e.g., within the past year), longitudinal studies may be necessary to assess how lifetime exposure to IPV affects adherence. Such information may reveal further implications for how IPV screening for adherence care is implemented.

The current study did not assess mental health which, according to existing literature, seems to be interwoven with experiences of IPV (Hatcher et al., 2022; McCleary-Sills et al., 2016; Pakhomova et al., 2021; Rice et al., 2017; Yonga et al., 2022). Future studies could focus on the influences of mental health on the association between IPV and adherence, and why certain types of IPV influence adherence more negatively than others.

The results of the current study highlighted that poor ART adherence is more prevalent among males. Therefore, it would be important for future research to establish whether the moderators of the association between IPV and ART adherence are different for men and women. Since the quantitative nature of the current study only allowed for the investigation of the quantitative influences of ML, SOC, and spirituality, qualitative research is needed to explore which aspects of spirituality and SOC improve the adherence of people exposed to IPV.

In light of the suggestion to provide targeted IPV psychosocial services to improve ART adherence, more research is needed to fully investigate the complexities around the

implementation of such services in primary healthcare for PLWH who have been exposed to IPV. In addition, future studies can explore which model of ART and IPV care will best work for the South African health system, given the backdrop of staffing, capacity and training challenges previously noted.

6.8 Conclusion

This study examined the moderating influences of ML, SOC and spirituality on the negative association between IPV and ART adherence among adults living with HIV in Johannesburg South. The aim arose from the backdrop of both local and international literature regarding high IPV rates and its problematic impact on adherence, including limited research on moderators of adherence in people exposed to IPV. Following a quantitative analysis, the study established that sexual IPV has the most negative influence on ART adherence, followed by emotional IPV. Spirituality and SOC significantly moderated the association between IPV and ART adherence, tempering the influence of violence.

Therefore, the implementation of standard IPV screening for people undergoing ART at primary healthcare facilities could help with early identification of IPV exposure, monitoring, and support, especially for women, since the results of this study established that women exposed to IPV have a heightened risk of poor ART adherence. Other studies have suggested that IPV screening could be introduced during the early stages of ART initiation. Also, the implementation of psychosocial support services at primary healthcare facilities to encourage users of ARTs to mobilise spirituality and SOC-building activities may enhance the adherence of people exposed to IPV. Further research is required to investigate the complexities of why different types of IPV affect ART adherence variably, and which aspects of spirituality and SOC are elemental in improving adherence. Although this study revealed that exposure to IPV was reported more by women, it might be worthwhile for future studies to focus on poor ART adherence in both men and women, and in people who completely disengage from ART care.

Shubber et al. (2016) were of the opinion that there is no simple solution for ensuring high levels of ART adherence, especially for PLWH exposed to IPV. However, the findings of this doctoral study support the need to prioritise IPV screening at facilities that provide ART and

psychosocial services, focusing on aspects of spirituality and sense of coherence to improve the adherence of people exposed to IPV.

REFERENCES

- Abaynew, Y., Deribew, A., & Deribe, K. (2011). Factors associated with late presentation to HIV/AIDS care in South Wollo Zone Ethiopia: a case-control study. *AIDS Research and Therapy*, 8(1), 1-6. Doi: <https://doi.org/10.1186/1742-6405-8-8>
- Abdool Karim, Q., Dellar, R. C., Bearnot, B., Werner, L., Frohlich, J. A., Kharsany, A. B., & Abdool Karim, S. S. (2015). HIV-positive status disclosure in patients in care in rural South Africa: implications for scaling up treatment and prevention interventions. *AIDS and Behavior*, 19(2), 322-329.
- Abdul Wahab, N. A., Makmor Bakry, M., Ahmad, M., Mohamad Noor, Z., & Mhd Ali, A. (2021). Exploring culture, religiosity and spirituality influence on antihypertensive medication adherence among specialised population: A qualitative ethnographic approach. *Patient Preference and Adherence*, 15(1), 2249-2265.
DOI: <https://doi.org/10.2147/PPA.S319469>
- Abernathy, K., Chandler, L. J., & Woodward, J. J. (2010). Alcohol and the prefrontal cortex. *International Review of Neurobiology*, 91(1), 289-320.
- Abhari, M. B., Fisher, J. W., Kheiltash, A., & Nojomi, M. (2018). Validation of the Persian version of spiritual well-being questionnaires. *Iranian Journal of Medical Sciences*, 43(3), 276-285.
- Abrahams, N., Mathews, S., Martin, L. J., Lombard, C., & Jewkes, R. (2013). Intimate partner femicide in South Africa in 1999 and 2009. *PLoS Medicine*, 10(4), e1001412.
- Abu-Kaf, S., & Braun-Lewensohn, O. (2019). Coping resources and stress reactions among Bedouin Arab adolescents during three military operations. *Psychiatry Research*, 273(9), 559-566.
- Achchappa, B., Bhandary, M., Unnikrishnan, B., Ramapuram, J. T., Kulkarni, V., Rao, S., Maadi, D., Bhat, A., & Priyadarshni, S. (2017). Intimate Partner Violence, Depression,

- and Quality of Life among Women Living with HIV/AIDS in a Coastal City of South India. *Journal of the International Association of Providers of AIDS Care*, 16 (5), 455-459. DOI: <https://doi.org/10.1177/2325957417691137>
- Addo, M. K., Aboagye, R. G., & Tarkang, E. E. (2022). Factors influencing adherence to antiretroviral therapy among HIV/AIDS patients in the Ga West Municipality, Ghana. *International Journal of Infectious Diseases*, 3(1), 218-225.
DOI: <https://doi.org/10.1016/j.ijregi.2022.04.009>
- Adegbola, S. A., Marincowitz, G. J., Govender, I., & Ogunbanjo, G. A. (2016). Assessment of self-reported adherence among patients with type 2 diabetes in Matlala District Hospital, Limpopo Province. *African Journal of Primary Health Care and Family Medicine*, 8(1), 1-5.
- Adefolalu, A. O. (2018). Cognitive-behavioural theories and adherence: application and relevance in antiretroviral therapy. *Southern African Journal of HIV Medicine*, 19(1), 1-7. DOI: <https://dx.doi.org/10.4102/sajhivmed.v19i1.762>
- Adeniyi, O. M., Azimov, U., & Burluka, A. (2018). Algae biofuel: current status and future applications. *Renewable and Sustainable Energy Reviews*, 90(3), 316-335.
- Admur, A., & Banker, E. A. (2011). *Institutional Review Board: Member Handbook* (3rd ed.). London, Jones and Barlett.
- Afe, A. J., Motunrayo, O., & Ogungbade, G. O. (2017). Explaining Adherence to HAART among Patients Living with HIV/AIDS in Nigeria: Behavioral Theory Analysis. *Clinical Immunology and Research*, 1(1), 1-8.
DOI: <https://doi.org/10.33425/2639-8494.1005>
- Afifi, T. O., Mota, N., Sareen, J., & MacMillan, H. L. (2017). The relationships between harsh physical punishment and child maltreatment in childhood and intimate partner violence in adulthood. *Biomed Central Public Health*, 17(1), 493-493.

<https://doi.org/10.1186/s12889-017-4359-8>

- Agha, S., Hutchinson, P., & Kusanthan, T. (2017). 'The effects of religious affiliation on sexual initiation and condom use in Zambia'. *Journal of Adolescence Health*, 38(5), 550–555. <https://doi.org/10.1016/j.jadohealth.2005.04.012>
- Aguocha, C. M., Uwakwe, R. U., Duru, C. B., Diwe, K. C., Aguocha, J. K., Enwere, O. O., & Olose, E. O. (2015). Prevalence and socio-demographic determinants of depression among patients attending HIV/AIDS clinic in a teaching hospital in Imo State, Nigeria. *The American Journal of the Medical Sciences*, 3(6), 106-12.
- Agustin, D. A., Prasetyo, A. A., & Murti, B. (2018). A path analysis on adherence to antiretroviral therapy among HIV/AIDS patients at Dr. Moewardi hospital, Surakarta using health belief model. *Journal of Health Promotion and Behavior*, 3(1), 48-55.
- Ahmadi, R., Soleimani, R., Jalali, M. M., Yousefnezhad, A., Roshandel Rad, M., & Eskandari, A. (2017). Association of intimate partner violence with sociodemographic Ghodrati F et al. Women of Reproductive Age JMRH factors in married women: a population-based study in Iran. *Psychology, Health and Medicine*, 22(7), 834-844. DOI: <https://doi.org/10.1080/13548506.2016.1238489>
- Ahmed, S., Autrey, J., Katz, I. T., Fox, M. P., Rosen, S., Onoya, D., Bärnighausen, T., Mayer, K. H., & Bor, J. (2018). Why do people living with HIV not initiate treatment? A systematic review of qualitative evidence from low- and middle-income countries. *Social Science and Medicine*, 213, 72–84.
DOI: <https://doi.org/10.1016/j.socscimed.2018.05.048>
- Ahmed, A., Saqlain, M., Bashir, N., Dujaili, J., Hashmi, F., Mazhar, F., Khan, A., Jabeen, M., Blebil, A., & Awaisu, A. (2021). Health-related quality of life and its predictors among adults living with HIV/AIDS and receiving antiretroviral therapy in Pakistan. *Quality*

of Life Research, 30(6), 1653–1664. DOI: [https://doi.org/10.1007/s11136-021-02771-](https://doi.org/10.1007/s11136-021-02771-y)

[y](#)

Ahnlund, P., Andersson, T., Snellman, F., Sundström, M., & Heimer, G. (2017). Prevalence and Correlates of Sexual, Physical, and Psychological Violence Against Women and Men of 60 to 74 Years in Sweden. *Journal of Interpersonal Violence*, 35(5–6), 1539–1561. DOI: <https://doi.org/10.1177/0886260517696874>

Aibibula, W., Cox, J., Hamelin, A. M., McLinden, T., Klein, M. B., & Brassard, P. (2017). Association between food insecurity and HIV viral suppression: a systematic review and meta-analysis. *AIDS and Behavior*, 21, 754-765.

DOI: <https://doi.org/10.1007/s10461-016-1605-5>

AIDSinfo, A. (2013). Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. *Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents*.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.

Akangbe, T.A. (2020). Culture, religion and help-seeking for intimate partner violence victims in Nigeria (a narrative review). *African Journal of Social Sciences and Humanities Research*, 3(2), 56-62.

Alawiyah, W., & Lindayani, L. (2021). Systematic Review of Spiritual Experiences in HIV Patients. *KnE Life Sciences*, 189-208. DOI: <https://doi.org/10.18502/cls.v6i1.8604>

Ali, B., Mittal, M., Schroder, A., Ishman, N., Quinton, S., & Boekeloo, B. (2017). Psychological violence and sexual risk behavior among predominantly African American women. *Journal of Interpersonal Violence*, 35(23-24), 5574-5588. doi: 10.1177/0886260517720734.

- Ali, P. A., Dhingra, K., & McGarry, J. (2016). A literature review of intimate partner violence and its classifications. *Aggression and Violent Behavior, 31*, 16–25. DOI: <https://doi.org/10.1016/j.avb.2016.06.008>
- Ali, P.A., & Naylor P.B. (2013). Intimate partner violence: A narrative review of the feminist, social and ecological explanations for its causation. *Aggression and Violent Behavior, 18*(3), 373-382.
- Alonzo, A. A., & Reynolds, N. R. (1995). Stigma, HIV and AIDS: An exploration and elaboration of a stigma trajectory. *Social Science and Medicine, 41*(3), 303-315.
- Ameri, M., Movahed, E., & Farokhzadian, J. (2020). Effect of information, motivation, and behavioral skills model on adherence to medication, diet, and physical activity in HIV/AIDS patients: a health promotion strategy. *Journal of Education and Health Promotion, 9* (1), 3-17. doi:10.4103/jehp.jehp18820
- Amico, K. R., Harman, J. J., & Johnson, B. T. (2006). Efficacy of antiretroviral therapy adherence interventions: a research synthesis of trials, 1996 to 2004. *JAIDS Journal of Acquired Immune Deficiency Syndromes, 41*(3), 285-297. DOI: 10.1097/01.qai.0000197870.99196.ea
- Amour, M., Sangeda, R.Z., Kidenya, B., Balandya, E., Mmbaga, B.T., Machumi, L., Rugarabamu, A., Aris, E., Njiro, B.J., Ndumwa, H.P., et al. (2022). Adherence to Antiretroviral Therapy by Medication Possession Ratio and Virological Suppression among Adolescents and Young Adults Living with HIV in Dar es Salaam, Tanzania. *Tropical Medicine and Infectious Disease; 7*(4), 52-52.
DOI: <https://doi.org/10.3390/tropicalmed7040052>
- Andersson, N., Cockcroft, A., & Shea, B. (2008). Gender-Based violence and HIV: relevance for HIV prevention in hyperendemic countries of southern Africa. *AIDS, 22* (Suppl 4), S73-S86. DOI: [10.1097/01.aids.0000341778.73038.86](https://doi.org/10.1097/01.aids.0000341778.73038.86)

- Anderson, K. M., Renner, L. M., & Danis, F. S. (2012). Recovery: Resilience and growth, in the aftermath of domestic violence. *Violence Against Women*, 18(11), 1279-1299.
- Andronesu, L., Zulu, P. M., Jackson, S. S., Hachaambwa, L., Claassen, C. W., & Stafford, K. A. (2019). The association between gender and HIV viral suppression on third-line therapy in Zambia: a retrospective cohort study. *International Journal of STD and AIDS*, 30(5), 453-459. <https://doi.org/10.1177/0956462418817645>
- Angelo, A. T., & Alemayehu, D. S. (2021). Adherence and Its Associated Factors Among Adult HIV-Infected Patients on Antiretroviral Therapy in South Western Ethiopia, 2020. *Patient Preference and Adherence*, 15, 299-308.
DOI: <https://doi.org/10.2147/PPA.S298594>
- Antinori, A., Arendt, G., Becker, J. T., Brew, B. J., Byrd, D. A., Cherner, M., ... & Wojna, V. E. (2007). Updated research nosology for HIV-associated neurocognitive disorders. *Neurology*, 69(18), 1789-1799.
DOI: <https://doi.org/10.1212/01.WNL.0000287431.88658.8b>
- Antonovsky, A. (1979). *Health, Stress, and Coping: New Perspectives on Mental and Physical Well-Being*. San Francisco, California: Jossey-Bass Publishers.
- Antonovsky, A. (1987). *Unraveling the mystery of health. How people manage stress and stay well*. Jossey-Bass Publishers.
- Antonovsky, A. (1993). The structure and properties of the sense of coherence scale. *Social Science and Medicine*, 36(6), 725-733.
- Antonovsky, A. (1996). The salutogenic model as a theory to guide health promotion. *Health Promotion International*, 11(1), 11-18.
- Anyaike, C., Atoyebi, O. A., Musa, O. I., Bolarinwa, O. A., Durowade, K. A., Ogundiran, A., & Babatunde, O. A. (2019). Adherence to combined Antiretroviral therapy (cART)

among people living with HIV/AIDS in a Tertiary Hospital in Ilorin, Nigeria. *The Pan African medical journal*, 32 (1), 10-10.

DOI: <https://doi.org/10.11604/pamj.2019.32.10.7508>

Appelbaum Belisle, H., Hennink, M., Ordóñez, C. E., John, S., Ngubane-Joye, E., Hampton, J., ... & Marconi, V. C. (2015). Concurrent use of traditional medicine and ART: Perspectives of patients, providers and traditional healers in Durban, South Africa. *Global Public Health*, 10(1), 71-87.

DOI: <https://doi.org/10.1080/17441692.2014.967709>

Arafat, Y. & Ibrahim, M.I.M., 2018, 'The use of measurements and health behavioral models to improve medication adherence', in M.I. Ibrahim, A. Wertheimer & Z. Babar (eds.), *Social and administrative aspects of pharmacy in low- and middle-income countries*, Academic Press, Cambridge, MA.

Arnold, S, Herrick, L, Pankratz, V, & Mueller, P. (2006). Spiritual well-being, emotional distress, and perception of health after a myocardial infarction. *Internet Journal of Advanced Nursing Practice*, 9 (1).

Aron, A., Lewandowski, G. Jr, Mashek, D., & Aron, E. (2013). The self-expansion model of motivation and cognition in close relationships. In Simpson J. & Campbell L. (Eds.), *The Oxford Handbook of Close Relationships*, 90–115. Oxford University Press, Oxford, NY. doi: 10.1093/oxfordhb/9780195398694.013.0005

Arrey, A. E., Bilsen, J., Lacor, P., & Deschepper, R. (2016). Spirituality/religiosity: A cultural and psychological resource among Sub-Saharan African migrant women with HIV/AIDS in Belgium. *PloS one*, 11(7), e0159488.

Asche, C., LaFleur, J., & Conner, C. (2011). A Review of Diabetes Treatment Adherence and the Association with Clinical and Economic Outcomes. *Clinical Therapeutics*, 33(1), 74–109. <https://doi.org/10.1016/j.clinthera.2011.01.019>

- Atibioke, O. P., Osinowo, H. O., & Taiwo, A. O. (2018). Influence of Education and pattern of Daily Feeding on Treatment Adherence in People living with HIV and AIDS. *International Review of Social Science*, 6(7), 342-351.
- Attia S, Egger M, Muller M, Zwahlen M, & Low, N. (2009). Sexual transmission of HIV according to viral load and antiretroviral therapy: systematic review and meta-analysis. *AIDS*, 23 (11), 1397–1404.
- Atuyambe, L. M., Ssegujja, E., Ssali, S., Tumwine, C., Nekesa, N., Nannungi, A., ... & Wagner, G. (2014). HIV/AIDS status disclosure increases support, behavioural change and, HIV prevention in the long term: a case for an Urban Clinic, Kampala, Uganda. *Biomed Central Health Services Research*, 14(1), 1-11. DOI: <https://doi.org/10.1186/1472-6963-14-276>
- Audet, C. M, McGowan, C. C, Wallston, K. A, & Kipp, A. M. (2013). Relationship between HIV Stigma and Self-Isolation among People Living with HIV in Tennessee. *PLoS One*, 8(8), e69564. doi: 10.1371/journal.pone.0069564.
- Audet, C., Wagner, L., & Wallston, K. (2015). Finding meaning in life while living with HIV: validation of a novel HIV meaningfulness scale among HIV-infected participants living in Tennessee. *Biomed Central Psychology*. DOI: <https://doi.org/10.1186/s40359-015-0070-7>.
- Azadarmaki, T., Kassani, A., Menati, R., Hassanzadeh, J., & Menati, W. (2016). Psychometric properties of a screening instrument for domestic violence in a sample of Iranian women. *Nursing and Midwifery Studies*, 5(1), e27763-e27763. DOI: 10.17795/nmsjournal27763.
- Azmach, N. N., Hamza, T, A., & Husen, A. A. (2019). “Socioeconomic and Demographic Statuses as Determinants of Adherence to Antiretroviral Treatment in HIV Infected

- Patients: A Systematic Review of the Literature”. *Current HIV Research*, 17(3), 161-172 . DOI: <https://doi.org/10.2174/1570162X17666190919130229>
- Babbie, E. & Mouton, J. (2008). *The practice of social research*, South African edition. Cape Town: Oxford University Press Southern Africa.
- Babcock J. C., Costa, D. M., Green, C. E., & Eckhardt, C.I. (2004). What situations induce intimate partner violence? A reliability and validity study of the proximal antecedents to violent episodes (PAVE) scale. *Journal of Family Psychology*, 18(3), 433-442.
- Bacon, O., Chin, J., & Hsu, L. (2018). *The Rapid ART Program Initiative for HIV Diagnoses (RAPID) in San Francisco*. CROI. Boston, MA, USA.
- Bandura A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215. URL: www.apa.org/journals/rev.html
- Bandura, A. (1988). Organisational applications of social cognitive theory. *Australian Journal of Management*, 13(2), 275-302.
- Bandura A. (2004). Health promotion by social cognitive means. *Health Education and Behavior*, 31(2), 143-164.
- Bango, F., Ashmore, J., Wilkinson, L., van Cutsem, G., & Cleary, S. (2016). Adherence clubs for long-term provision of antiretroviral therapy: cost-effectiveness and access analysis from Khayelitsha, South Africa. *Tropical Medicine and International Health*, 21(9), 1115–1123. <https://doi.org/10.1111/tmi.12736>
- Bangsberg, D. R., Kroetz, D. L., & Deeks, S. G. (2007). Adherence-resistance relationships to combination HIV antiretroviral therapy. *Current HIV/AIDS Reports*, 4(2), 65–72. <https://doi.org/10.1007/s11904-007-0010-0>
- Bangsberg, D. R. (2008). Preventing HIV antiretroviral resistance through better monitoring of treatment adherence. *The Journal of Infectious Diseases*, 197(Suppl 3), S272-
[doi:10.1086/533415](https://doi.org/10.1086/533415)

Barfod, T. S., Sørensen, H. T., Nielsen, H., Rodkjær, L., & Obel, N. (2006). ‘Simply forgot’ is the most frequently stated reason for missed doses of HAART irrespective of degree of adherence. *HIV Medicine*, 7(5), 285-290.

DOI:<https://doi.org/10.1111/j.1468-1293.2006.00387.x>

Barnabas, R. V., van Rooyen, H., Tumwesigye, E., Brantley, J., Baeten, J. M., van Heerden, A., Turyamureeba, B., Joseph, P., Krows, M., Thomas, K. K., Schaafsma, T. T., Hughes, J. P., & Celum, C. (2016). Uptake of antiretroviral therapy and male circumcision after community-based HIV testing and strategies for linkage to care versus standard clinic referral: a multisite, open-label, randomised controlled trial in South Africa and Uganda. *The Lancet HIV*, 3(5), e212–e220.

DOI:[https://doi.org/10.1016/s2352-3018\(16\)00020-5](https://doi.org/10.1016/s2352-3018(16)00020-5)

Bärnighausen, T., Chaiyachati, K., Chimbindi, N., Peoples, A., Haberer, J., & Newell, M. L. (2011). Interventions to increase antiretroviral adherence in sub-Saharan Africa: a systematic review of evaluation studies. *The Lancet Infectious Diseases*, 11(12), 942–

951. DOI: [https://doi.org/10.1016/s1473-3099\(11\)70181-5](https://doi.org/10.1016/s1473-3099(11)70181-5)

Barros-Gomes, P., Kimmes, J., Smith, E., Cafferky, B., Stith, S., Durtschi, J., & McCollum, E. (2019). The Role of Depression in the Relationship Between Psychological and Physical Intimate Partner Violence. *Journal of Interpersonal Violence*, 34(18), 3936–

3960. DOI: <https://doi.org/10.1177/0886260516673628>

Basti, B. D., Mahesh, V., Bant, D. D., & Bathija, G. V. (2017). Factors affecting antiretroviral treatment adherence among people living with human immunodeficiency virus/acquired immunodeficiency syndrome: A prospective study. *Journal of Family Medicine and Primary Care*, 6(3), 482.

- Basu, S., & Garg, S. (2017). Methods for estimating medication adherence to antiretroviral therapy: Response to Mehta: et al. (2016). *Journal of Family Medicine and Primary Care*, 6(1), 171-172.
- Bauman, K. (2019). *New Survey Questions Do a Better Job Capturing Mobile Use. United States Census*.
URL:<https://www.census.gov/library/stories/2018/08/internet-access.html>
[accessed May 16 2019].
- Beer, L., Heffelfinger, J., Frazier, E., Mattson, C., Roter, B., Barash, E., ... & Valverde, E. (2012). Suppl 1: Use of and Adherence to Antiretroviral Therapy in a Large US Sample of HIV-infected Adults in Care, 2007-2008. *The open AIDS Journal*, 6, 213-223.
- Belayihun, B., & Negus, R. (2015). Antiretroviral treatment adherence rate and associated factors among people living with HIV in Dubti Hospital, Afar Regional State, East Ethiopia. *International Scholarly Research Notices*, 2015, 187360. DOI: <http://dx.doi.org/10.1155/2015/187360>
- Benning, L., Mantsios, A., Kerrigan, D., Coleman, J. S., Golub, E., Blackstock, O., ... & Murray, M. (2020). Examining adherence barriers among women with HIV to tailor outreach for long-acting injectable antiretroviral therapy. *Biomed Central Women's Health*, 20(1), 1-11.
- Bernard, C., Dabis, F., & de Rekeneire, N. (2017). Prevalence and factors associated with depression in people living with HIV in sub-Saharan Africa: a systematic review and meta-analysis. *PLOS one*, 12(8), e0181960.
DOI: <https://doi.org/10.1371/journal.pone.0181960>
- Bernstein, M., Phillips, T., Zerbe, A., McIntyre, J., Brittain, K., Petro, G., Abrams, E., & Myer, L. (2016). Intimate partner violence experienced by HIV-infected pregnant women in

South Africa: a cross-sectional study. *British Medical Journal Open*, 6(8), e011999.

DOI: <https://doi.org/10.1136/bmjopen-2016-011999>

Bershteyn, A., Jamieson, L., Kim, H-Y., Platais, I., Milali, M.P., Mudimu, E., et al. (2022).

Transmission reduction, health benefits, and upper-bound costs of interventions to improve retention on antiretroviral therapy: a combined analysis of three mathematical models. *The Lancet Global Health*, 10(9), pp. e1298-e1306, [https://doi.org/10.1016/S2214-109X\(22\)00310-2](https://doi.org/10.1016/S2214-109X(22)00310-2).

Bezabhe, W. M., Chalmers, L., Bereznicki, L. R., & Peterson, G. M. (2016). Adherence to Antiretroviral Therapy and Virologic Failure: A Meta-Analysis. *Medicine*, 95(15), e3361. <https://doi.org/10.1097/MD.0000000000003361>

Bezuidenhout, A., & Cilliers, F. V. (2010). Burnout, work engagement and sense of coherence in female academics in higher-education institutions in South Africa. *South African Journal of Industrial Psychology*, 36(1), 1-10.

Bhagwanjee, A., Govender, K., Reardon, C., Johnstone, L., George, G., & Gordon, S. (2013). Gendered constructions of the impact of HIV and AIDS in the context of the HIV-positive seroconcordant heterosexual relationship. *Journal of the International AIDS Society*, 16(1), 18021.

Bhaskar, R. (1978). *A Realist Theory of Science*. New York: Humanities Press.

Bhaskar, R. (2008). *A Realist Theory of Science*. London: Verso.

Bijker, R., Jiamsakul, A., Kityo, C., Kiertiburanakul, S., Siwale, M., Phanuphak, P., Akanmu, S., Chaiwarith, R., Wit, F. W., Sim, B. L., Boender, T. S., Ditangco, R., Rinke De Wit, T. F., Sohn, A. H., & Hamers, R. L. (2017). Adherence to antiretroviral therapy for HIV in sub-Saharan Africa and Asia: a comparative analysis of two regional cohorts. *Journal of the International AIDS Society*, 20(1).

DOI: <https://doi.org/10.7448/ias.20.1.21218>

- Bikinesi, L.T, Mash, R, & Joyner, K. (2017). Prevalence of intimate partner violence and associated factors amongst women attending antenatal care at Outapi clinic, Namibia: A descriptive survey. *African Journal of Primary Health Care and Family Medicine*, 9(1), 1-6. DOI: <https://doi.org/10.4102/phcfm.v9i1.1512>
- Biomndo, B. C., Bergmann, A., Lahmann, N., & Atwoli, L. (2021). Intimate partner violence is a barrier to antiretroviral therapy adherence among HIV-positive women: Evidence from government facilities in Kenya. *PLOS ONE*, 16(4), e0249813. <https://doi.org/10.1371/journal.pone.0249813>
- Bisson, G. P., Gross, R., Bellamy, S., Chittams, J., Hislop, M., Regensberg, L., ... & Nachega, J. B. (2008). Pharmacy refill adherence compared with CD4 count changes for monitoring HIV-infected adults on antiretroviral therapy. *PLOS Medicine*, 5(5), e109.
- Blumberg, B., Cooper, D.R. & Schindler, P.S. (2011). *Business Research Methods*, London: McGraw-Hill.
- Boateng, D., Kwabong, G. D., & Agyei-Baffour, P. (2013). Knowledge, perception about antiretroviral therapy (ART) and prevention of mother-to-child-transmission (PMTCT) and adherence to ART among HIV positive women in the Ashanti Region, Ghana: a cross-sectional study. *Biomed Central Women's Health*, 13(1). DOI: <https://doi.org/10.1186/1472-6874-13-2>
- Bogart, L. M., Chetty, S., Giddy, J., Sypek, A., Sticklor, L., Walensky, R. P., Losina, E., Katz, J. N., & Bassett, I. V. (2013). Barriers to care among people living with HIV in South Africa: Contrasts between patient and healthcare provider perspectives. *AIDS Care*, 25(7), 843–853. DOI: <https://doi.org/10.1080/09540121.2012.729808>
- Bondarchuk, C P., Mlandu, N, Adams, T, & de Vries, E. (2022). Predictors of low antiretroviral adherence at an urban South African clinic: A mixed-methods study. *Southern African Journal of HIV Medicine*, 23(1), 18-25.

DOI: <https://dx.doi.org/10.4102/sajhivmed.v23i1.1343>

Bonner, K., Mezocho, A., Roberts, T., Ford, N., & Cohn, J. (2013). Viral load monitoring as a tool to reinforce adherence: a systematic review. *Journal of Acquired Immune Deficiency Syndromes (1999)*, 64(1), 74–78.

DOI: <https://doi.org/10.1097/QAI.0b013e31829f05ac>

Boogaard, J. V. D., Lyimo, R. A., Boeree, M. J., Kibiki, G. S., & Aarnoutse, R. E. (2011). Electronic monitoring of treatment adherence and validation of alternative adherence measures in tuberculosis patients: a pilot study. *Bulletin of the World Health Organization*, 89 (9), 632-639.

Boonzaier, F. A., & Gordon, S. F. (2015). Responding to men's violence against women partners in post-apartheid South Africa: On the necessity of identification across identity's intersections. *British Journal of Criminology*, 55(6), 1096-1114.

Bor, J., Herbst, A. J., Newell, M. L., & Bärnighausen, T. (2013). Increases in Adult Life Expectancy in Rural South Africa: Valuing the Scale-Up of HIV Treatment. *Science*, 339(6122), 961–965. <https://doi.org/10.1126/science.1230413>

Bornman, S. (2015). The criminal justice system responses to sexual violence in South Africa. In: Verwoerd, M. & Lopes, C (eds), *Sexualised Violence in the National Debate: Cross-border Observations on India and South Africa* (pp. 54–63). Cape Town: Heinrich Boll Foundation Southern Africa.

Boshoff, L. (2012). *Validation of the Questionnaire for Eudaimonic Well-being in a South African context*. Doctoral dissertation, North-West University.

Boullé, C., Kouanfack, C., Laborde-Balen, G., Boyer, S., Aghokeng, A. F., Carrieri, M. P., ... & Stratall ANRS 12110ESTHER Study Group. (2015). Gender differences in adherence and response to antiretroviral treatment in the Stratall trial in rural district

- hospitals in Cameroon. *Journal of Acquired Immune Deficiency Syndromes*, 69(3), 355-364.
- Boyd, M., Boffito, M., Castagna, A. and Estrada, V. (2019), Rapid initiation of antiretroviral therapy at HIV diagnosis: definition, process, knowledge gaps. *HIV Medicine*, 20, 3-11. DOI: <https://doi.org/10.1111/hiv.12708>
- Boyes, M. E., Cluver, L. D., Meinck, F., Casale, M., & Newnham, E. (2019). Mental health in South African adolescents living with HIV: correlates of internalising and externalising symptoms. *AIDS care*, 31(1), 95-104.
DOI: <https://doi.org/10.1080/09540121.2018.1524121>
- Braganza, M.E., Hoy, S & Lafrenière, G. (2022) “They are my family”: exploring the usage of spiritual and religious supports by survivors of intimate partner violence. *Journal of Religion and Spirituality in Social Work: Social Thought*, 41(1), 23-50.
DOI: [10.1080/15426432.2021.1955427](https://doi.org/10.1080/15426432.2021.1955427)
- Brandão, B. M. G. D. M., Angelim, R. C. D. M., Marques, S. C., Oliveira, R. C. D., & Abrão, F. M. D. S. (2020). Living with HIV: coping strategies of seropositive older adults. *Research, Society and Development*, 12(7), e5412742547-e5412742547.
- Braun-Lewensohn, O., & Al-Sayed, K. (2018). Syrian adolescent refugees: How do they cope during their stay in refugee camps? *Frontiers in Psychology*, 9, 1258-1258. DOI: <https://doi.org/10.3389/fpsyg.2018.01258>
- Breet, E., Seedat, S., & Kagee, A. (2019). Posttraumatic Stress Disorder and Depression in Men and Women Who Perpetrate Intimate Partner Violence. *Journal of Interpersonal Violence*, 34(10), 2181–2198. DOI: <https://doi.org/10.1177/0886260516660297>
- Briesacher, B. A., Andrade, S. E., Fouayzi, H., & Chan, K. A. (2008). Comparison of Drug Adherence Rates Among Patients with Seven Different Medical

- Conditions. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy*, 28(4), 437–443. DOI: <https://doi.org/10.1592/phco.28.4.437>
- Brim, O. G., Ryff, C. D., and Kessler, R. C. (2019). *How Healthy are We?: A National Study of Well-Being at Midlife*. Chicago: University of Chicago Press.
- Brittain, K., Remien, R. H., Mellins, C. A., Phillips, T. K., Zerbe, A., Abrams, E. J., & Myer, L. (2018). Determinants of suboptimal adherence and elevated HIV viral load in pregnant women already on antiretroviral therapy when entering antenatal care in Cape Town, South Africa. *AIDS Care*, 30(12), 1517-1523.
- Brown, J. L., Littlewood, R. A., & Vanable, P. A. (2013). Social-cognitive correlates of antiretroviral therapy adherence among HIV-infected individuals receiving infectious disease care in a medium-sized northeastern US city. *AIDS Care*, 25(9), 1149–1158. DOI: <https://doi.org/10.1080/09540121.2012.752566>
- Brown, L., Macintyre, K., & Trujillo, L. (2003). Interventions to reduce HIV/AIDS stigma: what have we learned? *AIDS Education and Prevention*, 15(1), 49-69. DOI: <https://doi.org/10.1521/aeap.15.1.49.23844>
- Browne, S. H., Peloquin, C., Santillo, F., Haubrich, R., Muttera, L., Moser, K., ... & Blaschke, T. F. (2018). Digitizing medicines for remote capture of oral medication adherence using co-encapsulation. *Clinical Pharmacology and Therapeutics*, 103(3), 502-510.
- Bryman, A., & Bell, E. (2015). *Business research methods*. Oxford University Press, Oxford.
- Bryngersdottir, H. S., & Halldorsdottir, S. (2022). “I’m a winner, not a victim”: The facilitating factors of post-traumatic growth among women who have suffered intimate partner violence. *International Journal of Environmental Research and Public Health*, 19(3), 1342.
- Budhwani, H., Gakumo, C. A., Yigit, I., Rice, W. S., Fletcher, F. E., Whitfield, S., ... & Turan, J. M. (2022). Patient health literacy and communication with providers among women

living with HIV: a mixed methods study. *AIDS and Behavior*, 26 (5), 1422-1430.

DOI:<https://doi.org/10.1007/s10461-021-03496-2>

Bukenya, D., Mayanja, B. N., Nakamanya, S., Muhumuza, R., & Seeley, J. (2019). What causes non-adherence among some individuals on long term antiretroviral therapy? Experiences of individuals with poor viral suppression in Uganda. *AIDS Research and Therapy*, 16(1), 1-9. DOI: <https://doi.org/10.1186/s12981-018-0214-y>

Bull, T, Mittelmark, M.B, & Kanyeka, N. E. (2013). Assets for well- being for women living in deep poverty: through a salutogenic looking-glass. *Critical Public Health*, 23(2), 160-173.

Buthelezi, S., Swart, L. A., & Seedat, M. (2017). The incidence and epidemiology of eldercide in the city of Johannesburg, South Africa. *Journal of Forensic and Legal Medicine*, 52, 82-88. DOI: <https://doi.org/10.1016/j.jflm.2017.08.018>

Byron, K., & Miller-Perrin, C. (2009). The value of life purpose: Purpose as a mediator of faith and well-being. *The Journal of Positive Psychology*, 4(1), 64-70.

Campbell, J. C., Baty, M. L., Ghandour, R. M., Stockman, J. K., Francisco, L., & Wagman, J. (2008). The intersection of intimate partner violence against women and HIV/AIDS: a review. *International Journal of Injury Control and Safety Promotion*, 15(4), 221–231. DOI: <https://doi.org/10.1080/17457300802423224>

Campbell, L., Masquillier, C., Thunnissen, E., Ariyo, E., Tabana, H., Sematlane, N., ... & Wouters, E. (2020). Social and Structural Determinants of Household Support for ART Adherence in Low- and Middle-Income Countries: A Systematic Review. *International Journal of Environmental Research and Public Health*, 17(11), E3808-E3808. DOI: 10.3390/ijerph17113808

- Capaldi, D. M., & Owen, L. D. (2001). Physical aggression in a community sample of at-risk young couples: Gender comparisons for high frequency, injury, and fear. *Journal of Family Psychology*, 15(3), 425–440. DOI: <https://doi.org/10.1037/0893-3200.15.3.425>
- Capaldi, D. M., Kim, H. K., & Shortt, J. W. (2007). Observed initiation and reciprocity of physical aggression in young, at-risk couples. *Journal of Family Violence*, 22 (2), 101–111.
- Capinha, M., Rijo, D., Pereira, M., & Matos, M. (2022). The prevalence, directionality, and dyadic perpetration types of intimate partner violence in a community sample in Portugal: A gender-inclusive inquiry. *European Journal on Criminal Policy and Research*, 1-18. DOI: <https://doi.org/10.1007/s10610-022-09514-w>
- Carvalho, P. P., Barroso, S. M., Coelho, H. C., & Penaforte, F. R. D. O. (2019). Factors associated with antiretroviral therapy adherence in adults: an integrative review of literature. *Ciencia and Saude Coletiva*, 24, 2543-2555.
DOI: <https://doi.org/10.1590/1413-81232018247.22312017>
- Castillo-Mancilla, J. R., & Haberer, J. E. (2018). Adherence measurements in HIV: new advancements in pharmacologic methods and real-time monitoring. *Current HIV/AIDS Reports*, 15, 49-59.
- Catalan, J., Tuffrey, V., Ridge, D., & Rosenfeld, D. (2017). What influences quality of life in older people living with HIV? *AIDS Research and Therapy*, 14(1), 1-10.
- Ceccon, R. F., Meneghel, S. N., & Hirakata, V. N. (2014). Women with HIV: gender violence and suicidal ideation. *Revista de Saude Publica*, 48(5), 758-765.
DOI: /10.1590/S0034-8910.2014048005228
- Cederfjäll, C, Langius-Eklöf, A, Lidman, K, & Wredling R. (2002). Self-reported adherence to antiretroviral treatment and degree of sense of coherence in a group of HIV-infected patients. *AIDS Patient Care STDS*, 16(12), 609–616.

- Centers for Disease Control and Prevention. (2014). *HIV Surveillance Report, 2014, vol. 26*.
URL: <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-us.pdf>.
- Chadambuka, C. (2022). Coping Strategies Adopted by Women Who Experienced Intimate Partner Violence in the Context of Social Norms in Rural Areas in Zimbabwe. *Journal of Interpersonal Violence, 37*(56), 2776-2800.
DOI: <https://doi.org/10.1177/0886260520943734>
- Chaiyasit, Y., Thong-on, R., Piboonrungraj, P., & Kotta, P. (2019). The Roles of Spirituality in People Living with HIV/AIDS: A Qualitative Meta-synthesis. *The Bangkok Medical Journal, 15*(1), 113–120. DOI: <https://doi.org/10.31524/bkkmedj.2019.02.020>
- Chakraborty, A., Hershow, R. C., Qato, D. M., Stayner, L., & Dworkin, M. S. (2020). Adherence to antiretroviral therapy among HIV patients in India: a systematic review and meta-analysis. *AIDS and Behavior, 24*(7), 2130-2148.
- Chalker, J., Wagner, A., Tomson, G., Laing, R., Johnson, K., Wahlström, R., & Ross-Degnan, D. (2010). Urgent need for coordination in adopting standardized antiretroviral adherence performance indicators. *Journal of Acquired Immune Deficiency Syndromes, 53*(2), 159-161.
- Chatterji, S., & Heise, L. (2021). Examining the bi-directional relationship between intimate partner violence and depression: Findings from a longitudinal study among women and men in rural Rwanda. *SSM - Mental Health, 1*, 100038.
DOI: <https://doi.org/10.1016/j.ssmmh.2021.100038>.
- Chen, L. P., Murad, M. H., Paras, M. L., Colbenson, K. M., Sattler, A. L., Goranson, E. N., ... & Zirakzadeh, A. (2010). Sexual abuse and lifetime diagnosis of psychiatric disorders: systematic review and meta-analysis. *In Mayo Clinic Proceedings, 85*(7), 618–629.

- Chen, M., Dou, Z., Wang, L., Wu, Y., Zhao, D., Gan, X., ... & Zhang, F. (2017). Gender differences in outcomes of antiretroviral treatment among HIV-infected patients in China: a retrospective cohort study, 2010–2015. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 76(3), 281-288. DOI: 10.1097/QAI.0000000000001500
- Cheng, L. J., Cheng, J. Y., Yen, K. Y., Lau, S. T., & Lau, Y. (2023). Global Prevalence and Factors Related to Intimate Partner Violence Amongst People Living with Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome: A Systematic Review, Meta-Analysis, and Meta-Regression. *Trauma, Violence, and Abuse*, 24(4), 2466–2485. DOI: <https://doi.org/10.1177/15248380221097436>
- Chesney, M. A. (2000). Factors affecting adherence to antiretroviral therapy. *Clinical Infectious Diseases*, 30(Supplement_2), S171-S176.
DOI: <https://doi.org/10.1086/313849>
- Chikhungu, L. C., Amos, M., Kandala, N., & Palikadavath, S. (2019). Married women's experience of domestic violence in Malawi: New evidence from a cluster and multinomial logistic regression analysis. *Journal of Interpersonal Violence*, 36(17-18), 8693-8714. DOI: <https://doi.org/10.1177/0886260519851782>
- Chimoyi, L., Chikovore, J., Musenge, E., Mabuto, T., Chetty-Makkan, C. M., Munyai, R., ... & Setswe, G. (2022). Understanding factors influencing utilization of HIV prevention and treatment services among patients and providers in a heterogeneous setting: a qualitative study from South Africa. *PLoS Global Public Health*, 2(2), e0000132.
- Chirundu, D., Tapesana S., Magande, P., & Mduluzi, T. (2018). Adherence to Antiretroviral therapy among Clients Utilizing a Primary Health Care Facility Kadoma Zimbabwe (2016). *Texila International Journal of Nursing*, 4(1).
DOI: 10.21522/TIJNR.2015.04.01.Art002

- Chirwa, E., Jewkes, R., Van Der Heijden, I., & Dunkle, K. (2020). Intimate partner violence among women with and without disabilities: a pooled analysis of baseline data from seven violence-prevention programmes. *British Medical Journal global health*, 5(11), e002156.
- Chisholm-Burns, M., & Spivey, C. (2010). Use of social cognitive theory to guide a medical treatment adherence intervention. *International Journal of Interdisciplinary Social Sciences*, 5 (7), 97-108.
- Chop, E., Duggaraju, A., Malley, A., Burke, V., Caldas, S., Yeh. P. T., Narasimhan, M., Amin, A., & Kennedy, C. E. (2017). Food insecurity, sexual risk behavior, and adherence to antiretroviral therapy among women living with HIV: A systematic review. *Health Care for Women International*, 38(9), 927-944.
DOI: [10.1080/07399332.2017.1337774](https://doi.org/10.1080/07399332.2017.1337774)
- Christofides, N. J., Hatcher, A. M., Rebombo, D., McBride, R. S., Munshi, S., Pino, A., ... & Jewkes, R. K. (2020). Effectiveness of a multi-level intervention to reduce men's perpetration of intimate partner violence: a cluster randomised controlled trial. *Trials* 21, 1-13. DOI: <https://doi.org/10.1186/s13063-020-4185-7>
- Cichowitz, C., Maraba, N., Hamilton, R., Charalambous, S., & Hoffmann, C. J. (2017). Depression and alcohol use disorder at antiretroviral therapy initiation led to disengagement from care in South Africa. *PLOS One*, 12(12), e0189820.
- City of Johannesburg Annual Report 2017/18 (2017). Retrieved from <https://www.joburg.org.za/documents /Documents/Annual%20Reports/20172018/CoJ%20Annual%20Report%202017-18%20 24%20January%202019.pdf> Accessed, 22 October 2019.

- Cluver, L., Meinck, F., Toska, E., Orkin, F. M., Hodes, R., & Sherr, L. (2018). Multitype violence exposures and adolescent antiretroviral nonadherence in South Africa. *AIDS*, 32(8), 975–983. DOI: <https://doi.org/10.1097/QAD.0000000000001795>
- Cluver, L., Shenderovich, Y., Toska, E., Rudgard, W. E., Zhou, S., Orkin, M., ... & Sherr, L. (2021). Clinic and care: associations with adolescent antiretroviral therapy adherence in a prospective cohort in South Africa. *AIDS*, 35(8), 1263.
DOI: [10.1097/QAD.0000000000002882](https://doi.org/10.1097/QAD.0000000000002882)
- Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). New York: John Wiley & Sons.
- Coffelt, T. A. (2017). Confidentiality and anonymity of participants. In Allen, M (Ed.), *The SAGE Encyclopedia of Communication Research Methods*. Thousand Oaks, CA: Sage.
DOI:[10.4135/9781483381411.n86](https://doi.org/10.4135/9781483381411.n86).
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Second Edition. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
- Cohen., M.S, McCauley, M, & Gamble T.R. (2012). HIV treatment as prevention and HPTN 052. *Current Opinion in HIV and AIDS*,7(2),99–105.
- Collis, J., & Hussey, R. (2014). Identifying Your Paradigm. In *Business Research* (pp. 42-57). Palgrave, London.
- Colombini, M., James, C., Ndwiga, C., & Mayhew, S. H. (2016). The risks of partner violence following HIV status disclosure, and health service responses: narratives of women attending reproductive health services in Kenya. *Journal of the International AIDS Society*, 19(1), 20766-20766. DOI: <https://doi.org/10.7448/ias.19.1.20766>
- Conroy, A. A. (2014). Gender, power, and intimate partner violence: a study on couples from rural Malawi. *Journal of Interpersonal Violence*, 29(5), 866-888.
- Corless, I., Guarino, A., Nicholas, P., Tyer-Viola, L., Kirksey, K., Brion, J., Dawson Rose, C., Eller, L., Rivero-Mendez, M., Kemppainen, J., Nokes, K., Sefcik, E., Voss, J.,

- Wantland, D., Johnson, M., Phillips, J., Webel, A., Ipinge, S., Portillo, C., . . . Sullivan, K. (2012). Mediators of antiretroviral adherence: A multisite international study. *AIDS Care*, 25(3), 364–377. <https://doi.org/10.1080/09540121.2012.701723>
- Corless, I. B., Hoyt, A. J., Tyer-Viola, L., Sefcik, E., Kemppainen, J., Holzemer, W. L., ... & Nicholas, P. K. (2017). 90-90-90-Plus: Maintaining adherence to antiretroviral therapies. *AIDS Patient Care and STDs*, 31(5), 227-236.
DOI: <http://doi.org/10.1089/apc.2017.0009>
- Corless, I. B., Wantland, D., Bhengu, B., McInerney, P., Ncama, B., Nicholas, P. K., ... & Davis, S. M. (2009). HIV and tuberculosis in Durban, South Africa: adherence to two medication regimens. *AIDS Care*, 21(9), 1106-1113.
- Costa, B. M., Kaestle, C. E., Walker, A., Curtis, A., Day, A., Toumbourou, J. W., & Miller, P. (2015). Longitudinal predictors of domestic violence perpetration and victimization: A systematic review. *Aggression and Violent Behavior*, 24, 261–272.
DOI: <https://doi.org/10.1016/j.avb.2015.06.001>
- Costa, J. D. M., Torres, T. S., Coelho, L. E., & Luz, P. M. (2018). Adherence to antiretroviral therapy for HIV/AIDS in Latin America and the Caribbean: Systematic review and meta-analysis. *Journal of the International AIDS Society*, 21(1), e25066. DOI: <https://doi.org/10.1002/jia2.25066>
- Côté, J., Cossette, S., Ramirez-Garcia, P., De Pokomandy, A., Worthington, C., Gagnon, M. P., Auger, P., Boudreau, F., Miranda, J., Guéhéneuc, Y. G., & Tremblay, C. (2015). Evaluation of a Web-based tailored intervention (TAVIE en santé) to support people living with HIV in the adoption of health promoting behaviours: an online randomized controlled trial protocol. *Biomed Central Public Health*, 15(1), 1-2.
DOI: <https://doi.org/10.1186/s12889-015-2310-4>

- Cowan, N. (2017). The many faces of working memory and short-term storage. *Psychonomic Bulletin and Review*, 24 (4), 1158-1170.
- Cramer, J. A., Benedict, Muszbek, N., Keskinaslan, A., & Khan, Z. M. (2007). The significance of compliance and persistence in the treatment of diabetes, hypertension and dyslipidaemia: a review. *International Journal of Clinical Practice*, 62(1), 76–87. DOI: <https://doi.org/10.1111/j.1742-1241.2007.01630.x>
- Cramer, J. A., Roy, A., Burrell, A., Fairchild, C. J., Fuldeore, M. J., Ollendorf, D. A., & Wong, P. K. (2008). Medication Compliance and Persistence: Terminology and Definitions. *Value in Health*, 11(1), 44–47.
DOI: <https://doi.org/10.1111/j.1524-4733.2007.00213.x>
- Crawford, A. M. (1996). Stigma Associated With AIDS: A Meta-Analysis 1. *Journal of Applied Social Psychology*, 26(5), 398-416.
DOI: <https://doi.org/10.1111/j.1559-1816.1996.tb01856.x>
- Creswell, J. W. (2009). Mapping the field of mixed methods research. *Journal of Mixed Methods Research*, 3(2), 95-108.
- Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Method Approaches*. Thousand Oaks, CA: SAGE.
- Crim, S. M., Tie, Y., Beer, L., Weiser, J., & Dasgupta, S. (2020). Barriers to antiretroviral therapy adherence among Hispanic and Latino men who have sex with men—United States, 2015–2019. *Morbidity and Mortality Weekly Report*, 69(40), 1437.
DOI: <https://doi.org/10.15585/mmwr.mm6940a1>
- Croome, N., Ahluwalia, M., Hughes, L. D., & Abas, M. (2017). Patient-reported barriers and facilitators to antiretroviral adherence in sub-Saharan Africa. *AIDS*, 31(7), 995.
doi: [10.1097/QAD.0000000000001416](https://doi.org/10.1097/QAD.0000000000001416)
- Crotty, M. (1998). *The foundations of social research*. London: Sage.

- Crowley, T, Mokoka, E, & Geyer, N. (2021). Ten years of nurse-initiated antiretroviral treatment in South Africa: A narrative review of enablers and barriers. *Southern African Journal of HIV Medicine*, 22(1), 1-13.
DOI: <https://dx.doi.org/10.4102/sajhivmed.v22i1.1196>
- Crush, J., Frayne, B., & Pendleton, W. (2012). The crisis of food insecurity in African cities. *Journal of Hunger and Environmental Nutrition*, 7(2-3), 271-292. DOI: <https://doi.org/10.1080/19320248.2012.702448>
- Csabonyi, M., & Phillips, L. J. (2020). Meaning in life and substance use. *Journal of Humanistic Psychology*, 60(1), 3-19.
- Daar, E. S., Wang, Y., Siqueiros, L., Shen, J., Guerrero, M., Di, X., ... Liu, H. (2019). Real-time and wireless assessment of adherence to antiretroviral therapy with co-encapsulated ingestion sensor in HIV-infected patients: A pilot study. *Clinical and Translational Science*, 13(1), 189-194. DOI:10.1111/cts.12701
- Dale, S. K., Pierre-Louis, C., Bogart, L. M., O'Cleirigh, C., & Safren, S. A. (2018). Still I rise: The need for self-validation and self-care in the midst of adversities faced by Black women with HIV. *Cultural Diversity and Ethnic Minority Psychology*, 24(1), 15.
- Dalmida, S. G., Holstad, M. M., DiIorio, C., & Laderman, G. (2009). Spiritual well-being, depressive symptoms, and immune status among women living with HIV/AIDS. *Women and Health*, 49(2-3), 119-143.
DOI: <https://doi.org/10.1080/03630240902915036>
- Dalmida, S.G., Holstad, M. M., DiIorio, C., & Laderman, G. (2011). Spiritual well-being and health-related quality of life among African-American women with HIV/AIDS. *Applied Research in Quality of life*, 6(2), 139-157.
DOI: <https://doi.org/10.1007/s11482-010-9122-6>

- Dalmida, S. G., Koenig, H. G., Holstad, M. M., & Thomas, T. L. (2015). Religious and psychosocial covariates of health-related quality of life in people living with HIV/AIDS. *HIV/AIDS Research and Treatment: Open Journal*, *1*(1), 1000HARTOJ1101.
- Dalmida, S. G., McCoy, K., Koenig, H. G., Miller, A., McDonnell Holstad, M., Thomas, T. L., ... & Mugoya, C. G. (2018). Correlates and predictors of medication adherence in outpatients living with HIV/AIDS. *Journal of HIV/AIDS and Social Services*, *17*(4), 402-420. DOI: <https://doi.org/10.1080/15381501.2018.1502709>
- D'Amore, C., Martin, S. L., Wood, K., & Brooks, C. (2021). Themes of healing and posttraumatic growth in women survivors' narratives of intimate partner violence. *Journal of Interpersonal Violence*, *36*(5-6), 2697-2724.
- Damulak, P. P., Ismail, S., Abdul Manaf, R., Mohd Said, S., & Agbaji, O. (2021). Interventions to Improve Adherence to Antiretroviral Therapy (ART) in Sub-Saharan Africa: An Updated Systematic Review. *International Journal of Environmental Research and Public Health*, *18*(5), 2477- 2477. DOI: <https://doi.org/10.3390/ijerph18052477>
- Daneshvar, S., Shafiei, M., & Basharpour, S. (2022). Group-based Compassion-focused Therapy on Experiential Avoidance, Meaning-in-life, and Sense of Coherence in Female Survivors of Intimate Partner Violence with PTSD: A Randomized Controlled Trial. *Journal of Interpersonal Violence*, *37*(7-8), 4187-4211.
DOI: <https://doi.org/10.1177/0886260520958660>
- Davis, A., Pala, A. N., Nguyen, N., Robbins, R. N., Joska, J., Gouse, H., ... & Remien, R. H. (2021). Sociodemographic and psychosocial predictors of longitudinal antiretroviral therapy (ART) adherence among first-time ART initiators in Cape Town, South Africa. *AIDS Care*, *33*(11), 1394-1403.
DOI: <https://doi.org/10.1080/09540121.2020.1798336>

- Deka, D. B., Gopalan, R. T., & Bhave, T. A. (2019). Understanding Spiritual Well Being, Forgiveness, Mindfulness and Meaning in Life among Offenders. *Journal of Forensic Sciences and Criminal Investigations*, 13(1), 555852.
DOI: 10.19080/JFSCI.2019.13.555852
- de Los Rios, P., Okoli, C., Castellanos, E., Allan, B., Young, B., Brough, G., ... & Van de Velde, N. (2021). Physical, emotional, and psychosocial challenges associated with daily dosing of HIV medications and their impact on indicators of quality of life: findings from the positive perspectives study. *AIDS and Behavior*, 25 (3), 961-972.
- Department of Health. (2016). Implementation of the Universal Test and Treat Strategy for HIV Positive Patients and Differentiated Care for Stable Patients. Pretoria: Department of Health.
URL: <http://www.sahivsoc.org/Files/22%208%2016%20Circular%20UTT%20%20%20Decongestion%20CCMT%20Directorate.pdf>.
- Denison, J. A., Koole, O., Tsui, S., Menten, J., Torpey, K., Van Praag, E., ... & Bangsberg, D. R. (2015). Incomplete adherence among treatment-experienced adults on antiretroviral therapy in Tanzania, Uganda and Zambia. *AIDS*, 29(3), 361- 371.
DOI: <https://doi.org/10.1097%2FQAD.0000000000000543>
- Denzin, N.K. & Lincoln, Y.S., (2011). Paradigmatic Controversies, Contradictions, and Emerging Confluences, Revisited. In N. K. Denzin & Y. S. Lincoln, eds. *The Sage Hand of Qualitative Research* (pp. 97–128). Thousand Oaks: Sage.
- Devine, P. G., Plant, E. A., & Harrison, K. (1999). The problem of “us” versus “them” and AIDS stigma. *American Behavioral Scientist*, 42(7), 1212-1228.
- Demir, E., Saatçioğlu, Ö., & İmrol, F. (2016). Examination of educational researches published in international journals in terms of normality assumptions. *Current Research in Education*, 2(3), 130-148.

- Dessie, G., Wagnaw, F., Mulugeta, H., Amare, D., Jara, D., Leshargie, C. T., Negesse, A., Rayasam, S., & Burrowes, S. (2019). The effect of disclosure on adherence to antiretroviral therapy among adults living with HIV in Ethiopia: a systematic review and meta-analysis. *Biomed Central Infectious Diseases*, *19*(1), 528-528.
DOI: <https://doi.org/10.1186/s12879-019-4148-3>
- De Vos, A.S., Strydom, H., Fouche, C.B., & Delpont, C.S.L. (2011). *Research at Grass Roots for the Social Sciences and Human Services Professions. 4th Ed.* Pretoria: Van Schaik.
- Devraj, R., Herndon, C. M., & Griffin, J. (2013). Pain Awareness and Medication Knowledge: A Health Literacy Evaluation. *Journal of Pain and Palliative Care Pharmacotherapy*, *27*(1), 19–27.
DOI: <https://doi.org/10.3109/15360288.2012.751955>
- Deyno, S., & Toma, A. (2014). Adherence to antiretroviral therapy in HIV-positive patients in Ethiopia: review. *Journal of Tropical Diseases*, *2*(4), 142-142.
- DiClemente, C. C., Prochaska, J. O., Fairhurst, S. K., Velicer, W. F., Velasquez, M. M., & Rossi, J. S. (1991). The process of smoking cessation: an analysis of precontemplation, contemplation, and preparation stages of change. *Journal of Consulting and Clinical Psychology*, *59*(2), 295-304.
- Dienes, Z. (2014). Using Bayes to get the most out of non-significant results. *Frontiers in psychology*, *5*, 781.
- Dinaj-Koci, V., Wang, B., Naar-King, S., & MacDonell, K, K. (2019). Adolescent Medicine Trials Network for HIV/AIDS Interventions, A Multi-Site Study of Social Cognitive Factors Related to Adherence Among Youth Living With HIV in the New Era of Antiretroviral Medication. *Journal of Pediatric Psychology*, *44* (1), 98–109.
DOI: <https://doi.org/10.1093/jpepsy/jsy076>

- Di Napoli, I., Procentese, F., Carnevale, S., Esposito, C., & Arcidiacono, C. (2019). Ending Intimate Partner Violence (IPV) and Locating Men at Stake: An Ecological Approach. *International Journal of Environmental Research and Public Health*, 16(9), 1652. <https://doi.org/10.3390/ijerph16091652>
- Direess, G, & Linger, M. (2020). Change in Viral Load Count and Its Predictors Among Unsuppressed Viral Load Patients Receiving an Enhanced Adherence Counseling Intervention at Three Hospitals in Northern Ethiopia: An Exploratory Retrospective Follow-Up Study. *SAHARA-J: Journal of Social Aspects of HIV/AIDS*, 17(1), 38-44. DOI: <https://doi.org/10.2147/HIV.S283917>
- Dokkedahl, S.B., Kirubakaran, R., & Bech-Hansen, D. (2022). The psychological subtype of intimate partner violence and its effect on mental health: a systematic review with meta-analyses. *Systematic Reviews*, 11(1), 163-163. DOI: <https://doi.org/10.1186/s13643-022-02025-z>
- Dolatian, M., & Sedghi, S. (2017). Correlation between religious attitude and resiliency of women under domestic violence. *Global Journal of Health Science*, 9(3), 199–208. DOI: <https://doi.org/10.5539/gjhs.v9n3p199>
- Doolittle, B. R., Justice, A. C., & Fiellin, D. A. (2018). Religion, spirituality, and HIV clinical outcomes: a systematic review of the literature. *AIDS and Behavior*, 22(6), 1792-1801.
- Dorcélus, L., Bernard, J., Georgery, C., & Vanessa, C. (2021). Factors associated with antiretroviral therapy adherence among people living with HIV in Haiti: a cross-sectional study. *AIDS Research and Therapy*, 18(1), 1-9. DOI: <https://doi.org/10.1186/s12981-021-00405-4>
- Dörnyei, Z. (2007). *Research methods in applied linguistics*. New York: Oxford University Press.

- Down, I., Prestage, G., Triffitt, K., Brown, G., Bradley, J., & Ellard, J. (2014). Recently diagnosed gay men talk about HIV treatment decisions. *Sexual Health, 11*(2), 200-206.
- Drumm, R., Popescu, M., Cooper, L., Trecartin, S., Seifert, M., Foster, T., & Kilcher, C. (2014). "God just brought me through it": Spiritual coping strategies for resilience among intimate partner violence survivors. *Clinical Social Work Journal, 42*(4), 385–394.
- Duko, B., Toma, A., Asnake, S., & Abraham, Y. (2019). Depression, anxiety and their correlates among patients with HIV in South Ethiopia: An institution-based cross-sectional study. *Frontiers in psychiatry, 10*, 290. DOI: [10.3389/fpsy.2019.00290](https://doi.org/10.3389/fpsy.2019.00290)
- Dunbar-Jacob, J., & Mortimer-Stephens, M. (2001). Treatment adherence in chronic disease. *Journal of Clinical Epidemiology, 54*(12), S57–S60.
- Dunkle, K. L., Jewkes, R. K., Brown, H. C., Gray, G. E., McIntyre, J. A., & Harlow, S. D. (2004). Gender-based violence, relationship power, and risk of HIV infection in women attending antenatal clinics in South Africa. *The Lancet, 363*(9419), 1415-1421.
- Durrheim, K., & Painter, D. (2008). Collecting quantitative data: Sampling and measuring. In M. T. Blanche, K. Durrheim, & D. Painter (Eds.), *Research in practice: Applied methods for the social sciences* (pp. 131–159). Cape Town: Juta and Company.
- Earnshaw, V. A., & Chaudoir, S. R. (2009). From conceptualizing to measuring HIV stigma: a review of HIV stigma mechanism measures. *AIDS and Behavior, 13*(6), 1160-1177. DOI: <https://doi.org/10.1007/s10461-009-9593-3>
- Edge, J., & Richards, K. (1998). May I see your warrant please? Justifying Outcomes in Qualitative research. *Applied Linguistics, 19*(3), 334-356. DOI: <http://dx.doi.org/10.1093/applin/19.3.334>

- Eh, K., McGill, M., Wong, J., & Krass, I. (2016). Cultural issues and other factors that affect self-management of type 2 diabetes mellitus (T2D) by Chinese immigrants in Australia. *Diabetes Research and Clinical Practice*, (100)119, 97-105.
- Ellison, L. L. (2006). A review of The spiritual well-being scale.
- Ellsberg, M., Arango, D.J., Morton, M., Gennari, F., Kiplesund, S., Contreras, M., Watts, C. (2015) Prevention of violence against women and girls: What does the evidence say? *The Lancet*, 385 (9977), 555-1566. DOI: [10.1016/S0140-6736\(14\)61703-7](https://doi.org/10.1016/S0140-6736(14)61703-7)
- Elul, B., Basinga, P., Nuwagaba-Biribonwoha, H., Saito, S., Horowitz, D., Nash, D., ... & Asiimwe, A. (2013). High levels of adherence and viral suppression in a nationally representative sample of HIV-infected adults on antiretroviral therapy for 6, 12 and 18 months in Rwanda. *PLOS One*, 8(1), e53586.
- Emuren, L., Welles, S., Macalino, G., Evans, A. A., Polansky, M., Ganesan, A., ... & Agan, B. K. (2020). Predictors of health-related quality of life among military HIV-infected individuals. *Quality of Life Research*, 29(7), 1855-1869
- Enwereji, E. E., & Eke, R. A. (2016). Review of useful theories for working with people who are living with HIV and AIDS. *Journal of Clinical Research In HIV AIDS And Prevention*, 2(3), 30-49.
- Eriksson, M., & Lindström, B. (2005). Validity of Antonovsky's sense of coherence scale: a systematic review. *Journal of Epidemiology and Community Health*, 59(6), 460-466.
- Eriksson, M., Lindstrom, B. (2007). Antonovsky's sense of coherence scale and its relation with quality of life: a systematic review. *Journal of Epidermal Community Health*, 61(11), 938–944. DOI: 10.1136/jech.2006.056028
- Eshun-Wilson, I., Rohwer, A., Hendricks, L., Oliver, S., & Garner, P. (2019). Being HIV positive and staying on antiretroviral therapy in Africa: A qualitative systematic review and theoretical model. *PLOS ONE*, 14(1),e0210408.

DOI: <https://doi.org/10.1371/journal.pone.0210408>

Evangelini, M., & Wroe, A. L. (2017). HIV disclosure anxiety: A systematic review and theoretical synthesis. *AIDS and Behavior*, 21(1), 1-11.

DOI: [10.1007/s10461-016-1453-3](https://doi.org/10.1007/s10461-016-1453-3)

Evans, D., & Fox, M. P. (2013). When and how should we be measuring adherence to antiretroviral therapy in resource-limited settings. *Journal of Clinical Research in HIV AIDS And Prevention*, 1(2), 24-30.

Fan, E., & Uretsky, E. (2016). In search of results: Anthropological interrogations of evidence-based global health. *Critical Public Health*, 27(2), 157–162.

Fapohunda, T., Masiagwala, P., Stiegler, N., & Bouchard, J. P. (2021). Intimate partner and domestic violence in South Africa. In *Annales Médico-psychologiques, Revue Psychiatrique*, 179(7), 653-661. DOI: <https://doi.org/10.1016/j.amp.2021.07.007>

Farley, J., Eng, M., Mbaezue, N., Ibe, I., Zamanai, A., Falayajo, K., ... & Dakum, P. (2007). Adherence assessment utilizing pharmacy refill records and patient self-report. In Abstract 791 from the 2007 HIV/AIDS Implementers Meeting, June 16-19, 2007, Kigali, Rwanda.

Fauk, N. K., Mwanri, L., Hawke, K., & Ward, P. R. (2022). Traditional Human Immunodeficiency Virus treatment and family and social influence as barriers to accessing HIV care services in Belu, Indonesia. *PLoS One*, 17(7), e0264462. DOI: <https://doi.org/10.1371/journal.pone.0264462>

Feldbau-Kohn, S., Heyman, R. E., & O'Leary, K. D. (1998). Major depressive disorder and depressive symptomatology as predictors of husband to wife physical aggression. *Violence and Victims*, 13(4), 347–360.

Felsher, M., Szep, Z., Krakower, D., Martinez-Donate, A., Tran, N., & Roth, A. M. (2018). "I Don't Need PrEP Right Now": A Qualitative Exploration of the Barriers to PrEP Care

- Engagement Through the Application of the Health Belief Model. *AIDS Education and Prevention: Official Publication of the International Society for AIDS Education*, 30(5), 369-381.
- Ferradini, L., Jeannin, A., Pinoges, L., Izopet, J., Odhiambo, D., Mankhambo, L., ... & Carrieri, M. P. (2006). Scaling up of highly active antiretroviral therapy in a rural district of Malawi: an effectiveness assessment. *The Lancet*, 367(9519), 1335-1342.
- Field, A. (2009). *Discovering statistics using SPSS*. Third Edition. London: Sage.
- Field, S., Onah, M., van Heyningen, T., & Honikman, S. (2018). Domestic and intimate partner violence among pregnant women in a low resource setting in South Africa: a facility-based, mixed methods study. *Biomed Central Women's Health*, 18(1), e119.
DOI: <https://doi.org/10.1186/s12905-018-0612-2>
- Finfgeld-Connett, D. (2017). Intimate partner violence and its resolution among Mexican Americans. *Issues in Mental Health Nursing*, 38(6), 464-472.
DOI: <https://doi.org/10.1080/01612840.2017.1284968>
- Finneran, C., & Stephenson, R. (2013). Intimate partner violence among men who have sex with men: A systematic review. *Trauma, Violence, and Abuse*, 14(2), 168-185.
- Fisher, W.A., Fisher, J.D., & Harman, J. (2003). The Information-Motivation-Behavioral Skills Model: A General Social Psychological Approach to Understanding and Promoting Health Behavior. *Social Psychological Foundations of Health and Illness*, 82-106.
- Fletcher, A. J. (2017). Applying critical realism in qualitative research: methodology meets method. *International journal of social research methodology*, 20(2), 181-194.
- Fonsah, J. Y., Njamnshi, A. K., Kouanfack, C., Qiu, F., Njamnshi, D. M., Tagny, C. T., Nchindap, E., Kenmogne, L., Mbanya, D., Heaton, R., & Kanmogne, G. D. (2017). Adherence to Antiretroviral Therapy (ART) in Yaoundé-Cameroon: Association with

- Opportunistic Infections, Depression, ART Regimen and Side Effects. *PLOS ONE*, 12(1), e0170893. DOI: <https://doi.org/10.1371/journal.pone.0170893>
- Ford, N., Shubber, Z., Meintjes, G., Grinsztejn, B., Eholie, S., Mills, E. J., ... & Doherty, M. (2015). Causes of hospital admission among people living with HIV worldwide: a systematic review and meta-analysis. *The Lancet HIV*, 2(10), e438-e444. DOI: [https://doi.org/10.1016/S2352-3018\(15\)00137-X](https://doi.org/10.1016/S2352-3018(15)00137-X)
- Foresto, J. S., Melo, E. S., Costa, C. R. B., Antonini, M., Gir, E., & Reis, R. K. (2017). Adherence to antiretroviral therapy by people living with HIV/AIDS in a municipality of São Paulo. *Revista Gaúcha de Enfermagem*, 38. e63158.
Doi: 10.1590/1983-1447.2017.01.63158.
- Fox, M. P., Pascoe, S. J. S., Huber, A. N., Murphy, J., Phokojo, M., Gorgens, M., Rosen, S., Wilson, D., Pillay, Y., & Fraser-Hurt, N. (2018). Effectiveness of interventions for unstable patients on antiretroviral therapy in South Africa: results of a cluster-randomised evaluation. *Tropical Medicine and International Health*, 23(12), 1314–1325. DOI: <https://doi.org/10.1111/tmi.13152>
- Fox, N., Hunn, A., & Mathers, N. (2009). Sampling and sample size calculation. *East Midlands/Yorkshire: the National Institutes for Health Research. Research Design Service for the East Midlands/Yorkshire and the Humber*.
- Fox, M. P., Shearer, K., Maskew, M., Macleod, W., Majuba, P., Macphail, P., & Sanne, I. (2012). Treatment outcomes after 7 years of public-sector HIV treatment. *AIDS*, 26(14), 1823–1828.
DOI: <https://doi.org/10.1097/qad.0b013e328357058a>
- Frankl, V. E. (1984). *Search for Meaning*. Milwaukee, WI, USA: Mount Mary College.
- Frankl, V. E. (1988). *The Will to Meaning: Foundations and Applications of Logotherapy*. New York, NY: Penguin.

- Fredericksen, R. J., Nance, R. M., Whitney, B. M., Harding, B. N., Fitzsimmons, E., Del Rio, C., ... & Crane, H. M. (2021). Correlates of psychological intimate partner violence with HIV care outcomes on patients in HIV care. *Biomed Central Public Health*, *21*(1), 1-10.
- Freeman, R., Gwadz, M., Francis, K., & Hoffeld, E. (2021). Forgetting to take HIV antiretroviral therapy: a qualitative exploration of medication adherence in the third decade of the HIV epidemic in the United States. *SAHARA-J: Journal of Social Aspects of HIV/AIDS*, *18*(1), 113-130. DOI: <https://doi.org/10.1080/17290376.2021.1989021>
- Frey, B. B. (Ed.). (2018). *The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation*. Sage Publications.
- Friedman, E. M., Ruini, C., Foy, R., Jaros, L., Sampson, H., and Ryff, C. D. (2017). Lighten UP! A community-based group intervention to promote psychological well-being in older adults. *Aging and Mental Health* *21*(2), 199–205.
DOI: 10.1080/13607863.2015.1093605
- Fulu, E., Jewkes, R., Roselli, T., & García-Moreno. C. (2013). “Prevalence of and Factors Associated with Male Perpetration of Intimate Partner Violence: Findings from the UN Multi-country Cross-sectional Study on Men and Violence in Asia and the Pacific.” *The Lancet Global Health*, *1*(4),e187–e207.
- Furlong, P. & Marsh, D. (2010). ‘A skin not a sweater: ontology and epistemology in political science.’ In Marsh, D. and Stoker G. (eds.) 2010. *Theory and methods in political science*. (3rd ed.) Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.
- Fuster-RuizdeApodaca, M. J., Castro-Granell, V., Laguía, A., Jaén, Á., Cenoz, S., & Galindo, M. J. (2020). Drug use and antiretroviral therapy (ART) interactions: a qualitative study to explore the knowledge, beliefs, adherence, and quality of life of people living with

- HIV taking ART and illicit drugs. *AIDS Research and Therapy*, 17(1), 24-24.
DOI:<https://doi.org/10.1186/s12981-020-00279-y>
- Gachara, G., Mavhandu, L. G., Rogawski, E. T., Manhaeve, C., & Bessong, P. O. (2017). Evaluating Adherence to Antiretroviral Therapy Using Pharmacy Refill Records in a Rural Treatment Site in South Africa. *AIDS Research and Treatment*, 2017, 1–6. DOI: <https://doi.org/10.1155/2017/5456219>
- Galletta, M., Cherchi, M., Cocco, A., Lai, G., Manca, V., Pau, M., Tatti, F., Zambon, G., Deidda, S., Origa, P., Massa, E., Cossu, E., Boi, F., & Contu, P. (2019). Sense of coherence and physical health-related quality of life in Italian chronic patients: the mediating role of the mental component. *British Medical Journal Open*, 9(9), e030001. DOI:<https://doi.org/10.1136/bmjopen-2019-030001>
- Gandhi, M., Ameli, N., Bacchetti, P., Anastos, K., Gange, S. J., Minkoff, H., ... Greenblatt, R. M. (2011). Atazanavir Concentration in Hair Is the Strongest Predictor of Outcomes on Antiretroviral Therapy. *Clinical Infectious Diseases*, 52(10), 1267–1275. DOI:10.1093/cid/cir131
- García-Moreno, C., Hegarty, K., d'Oliveira, A. F. L., Koziol-McLain, J., Colombini, M., & Feder, G. (2015). The health-systems response to violence against women. *The Lancet*, 385(9977), 1567-1579.
- Garner, C., & Page, S. J. (2005). Applying the transtheoretical model to the exercise behaviors of stroke patients. *Topics in Stroke Rehabilitation*, 12(1), 69-75.
- Garriga, C., Trujillo, L. G., Del Romero, J., Montero, M., Pérez-Elías, M. J., Lévano, D. C., ... & Rodríguez-Arenas, M. A. (2020). Psychological distress in women and men living with HIV in Spain: a cross-sectional telephone survey. *British Medical Journal Mental Health*, 23(3), 91-99.

- Gass, J. D., Stein, D. J., Williams, D. R., & Seedat, S. (2010). Intimate partner violence, health behaviours, and chronic physical illness among South African women. *South African Medical Journal*, *100*(9), 582-585
- Gass, J. D., Stein, D. J., Williams, D. R., & Seedat, S. (2011). Gender differences in risk for intimate partner violence among South African adults. *Journal of Interpersonal Violence*, *26*(14), 2764–89.
- Gast, A., & Mathes, T. (2019). Medication adherence influencing factors—an (updated) overview of systematic reviews. *Systematic Reviews*, *8*, 1-17.
- Gauteng Department of Health Annual Report. (2016). *Gauteng Provincial Government*. Government Printers, Pretoria.
- Gay, C., Portillo, C. J., Kelly, R., Coggins, T., Davis, H., Aouizerat, B. E., ... & Lee, K. A. (2011). Self-reported medication adherence and symptom experience in adults with HIV. *Journal of the Association of Nurses in AIDS Care*, *22*(4), 257-268.
- Genberg, B. L., Lee, Y., Rogers, W. H., Willey, C., & Wilson, I. B. (2013). Stages of change for adherence to antiretroviral medications. *AIDS Patient Care and STDs*, *27*(10), 567-572.
- George, D. & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference 11. 0 update*. 4th ed, Boston: Allyn & Bacon.
- George, L. S., & Park, C. L. (2016). Meaning in life as comprehension, purpose, and mattering: Toward integration and new research questions. *Review of General Psychology*, *20*(3), 205-220.
- Gephart, R. (1999) Paradigms and research methods. *Research Methods Forum*, *4*, Academy of Management.
- URL: http://division.aonline.org/rm/1999_RMD_Forum_Paradigms_and_Research_Methods.htm Accessed, October 2019.

- Gerino, E., Caldarera, A. M., Curti, L., Brustia, P., & Rollè, L. (2018). Intimate partner violence in the golden age: Systematic review of risk and protective factors. *Frontiers in Psychology*, 9, 1595. DOI: /10.3389/fpsyg.2018.01595
- Ghidei, L., Simone, M. J., Salow, M. J., Zimmerman, K. M., Paquin, A. M., Skarf, L. M., Kostas, T. R. M., & Rudolph, J. L. (2013). Aging, Antiretrovirals, and Adherence: A Meta Analysis of Adherence among Older HIV-Infected Individuals. *Drugs and Aging*, 30(10), 809–819. Doi: <https://doi.org/10.1007/s40266-013-0107-7>
- Gibbs, A., Jewkes, R., Willan, S., & Washington, L. (2018). Associations between poverty, mental health and substance use, gender power, and intimate partner violence amongst young (18-30) women and men in urban informal settlements in South Africa: A cross-sectional study and structural equation model. *PLOS One*, 13(10), e0204956.
- Gibbs, A., Reddy, T., Closson, K., Cawood, C., Khanyile, D., & Hatcher, A. (2022). Intimate partner violence and the HIV care and treatment cascade among adolescent girls and young women in DREAMS, South Africa. *Journal of Acquired Immune Deficiency Syndromes*, 89(2), 136-142. Doi: [10.1097/QAI.0000000000002843](https://doi.org/10.1097/QAI.0000000000002843)
- Gibbs, A., Washington, L., Abdelatif, N., Chirwa, E., Willan, S., Shai, N., ... & Jewkes, R. (2020). Stepping stones and creating futures intervention to prevent intimate partner violence among young people: cluster randomized controlled trial. *Journal of Adolescent Health*, 66(3), 323-335.
DOI: <https://doi.org/10.1016/j.jadohealth.2019.10.004>
- Glanz, K., Rimer, B., & Lewis, F. (2002) *Health behavior and health education. Theory, research and practice*. 3rd edition. Jossey-Bass, San Francisco.
- Glendinning, E., Spiers, J., Smith, J. A., Anderson, J., Campbell, L. J., Cooper, V., & Horne, R. (2019). A qualitative study to identify perceptual barriers to antiretroviral therapy (ART) uptake and adherence in HIV positive people from UK black African and

- Caribbean communities. *AIDS and Behavior*, 23(9), 2514-2521. DOI: [10.1007/s10461-019-02670-x](https://doi.org/10.1007/s10461-019-02670-x)
- Goffman, E. (2009). *Stigma: Notes on the management of spoiled identity*. Simon and Schuster.
- Gogtay, N. J., Deshpande, S. P., & Thatte, U. M. (2017). Principles of regression analysis. *Journal of the Association for Physicians India*, 65(48), 48-52.
- Golin, C. E., Knight, K., Carda-Auten, J., Gould, M., Groves, J., L. White, B., ... & Wohl, D. (2016). Individuals motivated to participate in adherence, care and treatment (imPACT): development of a multi-component intervention to help HIV-infected recently incarcerated individuals link and adhere to HIV care. *Biomed Central Public Health*, 16, 1-16. DOI: <https://doi.org/10.1186/s12889-016-3511-1>
- González-Álvarez, S., Madoz-Gúrpide, A., Parro-Torres, C., Hernández-Huerta, D., & Mangado, E. O. (2019). Relationship between alcohol consumption, whether linked to other substance use or not, and antiretroviral treatment adherence in HIV+ patients. *Adicciones*, 31(1), 8-17. DOI: 10.20882/adicciones.916.
- Goodman, L. A., Smyth, K. F., Borges, A. M., & Singer, R. (2009). When crises collide: How intimate partner violence and poverty intersect to shape women's mental health and coping? *Trauma, Violence, and Abuse*, 10(4), 306-329.
- Goodwin, D. L. (2008). Self-regulated dependency: Ethical reflections on interdependence and help in adapted physical activity. *Sport, Ethics and Philosophy*, 2(2), 172 – 184.
- Gordon, K., Hoffman, R. M., Azhar, G., Ramirez, D., Schneider, S., & Wagner, G. J. (2021). Examining correlates of pre-ART and early ART adherence to identify key factors influencing adherence readiness. *AIDS and Behavior*, 25(1), 113-123.
- Gorski, P. S. (2013). What is critical realism? And why should you care?
- Govender, K., Beckett, S., Masebo, W., Braga, C., Zambezi, P., Manhique, M., George, G., & Durevall, D. (2019). Effects of a Short Message Service (SMS) Intervention on

Reduction of HIV Risk Behaviours and Improving HIV Testing Rates Among Populations located near Roadside Wellness Clinics: A Cluster Randomised Controlled Trial in South Africa, Zimbabwe and Mozambique. *AIDS and Behavior*, 23(11), 3119–3128. DOI: <https://doi.org/10.1007/s10461-019-02427-6>

Graham, L. M., Jensen, T. M., Givens, A. D., Bowen, G. L., & Rizo, C. F. (2019). Intimate partner violence among same-sex couples in college: A propensity score analysis. *Journal of Interpersonal Violence*, 34(8), 1583-1610

Granich, R., Gupta, S., Hall, I., Aberle-Grasse, J., Hader, S., & Mermin, J. (2017). Status and methodology of publicly available national HIV care continua and 90-90-90 targets: A systematic review. *PLOS Medicine*, 14(4), e1002253.

DOI: <https://doi.org/10.1371/journal.pmed.1002253>

Gravetter, F.J. & Forzano, L.A.B. (2016) *Research Methods for the Behavioral Sciences*. 5th Edition, Cengage, Stamford.

Grill, K. B., Wang, J., Cheng, Y. I., & Lyon, M. E. (2020). The role of religiousness and spirituality in health-related quality of life of persons living with HIV: A latent class analysis. *Psychology of Religion and Spirituality*, 12(4), 494–504.

<https://doi.org/10.1037/rel0000301>

Grimes, R. M., & Grimes, D. E. (2010). Readiness: the state of the science (or the lack thereof). *Current HIV/AIDS Reports*, 7(4), 245-252.

Doi: <https://doi.org/10.1007/s11904-010-0056-2>

Grinsztejn, B, Hosseinipour, M.C., Ribaud, H.J., Swindells, S, Eron, J, Chen, Y.Q, et al. (2014). Effects of early versus delayed initiation of antiretroviral treatment on clinical outcomes of HIV-1 infection: results from the phase 3 HPTN 052 randomised controlled trial. *Lancet Infectious Diseases*, 14(4), 281–290.

Grix, J. (2004). *The Foundations of Research*. London: Palgrave Macmillan

- Groat, L., & Wang, D. (2002). *Architectural Research Methods*. John Wiley and Sons: New York
- Gross, G. M., Laws, H., Park, C. L., Hoff, R., & Hoffmire, C. A. (2019). Meaning in life following deployment sexual trauma: Prediction of posttraumatic stress symptoms, depressive symptoms, and suicidal ideation. *Psychiatry Research*, 278, 78-85.
- Grossoehme, D. H., Szczesniak, R. D., Mrug, S., Dimitriou, S. M., Marshall, A., & McPhail, G. L. (2016). Adolescents' spirituality and cystic fibrosis airway clearance treatment adherence: examining mediators. *Journal of Pediatric Psychology*, 41(9), 1022–1032.
- Grover, V. K. (2015.) Research approach: an overview. *Golden Research Thoughts*, 4(8),1-8.
- Guba, E.G. (1990). The alternative paradigm dialog. In E.G. Guba (Eds.), *The paradigm dialog* (pp. 17-30). Newbury Park, CA: Sage.
- Guba, E. G., & Lincoln, Y. S. (2005). Paradigmatic Controversies, Contradictions, and Emerging Confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (3rd ed., pp. 191–215). Sage Publications Ltd.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. 105–117). Sage Publications, Inc.
- Gubi, D., & Wandera, S.O. (2022). Prevalence and correlates of intimate partner violence among ever-married men in Uganda: a cross-sectional survey. *Biomed Central Public Health* 22, 535. DOI: <https://doi.org/10.1186/s12889-022-12945-z>
- Guta, A., Voronka, J., & Gagnon, M. (2018). Resisting the digital medicine Panopticon: toward a bioethics of the oppressed. *The American Journal of Bioethics*, 18(9), 62-64.
- Haas, A. D., Zaniewski, E., Anderegg, N., Ford, N., Fox, M. P., Vinikoor, M., Dabis, F., Nash, D., Sinayobye, J. A., Niyongabo, T., Tanon, A., Poda, A., Adedimeji, A. A., Edmonds, A., Davies, M.-A., & Egger, M. (2018). Retention and mortality on antiretroviral

therapy in sub-Saharan Africa: Collaborative analyses of HIV treatment programmes: Collaborative. *Journal of the International AIDS Society*, 21(2), e25084. DOI: <https://doi.org/10.1002/jia2.25084>

Haberer, J. E., Sabin, L., Amico, K. R., Orrell, C., Galárraga, O., Tsai, A. C., Vreeman, R. C., Wilson, I., Sam-Agudu, N. A., Blaschke, T. F., Vrijens, B., Mellins, C. A., Remien, R. H., Weiser, S. D., Lowenthal, E., Stirratt, M. J., Sow, P. S., Thomas, B., Ford, N., Mills, E., ... Bangsberg, D. R. (2016). Improving antiretroviral therapy adherence in resource-limited settings at scale: a discussion of interventions and recommendations. *Journal of the International AIDS Society*, 20(1), 21371-21371. DOI: <https://doi.org/10.7448/IAS.20.1.21371>

Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). *Multivariate data analysis: A Global Perspective*. Prentice Hall.

Hallebone, E. & Priest, J. (2009). *“Business and Management Research: Paradigms and Practices”*. Palgrave Macmillan

Hampana, K. M. (2016). Intimate partner violence and HIV-positive women’s non- adherence to antiretroviral medication for the purpose of prevention of mother-to-child transmission in Lusaka, Zambia. *Social Science and Medicine*, 153, 123–130. DOI: <https://doi.org/10.1016/j.socscimed.2016.02.011>

Hargreaves, J.R., Krishnaratne, S. Mathema, H., Lilleston, P.S., Sievwright, K., Mandla, N., Mainga, T., Vermaak, R., Piwowar-Manning, E., Schaap, A., et al. (2018). Individual and Community-Level Risk Factors for HIV Stigma in 21 Zambian and South African Communities: Analysis of Data from the HPTN071 (PopART) Study. *AIDS*, 32(6), 783-793.

- Harvey, B. J., & Lang, T. A. (2010). Hypothesis testing, study power, and sample size. *Chest*, *138*(3), 734-737. DOI: <https://doi.org/10.1378/chest.10-0067>
- Harzke, A. J., Williams, M. L., Nilsson-Schönnesson, L., Ross, M. W., Timpson, S., & Keel, K. B. (2004). Psychosocial factors associated with adherence to antiretroviral medications in a sample of HIV-positive African American drug users. *AIDS Care*, *16*(4), 458-470.
- Hassan, F., Sadowski, L. S., Bangdiwala, S. I., Vizcarra, B., Ramiro, L., De Paula, C. S., ... & Mitra, M. K. (2004). Physical intimate partner violence in Chile, Egypt, India and the Philippines. *Injury Control and Safety Promotion*, *11*(2), 111-116.
- Hatah, E., Lim, K. P., Ali, A. M., Mohamed Shah, N., & Islahudin, F. (2015). The influence of cultural and religious orientations on social support and its potential impact on medication adherence. *Patient Preference and Adherence*, *9*, 589-596.
- Hatcher, A.M, Colvin, C. J., Ndlovu, N., & Dworkin, S.L. (2014). Intimate partner violence among rural South African men: alcohol use, sexual decision-making, and partner communication. *Culture, Health and Sexuality*, *16*(9), 1023–1039.
- Hatcher, A. M., Smout, E. M., Turan, J. M., Christofides, N., & Stoeckl, H. (2015). Intimate partner violence and engagement in HIV care and treatment among women: a systematic review and meta-analysis. *AIDS*, *29*(16), 2183-2194.
DOI: <https://doi.org/10.1016/j.ssmmh.2022.100112>
- Hatcher, A, M., Turan, J.M., Stöckl H., Woollett, N., García-Moreno C., & Christofides, N.J. (2022). Intimate partner violence and HIV treatment adherence in urban South Africa: Mediating role of perinatal common mental disorders. *SSM Mental Health*, *2*, 100112.
DOI: <https://doi.org/10.1016/j.ssmmh.2022.100112>.

- Hawkins, A., Evangelini, M., Sturgeon, K., Le Prevost, M., & Judd, A. (2016). Episodic medication adherence in adolescents and young adults with perinatally acquired HIV: a within-participants approach. *AIDS Care*, 28(sup1), 68–75.
DOI: <https://doi.org/10.1080/09540121.2016.1146210>
- Hayden, J. (2009). *Introduction to Health Behavior Theory*. Jones and Bartlett Publishers.
- Hayes, A. F. (2013). Mediation, moderation, and conditional process analysis. *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*, 1(6), 12-20.
- Hayes, A. F., & Rockwood, N. J. (2017). Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. *Behaviour Research and Therapy*, 98, 39-57.
- Heestermans, T., Browne, J. L., Aitken, S. C., Vervoort, S. C., & Klipstein-Grobusch, K. (2016). Determinants of adherence to antiretroviral therapy among HIV-positive adults in sub-Saharan Africa: a systematic review. *British Medical Journal Global Health*, 1(4), e000125. <http://dx.doi.org/10.1136/bmjgh-2016-000125>
- Henegar, C. E., Westreich, D., Maskew, M., Brookhart, M. A., Miller, W. C., Majuba, P., & Van Rie, A. (2015). Comparison of pharmacy-based measures of adherence to antiretroviral therapy as predictors of virological failure. *AIDS and Behavior*, 19(4), 612-618.
- Hlongwane, N., & Madiba, S. (2020). Navigating life with HIV as an older adult in South African communities: A phenomenological study. *International Journal of Environmental Research and Public Health*, 17(16), 5797.
DOI: <https://doi.org/10.3390/ijerph17165797>

- Ho, S. C., Jacob, S. A., & Tangiisuran, B. (2017). Barriers and facilitators of adherence to antidepressants among outpatients with major depressive disorder: a qualitative study. *PLoS One*, *12*(6), e0179290.
- Hodes, R., Cluver, L., Toska, E., & Vale, B. (2020). Pesky metrics: the challenges of measuring ART adherence among HIV-positive adolescents in South Africa. *Critical Public Health*, *30*(2), 179-190. DOI: [10.1080/09581596.2018.1550253](https://doi.org/10.1080/09581596.2018.1550253)
- Hodes, R., Vale, B., Toska, E., Cluver, L., Dowse, R., & Ashorn, M. (2019). ‘Yummy or crummy?’ The multisensory components of medicines-taking among HIV-positive youth. *Global Public Health*, *14*(2), 284-299.
- Hoffman, S., Tymejczyk, O., Kulkarni, S., Lahuerta, M., Gadisa, T., & Remien, R. H. (2017). Brief report: Stigma and HIV care continuum outcomes among Ethiopian adults initiating ART. *Journal of Acquired Immune Deficiency Syndromes*, *76*(4), 382–387. <https://doi.org/10.1097/QAI.0000000000001530>
- Hong, S. Y., Fanelli, T. J., Jonas, A., Gweshe, J., Tjituka, F., Sheehan, H. M., Wanke, C., Terrin, N., Jordan, M. R., & Tang, A. M. (2014). Household food insecurity associated with antiretroviral therapy adherence among HIV-infected patients in Windhoek, Namibia. *Journal of Acquired Immune Deficiency Syndromes*, *67*(4), e115–e122. DOI: <https://doi.org/10.1097/QAI.0000000000000308>
- Huang, Y. M., Shiyanbola, O. O., & Smith, P. D. (2018). Association of health literacy and medication self-efficacy with medication adherence and diabetes control. *Patient Preference and Adherence*, *12*, 793-802.
- Hughes, A. J., Mattson, C. L., Scheer, S., Beer, L., & Skarbinski, J. (2014). Discontinuation of Antiretroviral Therapy Among Adults Receiving HIV Care in the United States. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, *66*(1), 80–89.
DOI: <https://doi.org/10.1097/qai.0000000000000084>

- Hoho, V.N. (2014). *The sense of coherence and resilience of HIV-positive students in the support group of a university in the Eastern Cape*. Dissertation.
- DOI: <http://scholar.sun.ac.za>
- Hogh, A., & Mikkelsen, E., G. (2005). Is sense of coherence a mediator or moderator of relationships between violence at work and stress reactions? *Scandinavian Journal of Psychology*, 46(5), 429-437.
- Horvath, K. J., Smolenski, D., & Amico, K., R. (2014). An empirical test of the information-motivation-behavioral skills model of ART adherence in a sample of HIV-positive persons primarily in out-of-HIV-care settings. *AIDS Care*, 26(2), 142–151.
- <https://doi.org/10.1080/09540121.2013.802283>
- Houston, E., Mikrut, C., Guy, A., Fominaya, A. W., Tatum, A. K., Kim, J. H., & Brown, A. (2016). Another look at depressive symptoms and antiretroviral therapy adherence: The role of treatment self-efficacy. *Journal of Health Psychology*, 21(10), 2138-2147.
- Howell, K. E. (2013). *An Introduction to the Philosophy of Methodology*. SAGE Publications. <https://doi.org/10.4135/9781473957633>
- Simbayi, L. C. Z. K., Zuma, K., Zungu, N., Moyo, S., Marinda, E., Jooste, S., ... & Naidoo, I. (2019). South African National HIV prevalence, incidence, behaviour and communication survey, 2017: Towards achieving the UNAIDS 90-90-90 targets.
- Hunter, L., & Leahey, E. (2008). Collaborative research in sociology: Trends and contributing factors. *American Sociologist*, 39, 290–306.
- Hussein, M., Dibaba, B., & Wondu, Y. (2020). Factors influencing effectiveness of peer education against nonadherence to antiretroviral therapy among adult people living with HIV/AIDS: A pre-post intervention study in Arsi Zone, Ethiopia. *HIV/AIDS-Research and Palliative Care*, 12, 1-7. DOI: <https://doi.org/10.2147/HIV.S228330>

- Ibrahim, K. M., Schommer, J. C., Morisky, D. E., Rodriguez, R., Gaither, C., & Snyder, M. (2021). The Association between Medication Experiences and Beliefs and Low Medication Adherence in Patients with Chronic Disease from Two Different Societies: The USA and the Sultanate of Oman. *Pharmacy*, 9(1), 31-31.
DOI: <https://doi.org/10.3390/pharmacy9010031>
- IBM Corp. (2016). *IBM SPSS Statistics for Windows, Version 24.0*. Armonk, NY: IBM Corp
- Igumbor, J., Stewart, A., & Holzemer, W. (2012). Factors contributing to the health-related quality of life of people living with HIV and their experiences with care and support services in Limpopo Province, South Africa and fitness. *African Journal for Physical Health Education, Recreation and Dance*, 18(41), 812-840.
- Ironson, G., Kremer, H., & Lucette, A. (2016). Relationship between spiritual coping and survival in patients with HIV. *Journal of General Internal Medicine*, 31(9), 1068–1076.
<http://dx.doi.org/10.1007/s11606-016-3668-4>
- Istratii, R., & Ali, P. (2023). A Scoping Review on the Role of Religion in the Experience of IPV and Faith-Based Responses in Community and Counseling Settings. *Journal of Psychology and Theology*, 51(2), 141-173.
DOI: <https://doi.org/10.1177/00916471221143440>
- Iversen, J., Qureshi, S. U. H., Zafar, M., Busz, M., & Maher, L. (2021). Adherence to antiretroviral therapy among HIV positive men who inject drugs in Pakistan. *International Journal of Drug Policy*, 96, e103281.
<https://doi.org/10.1016/j.drugpo.2021.103281>
- Iwelunmor, J., Nwaozuru, U., Sofolahan-Oladeinde, Y., Conserve, D., & Airhihenbuwa, C. O. (2017). Disclosure narratives of women living with HIV in South Africa. *Journal of Social Issues*, 73(2), 273-288.

- Iwuji, C., Chimukuche, R. S., Zuma, T., Plazy, M., Larmarange, J., Orne-Gliemann, J., ... & Seeley, J. (2020). Test but not treat: Community members' experiences with barriers and facilitators to universal antiretroviral therapy uptake in rural KwaZulu-Natal, South Africa. *PLoS One*, *15*(9), e0239513.
DOI: <https://doi.org/10.1371/journal.pone.0239513>
- Jacobs, A. C., Viljoen, C. T., & Van der Walt, J. L. (2012). Spiritual well-being and lifestyle choices in adolescents: A quantitative study among Afrikaans-speaking learners in the North West Province of South Africa. *Journal of Child and Adolescent Mental Health*, *24*(1), 89-98.
- Jamal, T., Borges, M., & Stronza, A. (2006). The institutionalisation of ecotourism: Certification, cultural equity and praxis. *Journal of Ecotourism*, *5*(3), 145-175.
- James, T. (2012). Domestic violence against men is the most under-reported crime.
- Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly*, *11*(1), 1-47.
- Jensen, D. R., & Ramirez, D. E. (2013). Revision: Variance inflation in regression. *Advances in Decision Sciences*, 2013.
- Jewkes, R. (2002). Intimate partner violence: causes and prevention. *The Lancet*, *359*(9315), 1423-1429.
- Jewkes, R., Penn-Kekana, L., Levin, J., Ratsaka, M., & Schrieber, M. (2001). Prevalence of emotional, physical and sexual abuse of women in three South African provinces. *South African Medical Journal*, *91*(5), 421-428.
- Jewkes, R., Dunkle, K., Nduna, M., Levin, J., Jama, N., Khuzwayo, N., Koss, M., Puren, A., & Duvvury, N. (2006). Factors associated with HIV sero-status in young rural South African women: connections between intimate partner violence and HIV. *International Journal of Epidemiology*, *35*(6), 1461-1468. doi:<https://doi.org/10.1093/ije/dyl218>.

- Jewkes R, & Morrell R. (2010a). Gender and sexuality: emerging perspectives from the heterosexual epidemic in South Africa and implications for HIV risk and prevention. *Journal of the International AIDS Society*, 13(1), 1-11.
- Jewkes, R. K., Dunkle, K., Nduna, M., & Shai, N. (2010b). Intimate partner violence, relationship power inequity, and incidence of HIV infection in young women in South Africa: a cohort study. *The Lancet*, 376(9734), 41-48.
- Jewkes, R., Sikweyiya, Y.M., Morrell, R., & Dunkle, K. (2011). The Relationship between Intimate Partner Violence, Rape and HIV amongst South African Men: A Cross-Sectional Study. *PLOS One*, 6(12), e29590.
- Jewkes, R., Dunkle, K., Jama-Shai, N., & Gray, G. (2015). Impact of exposure to intimate partner violence on CD4+ and CD8+ T cell decay in HIV infected women: longitudinal study. *PLOS One*, 10(3), e0122001. <https://doi.org/10.1371/journal.pone.0122001>
- Jia, W., Jiao, K., Ma, J., Liao, M., Wang, C., Kang, D., ... & Ma, W. (2022). HIV infection disclosure, treatment self-efficacy and quality of life in HIV-infected MSM receiving antiretroviral therapy. *Biomed Central Infectious Diseases*, 22(1), 937-937.
Doi: <https://doi.org/10.1186/s12879-022-07932-z>
- Jiamsakul, A., Kumarasamy, N., Ditangco, R., Li, P. C., Phanuphak, P., Sirisanthana, T., Sungkanuparph, S., Kantipong, P., K C Lee, C., Mustafa, M., Merati, T., Kamarulzaman, A., Singtoroj, T., Law, M., & TREAT Asia Studies to Evaluate Resistance Monitoring Study (TASER-M) (2014). Factors associated with suboptimal adherence to antiretroviral therapy in Asia. *Journal of the International AIDS Society*, 17(1), 18911. DOI: <https://doi.org/10.7448/IAS.17.1.18911>
- Jimmy, B., & Jose, J. (2011). Patient medication adherence: measures in daily practice. *Oman Medical Journal*, 26(3), 155.

- Johnson, R. B. (2009). Towards a more inclusive ‘scientific research in education’. *Educational Researcher*, 38(6), 449–457.
- Johnston, C. S., De Bruin, G. P., Geldenhuys, M., Gyorkos, C., Massoudi, K., & Rossier, J. (2013). Sense of coherence and job characteristics in predicting burnout in a South African sample. *South African Journal of Industrial Psychology*, 39(1), 1-9.
- Jones, A., Cohen, D., Johnstone, B., Yoon, D. P., Schopp, L. H., McCormack, G., & Campbell, J. (2015). Relationships Between Negative Spiritual Beliefs and Health Outcomes for Individuals With Heterogeneous Medical Conditions. *Journal of Spirituality in Mental Health*, 17(2), 135–152.
DOI: <https://doi.org/10.1080/19349637.2015.1023679>
- Jones, H. S., Floyd, S., Stangl, A., Bond, V., Hoddinott, G., Pliakas, T., Bwalya, J., Mandla, N., Moore, A., Donnell, D., Bock, P., Fidler, S., Hayes, R., Ayles, H., & Hargreaves, J. R. (2020). Association between HIV stigma and antiretroviral therapy adherence among adults living with HIV: baseline findings from the HPTN 071 (PopART) trial in Zambia and South Africa. *Tropical Medicine and International Health*, 25(10), 1246–1260. DOI: <https://doi.org/10.1111/tmi.13473>
- Joseph, R. P., Ainsworth, B. E., Mathis, L., Hooker, S. P., & Keller, C. (2017). Incorporating religion and spirituality into the design of community-based physical activity programs for African American women: a qualitative inquiry. *Biomed Central Research Notes*, 10(1), 1-6.
- Joyner, K., & Mash, B. A. (2012). Comprehensive model for intimate partner violence in South African primary care: Action research. *Biomed Central Health Services Research*, 12(1), 1-10. <https://doi.org/10.1186/1472-6963-12-399>
- Jud, A., Grafe, B., Meshkova, K., Kavemann, B., Meysen, T., Hoffmann, U., Ziegenhain, U., & Fegert, J. (2023). Prevalence and Predictors of Affirmations of Intimate Partner

Violence in Germany: A First Nationwide Study on Victimization in Women and Men. *Journal of Interpersonal Violence*, 38(1-2), 1473–1493.

<https://doi.org/10.1177/08862605221092066>

Jung, S., Kneer, J., & Krüger, T. H. (2020). Mental health, sense of coherence, and interpersonal violence during the COVID-19 pandemic lockdown in Germany. *Journal of Clinical Medicine*, 9(11), 3708.

Kagee, A. (2012). Addressing psychosocial problems among persons living with HIV. *African Journal of Psychiatry*, 15(6), 424-426. DOI: <https://hdl.handle.net/10520/EJC127136>

Kagee, A., Remien, R., Berkman, A., Hoffman, S., Campos, L., & Swartz, L. (2011). Structural barriers to ART adherence in Southern Africa: Challenges and potential ways forward. *Global Public Health*, 6(1), 83–97.

DOI: <https://doi.org/10.1080/17441691003796387>

Kalichman, S., Banas, E., Kalichman, M., & Mathews, C. (2020). Stigmatisation of alcohol use among people receiving antiretroviral therapy for HIV infection, Cape Town, South Africa. *Global Public Health*, 15(7), 1040-1049.

DOI: <https://doi.org/10.1080/17441692.2020.1724314>

Kalichman, S. C., Kalichman, M. O., & Cherry, C. (2017). Forget about forgetting: structural barriers and severe non-adherence to antiretroviral therapy. *AIDS Care*, 29(4), 418-422.

DOI: <https://doi.org/10.1080/09540121.2016.1220478>

Kalichman, S., Mathews, C., El-Krab, R., Banas, E., & Kalichman, M. (2021). Forgoing antiretroviral therapy to evade stigma among people living with HIV, Cape Town, South Africa. *Journal of Behavioral Medicine*, 44(5), 653-661.

DOI: <https://doi.org/10.1007/s10865-021-00212-2>

- Kalichman, S. C., Simbayi, L. C., Kaufman, M., Cain, D., Cherry, C., Jooste, S., & Mathiti, V. (2005). Gender attitudes, sexual violence, and HIV/AIDS risks among men and women in Cape Town, South Africa. *Journal of Sex Research, 42*(4), 299–305.
DOI: <https://doi.org/10.1080/00224490509552285>
- Kanters, S, Park J.J, Chan, K, Socias, M.E, Ford, N, Forrest, J.I, et al. (2017). Interventions to improve adherence to antiretroviral therapy: a systematic review and network meta-analysis. *Lancet HIV, 4*(1),31-40.
DOI: [http://dx.doi.org/10.1016/S2352-3018\(16\)30206-5](http://dx.doi.org/10.1016/S2352-3018(16)30206-5)
- Kapiamba, G., Masango, T., & Mphuthi, D. (2016). Antiretroviral adherence and virological outcomes in HIV-positive patients in Ugu district, KwaZulu-Natal province. *African Journal of AIDS Research, 15*(3), 195-201.
- Kapiga, S., Harvey, S., Muhammad, A. K., Stöckl, H., Mshana, G., Hashim, R., ... & Watts, C. (2017). Prevalence of intimate partner violence and abuse and associated factors among women enrolled into a cluster randomised trial in northwestern Tanzania. *Biomed Central Public Health, 17*(1), 1-11.
- Karim, Q. A., & Baxter, C. (2016). The dual burden of gender-based violence and HIV in adolescent girls and young women in South Africa: guest editorial. *South African Medical Journal, 106*(12), 1151-1153.
DOI: <http://dx.doi.org/10.1097/QAD.0b013e3283333bfb7>
- Karpiak, S. E., & Havlik, R. (2017). Are HIV-infected older adults aging differently? *HIV and Aging, 42*(1), 11-27.
- Kasahun, A. E., Sendekie, A. K., Mekonnen, G. A., Sema, F. D., Kemal, L. K., & Abebe, R. B. (2022). Impact of personal, cultural and religious beliefs on medication adherence among patients with chronic diseases at university hospital in Northwest Ethiopia. *Patient Preference and Adherence, 16*(1), 1787-1803.

doi: <https://doi.org/10.2147/PPA.S370178>

- Katalan, L. (2003). The sense of coherence and coping resources of HIV-positive adult females attending a support group.
- Katz, I. T., Dietrich, J., Tshabalala, G., Essien, T., Rough, K., Wright, A. A., ... & Ware, N. C. (2015). Understanding treatment refusal among adults presenting for HIV-testing in Soweto, South Africa: a qualitative study. *AIDS and Behavior, 19*(4), 704-714. DOI: <https://doi.org/10.1007/s10461-014-0920-y>
- Katz, I. T., Ryu, A. E., Onuegbu, A. G., Psaros, C., Weiser, S. D., Bangsberg, D. R., & Tsai, A. C. (2015). Impact of HIV-related stigma on treatment adherence: systematic review and meta-synthesis. *Journal of the International AIDS Society, 16* (2), 18640-18640. DOI: <https://doi.org/10.7448/IAS.16.3.18640>
- Katz, L.F, Hessler, D.M, & Anest, A. (2007). Domestic violence, emotional competence, and child adjustment. *Journal of Social Development, 16*(3), 513–38.
- Kaufman, M. R., Williams, A. M., Grilo, G, Marea, C. X., Fentaye, F. W., Gebretsadik, L. A., & Yedenekal, S. A. (2019) ‘We are responsible for the violence, and prevention is up to us’: A qualitative study of perceived risk factors for gender-based violence among Ethiopian university students. *Biomed Central Women’s Health 19*(131), 1–10.
- Kaur, A., James, T. A., & Brown, M. J. (2023). Coping and ART adherence self-efficacy among people living with HIV in South Carolina. *AIDS Care, 35*(7), 989-994. DOI: <https://doi.org/10.1080/09540121.2022.2079600>
- Kay, E. S., Batey, D. S., & Mugavero, M. J. (2016). The HIV treatment cascade and care continuum: updates, goals, and recommendations for the future. *AIDS Research and Therapy, 13*(1), 1-7. DOI: 10.1186/s12981-016-0120-0

- Kebede, H. K., Mwanri, L., Ward, P., & Gesesew, H. A. (2021). Predictors of lost to follow up from antiretroviral therapy among adults in sub-Saharan Africa: a systematic review and meta-analysis. *Infectious Diseases of Poverty*, *10*(1), 1-18.
DOI: <https://doi.org/10.1186/s40249-021-00822-7>
- Keeves, J. P. (1997). Models and Models building. In keeves, J.P (ed) *Educational research, methodology and measurement: An International Handbook*.
- Kekwaletswe, C. T., Jordaan, E., Nkosi, S., & Morojele, N. K. (2014). Social support and the mediating roles of alcohol use and adherence self-efficacy on antiretroviral therapy (ART) adherence among ART recipients in Gauteng, South Africa. *AIDS and Behavior*, *21*(7), 1846-1856. DOI: <https://doi.org/10.1007/s10461-016-1595-3>
- Kekwaletswe, C. T., & Morojele, N. K. (2014). Alcohol use, antiretroviral therapy adherence, and preferences regarding an alcohol-focused adherence intervention in patients with human immunodeficiency virus. *Patient Preference and Adherence*, *8*(1), 401–413.
DOI: <https://doi.org/10.2147/PPA.S55547>
- Kelly-Hanku, A., Aggleton, P., & Shih, P. (2018). I shouldn't talk of medicine only: Biomedical and religious frameworks for understanding antiretroviral therapies, their invention and their effects. *Global Public Health*, *13*(10), 1454-1467.
- Kemp, C. G., & Velloza, J. (2018). Implementation of eHealth interventions across the HIV care cascade: a review of recent research. *Current HIV/AIDS Reports*, *15*(6), 403-413.
- Kendre, G.M., Gabhale, Y.R., Shah, N.D., Jadhav, V.M., Nath, N., & Manglani, M.V. (2017). *International Journal of Contemporary Pediatrics*, *4*(6), 1962-1968.
DOI: <http://dx.doi.org/10.18203/2349-3291.ijcp20174154>
- Kendrick, H.M (2017). Are religion and spirituality barriers or facilitators to treatment for HIV: a systematic review of the literature. *AIDS Care*, *29*(1), 1-13.

- Kenya National Bureau (KNBS) of Statistics, K. N. B., of Health/Kenya, M., Council/Kenya, N. A. C., Institute, K. M. R., for Population Development/Kenya, N. C., & International, I. (2015). Kenya Demographic and Health Survey 2014.
URL: <https://dhsprogram.com/publications/publication-fr308-dhs-final-reports.cfm> Accessed 07 July 2023.
- Khan, M. U., Brien, J., & Aslani, P. (2020). The use of discrete choice experiments in adherence research: A new solution to an old problem, *Research in Social and Administrative Pharmacy*, 16 (10), 1487-1492. DOI: <https://doi.org/10.1016/j.sapharm.2020.02.013>.
- Khangholi, Z. A., Mohtashami, J., Hosseini, S., & Saberi, S. M. (2019). Investigation of Rate of Domestic Violence against Women Presenting to Legal Medicine Centers and its Coping Methods: A Descriptive Study. *Crescent Journal of Medical and Biological Sciences*, 6(2), 164-169.
- Kharsany, A. B. M., & Karim, Q. A. (2016). HIV Infection and AIDS in Sub-Saharan Africa: Current Status, Challenges and Opportunities. *The Open AIDS Journal*, 10(1), 34–48. doi:10.2174/1874613601610010034
- Khazaeian, S., Navidian, A., Sanavi, F. S., & Hadipoor, L. (2020). Investigating the effect of education on man immunodeficiency virus/acquired immune deficiency syndrome preventive behaviors in vulnerable women living in peripheral neighborhoods: Applications of the health belief model. *Journal of Education and Health Promotion*, 9(1), 302-302. DOI: https://doi.org/10.4103%2Fjehp.jehp_325_20
- Kheswa, J. G. (2017). Exploring the factors and effects of non-adherence to antiretroviral treatment by people living with HIV/AIDS. *Indo-Pacific Journal of Phenomenology*, 17(1), 1-11. DOI: <https://doi.org/10.1080/20797222.2017.1280923>

- Khumalo, I. P., Wissing, M. P., & Schutte, L. (2014). Presence of meaning and search for meaning as mediators between spirituality and psychological well-being in a South African sample. *Journal of Psychology in Africa, 24*(1), 61-72.
- Kickbusch, I. (1996). Tribute to Aaron Antonovsky — ‘What creates health’. *Health Promotion International, 11*(1), 5–6.
- Kidman, R., & Violari, A. (2018). Dating Violence Against HIV-Infected Youth in South Africa: Associations With Sexual Risk Behavior, Medication Adherence, and Mental Health. *JAIDS Journal of Acquired Immune Deficiency Syndromes, 77*(1), 64–71. <https://doi.org/10.1097/qai.0000000000001569>
- Kiene, S. M., Fisher, W. A., Shuper, P. A., Cornman, D. H., Christie, S., MacDonald, S., ... & Fisher, J. D. (2013). Understanding HIV transmission risk behavior among HIV-infected South Africans receiving antiretroviral therapy: An Information—Motivation—Behavioral Skills Model analysis. *Health Psychology, 32*(8), 860-868.
- Kim, J., Lee, E., Park., B, J. Bang., J, H & Lee., J, Y. (2018). Adherence to antiretroviral therapy and factors affecting low medication adherence among incident HIV-infected individuals during 2009–2016: A nationwide study. *Scientific Reports, 8*(10), 3133-3806. doi:10.1038/s41598-018-21081-x
- Kim, M. H., Zhou, A., Mazenga, A., Ahmed, S., Markham, C., Zomba, G., ... & Abrams, E. J. (2016). Why did I stop? Barriers and facilitators to uptake and adherence to ART in Option B+ HIV care in Lilongwe, Malawi. *PLOS One, 11*(2), e0149527. doi:10.1371/journal.pone.0149527
- Kioko, M. T., & Pertet, A. M. (2017). Factors contributing to antiretroviral drug adherence among adults living with HIV or AIDS in a Kenyan rural community. *African Journal of Primary Health Care and Family Medicine, 9*(1), 1-7.
DOI: <https://dx.doi.org/10.4102/phcfm.v9i1.1343>

- Kirby, N. F., & Dempster, E. R. (2012). The (re)construction of a philosophical and pedagogical position for the Foundation Programme at UKZN with particular reference to the biology module. *South African Journal of Higher Education*, 25(6): 1103–1124.
- Kleiveland, B., Natvig, G. K., & Jepsen, R. (2015). Stress, sense of coherence and quality of life among Norwegian nurse students after a period of clinical practice. *Peer Reviewed Journal*, 3, e1286.
- Kline, R. B. (2016). *Principles and practice of structural equation modelling*. Guilford Press.
- Klopper, C., Stellenberg, E., & Van der Merwe, A. (2014). Stigma and HIV disclosure in the Cape Metropolitan area, South Africa. *African Journal of AIDS Research*, 13(1), 37-43. DOI: <https://doi.org/10.2989/16085906.2014.886606>
- Knight, L., & Schatz, E. (2022). Social Support for Improved ART Adherence and Retention in Care among Older People Living with HIV in Urban South Africa: A Complex Balance between Disclosure and Stigma. *International Journal of Environmental Research and Public Health*, 19(18), 11473-11473.
DOI: <https://doi.org/10.3390/ijerph191811473>
- Koen, N., Wyatt, G. E., Williams, J. K., Zhang, M., Myer, L., Zar, H. J., & Stein, D. J. (2014). Intimate partner violence: associations with low infant birthweight in a South African birth cohort. *Metabolic Brain Disease*, 29(2), 281-299.
- Koenig G. (2009) Realistic evaluation and case studies: stretching the potential. *Evaluation*, 15(1), 9–30.
- Koenig H. G. (2012). Religion, spirituality, and health: the research and clinical implications. *International Scholarly Research Network Psychiatry*, 2012, 278730.
DOI: <https://doi.org/10.5402/2012/278730>
- Koenig, H. G. (2013). Religion and spirituality in coping with acute and chronic illness. In K. I. Pargament, A. Mahoney, & E. P. Shafranske (Eds.), *APA handbook of psychology*,

religion, and spirituality (Vol. 2): An Applied Psychology of Religion and Spirituality (pp.275–295). American Psychological Association.

DOI: <https://doi.org/10.1037/14046-014>

Koenig, H.G. (2015). Religion, spirituality, and health: A review and update. *Advances In Mind-Body Medicine*, 29(3), 11–18.

Kombo, D., & Tromp, D. (2009). *Project and Thesis Writing: An introduction*. Nairobi: Pauline Publishers

Kosia, A., Kakoko, D., Semakafu, A. M. E., Nyamhanga, T., & Frumence, G. (2016). Intimate partner violence and challenges facing women living with HIV/AIDS in accessing antiretroviral treatment at Singida Regional Hospital, central Tanzania. *Global Health Action*, 9(1), 32307. <https://doi.org/10.3402/gha.v9.32307>

Kouyoumdjian F.G., Findlay N, Schwandt, M., & Calzavara, L., M. (2013). A Systematic Review of the Relationships between Intimate Partner Violence and HIV/AIDS. *PLOS ONE*, 8(11), e81044. <https://doi.org/10.1371/journal.pone.0081044>

Kremer, H., & Ironson, G. (2014). Longitudinal spiritual coping with trauma in people with HIV: implications for health care. *AIDS Patient Care and STDs*, 28(3), 144–154. doi: 10.1089/apc.2013.0280

Kretchy, I. A., Owusu-Daaku, F. T., & Danquah, S. A. (2014). Mental health in hypertension: assessing symptoms of anxiety, depression and stress on anti-hypertensive medication adherence. *International Journal of Mental Health Systems*, 8(1), 1–6.

Kristofferzon, M. L., Engström, M., & Nilsson, A. (2018). Coping mediates the relationship between sense of coherence and mental quality of life in patients with chronic illness: a cross-sectional study. *Quality of Life Research*, 27(7), 1855–1863.

DOI: <https://doi.org/10.1007/s11136-018-1845-0>

- Krug, E. G., Mercy, J. A., Dahlberg, L.L., & Zwi, A.B. (2002) The world report on violence and health. *The Lancet*, 360(9339),1083–10888.
- Ku, G.M.V., & Kegels, G. (2015). Knowledge, attitudes and perceptions of people with type 2 diabetes as related to self-management practices: results of a cross-sectional study conducted in Luzon, Philippines. *Chronic Illness*, 11(2),93–107.
doi:10.1177/1742395314538291
- Kuhns, L.M., Hotton, A.L., Garofalo, R, Muldoon, A.L, Jaffe, K, Bouris, A, Voisin, D, & Schneider, J. (2016). An Index of Multiple Psychosocial, Syndemic Conditions Is Associated with Antiretroviral Medication Adherence Among HIV-Positive Youth. *AIDS Patient Care STDS*,30(4),185-92.
- Kumar, S., & Sharma, M. (2022). Factors influencing the attitude, subjective norms and perceived behaviour control among people living with HIV towards adherence to treatment: Evidence from India. *International Journal of Scientific Development and Research*, 7(9), 912-915
- Kunihira, N. R., Nuwaha, F., Mayanja, R., & Peterson, S. (2010). Barriers to use of antiretroviral drugs in Rakai district of Uganda. *African Health Sciences*, 10(2), 120-129.
- Lacob, S. A., Lacob, D. G., & Jugulete, G. (2017). Improving the Adherence to Antiretroviral Therapy, a Difficult but Essential Task for a Successful HIV Treatment-Clinical Points of View and Practical Considerations. *Frontiers in Pharmacology*, 8, 831. DOI: <https://doi.org/10.3389/fphar.2017.00831>
- Lagdon, S., Armour, C., & Stringer, M. (2014). Adult experience of mental health outcomes as a result of intimate partner violence victimisation: a systematic review. *European Journal of Psychotraumatology*, 5(1), 1-2. Doi: <https://doi.org/10.3402/ejpt.v5.24794>

- Laher, A., Richards, G., Paruk, F., & Venter, W. (2021). Antiretroviral therapy non-adherence among HIV-positive patients presenting to an emergency department in Johannesburg, South Africa: Associations and reasons. *South African Medical Journal*, *111*(8), 753-758. doi:10.7196/SAMJ 2021.v111i8.15604
- Lam, W. Y., & Fresco, P. (2015). Medication Adherence Measures: An Overview. *BioMed Research International*, *2015*, 217047-217047.
DOI: <https://doi.org/10.1155/2015/217047>
- Lanagan, J. C., Jaquier, V., Overstreet, N., Swan, S. C., & Sullivan, T. P. (2014). The mediating role of avoidance coping between intimate partner violence (IPV) victimization, mental health, and substance abuse among women experiencing bidirectional IPV. *Psychiatry Research*, *220*(1-2), 391-396.
- Langebeek, N., Gisolf, E. H., Reiss, P., Vervoort, S. C., Hafsteinsdóttir, T. B., Richter, C., ... & Nieuwkerk, P. T. (2014). Predictors and correlates of adherence to combination antiretroviral therapy (ART) for chronic HIV infection: a meta-analysis. *Biomed Central Medicine*, *12*(1), 1-14. DOI: <https://doi.org/10.1186/s12916-014-0142-1>
- Layer, E. H., Kennedy, C. E., Beckham, S. W., Mbwambo, J. K., Likindikoki, S., Davis, W. W., ... & LTC Tanzania Collaborative Study Team. (2014). Multi-level factors affecting entry into and engagement in the HIV continuum of care in Iringa, Tanzania. *PLOS One*, *9*(8), e104961.
- Lazenbatt, A., & Devaney, J. (2014). Older women living with domestic violence: coping resources and mental health and wellbeing. *Current Nursing Journal*, *1*(1), 10–22.
- Lecher, S. L., Fonjungo, P., Ellenberger, D., Toure, C. A., Alemnji, G., Bowen, N., Basiye, F., Beukes, A., Carmona, S., de Klerk, M., Diallo, K., Dziuban, E., Kiyaga, C., Mbah, H., Mengistu, J., Mots'oane, T., Mwangi, C., Mwangi, J. W., Mwasekaga, M., . . . Alexander, H. (2021). HIV Viral Load Monitoring Among Patients Receiving

Antiretroviral Therapy — Eight Sub-Saharan Africa Countries, 2013–2018. *MMWR. Morbidity and Mortality Weekly Report*, 70(21), 775–778.

DOI: <https://doi.org/10.15585/mmwr.mm7021a2>

Lee, M., Nezu, A. M., & Nezu, C. M. (2014). Positive and negative religious coping, depressive symptoms, and quality of life in people with HIV. *Journal of Behavioral Medicine*, 37(5), 921–930.

Lee, R. S., Kochman, A., & Sikkema, K. J. (2002). Internalized stigma among people living with HIV-AIDS. *AIDS and Behavior*, 6(4), 309-319.

DOI: <https://doi.org/10.1023/A:1021144511957>

LeGrand, S., Reif, S., Sullivan, K., Murray, K., Barlow, M. L., & Whetten, K. (2015). A Review of Recent Literature on Trauma Among Individuals Living with HIV. *Current HIV/AIDS Reports*, 12(4), 397–405. <https://doi.org/10.1007/s11904-015-0288-2>

Lehmann, A., Aslani, P., Ahmed, R., Celio, J., Gauchet, A., Bedouch, P., ... & Schneider, M. P. (2014). Assessing medication adherence: options to consider. *International Journal of Clinical Pharmacy*, 36(1), 55-69. <https://doi.org/10.1007/s11096-013-9865-x>

Lemay, J., Waheedi, M., Al-Sharqawi, S., & Bayoud, T. (2018). Medication adherence in chronic illness: Do beliefs about medications play a role? *Patient Preference and Adherence*, 12, 1687–1698. <https://doi.org/10.2147/PPA.S169236>

Letourneau, N. & M. Allen. (1999). Postpositivistic critical multiplism: A beginning dialogue. *Journal of Advanced Nursing*, 30(3), 623–630.

Letta, S., Demissie, A., Oljira, L., & Dessie, Y. (2015). Factors associated with adherence to Antiretroviral Therapy (ART) among adult people living with HIV and attending their clinical care, Eastern Ethiopia. *Biomed Central International Health and Human Rights*, 15(1), 1-7. DOI: <https://doi.org/10.1186/s12914-015-0071-x>

- Li, H., Marley, G., Ma, W., Wei, C., Lackey, M., Ma, Q., Renaud, F., Vitoria, M., Beanland, R., Doherty, M., & Tucker, J. D. (2016). The Role of ARV Associated Adverse Drug Reactions in Influencing Adherence Among HIV-Infected Individuals: A Systematic Review and Qualitative Meta-Synthesis. *AIDS and Behavior*, *21*(2), 341–351. DOI: <https://doi.org/10.1007/s10461-016-1545-0>
- Li, Y., Marshall, C. M., Rees, H. C., Nunez, A., Ezeanolue, E. E., & Ehiri, J. E. (2014). Intimate partner violence and HIV infection among women: a systematic review and meta-analysis. *Journal of the International AIDS Society*, *17*(1), 18845. DOI: <https://doi.org/10.7448/IAS.17.1.18845>
- Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited In N. Denzin and Y. S. Lincoln (Eds.), *The Sage Handbook of Qualitative Research* (pp. 97–128). Thousand Oaks, CA: Sage.
- Little, J. (2017). Understanding domestic violence in rural spaces: a research agenda. *Progress in Human Geography*, *4*(4), 472–488. DOI: <https://doi.org/10.1177/0309132516645960>
- Liu, H., Daar, E., Wang, Y., Siqueiros, L., Campbell, K., Shen, J., Guerrero, M., Ko, M. W., Xiong, D., Dao, J., Young, T., Rosen, M., & Fletcher, C. V. (2020). Pharmacokinetics of Coencapsulated Antiretrovirals with Ingestible Sensors. *AIDS Research and Human Retroviruses*, *36*(1), 65–74. Doi: /10.1089/AID.2019.0202
- Liu, S.S., & Gan, Y.Q. (2010). Reliability and validity of the Chinese version of the Meaning in Life Questionnaire. *Chinese Mental Health Journal*, *24*(6), 478–482.
- Lobmeier, J., H. (2012). Nonexperimental Designs. In N. Salkind (Ed.), *Encyclopedia of Research Design* (pp. 1–9). Sage Publications, Inc.

- Loeliger, K. B., Niccolai, L. M., Mtungwa, L. N., Moll, A., & Shenoi, S. V. (2016). Antiretroviral therapy initiation and adherence in rural South Africa: community health workers' perspectives on barriers and facilitators. *AIDS Care*, 28(8), 982-993. DOI: <https://doi.org/10.1080/09540121.2016.1164292>
- Lopez, E. J., Jones, D. L., Villar-Loubet, O. M., Arheart, K. L., & Weiss, S. M. (2010). Violence, coping, and consistent medication adherence in HIV-positive couples. *AIDS Education and Prevention*, 22(1), 61-68.
- Lopez, S. J., Pedrotti, J. T., & Snyder, C. R. (2019). *Positive psychology: The Scientific and Practical Explorations of Human Strengths (4th ed.)*. Thousand Oaks, CA: Sage Publications
- Lövestad, S., Löve, J., Vaez, M., & Krantz, G. (2017). Prevalence of intimate partner violence and its association with symptoms of depression; a cross-sectional study based on a female population sample in Sweden. *Biomed Central Public Health*, 17(1), 1-11.
- Low, A., Gavriilidis, G., Larke, N., B-Lajoie, M. R., Drouin, O., Stover, J., Muhe, L., & Easterbrook, P. (2016). Incidence of Opportunistic Infections and the Impact of Antiretroviral Therapy Among HIV-Infected Adults in Low- and Middle-Income Countries: A Systematic Review and Meta-analysis. *Clinical Infectious Diseases*, 62(12), 1595–1603. DOI: <https://doi.org/10.1093/cid/ciw125>
- Lowane, M. P. (2019). Strategy for reducing the missing of appointments among on anti-retroviral therapy in Limpopo Province, South Africa (Doctoral dissertation).
- Lowther, K., Selman, L., Harding, R., & Higginson, R.J. (2014). Experience of persistent psychological symptoms and perceived stigma among people with HIV on antiretroviral therapy (ART): A systematic review. *International Journal of Nursing Studies*, 51(8), 1171-1189. Doi: [org/10.1016/j.ijnurstu.2014.01.015](https://doi.org/10.1016/j.ijnurstu.2014.01.015).

- Lun, V. M. C., & Bond, M. H. (2016). Achieving subjective well-being around the world: The moderating influence of gender, age and national goals for socializing children. *Journal of Happiness Studies*, 2(17), 587-608.
- Luoga, A. R., Harris, J., Gibson, J., & Kwesigabo, G. (2017). Gender-Based Violence and Adherence to Anti-Retroviral Therapy among Hiv-Infected Women Attending Care and Treatment Clinic, Mbeya Region 2017.
- Mabunda, K., Ngasama, E., Babalola, J., Zunza, M., & Nyasulu, P. (2019). Determinants of adherence to antiretroviral treatment among human immunodeficiency virus infected young adults attending care at Letaba Hospital HIV Clinic, Limpopo Province, South Africa. *The Pan African Medical Journal*, 32(37).
doi: [10.11604/pamj.2019.32.37.17722](https://doi.org/10.11604/pamj.2019.32.37.17722)
- MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology*, 58(1), 593-614.
DOI: <https://doi.org/10.1146/annurev.psych.58.110405.085542>
- Madruga, C. S., Viana, M. C., Abdalla, R. R., Caetano, R., & Laranjeira, R. (2017). Pathways from witnessing parental violence during childhood to involvement in intimate partner violence in adult life: The roles of depression and substance use. *Drug and Alcohol Review*, 36(1), 107–114. <https://doi.org/10.1111/dar.12514>
- Maeri, I., El Ayadi, A., Getahun, M., Charlebois, E., Akatukwasa, C., Tumwebaze, D., ... & Search Collaboration. (2016). “How can I tell?” Consequences of HIV status disclosure among couples in eastern African communities in the context of an ongoing HIV “test-and-treat” trial. *AIDS Care*, 28(3), 59-66.
DOI: <https://doi.org/10.1080/09540121.2016.1168917>

- Magidson, J. F., Blashill, A. J., Safren, S. A., & Wagner, G. J. (2015). Depressive symptoms, lifestyle structure, and ART adherence among HIV-infected individuals: A longitudinal mediation analysis. *AIDS and Behavior, 19*(1), 34-40.
DOI: <https://doi.org/10.1007/s10461-014-0802-3>
- Makhado, L., & Mongale, M. (2019). Factors influencing non-adherence to antiretroviral therapy in South Africa: a systematic review. *HIV & AIDS Review. International Journal of HIV-Related Problems, 18*(4), 239-246.
- Makongoza, M., & Nduna, M. (2021). Awareness and rejection accounts of intimate partner violence by young women in Soweto, Johannesburg, South Africa. *Journal of Interpersonal Violence, 36*(2), 7-32.
- Malherbe, N., Seedat, M., & Suffla, S. (2021). Understanding community violence: A critical realist framework for community psychology. *Journal of Community Psychology*. DOI: <https://doi.org/10.1002/jcop.22660>
- Malik, J. S., & Nadda, A. (2019). A Cross-sectional Study of Gender-Based Violence against Men in the Rural Area of Haryana, India. *Indian Journal of Community Medicine, 44*(1), 35-8.
- Mallinckrodt, B., Abraham, W. T., Wei, M., & Russell, D. W. (2006). Advances in testing the statistical significance of mediation effects. *Journal of Counseling Psychology, 53*(3), 372-378. DOI: <https://psycnet.apa.org/doi/10.1037/0022-0167.53.3.372>
- Maman, S., Campbell, J., Sweat, M. D., & Gielen, A. C. (2000). The intersections of HIV and violence: directions for future research and interventions. *Social Science and Medicine, 50*(4), 459–478. [https://doi.org/10.1016/s0277-9536\(99\)00270-1](https://doi.org/10.1016/s0277-9536(99)00270-1)
- Mannheimer, S., Friedland, G., Matts, J., Child, C., & Chesney, M. (2002). The Consistency of Adherence to Antiretroviral Therapy Predicts Biologic Outcomes for Human

- Immunodeficiency Virus–Infected Persons in Clinical Trials. *Clinical Infectious Diseases*, 34(8), 1115–1121. <https://doi.org/10.1086/339074>
- Maphula, R., Laher, A., & Richards, G. (2020). Patterns of presentation and survival of HIV-infected patients admitted to a tertiary-level intensive care unit. *HIV Medicine*, 21(5), 334–341. DOI: <https://doi.org/10.1111/hiv.12834>
- Marinda, E., Simbayi, L., Zuma, K., Zungu, N., Moyo, S., Kondlo, L., ... & Briggs-Hagen, M. (2020). Towards achieving the 90–90–90 HIV targets: results from the south African 2017 national HIV survey. *Biomed Central Public Health*, 20(1), 1375-1375.
- Marinda, E., Zungu, N., Chikovore, J., Mthembu, J., Magampa, M., Mathentamo, Q., ... & Simbayi, L. (2021). Association between ART adherence and mental health: results from a national HIV sero-behavioural survey in South Africa. *AIDS and Behavior*, 26(5), 1517-1529. DOI: <https://doi.org/10.1007/s10461-021-03505-4>
- Marsh, K., Eaton, J. W., Mahy, M., Sabin, K., Autenrieth, C. S., Wanyeki, I., ... & Ghys, P. D. (2019). Global, regional and country-level 90–90–90 estimates for 2018: assessing progress towards the 2020 target. *AIDS*, 33, 213-226.
DOI: 10.1097/QAD.0000000000002355
- Martani, A., Geneviève, L. D., Poppe, C., Casonato, C., & Wangmo, T. (2020). Digital pills: a scoping review of the empirical literature and analysis of the ethical aspects. *Biomed Central Medical Ethics*, 21(1), 1-13.
- Maskew, M., Fox, M. P., Evans, D., Govindasamy, D., Jamieson, L., Maletse, G., Mongwenyana, C., & Technau, K. (2016). Insights into Adherence among a Cohort of Adolescents Aged 12–20 Years in South Africa: Reported Barriers to Antiretroviral Treatment. *AIDS Research and Treatment*, 2016, 1–12.
DOI: <https://doi.org/10.1155/2016/4161738>

- Masuku, M. (2017). Strengthening the Community System Through Local Collaboration: Lessons Learned from Ehlanzeni, Mpumalanga Province Background: Roll out of the National Adherence Guidelines. URL: <http://www.saaids.com/Presentations%20AIDS%202017/Wednesday,%2014%20June%202017/Hall%201/Mrs%20Mumsy%20Masuku%20Strengthening%20the%20community%20system%20through%20local%20collaboration.pdf>.
- Mathes, T, Antoine, S.L, & Pieper, D. (2014). Adherence-enhancing interventions for active antiretroviral therapy in sub-Saharan Africa: a systematic review and meta-analysis. *Sexual Health*, 11(3),230-239. DOI: <http://dx.doi.org/10.1071/SH14>
- Matseke, G., Rodriguez, V.J., Peltzer, K., & Jones. D. (2016) Intimate partner violence among HIV positive pregnant women in South Africa. *Journal of Psychology in Africa*, 26(3),259–266.
- Mayer, J. E., & Fontelo, P. (2017). Meta-analysis on the effect of text message reminders for HIV-related compliance. *AIDS Care*, 29(4), 409-417.
- Mayeye, B. F., Goon, D. T., & Yako, E. M. (2019). An Exploratory Study of the Determinants of Adherence to Antiretroviral Therapy by Adolescents and Youths in the Eastern Cape, South Africa. *Global Journal of Health Science*, 11(11), 141-141.
- Mayston, R., Kinyanda, E., Chishinga, N., Prince, M., & Patel, V. (2012). Mental disorder and the outcome of HIV/AIDS in low-income and middle-income countries: a systematic review. *AIDS*, 26(1), 117-135.
- Mazenda, A., Molepo, N., Mushayanyama, T., & Ngarava, S. (2022). The invisible crisis: the determinants of local food insecurity in Gauteng municipalities, South Africa. *British Food Journal*, 124(13), 274–289. <https://doi.org/10.1108/bfj-11-2021-1234>
- Mbiti, J. S. (1975). *Concepts of God in Africa*. London: SPCK.

- Mburu, G., Ram, M., Siu, G., Bitira, D., Skovdal, M., & Holland, P. (2014). Intersectionality of HIV stigma and masculinity in eastern Uganda: implications for involving men in HIV programmes. *Biomed Central Public Health*, *14*(1), 1-9. doi:10.1186/1471-2458-14-1061.
- McClain, C, Rosenfeld, B, & Breitbart, W. (2003). Effect of spiritual well-being on end-of-life despair in terminally ill cancer patients. *The Lancet*, *361*(9369), 1603-1607.
- McCleary-Sills, J., Namy, S., Nyoni, J., Rweyemamu, D., Salvatory, A., & Steven, E. (2015). Stigma, shame and women's limited agency in help-seeking for intimate partner violence. *Global Public Health*, *11*(2), 224–235.
DOI: <https://doi.org/10.1080/17441692.2015.1047391>
- McCloskey L, A, Boonzaier, F, Steinbrenner, S. Y., & Hunter, T. (2016). Determinants of intimate partner violence in sub-Saharan Africa: a review of prevention and intervention programs. *Partner Abuse*, *7*(3), 277–315.
- McCoy, K., Waldrop-Valverde, D., Balderson, B. H., Mahoney, C., & Catz, S. (2016). Correlates of Antiretroviral Therapy Adherence among HIV-Infected Older Adults. *Journal of the International Association of Providers of AIDS Care*, *15*(3), 248–255. DOI:<https://doi.org/10.1177/2325957416642019>
- Mckie, A. L., & Gaida, F. (2022). A scoping review of spirituality and religiosity in people who have had a kidney transplant. *Nursing Open*, *9*(5), 2277-2288.
- McKinney, A., & Coyle, K. (2004). Next day effects of a normal night's drinking on memory and psychomotor performance. *Alcohol and Alcoholism*, *39*(6), 509-513.
- McMillan, J. H., & Schumacher, S. (2010). *Research in Education evidence-based inquiry*. 7 Ed. New Jersey: Pearson
- McMahon, J. H., Jordan, M. R., Kelley, K., Bertagnolio, S., Hong, S. Y., Wanke, C. A., ... & Elliott, J. H. (2011). Pharmacy adherence measures to assess adherence to antiretroviral

- therapy: review of the literature and implications for treatment monitoring. *Clinical Infectious Diseases*, 52(4), 493-506.
- Mekuria, L. A., Prins, J. M., Yalew, A. W., Sprangers, M. A. G., & Nieuwkerk, P. T. (2016). Which adherence measure – self-report, clinician recorded or pharmacy refill – is best able to predict detectable viral load in a public ART programme without routine plasma viral load monitoring? *Tropical Medicine and International Health*, 21(7), 856–869. DOI: <https://doi.org/10.1111/tmi.12709>
- Mellar, B. M., Gulliver, P. J., Selak, V., Hashemi, L., McIntosh, T.K.D., & Fanslow, J. L.(2023). Association Between Men’s Exposure to Intimate Partner Violence and Self-reported Health Outcomes in New Zealand. *The Journal of the American Medical Association Network Open*, 6(3), e2252578- e2252578. DOI:10.1001/jamanetworkopen.2022.52578
- Mendenhall, E., & Norris, S. A. (2015). When HIV is ordinary and diabetes new: remaking suffering in a South African township. *Global Public Health*, 10(4), 449-462. DOI: <https://doi.org/10.1080/17441692.2014.998698>
- Merrill, K. G., Campbell, J. C., Decker, M. R., McGready, J., Burke, V. M., Mwansa, J. K., ... & Denison, J. A. (2021). Past-year violence victimization is associated with viral load failure among HIV-positive adolescents and young adults. *AIDS and Behavior*, 25(5), 1373-1383. DOI: <https://doi.org/10.1007/s10461-020-02958-3>
- Meskele, M, Khuzwayo, N, & Taylor, M (2021). Mapping the evidence of intimate partner violence among women living with HIV/AIDS in sub-Saharan Africa: a scoping review. *British Medical Journal Open* 2021, 11(5), 041326. doi: 10.1136/bmjopen-2020-041326
- Mertens, D. M., & Ginsberg, P. E. (2009). *The handbook of social research ethics*. Sage.

- Mey, A., Plummer, D., Dukie, S., Rogers, G. D., O’Sullivan, M., & Domberelli, A. (2017). Motivations and barriers to treatment uptake and adherence among people living with HIV in Australia: a mixed-methods systematic review. *AIDS and Behavior*, *21*(2), 352-385. DOI: <https://doi.org/10.1007/s10461-016-1598-0>
- Mgbako, O., Conard, R., Mellins, C. A., Dacus, J. D., & Remien, R. H. (2022). A systematic review of factors critical for hiv health literacy, ART adherence and retention in care in the US for racial and ethnic minorities. *AIDS and Behavior*, *26*(11), 3480-3493. doi: 10.1007/s10461-022-03680-y.
- Miller, K. (2005). *Communication theories: Perspectives, processes, and contexts*. Boston, Mass: McGraw-Hill.
- Miller T. A. (2016). Health literacy and adherence to medical treatment in chronic and acute illness: A meta-analysis. *Patient Education and Counseling*, *99*(7), 1079–1086. DOI: <https://doi.org/10.1016/j.pec.2016.01.020>
- Mills, E. J., Nachega, J. B., Buchan, I., Orbinski, J., Attaran, A., Singh, S., ... & Bangsberg, D. R. (2006). Adherence to antiretroviral therapy in sub-Saharan Africa and North America: a meta-analysis. *Journal of the American Medical Association*, *296*(6), 679-690.
- Mingers, J. (2001). “Combining IS Research Methods: Towards a Pluralist Methodology,” *Information Systems Research*, *12*(3), 240–259.
- Minwagaw, M. T., Akenie, B. B., Tewabe, D. S., Tegegne, A. S., & Beyene, T. B. (2021). Predictors of Poor Adherence to CART and Treatment Failure at Second-Line Regimens Among Adults in Public Hospitals of Amhara Region, North-Western Ethiopia: A Retrospective Cohort Study. *Patient Preference and Adherence*, *15*, 2855-2864.

- Miot, H. A. (2017). Assessing normality of data in clinical and experimental trials. *Journal Vascular Brasileiro*, 16, 88-91.
- Mittelmark, M. B., Sagy, S., Eriksson, M., Bauer, G. F., Pelikan, J. M., Lindström, B., & Espnes, G. A. (2016). *The Handbook of Salutogenesis*. Cham, Switzerland: Springer Nature.
- Moges, N. A., Adesina, O. A., Okunlola, M. A., & Berhane, Y. (2020). Barriers and facilitators of same-day antiretroviral therapy initiation among people newly diagnosed with hiv in Ethiopia: Qualitative study using the transtheoretical model of behavioral change. *Journal of Multidisciplinary Healthcare*, 13 (2020), 1801-1815.
- Mogobe, K. D., Shaibu, S., Matshediso, E., Sabone, M., Ntsayagae, E., Nicholas, P. K., ... & Wantland, D. (2016). Language and culture in health literacy for people living with HIV: perspectives of health care providers and professional care team members. *AIDS Research and Treatment*, 2016, 5015707. DOI: <https://doi.org/10.1155/2016/5015707>
- Moodley, Y., & Bowman, B. (2022). Intimate partner violence as masculine accomplishment: resistance to victimhood in accounts of violence by gay men in urban South Africa. *Psychology and Sexuality*, 13(3), 663-675.
- Moosa, A., Gengiah, T. N., Lewis, L., & Naidoo, K. (2019). Long-term adherence to antiretroviral therapy in a South African adult patient cohort: a retrospective study. *Biomed Central Infectious Diseases*, 19(1), 1-12. doi:10.1186/s12879-019-4410-8
- Morowatisharifabad, M. A., Movahed, E., Farokhzadian, J., Nikooie, R., Askarishahi, M., Bidaki, R., & Hosseinzadeh, M. (2019). Antiretroviral therapy adherence based on information, motivation, and behavioral skills model and its association with depression among HIV-positive patients: Health promotion strategy towards the 909090 target. *Journal of Education and Health Promotion*, 8 (1), 192-192.
DOI: https://doi.org/10.4103/jehp.jehp_42_19

- Morris, T. (2006). *Social Work Research Methods: Four Alternative Paradigms*. Sage.
- Mphaphuli, M, & Smuts, L. (2021) ‘Give it to him’: Sexual violence in the intimate relationships of black married women in South Africa. *Signs: Journal of Women in Culture and Society*, 46(2),443–464 .
- Mpofu, E. (2018). How Religion Frames Health Norms: A Structural Theory Approach: How Religion Frames Health Norms: A Structural Theory Approach. *Religions*, 9(4), 119.
- Mthembu, J., Mabaso, M., Reis, S., Zuma, K., & Zungu, N. (2021). Prevalence and factors associated with intimate partner violence among the adolescent girls and young women in South Africa: findings the 2017 population based cross-sectional survey. *Biomed Central Public Health*, 21(1), 1160. <https://doi.org/10.1186/s12889-021-11183-z>
- Muijs, D. (2011). *Doing Quantitative Research in Education with SPSS*. London: SAGE Publications Ltd.
- Mukumbang, F. C., Orth, Z., & van Wyk, B. (2019). What do the implementation outcome variables tell us about the scaling-up of the antiretroviral treatment adherence clubs in South Africa? A document review. *Health Research Policy and Systems*, 17(1). DOI: <https://doi.org/10.1186/s12961-019-0428-z>
- Mulawa, M., Kajula, L. J., Yamanis, T. J., Balvanz, P., Kilonzo, M. N., & Maman, S. (2016). Perpetration and victimization of intimate partner violence among young men and women in dar es salaam, tanzania. *Journal of Interpersonal Violence*, 33(16), 2486–2511. DOI: <https://doi.org/10.1177/0886260515625910>
- Muluneh, M. D., Stulz, V., Francis, L., & Agho, K. (2020). Gender Based Violence against Women in Sub-Saharan Africa: A Systematic Review and Meta-Analysis of Cross-Sectional Studies. *International journal of Environmental Research and Public Health*, 17(3), 903. DOI: <https://doi.org/10.3390/ijerph17030903>

- Munro, S., Lewin, S., Swart, T., & Volmink, J. (2007). A review of health behaviour theories: how useful are these for developing interventions to promote long-term medication adherence for TB and HIV/AIDS?. *Biomed Central Public Health*, 7(104), 1-16.
- Musa, B. M., Garbati, M. A., Nashabaru, I. M., Yusuf, S. M., Nalado, A. M., Ibrahim, D. A., Simmons, M. N., & Aliyu, M. H. (2017). Sex disparities in outcomes among adults on long-term antiretroviral treatment in northern Nigeria. *International Health*, 9(1), 3–10. DOI: <https://doi.org/10.1093/inthealth/ihw050>
- Musavi Ghahfarokhi, M., Mohammadian, S., Mohammadi Nezhad, B., & Kiarsi, M. (2020). Relationship between spiritual health and hope by dietary adherence in haemodialysis patients in 2018. *Nursing Open*, 7(2), 503-511. DOI: <https://doi.org/10.1002/nop2.412>
- Musumari, P. M., Wouters, E., Kayembe, P. K., Kiumbu Nzita, M., Mbikayi, S. M., Suguimoto, S. P., Techasrivichien, T., Lukhele, B. W., El-saaidi, C., Piot, P., Ono-Kihara, M., & Kihara, M. (2014). Food Insecurity Is Associated with Increased Risk of Non-Adherence to Antiretroviral Therapy among HIV-Infected Adults in the Democratic Republic of Congo: A Cross-Sectional Study. *PLOS One*, 9(1), e85327. <https://doi.org/10.1371/journal.pone.0085327>
- Mutambara, J., Sodi, T., Mtemeri, J., & Makomo, M. (2021). Harmonizing religion and health: an exploration of religious reasons for defaulting ARVs among people living with HIV and AIDS in Gweru, Zimbabwe. *AIDS Care*, 33(3), 383-388.
- Mutwa, P. R., Van Nuil, J. I., Asimwe-Kateera, B., Kestelyn, E., Vyankandondera, J., Pool, R., ... & Boer, K. R. (2013). Living situation affects adherence to combination antiretroviral therapy in HIV-infected adolescents in Rwanda: a qualitative study. *PIOS One*, 8(4), e60073. DOI: <https://doi.org/10.1371/journal.pone.0060073>
- Mweemba, M., Musheke, M. M., Michelo, C., Halwiindi, H., Mweemba, O., & Zulu, J. M. (2015). “When am I going to stop taking the drug?” Enablers, barriers and processes of

- disclosure of HIV status by caregivers to adolescents in a rural district in Zambia. *Biomed Central Public Health*, 15(1), 1-9.
- Myers, M.D. (2009). *Qualitative Research in Business & Management*. Sage Publications, Thousand Oaks, CA.
- Nachega, J. B., Sam-Agudu, N.A., Mofenson, L.M., Schechter, M., & Mellors J.W. (2018). Achieving viral suppression in 90% of people living with human immunodeficiency virus on antiretroviral therapy in low-and-middle-income countries: progress, challenges, and opportunities. *Clinical Infectious Diseases*, 66(10),1487–1491.
- Nachega, J. B., Uthman, O. A., Peltzer, K., Richardson, L. A., Mills, E. J., Amekudzi, K., & Ouedraogo, A. (2014). Association between antiretroviral therapy adherence and employment status: systematic review and meta-analysis. *Bulletin of the World Health Organization*, 93(1), 29-41.
- Naidoo, P., & Premdutt, R. (2019). Do challenges still exist amongst HIV/AIDS patients in managing their condition? A cross-sectional study of 297 participants in the EtheKwini Metro of KwaZulu-Natal, South Africa. *African Journal of AIDS Research*, 18(3), 198-204
- Nakalyowa-Luggya, D., Lutwama-Rukundo, E., Kabonesa, C., & Kwiringira, J. (2022). “It is Such a Shameful Experience...” Barriers to Help-Seeking among Male Survivors of Intimate Partner Violence (IPV) in Uganda. *Gender and Behaviour*, 20(4), 20502-20517, DOI: 10.10520/ejc-genbeh_v20_n4_a12
- Nakamanya, S, Mayanja, B. N., Muhumuza, R, Bukenya, D, & Seeley J. (2019). Are treatment supporters relevant in long-term Antiretroviral Therapy (ART) adherence? Experiences from a long-term ART cohort in Uganda. *Glob Public Health*,14(3), 469-480.
- Nakanwagi, S., Matovu, J. K., Kintu, B. N., Kaharuza, F., & Wanyenze, R. K. (2016). Facilitators and barriers to linkage to hiv care among female sex workers receiving hiv

- testing services at a community-based organization in Periurban Uganda: A Qualitative Study. *Journal of Sexually Transmitted Diseases*, 2016, 7673014. DOI: <http://dx.doi.org/10.1155/2016/7673014>
- Nall, A., Chenneville, T., Rodriguez, L. M., & O'Brien, J. L. (2019). Factors affecting HIV testing among youth in Kenya. *International Journal of Environmental Research and Public Health*, 16(8), 1450. DOI: <https://doi.org/10.3390/ijerph16081450>
- Nasution, S. M., Sutatminingsih, R., & Marhamah, M. (2020). Dynamics of Resilience on Women as Intimate Partner Violence Survivors. *Journal of Educational and Social Research*, 10(3), 141-141. DOI: <https://doi.org/10.36941/jesr-2020-0054>
- Ncama, B. P., McInerney, P. A., Bhengu, B. R., Corless, I. B., Wantland, D. J., Nicholas, P. K., ... & Davis, S. M. (2008). Social support and medication adherence in HIV disease in KwaZulu-Natal, South Africa. *International Journal of Nursing Studies*, 45(12), 1757-1763.
- Nduna, M., Jewkes, R. K., Dunkle, K. L., Shai, N. P., & Colman, I. (2010). Associations between depressive symptoms, sexual behaviour and relationship characteristics: a prospective cohort study of young women and men in the Eastern Cape, South Africa. *Journal of the International AIDS Society*, 13(1), 1-8. <https://doi.org/10.1186/1758-2652-13-44>
- Necho, M., Belete, A., & Tsehay, M. (2021). Depressive symptoms and their determinants in patients who are on antiretroviral therapy in the case of a low-income country, Ethiopia: a systematic review and meta-analysis. *International Journal of Mental Health Systems*, 15(1), 1-14. DOI: <https://doi.org/10.1186/s13033-020-00430-2>
- Neff, K. D., Pisitsungkagarn, K., & Hsieh, Y. P. (2008). Self-compassion and self-construal in the United States, Thailand, and Taiwan. *Journal of Cross-Cultural Psychology*, 39(3), 267-285.

- Nicodimos, S. N. (2013). *The Association between Domestic Violence and Adherence to Antiretroviral Therapy in Southern India*. (Doctoral dissertation).
- Ndirangu, J. W., Gichane, M. W., Browne, F. A., Bonner, C. P., Zule, W. A., Cox, E. N., Smith, K. M., Carney, T., & Wechsberg, W. M. (2022). 'We have goals but [it is difficult]'. Barriers to antiretroviral therapy adherence among women using alcohol and other drugs living with HIV in South Africa. *Health Expectations*, 25(2), 754–763.
<https://doi.org/10.1111/hex.13422>
- Nemutandani, S. M., Hendricks, S. J., & Mulaudzi, M. F. (2018). Decolonising the mindsets, attitudes and practices of the allopathic and indigenous health practitioners in postcolonial society: An exploratory approach in the management of patients. *African Journal of Primary Health Care and Family Medicine*, 10(1), 1-8.
DOI: <https://hdl.handle.net/10520/EJC-f0df90452>
- Neuman, W. L. (2006). *Social Research Methods Qualitative and Quantitative Approach* (6th ed.). Upper Saddle River: Pearson.
- Neupane, S., Dhungana, G. P., & Ghimire, H. C. (2019). Adherence to antiretroviral treatment and associated factors among people living with HIV and AIDS in Chitwan, Nepal. *Biomed Central Public Health*, 19(1), 720-720.
DOI: <https://doi.org/10.1186/s12889-019-7051-3>
- Nieuwkerk, P. T., & Oort, F. J. (2005). Self-reported adherence to antiretroviral therapy for HIV-1 infection and virologic treatment response: a meta-analysis. *Journal of Acquired Immune Deficiency Syndromes*, 38(4), 445-448.
- Niewenhuis, J. (2007). Introducing qualitative research. In *First Steps in Research*, ed. K. Maree, 47–68. Pretoria: Van Schaik.

- Nilsson, D., Nordenstam, C., Green, S., Wetterhall, A., Lundin, T., & Svedin, C. G. (2015). Acute stress among adolescents and female rape victims measured by ASC-Kids: A pilot study. *Nordic Journal of Psychiatry*, *69*(7), 539–545.
- Nolte, C. B. (2010). *Meaning in life and sense of coherence in HIV-positive adults*. Nelson Mandela Metropolitan University. (Doctoral dissertation).
- Noordzij, M., Dekker, F. W., Zoccali, C., & Jager, K. J. (2011). Sample size calculations. *Nephron Clinical Practice*, *118*(4), 319-323.
DOI: <https://doi.org/10.1159/000322830>
- Nord, M., Andrews, M., & Carlson, S. (2005). *Household food security in the United States, Washington, USDA Economic Research Service, Report No.: ERR-29*. URL: https://www.ers.usda.gov/webdocs/publications/45655/29206_err29_002.pdf?v=41334 [PDF – 880 KB].
- Nosyk, B., Audoin, B., Beyrer, C., Cahn, P., Granich, R., Havlir, D., Katabira, E., Lange, J., Lima, V. D., Patterson, T., Strathdee, S. A., Williams, B., & Montaner, J. (2013). Examining the evidence on the causal effect of HAART on transmission of HIV using the Bradford Hill criteria. *AIDS*, *27*(7), 1159–1165.
<https://doi.org/10.1097/qad.0b013e32835f1d68>
- Novick, A. (1997). Stigma and AIDS: Three layers of damage. *Journal of the Gay and Lesbian Medical Association*, *1*(1), 53-60. DOI: <https://doi.org/10.1023/B:JOLA.0000007011.17392.fb>
- Nowshad, G., Jahan, N., Shah, N. Z., Ali, N., Ali, T., Alam, S., Khan, A., Mahmood, M. A., Saba, M., Arnone, D., & Shah, S. M. (2022). Intimate-partner violence and its association with symptoms of depression, perceived health, and quality of life in the Himalayan Mountain Villages of Gilgit Baltistan. *PLOS One*, *17*(9), e0268735.
<https://doi.org/10.1371/journal.pone.0268735>

- Nsagha, D. S., Lange, I., Fon, P. N., Nguedia Assob, J. C., & Tanue, E. A. (2016). A Randomized Controlled Trial on the Usefulness of Mobile Text Phone Messages to Improve the Quality of Care of HIV and AIDS Patients in Cameroon. *The Open AIDS Journal*, 10(1), 93–103. <https://doi.org/10.2174/1874613601610010093>
- Nutor, J. J., Thompson, R. G., Agbadi, P., Tuthill, E., Weiser, S., & Anguyo, G. (2022). Exploring postpartum women’s experiences of retention in HIV care through the perspective of the salutogenic model of health. *Journal of Global Health Science*, 4(1). <https://doi.org/10.35500/jghs.2022.4.e2>
- Nwani, S, E., & Osuji, E. (2020) : Poverty in Sub-Saharan Africa: The dynamics of population, energy consumption and misery index. *International Journal of Management, Economics and Social Sciences*, 9 (4), 247-270.
DOI:<http://dx.doi.org/10.32327/IJMESS/9.4.2020.13>
- Nwogwugwu, C., Hossain, M. B., Bronner, Y., & Ogbolu, Y. (2019). Examining the Health Belief Model Risk Factors on PrEP Use Among African-American Women Ages 20-44. *Journal of National Black Nurses' Association*, 30(1), 18-25.
- Nyamathi, A. M. (1993). Sense of coherence in minority women at risk for HIV infection. *Public Health Nursing*, 10(3), 151–158.
- Nybergh, L., Taft, C., Enander, V., & Krantz, G. (2013). Self-reported exposure to intimate partner violence among women and men in Sweden: results from a population-based survey. *Biomed Central Public Health*, 13(1), 1-13.
- O’Brien M. E. (2003). *Spirituality in nursing: Standing on holy ground* (2nd ed.). Boston, MA: Jones and Bartlett.
- O’Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality and Quantity*, 41(5), 673-690.

- O'Connor, J. L., Gardner, E. M., Mannheimer, S. B., Lifson, A. R., Esser, S., Telzak, E. E., & Phillips, A. N. (2013). INSIGHT SMART: Study Group Factors associated with adherence amongst 5295 people receiving antiretroviral therapy as part of an international trial. *The Journal of Infectious Diseases*, 208(1), 40–49.
DOI: <https://doi.org/10.1093/infdis/jis731>
- Oji, V. U., Hung, L. C., Abbasgholizadeh, R., Terrell Hamilton, F., Essien, E. J., & Nwulia, E. (2017). Spiritual care may impact mental health and medication adherence in HIV populations. *HIV/AIDS- Research and Palliative Care*, 9(1), 101–109.
DOI: <http://dx.doi.org/10.2147/HIV.S126309>
- Okafor, C. N., Barnett, W., Zar, H. J., Nhapi, R., Koen, N., Shoptaw, S., & Stein, D. J. (2021). Associations of Emotional, Physical, or Sexual Intimate Partner Violence and Depression Symptoms Among South African Women in a Prospective Cohort Study. *Journal of Interpersonal Violence*, 36(9–10), NP5060–NP5083.
DOI: <https://doi.org/10.1177/0886260518796522>
- Okonoda K., Maigida K., Audu M., & Obembe, A. (2023). Relationship between Intimate Partner Violence and Quality of Life among Females Attending the HIV Clinic of a Teaching Hospital in North Central, Nigeria. *Health*, 15(6), 475-494.
doi: [10.4236/health.2023.156032](https://doi.org/10.4236/health.2023.156032).
- Okoronkwo, I., Okeke, U., Chinweuba, A., & Iheanacho, P. (2013). Nonadherence factors and sociodemographic characteristics of HIV-infected adults receiving antiretroviral therapy in Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria. *International Scholarly Research Notices*, 2013, 1-8. DOI: <http://dx.doi.org/10.1155/2013/843794>

- Okuku, M. O., & Dan-Jumbo, A. (2021). Forgetfulness and Non-Adherence to Antiretroviral Therapy in Nigeria: A Review. *Asian Journal of Medical Principles and Clinical Practice*, 4(1), 34–41.
- URL: <https://journalajmpep.com/index.php/AJMPCP/article/view/68>
- Oliveira, S. S. W., Vasconcelos, R. S., Amaral, V. R. S., Sousa, H. F. P. E., Dinis, M. A. P., Vidal, D. G., & Sá, K. N. (2021). Spirituality in Coping with Pain in Cancer Patients: A Cross-Sectional Study. *Healthcare*, 9(12), 1671-1671.
- DOI: <https://doi.org/10.3390/healthcare9121671>
- Olsen, R. (2011). Self-Selection bias. In *Encyclopedia of Survey Research Methods*.
- Olsen, W., & Morgan, J. (2004). *A critical epistemology of analytical statistics: addressing the sceptical realist*.
- Ademola, O. O., Caroline, M., & Ishola, A. I. (2019). Socio-cultural Factors Influencing Adherence to Antiretroviral Therapy Among People Living with HIV/AIDS in a Tertiary Hospital in Southwestern Nigeria. *International Journal of HIV/AIDS Prevention, Education and Behavioural Science*, 5(2), 124-124.
- DOI: <https://doi.org/10.11648/j.ijhpebs.20190502.17>
- Omiya, T., Yamazaki, Y., Shimada, M., Kazuko Ikeda, K., Ishiuchi-Ishitani, S., & Ohira, K. (2017). Difficulties and Coping Strategies Experienced by Employed People with HIV in Japan: A Qualitative Study Comparing High and Low Sense of Coherence Groups. *HIV/AIDS-Contemporary Challenges*. DOI: <https://doi.org/10.5772/65775>
- Omonaiye, O., Nicholson, P., Kusljic, S., Mohebbi, M., & Manias, E. (2020). Medication-based Refill Adherence Among Pregnant Women Living with HIV in Nigeria. *Clinical Therapeutics*, 42 (11), 209-219. <https://doi.org/10.1016/j.clinthera.2020.08.014>.
- Ondwela, M., Mothiba, T., Mangi, N., & Ter Goon, D. (2019). " I Visited a Traditional Healer Because I Felt I wasn't Getting any Better by Using Active Antiretroviral".

- Understanding Cultural Imperatives in the Context of Adherence to Highly Active Antiretroviral Therapy. *The Open Public Health Journal*, 12(1), 315-320.
- Onono, M., Odwar, T., Abuogi, L., Owuor, K., Helova, A., Bukusi, E., Turan, J., & Hampanda, K. (2020). Effects of Depression, Stigma and Intimate Partner Violence on Postpartum Women's Adherence and Engagement in HIV Care in Kenya. *AIDS and Behavior*, 24(6), 1807–1815. <https://doi.org/10.1007/s10461-019-02750-y>
- Onoya, D., Nattey, C., Budgell, E., van den Berg, L., Maskew, M., Evans, D., ... & Fox, M. P. (2017). Predicting the need for third-line antiretroviral therapy by identifying patients at high risk for failing second-line antiretroviral therapy in South Africa. *AIDS Patient Care and STDs*, 31(5), 205-212.
- Orcan, F. (2020). Parametric or non-parametric: Skewness to test normality for mean comparison. *International Journal of Assessment Tools in Education*, 7(2), 255-265.
- Orrell, C., Cohen, K., Leisegang, R., Bangsberg, D. R., Wood, R., & Maartens, G. (2017). Comparison of six methods to estimate adherence in an ART-naïve cohort in a resource-poor setting: which best predicts virological and resistance outcomes? *AIDS Research and Therapy*, 14 (1), 1-11.
- Ortego, C., Huedo-Medina, T. B., Llorca, J., Sevilla, L., Santos, P., Rodríguez, E., Warren, M. R., & Vejo, J. (2011). Adherence to Highly Active Antiretroviral Therapy (HAART): A Meta-Analysis. *AIDS and Behavior*, 15(7), 1381–1396.
DOI: <https://doi.org/10.1007/s10461-011-9942-x>
- Orth, Z., & van Wyk, B. (2022). Discourses of Mental Wellness Among Adolescents Living with HIV in Cape Town, South Africa. *Psychology Research and Behavior Management*, 15(1), 1435–1450. <https://doi.org/10.2147/PRBM.S360145>

- Oseni, T. I., Salam, T. O., Ilori, T., & Momoh, M. O. (2022). Prevalence and pattern of intimate partner violence among men and women in Edo State, Southern Nigeria. *African Journal of Primary Health Care and Family Medicine*, 14(1), 1-7.
DOI:<https://doi.org/10.4102/phcfm.v14i1.3147>
- Outlaw, M.(2009). No One Type of Intimate Partner Abuse: Exploring Physical and Non-Physical Abuse Among Intimate Partners. *Journal of Family Violence*, 24 (4), 263–272
<https://doi.org/10.1007/s10896-009-9228-5>
- Oyewuwo-Gassikia, O. B. (2020). Black Muslim women’s domestic violence help-seeking strategies: Types, motivations, and outcomes. *Journal of Aggression, Maltreatment and Trauma*, 29(7), 856-875.
- Pakhomova, T. E., Dietrich, J. J., Closson, K., Smit, J., Hornschuh, S., Smith, P., Beksinska, M., Ndung’u, T., Brockman, M., Gray, G., & Kaida, A. (2021). Intimate Partner Violence, Depression, and Anxiety Are Associated With Higher Perceived Stress Among Both Young Men and Women in Soweto and Durban, South Africa. *Frontiers in Reproductive Health*, 3, 638116. <https://doi.org/10.3389/frph.2021.638116>
- Palm, K., & Eriksson, A. (2018). Understanding salutogenic approaches to managing intensive work: Experiences from three Swedish companies. *Work*, 61(4), 627–637.
- Paloutzian, R. F., & Ellison, C. W. (1982). *Spiritual Well-Being Scale*. [Database record]. APA PsycTests. <https://doi.org/10.1037/t00534-000>
- Pangerti, F.D.Y., Pawito.P, & Prasetya, H. (2019). Effect of Care Support Treatment and Other Factors Affecting the Intention and Adherence to Antiretroviral Therapy: Path Analysis Evidence, from Malang East Java. *Journal of Health Promotion and Behavior*, 4(4), 298-305. <https://doi.org/10.26911/thejhp.2019.04.04.06>

- Panhwar, A. H., Ansari, S., & Shah, A. A. (2017). Post-positivism: An effective paradigm for social and educational research. *International Research Journal of Arts and Humanities*, 45(45), 253-259.
- Papageorgiou, V., Davies, B., Cooper, E., Singer, A., & Ward, H. (2022). Influence of material deprivation on clinical outcomes among people living with HIV in high-income countries: a systematic review and meta-analysis. *AIDS and Behavior*, 26(6), 2026-2054. DOI: <https://doi.org/10.1007/s10461-021-03551-y>
- Park, C. L. (2010). Making sense of the meaning literature: an integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin*, 136(2), 257.
- Park, C.L. & Ai, A.L. (2006). Meaning making and growth: new directions for research on survivors of trauma. *Journal of Loss and Trauma*, 11(15), 389- 407.
- Park, E. (2008). Projective normality of ruled surfaces. *Proceedings of the American Mathematical Society*, 136(3), 839-847.
- Parker, G., & Lee, C. (2007). Relationships Among Abuse Characteristics, Coping Strategies, and Abused Women's Psychological Health A Path Model. *Journal of Interpersonal Violence*, 22(9), 1184-1198.
- Parker, R. M., Ratzan, S. C., & Lurie, N. (2003). Health literacy: a policy challenge for advancing high-quality health care. *Health Affairs*, 22(4), 147-153.
- Parsons, J. T., Rosof, E., & Mustanski, B. (2007). Patient-related factors predicting HIV medication adherence among men and women with alcohol problems. *Journal of Health Psychology*, 12(2), 357-370.
- Pascoe, S. J. S., Fox, M. P., Huber, A. N., Murphy, J., Phokojoe, M., Gorgens, M., Rosen, S., Wilson, D., Pillay, Y., Fraser-Hurt, N. (2019). Differentiated HIV Care in South Africa: The Effect of Fast-Track Treatment Initiation Counselling on ART Initiation

- and Viral Suppression as Partial Results of an Impact Evaluation on the impact of a package of services to improve HIV treatment adherence. *Journal of the International AIDS Society*, 22 (11), e25409. <https://doi.org/10.1002/jia2.25409>
- Patton, M. Q. (2015). *Qualitative Research and Evaluation* (4th ed.). Thousand Oaks, CA: SAGE.
- Peer, N., Lombard, C., Steyn, K., & Levitt, N. (2020). A high burden of adverse life events and poor coping mechanisms experienced by urban-dwelling black South Africans. *Plos One*, 15(9), e0238320.
- Peltzer, K., Friend-du Preez, N., Ramlagan, S., & Anderson, J. (2010). Antiretroviral treatment adherence among HIV patients in KwaZulu-Natal, South Africa. *Biomed Central Public Health*, 10(1), 111-111. DOI: <https://doi.org/10.1186/1471-2458-10-111>
- Peltzer, K., & Pengpid, S. (2013). Socioeconomic Factors in Adherence to HIV Therapy in Low- and Middle-income Countries. *Journal of Health, Population and Nutrition*, 31(2), 150-170. DOI: <https://doi.org/10.3329/jhpn.v31i2.16379>
- Peltzer, K., & Pengpid, S. (2017). Associations between intimate partner violence, depression, and suicidal behavior among women attending antenatal and general outpatients' hospital services in Thailand. *Nigerian Journal of Clinical Practice*, 20(7), 892-899.
- Peng, Z., Chen, H., Wei, W., Yu, Y., Liu, Y., Wang, R., ... & Cai, Y. (2023). The information-motivation-behavioral skills (IMB) model of antiretroviral therapy (ART) adherence among people living with HIV in Shanghai. *AIDS Care*, 35(7), 1001-1006. doi:10.1080/09540121.2021.2019667
- Perrone, V., Cattaneo, D., Radice, S., Sangiorgi, D., Federici, A., Gismondo, M.R., Medaglia, M., Micheli, V., Vimercati, S., Pallone, E., Degli Esposti, L., & Clementi E. (2014). Impact of therapeutic drug monitoring of antiretroviral drugs in routine clinical management of patients infected with human immunodeficiency virus and related

- health care costs: a real-life study in a large cohort of patients. *ClinicoEconomics and Outcomes Research*, 6(1), 341–348. DOI: //doi.org/10.2147/CEOR.S58036
- Perales, F., & Bouma, G. (2019). Religion, religiosity and patriarchal gender beliefs: Understanding the Australian experience. *Journal of Sociology*, 55(2), 323–341.
- Perez, T. A., Chagas, E. F. B., & Pinheiro, O. L. (2021). Health functional literacy and adherence to antiretroviral therapy in people living with HIV. *Revista Gaúcha de Enfermagem*, 42, e20200012. DOI: <https://doi.org/10.1590/1983-1447.2021.20200012>
- Phillips, A. L., & Arya, M. (2016). Raising awareness: the overlapping epidemics of low health literacy and HIV. *The Journal of the Association of Nurses in AIDS Care*, 27(4), 372. doi: [10.1016/j.jana.2016.02.008](https://doi.org/10.1016/j.jana.2016.02.008)
- Phillips, D. C. (2004). Two decades after: ‘After the wake: Postpositivistic educational thought’. *Science and Education*, 13(1), 67–84. DOI: <https://doi.org/10.1023/B:SCED.0000018477.48228.99>
- Phillips, D. C. (2005). The contested nature of empirical educational research (and why philosophy of education offers little help). *Journal of Philosophy of Education*, 39(4), 577–597.
- Phillips, D. C., & N. C. Burbules. (2000). *Postpositivism and Educational Research*. Lanham, MA: Rowman and Littlefield.
- Phillips, T., Brittain, K., Mellins, C. A., Zerbe, A., Remien, R. H., Abrams, E. J., ... & Wilson, I. B. (2017). A self-reported adherence measure to screen for elevated HIV viral load in pregnant and postpartum women on antiretroviral therapy. *AIDS and Behavior*, 21(2), 450-461.
- Pinheiro, C. A. T., Souza, L. D. M., Motta, J. V. S., Kelbert, E. F., Souza, M. S., Martins, C. S. R., ... & Pinheiro, R. T. (2016). Depression and diagnosis of neurocognitive

- impairment in HIV-positive patients. *Brazilian Journal of Medical and Biological Research*, 49(10), e5344. <https://doi.org/10.1590/1414-431X20165344>
- Pomeroy, E.C, Thompson, S, Gober, K, & Noel, L. (2007). Predictors of medication adherence among HIV/AIDS clients. *Journal of HIV/AIDS and Social Services*, 6(2), 65-81. doi:10.1300/J187v06n01_05
- Pontiki, G., Sarantaki, A., Nikolaidis, P., & Lykeridou, A. (2022). Factors Affecting Antiretroviral Therapy Adherence among HIV-Positive Pregnant Women in Greece: An Exploratory Study. *Healthcare*, 10 (4), 654. DOI: <https://doi.org/10.3390/healthcare10040654>
- Potsane P. (2023). Factors associated with patients defaulting on HIV treatment at Helen Joseph Hospital, Gauteng province, South Africa. *African Journal of AIDS Research*, 22(2), 85–91. DOI: <https://doi.org/10.2989/16085906.2023.2197880>
- Poudel, K. C., Buchanan, D. R., & Poudel-Tandukar, K. (2015). Effects of a community-based HIV risk reduction intervention among HIV-positive individuals: results of a quasi-experimental study in Nepal. *AIDS Education and Prevention*, 27(3), 240-256.
- Prakot, S., Fink, A. M., Culbert, G., & Visudtibhan, P. J. (2022). An Analysis and Evaluation of the Information-Motivation-Behavioral Skills (IMB) Model for Antiretroviral Therapy. *Advances in Nursing Science*, 47(1), 73-88. DOI: <https://doi.org/10.1097/ANS.0000000000000469>
- Pretorius, H. G., Goldstein, N., & Stuart, A. D. (2005). Meaning-making of a group of South Africans in their experience of living with HIV: A phenomenological study. *Health South Africa Gesondheid*, 10(1), 41-51.
- Prochaska, J. O., & DiClemente, C. C. (1986). Toward a comprehensive model of change. In *Treating Addictive Behaviors: Processes of Change* (pp. 3-27). Boston, MA: Springer US.

- Prochaska, J. O., & Norcross, J. C. (2010). *Systems of psychotherapy: A transtheoretical analysis* (7th ed.), Brooks-Cole, California.
- Puskas, C. M., Kaida, A., Miller, C. L., Zhang, W., Yip, B., Pick, N., ... & Hogg, R. S. (2017). The adherence gap: a longitudinal examination of men's and women's antiretroviral therapy adherence in British Columbia, 2000–2014. *AIDS*, *31*(6), 827-833.
- Qiu, X, Zhang, N, Pan, S.J., Zhao, P, & Wu, B.W. (2020). Sense of Coherence and Health-Related Quality of Life in Patients With Brain Metastases. *Frontiers in Psychology*, *11*, 1516. doi: 10.3389/fpsyg.2020.01516
- Quinn, T.C., Wawer, M.J., Sewankambo, N, Serwadda, D, Li, C, Wabwire-Mangen F, et al. (2000). Viral load and heterosexual transmission of human immunodeficiency virus type 1. Rakai Project Study Group. *The New England Journal of Medicine*, *342*(13), 921–929. <https://doi.org/10.1056/NEJM200003303421303>
- Ramlagan, S., Peltzer, K., Ruiter, R. A. C., Barylski, N. A., Weiss, S. M., & Sifunda, S. (2018). Prevalence and factors associated with fixed-dose combination antiretroviral drugs adherence among HIV-positive pregnant women on Option B treatment in Mpumalanga Province, South Africa. *International Journal of Environmental Research and Public Health*, *15*(1), 161-181.
DOI: <https://doi.org/10.3390/ijerph15010161>
- Ramsey, S. E., Ames, E. G., Uber, J., Habib, S., Clark, S., & Waldrop-Valverde, D. (2019). Same-day associations between substance use and medication nonadherence among persons living with HIV. *Substance Abuse: Research and Treatment*, *13*, 1178221819878751. DOI: <https://doi.org/10.1177/1178221819878751>
- Razali, N. M., & Wah, Y. B. (2011). Power comparisons of shapiro-wilk, kolmogorov-smirnov, lilliefors and anderson-darling tests. *Journal of Statistical Modeling and Analytics*, *2*(1), 21-33.

- Rees, K., Zweigenthal, V., & Joyner, K. (2014). Implementing intimate partner violence care in a rural sub-district of South Africa: a qualitative evaluation. *Global Health Action*, 7(1), 24588. DOI: <https://doi.org/10.3402/gha.v7.24588>
- Regenauer, K. S., Kleinman, M. B., Belus, J. M., Myers, B., Joska, J. A., & Magidson, J. F. (2022). Effects of intersecting internalized stigmas and avoidance on HIV and alcohol-related outcomes among people living with HIV in South Africa. *Drug and Alcohol Dependence*, 233, 109364. DOI: <https://doi.org/10.1016/j.drugalcdep.2022.109364>
- Reichel, D. (2017). Determinants of intimate partner violence in Europe: The role of socioeconomic status, inequality, and partner behavior. *Journal of Interpersonal Violence*, 32(12), 1853–1873. <https://doi.org/10.1177/0886260517698951>
- Reid, M. J., Steenhoff, A. P., Thompson, J., Gabaitiri, L., Cary, M. S., Steele, K., ... & Linkin, D. R. (2017). Evaluation of the effect of cellular SMS reminders on consistency of antiretroviral therapy pharmacy pickups in HIV-infected adults in Botswana: a randomized controlled trial. *Health Psychology and Behavioral Medicine*, 5(1), 101-109.
- Riegel, B., & Knafl, G. (2013). Electronically monitored medication adherence predicts hospitalization in heart failure patients. *Patient Preference and Adherence*, 8 (2), 1-3. DOI: <https://doi.org/10.2147/ppa.s54520>
- Reis, A., Lencastre, L., Jonsson, C., & Guerra, M. P. (2019). Treatment adherence, meaning in life and affects in quality of life of HIV/AIDS patients. *Journal of Happiness Studies*, 21(7), 2405-2417. DOI: <https://doi.org/10.1007/s10902-019-00182-y>
- Renju, J., Moshabela, M., McLean, E., Ddaaki, W., Skovdal, M., Odongo, F., Bukenya, D., Wamoyi, J., Bonnington, O., Seeley, J., Zaba, B., & Wringe, A. (2017). ‘Side effects’ are ‘central effects’ that challenge retention in HIV treatment programmes in six sub-

- Saharan African countries: a multicountry qualitative study. *Sexually Transmitted Infections*, 93(3), e052971. <https://doi.org/10.1136/sextrans-2016-052971>
- Renner, L. M., Habib, L., Stromquist, A. M., & Peek-Asa, C. (2014). The association of intimate partner violence and depressive symptoms in a cohort of rural couples. *The Journal of Rural Health*, 30(1), 50–58. <https://doi.org/10.1111/jrh.12026>
- Reynolds, N. R., Sun, J., Nagaraja, H. N., Gifford, A. L., Wu, A. W., & Chesney, M. A. (2007). Optimizing measurement of self-reported adherence with the ACTG Adherence Questionnaire: a cross-protocol analysis. *Journal of Acquired Immune Deficiency Syndromes*, 46(4), 402-440.
- Rice, W. S., Crockett, K. B., Mugavero, M. J., Raper, J. L., Atkins, G. C., & Turan, B. (2017). Association Between Internalized HIV-Related Stigma and HIV Care Visit Adherence. *Journal of Acquired Immune Deficiency Syndromes*, 76(5), 482–487. <https://doi.org/10.1097/qai.0000000000001543>
- Riedl, D., Beck, T., Exenberger, S., Daniels, J., Dejaco, D., Unterberger, I., & Lampe, A. (2019). Violence from childhood to adulthood: The influence of child victimization and domestic violence on physical health in later life. *Journal of Psychosomatic Research*, 116, 68–74. <https://doi.org/10.1016/j.jpsychores.2018.11.019>
- Rivas, C., Ramsay, J., Sadowski, L., Davidson, L. L., Dunne, D., Eldridge, S., Hegarty, K., Taft, A., & Feder, G. (2015). Advocacy interventions to reduce or eliminate violence and promote the physical and psychosocial well-being of women who experience intimate partner abuse. *The Cochrane Database of Systematic Reviews*, 2015(12), CD005043. <https://doi.org/10.1002/14651858.CD005043.pub3>
- Rivara, F., Adhia, A., Lyons, V., Massey, A., Mills, B., Morgan, E., Simckes, M., & Rowhani-Rahbar, A. (2019). The Effects Of Violence On Health. *Health Affairs*, 38(10), 1622–1629. DOI: <https://doi.org/10.1377/hlthaff.2019.00480>

- Roberts, K. J. (2000). Barriers to and facilitators of HIV-positive patients' adherence to antiretroviral treatment regimens. *AIDS Patient Care STDS*, 14(3), 155-68. doi: 10.1089/108729100317948.
- Rogers, B. G., Lee, J. S., Bainter, S. A., Bedoya, C. A., Pinkston, M., & Safren, S. A. (2020). A multilevel examination of sleep, depression, and quality of life in people living with HIV/AIDS. *Journal of Health Psychology*, 25(10-11), 1556-1566.
DOI: <https://doi.org/10.1080/15402002.2020.1803871>
- Rohani, C., Abedi, H. A., Sundberg, K., & Langius-Eklöf, A. (2015). Sense of coherence as a mediator of health-related quality of life dimensions in patients with breast cancer: a longitudinal study with prospective design. *Health and quality of life outcomes*, 13(1), 1-9. DOI: <https://doi.org/10.1186/s12955-015-0392-4>
- Rosyad, Y. S., Malini, H. & Sarfika, R. (2020). 'My Live is Meaningful and Adherence to Antiretroviral Therapy' Men Who Have Sex with Men (MSM) Who Live with HIV/AIDS; Mixed Method. *Indian Journal of Public Health Research and Development*, 11 (3), 706-709.
- Rotzinger, A., Locatelli, I., Reymermier, M., Amico, S., Bugnon, O., Cavassini, M., & Schneider, M. P. (2016). Association of disclosure of HIV status with medication adherence. *Patient Education and Counseling*, 99(8), 1413-1420.
DOI: <https://doi.org/10.1016/j.pec.2016.03.012>
- Rowlands, E. (2021). "She is trying to control me: African men's lived experiences of intimate partner violence in johannesburg". *Gender and Behaviour*, 19(3), 8305-18315. Doi: 10.10520/ejc-genbeh_v19_n3_a6
- Rueda, S., Mitra, S., Chen, S., Gogolishvili, D., Globerman, J., Chambers, L., Wilson, M., Logie, C. H., Shi, Q., Morassaei, S., & Rourke, S. B. (2016). Examining the associations between HIV-related stigma and health outcomes in people living with

- HIV/AIDS: a series of meta-analyses. *British Medical Journal Open*, 6(7), e011453.
DOI: <https://doi.org/10.1136/bmjopen-2016-011453>
- Rupérez, M., Pou, C., Maculuve, S., Cedeño, S., Luis, L., Rodríguez, J., ... & Paredes, R. (2015). Determinants of virological failure and antiretroviral drug resistance in Mozambique. *Journal of Antimicrobial Chemotherapy*, 70(9), 2639-2647. DOI: <https://doi.org/10.1093/jac/dkv143>
- Russell, S., Martin, F., Zalwango, F., Namukwaya, S., Nalugya, R., Muhumuza, R., Katongole, J., & Seeley, J. (2016). Finding Meaning: HIV Self-Management and Wellbeing among People Taking Antiretroviral Therapy in Uganda. *PLOS One*, 11(1), e0147896. <https://doi.org/10.1371/journal.pone.0147896>
- Ryan, A. B. (2006). *Post-positivist approaches to research*. In *Researching and writing your thesis: A guide for postgraduate students*, eds. M. Antonesa, H. Fallon, A. B. Ryan, A. Ryan and T. Walsh, 12–26. Maynooth: Maynooth Adult and Community Education. Available at: <http://adulthoodeducation.nuim.ie/documents/Thesis.pdf> Accessed 8 February 2019.
- Ryff, C. D. (2014). Psychological well-being revisited: advances in the science and practice of eudaimonia. *Psychother Psychosom*, 83(1), 10–28. doi: 10.1159/000353263
- Saal, W., & A. Kagee. (2012). “The Applicability of the Theory of Planned Behaviour in Predicting Adherence to ART Among a South African Sample.” *Journal of Health Psychology*, 17(3), 362–370. Doi:10.1177/1359105311416875
- Saberi, P., Ming, K., Legnitto, D., Neilands, T. B., Gandhi, M., & Johnson, M. O. (2018). Novel methods to estimate antiretroviral adherence: protocol for a longitudinal study. *Patient Preference and Adherence*, 12, 1033-1042.

- Sabri, B., Simonet, M., & Campbell, J. C. (2018). Risk and protective factors of intimate partner violence among South Asian immigrant women and perceived need for services. *Cultural Diversity and Ethnic Minority Psychology, 24*(3), 442-452.
- Salleh, N. A. M., Richardson, L., Kerr, T., Shoveller, J., Montaner, J., Kamarulzaman, A., & Milloy, M. J. (2018). A longitudinal analysis of daily pill burden and likelihood of optimal adherence to antiretroviral therapy among people living with HIV who use drugs. *Journal of Addiction Medicine, 12*(4), 308-314.
- Samios, C., Raatjes, B., Ash, J., Lade, S. L., & Langdon, T. (2020). Meaning in life following intimate partner psychological aggression: The roles of self-kindness, positive reframing, and growth. *Journal of Interpersonal Violence, 35*(8), 1567-1586.
- Sangeda, R. Z., Mosha, F., Prosperi, M., Aboud, S., Vercauteren, J., Camacho, R. J., ... & Vandamme, A. M. (2014). Pharmacy refill adherence outperforms self-reported methods in predicting HIV therapy outcome in resource-limited settings. *Biomed Central Public Health, 14*(1), 1-11.
- Sardu, C., Mereu, A., Sotgiu, A., Andrissi, L., Jacobson, M. K., & Contu, P. (2012). Antonovsky's Sense of Coherence Scale: Cultural Validation of Soc Questionnaire and Socio-Demographic Patterns in an Italian Population. *Clinical Practice and Epidemiology in Mental Health, 8*(1), 1-6.
- DOI:<https://doi.org/10.2174/1745017901208010001>
- Sardinha, L., Maheu-Giroux, M., Stöckl, H., Meyer, S. R., & García-Moreno, C. (2022). Global, regional, and national prevalence estimates of physical or sexual, or both, intimate partner violence against women in 2018. *The Lancet, 399*(10327), 803-813.
- Sari, P., Martawinarti, R., Lataima, N., & Berhimpong, V. (2019). The Quality of Life of Patients with HIV/AIDS Undergoing Antiretroviral Therapy: A Systematic Review. *Journal Ners and Midwifery, 14*(3), 50-54.

doi:<http://dx.doi.org/10.20473/jn.v14i3.16978>

- Sattler, E. L. P., Lee, J. S., & Perri, M. (2013). Medication (Re)fill Adherence Measures Derived from Pharmacy Claims Data in Older Americans: A Review of the Literature. *Drugs and Aging*, 30(6), 383–399. DOI: <https://doi.org/10.1007/s40266-013-0074-z>
- Sauceda, J. A., Neilands, T. B., Johnson, M. O., & Saberi, P. (2018). An update on the barriers to adherence and a definition of self-report non-adherence given advancements in antiretroviral therapy (ART). *AIDS and Behavior*, 22(3), 939-947.
DOI: <https://doi.org/10.1007/s10461-017-1759-9>
- Saunders, M., Lewis, P. & Thornhill, A. (2007). *Research methods for Business Students*. 4th edition. Pearson Education Limited, England.
- Sawma, T., & Sanjab, Y. (2022). The association between sense of coherence and quality of life: a cross-sectional study in a sample of patients on hemodialysis. *Biomed Central Psychology*, 10(1), 100-100. DOI: <https://doi.org/10.1186/s40359-022-00805-9>
- Schaefer, L. M., Howell, K. H., Sheddan, H. C., Napier, T. R., Shoemaker, H. L., & Miller-Graff, L. E. (2021). The road to resilience: Strength and coping among pregnant women exposed to intimate partner violence. *Journal of Interpersonal Violence*, 36(18), 8382-8408.
- Schafer, K. R., Brant, J., Gupta, S., Thorpe, J., Winstead-Derlega, C., Pinkerton, R., Laughon, K., Ingersoll, K., & Dillingham, R. (2012). Intimate Partner Violence: A Predictor of Worse HIV Outcomes and Engagement in Care. *AIDS Patient Care and STDs*, 26(6), 356–365. <https://doi.org/10.1089/apc.2011.0409>
- Schafer, S. K., Becker, N., King, L., Horsch, A., & Michael, T. (2019). The relationship between sense of coherence and post-traumatic stress: a meta-analysis. *European Journal of Psychotraumatology*, 10(1), e1562839.

DOI: <https://doi.org/10.1080/20008198.2018.1562839>

- Schatz, E., David, I., Angotti, N., Gómez-Olivé, F. X., & Mojola, S. A. (2022). From “Secret” to “Sensitive Issue”: Shifting Ideas About HIV Disclosure Among Middle-Aged and Older Rural South Africans in the Era of Antiretroviral Treatment. *Journal of Aging and Health*, 34(1), 14-24. DOI: <https://doi.org/10.1177/08982643211020202>
- Schutte, L., Wissing, M. P., Ellis, S. M., Jose, P. E., & Vella-Brodrick, D. A. (2016). Rasch analysis of the meaning in life questionnaire among adults from South Africa, Australia, and New Zealand. *Health and Quality of Life Outcomes*, 14 (13), 1491–1519. DOI: <https://doi.org/10.1186/s12955-016-0414-x>
- Seedat, M., Van Niekerk, A., Jewkes, R., Suffla, S., & Ratele, K. (2009). Violence and injuries in South Africa: Prioritising an agenda for prevention. *The Lancet*, 374(9694), 1011–1022.
- Selamu, L. G., Singhe, M. S., & Assefa, E. (2017). The Psychosocial Factors that Influencing Antiretroviral Treatment Adherence. *Journal of Clinical Research in HIV AIDS and Prevention*, 3(1), 31-39. DOI: [10.14302/issn.2324-7339.jcrhap-16-1316](https://doi.org/10.14302/issn.2324-7339.jcrhap-16-1316)
- Selin, A., DeLong, S. M., Julien, A., MacPhail, C., Twine, R., Hughes, J. P., ... & Pettifor, A. (2019). Prevalence and associations, by age group, of IPV among AGYW in rural South Africa. *Sage open*, 9(1), 2158244019830016. DOI: 10.1177/2158244019830016
- Semvua, S. K., Orrell, C., Mmbaga, B. T., Semvua, H. H., Bartlett, J. A., & Boule, A. A. (2017). Predictors of non-adherence to antiretroviral therapy among HIV infected patients in northern Tanzania. *PLOS One*, 12(12), e0189460.
DOI: <https://doi.org/10.1371/journal.pone.0189460>
- Sere, Y., Roman, N.V., & Ruiters, R., A., C. (2021). Coping With the Experiences of Intimate Partner Violence Among South African Women: Systematic Review and Meta-Synthesis. *Frontiers in Psychiatry*, 12, 655130. DOI: 10.3389/fpsy.2021.655130

- Seroto, M. E., & Van Rensburg, E. J. (2022). To disclose or not? Enabling pregnant women to disclose their HIV status to their male partners. *African Journal of Reproductive Health, 25*(3), 30-40.
- Shaffer, C. S., Gatner, D. T., McCuish, E., Douglas, K. S., & Viljoen, J. L. (2021). The role of psychopathic features and developmental risk factors in trajectories of physical intimate partner violence. *Psychology of Violence, 11*(6), 549-552.
- Shahin, W., Kennedy, G. A., & Stupans, I. (2019). The impact of personal and cultural beliefs on medication adherence of patients with chronic illnesses: a systematic review. *Patient Preference and Adherence, 13*, 1019-1035. DOI: <https://doi.org/10.2147/PPA.S212046>
- Shakya, H. B., Cislighi, B., Fleming, P., Levto, R. G., Boyce, S. C., Raj, A., & Silverman, J. G. (2022). Associations of attitudes and social norms with experiences of intimate partner violence among married adolescents and their husbands in rural Niger: a dyadic cross-sectional study. *Biomed Central Women's Health, 22*(1), 180.
DOI: <https://doi.org/10.1186/s12905-022-01724-y>
- Sharif Nia, H., Pahlevan Sharif, S., Boyle, C., Yaghoobzadeh, A., Tahmasbi, B., Rassool, G. H., ... & Soleimani, M. A. (2018). The factor structure of the spiritual well-being scale in veterans experienced chemical weapon exposure. *Journal of Religion and Health, 57*(2), 596-608. <https://doi.org/10.1007/s10943-017-0458-1>
- Shisana O, Rehle T, Simbayi L, Zuma K, Jooste S, Zungu N, et al. (2014). South African National HIV Prevalence, Incidence and Behaviour Survey, 2012. Cape Town: HSRC Press. URL: <http://repository.hsrc.ac.za/bitstream/handle/20.500.11910/2490/8162.pdf?sequence=1&is> [retrieved 2019 Oct 22]
- Shoko, C., & Chikobvu, D. (2019). A superiority of viral load over CD4 cell count when predicting mortality in HIV patients on therapy. *Biomed Central Infectious Diseases, 19*(1), 169-180. <https://doi.org/10.1186/s12879-019-3781-1>

- Shubber, Z., Mills, E. J., Nachega, J. B., Vreeman, R., Freitas, M., Bock, P., Nsanzimana, S., Penazzato, M., Appolo, T., Doherty, M., & Ford, N. (2016). Patient-Reported Barriers to Adherence to Antiretroviral Therapy: A Systematic Review and Meta-Analysis. *PLOS Medicine*, *13*(11), e1002183.
<https://doi.org/10.1371/journal.pmed.1002183>
- Siemieniuk RA, Krentz H.B. & Gill M.J. (2013). Intimate partner violence and HIV: a review. *Current HIV/AIDS Reports*, *10*(4), 380–389.
- Sikweyiya, Y., Addo-Lartey, A. A., Alangea, D. O., Dako-Gyeke, P., Chirwa, E. D., Coker-Appiah, D., Adanu, R. M. K., & Jewkes, R. (2020). Patriarchy and gender-inequitable attitudes as drivers of intimate partner violence against women in the central region of Ghana. *Biomed Central Public Health*, *20*(1), 682-711.
DOI: <https://doi.org/10.1186/s12889-020-08825-z>
- Sikweyiya, Y. M., Jewkes, R., & Dunkle, K. (2014). Impact of HIV on and the constructions of masculinities among HIV-positive men in South Africa: implications for secondary prevention programs. *Global Health Action*, *7*(1), 24631.
- Simmons, J., & Swahnberg, K. (2021). Lifetime prevalence of polyvictimization among older adults in Sweden, associations with ill-health, and the mediating effect of sense of coherence. *Biomed Central Geriatrics*, *21*(1), 1-14.
- Simões, A., Oliveira, A.L., Lima, M.P., Vieira, C.M.C., & Nogueira, S.M. (2010). Instrument to evaluate the meaning of life. *Psicologia Educação Cultura*, *14*(2), 247–268.
- Simoni, J. M, Pearson, C.R., Pantalone, D.W., Marks, G, & Crepaz, N.(2006). Efficacy of interventions in improving highly active antiretroviral therapy adherence and HIV-1 RNA viral load: a meta-analytic review of randomized controlled trials. *Journal of Acquir Immune Deficiency Syndrome*, *43*(1), 23-S35.

- Simonič, B. (2021). The Power of Women's Faith in Coping with Intimate Partner Violence: Systematic Literature Review. *Journal of Religion and Health*, 60(6), 4278–4295. DOI: <https://doi.org/10.1007/s10943-021-01222-9>
- Simonič, B., & Klobučar, N. R. (2017). Experiencing positive religious coping in the process of divorce: A qualitative study. *Journal of Religion and Health*, 56(5), 1644–1654.
- Sin, N. L., & DiMatteo, M. R. (2014). Depression treatment enhances adherence to antiretroviral therapy: a meta-analysis. *Annals of Behavioral Medicine*, 47(3), 259–269.
- Singer, A. W., Weiser, S. D., & McCoy, S. I. (2015). Does Food Insecurity Undermine Adherence to Antiretroviral Therapy? A Systematic Review. *AIDS and Behavior*, 19(8), 1510–1526. DOI: <https://doi.org/10.1007/s10461-014-0873-1>
- Sitarczyk, M. (2013). Sense of coherence in women—Victims of domestic violence. *Journal of Psychiatry and Clinical Psychology*, 13(4), 250–565.
- Slabbert, I. (2017). Coping resources of women experiencing intimate partner violence: An ecological perspective. *Southern African Journal of Social Work and Social Development*, 29(1), 1–15. <https://hdl.handle.net/10520/EJC-89de1f6cd>
- Smith, R. J. (2006). Adherence to antiretroviral HIV drugs: how many doses can you miss before resistance emerges? *Proceedings: Biological Sciences*, 273(1586):617–624.
- Smith, C., Gengiah, T. N., Yende-Zuma, N., Upfold, M., & Naidoo, K. (2016). Assessing Adherence to Antiretroviral Therapy in a Rural Paediatric Cohort in KwaZulu-Natal, South Africa. *AIDS and Behavior*, 20(11), 2729–2738. DOI: <https://doi.org/10.1007/s10461-016-1419-5>
- Soares, R. D. C. A., Brito, A. M. D., Lima, K., & Lapa, T. M. (2020). Adherence to antiretroviral therapy among people living with HIV/AIDS in Northeastern Brazil: a cross-sectional study. *Sao Paulo Medical Journal*, 137(6), 479–485.

- Sok, P., Mgbere, O., Pompeii, L., & Essien, E. J. (2021, May). Evaluation of the Sociodemographic, Behavioral and Clinical Influences on Complete Antiretroviral Therapy Adherence Among HIV-Infected Adults Receiving Medical Care in Houston, Texas. *HIV/AIDS Research and Palliative Care*, *13*(1), 539–555.
DOI: <https://doi.org/10.2147/hiv.s303791>
- Soomro, N., Fitzgerald, G., Seeley, J. et al. (2019). Comparison of Antiretroviral Therapy Adherence Among HIV-Infected Older Adults with Younger Adults in Africa: Systematic Review and Meta-analysis. *AIDS Behaviour*, *23*(9), 445–458.
DOI: <https://doi.org/10.1007/s10461-018-2196-0>
- South African National AIDS Council. (2017). *Let our actions count: South Africa's national strategic plan for HIV, TB and STIs 2017–2022*. Pretoria: SANAC. URL: https://www.gov.za/sites/default/files/gcis_document/201705/nsp-hiv-tb-stia.pdf
Accessed on 20 July 2019.
- South African National Strategic Plan on Gender-based Violence and Femicide. (n.d.) URL: <https://www.gov.za/documents/overview-national-strategic-plan-gender-based-violence-and-femicide-roll0out-year-1-9-aug>
- Spiers, J., Smith, J. A., Poliquin, E., Anderson, J., & Horne, R. (2016). The experience of antiretroviral treatment for Black West African women who are HIV positive and living in London: An interpretative phenomenological analysis. *AIDS and Behavior*, *20*(9), 2151–2163.
- Sprague, C., Hatcher, A. M., Woollett, N., & Black, V. (2017). How Nurses in Johannesburg Address Intimate Partner Violence in Female Patients: Understanding IPV Responses in Low- and Middle-Income Country Health Systems. *Journal of Interpersonal Violence*, *32*(11), 1591–1619. <https://doi.org/10.1177/0886260515589929>

- Stangl, A. L., Lloyd, J. K., Brady, L. M., Holland, C. E., & Baral, S. (2013). A systematic review of interventions to reduce HIV-related stigma and discrimination from 2002 to 2013: how far have we come? *Journal of the International AIDS Society, 16* (2), 18734. DOI: <https://doi.org/10.7448/IAS.16.3.18734>
- Stanhope, M., & Lancaster, J. (2015). *Public Health Nursing: Population-Centered Health Care in the Community*. Elsevier Health Sciences.
- Statistics South Africa (StatsSA). (2017). *Mid-year Population Estimates 2017*. Pretoria: Statistics South Africa.
- Statistics South Africa. (2020) “Crimes against women in South Africa, an analysis of the phenomenon of GBV and femicide,” in *Statistics South Africa*, Statistics South Africa, Pretoria, South Africa. URL: https://www.parliament.gov.za/storage/app/media/1_Stock/Events_Institutional/2020/womens_charter_2020/docs/30-07-2020/A_Statistical_Overview_R_Maluleke.pdf.
- Statistics South Africa (Stats SA) (2017). *South Africa Demographic and Health Survey 2016*. Key Indicator Report.
- Statistics South Africa (Stats SA) (2022). *Measuring Food Security in South Africa: Applying the Food Insecurity Experience Scale, Report 03-00-19*. Statistics South Africa, Pretoria, South Africa. URL: <https://www.statssa.gov.za/publications/Report-03-00-19/Report-03-00-192020.pdf>
- Steger, M. F. (2009). Meaning in life.
- Steger, M. F. (2012). Making meaning in life. *Psychological Inquiry, 23*(4), 381-385.
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: assessing the presence of and search for meaning in life. *Journal of counseling psychology, 53*(1), 80-80.

- Steger, M. F., Kashdan, T. B., Sullivan, B. A., & Lorentz, D. (2008). Understanding the search for meaning in life: Personality, cognitive style, and the dynamic between seeking and experiencing meaning. *Journal of Personality, 76*(2), 199-228.
- Stern, E., Buikema, R., & Cooper, D. (2015). South African women's conceptualisations of and responses to sexual coercion in relation to hegemonic masculinities. *Global Public Health, 11*(1), 135–152. DOI: <https://doi.org/10.1080/17441692.2015.1032993>
- Steward, W. T., Sumitani, J., Moran, M. E., Ratlhagana, M. J., Morris, J. L., Isidoro, L., ... & Lippman, S. A. (2018). Engaging HIV-positive clients in care: acceptability and mechanisms of action of a peer navigation program in South Africa. *AIDS Care, 30*(3), 330-337.
- Stöckl, H., Devries, K., Rotstein, A., Abrahams, N., Campbell, J., Watts, C., & Moreno, C. G. (2013). The global prevalence of intimate partner homicide: a systematic review. *The Lancet, 382*(9895), 859–865. DOI: [https://doi.org/10.1016/s0140-6736\(13\)61030-2](https://doi.org/10.1016/s0140-6736(13)61030-2)
- Strawson, G. (2014). *The secret connexion: Causation, realism, and David Hume: Revised edition*. OUP Oxford.
- Sumari-de Boer, I. M., Ngowi, K. M., Sonda, T. B., Pima, F. M., Masika, L. V., Sprangers, M. A., ... & Aarnoutse, R. E. (2021). Effect of digital adherence tools on adherence to antiretroviral treatment among adults living with HIV in Kilimanjaro, Tanzania: a randomized controlled trial. *Journal of Acquired Immune Deficiency Syndromes, 87*(5), 1136. DOI: [10.1097/QAI.0000000000002695](https://doi.org/10.1097/QAI.0000000000002695)
- Super, S., Wagemakers, M. A. E., Picavet, H. S. J., Verkooijen, K. T., & Koelen, M. A. (2016). Strengthening sense of coherence: opportunities for theory building in health promotion. *Health Promotion International, 31*(4), 869-878.
- Sutton, S. (2001). Back to the drawing board? A review of applications of the transtheoretical model to substance use. *Addiction, 96*(1), 175-186.

- Swartz, A. K. (2018). Smart pills for psychosis: the tricky ethical challenges of digital medicine for serious mental illness. *The American Journal of Bioethics*, 18(9), 65-67.
- Sweeney, S. M., & Vanable, P. A. (2016). The association of HIV-related stigma to HIV medication adherence: a systematic review and synthesis of the literature. *AIDS and Behavior*, 20(1), 29-50. DOI: 10.1007/s10461-015-1164-1
- Szaflarski, M. (2013). Spirituality and religion among HIV-infected individuals. *Current HIV/AIDS Reports*, 10(4), 324-332. doi: 10.1007/s11904-013-0175-7.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Experimental designs using ANOVA* (Vol. 724). Belmont, CA: Thomson/Brooks/Cole.
- Tanser F., Barnighausen, T., Grapsa, E., Zaidi, J., & Newell, M., L. (2013). High coverage of ART associated with decline in risk of HIV acquisition in rural KwaZulu-Natal, South Africa. *Science*, 339(6122), 966–971.
- Tarkang, E. E., Adu-Gyamfi, M., Sackey, E., & Duodu, D. A. (2023). Application of the theory of planned behaviour to HIV management and prevention in sub-Saharan Africa: a systematic review. *International Journal of Health Promotion and Education*, 1–17. <https://doi.org/10.1080/14635240.2023.2175324>
- Tchakoute, T. C., Rhee, S. Y., Hare, C. B., Shafer, R. W., & Sainani, K. (2022). Adherence to contemporary antiretroviral treatment regimens and impact on immunological and virologic outcomes in a US healthcare system. *PLOS One*, 17(2), e0263742. <https://doi.org/10.1371/journal.pone.0263742>
- Temane, L., Khumalo, I. P., & Wissing, M. P. (2014). Validation of the Meaning in Life Questionnaire in a South African context. *Journal of Psychology in Africa*, 24(1), 51-60.

- Temane, Q. M., & Wissing, M. P. (2006). The role of spirituality as a mediator for psychological well-being across different contexts. *South African Journal of Psychology, 36*(3), 582-597.
- Terr Blanche, M., Durrheim, K. & Painter, D. (2006) *Research in Practice: Applied Methods for Social Sciences*. 2nd Edition, UCT Press, Cape Town.
- Tesfaye, M., Kaestel, P., Olsen, M. F., Girma, T., Yilma, D., Abdissa, A., ... & Hanlon, C. (2016). Food insecurity, mental health and quality of life among people living with HIV commencing antiretroviral treatment in Ethiopia: a cross-sectional study. *Health and Quality of Life Outcomes, 14*(1), 1-8. DOI: <https://doi.org/10.1186/s12955-016-0440-8>
- The World Bank. (2017). *Evaluation of the National Adherence Guidelines for Chronic Diseases in South Africa: Healthcare Provider Perspectives on Different Care Models, 2017*. Washington DC: World Bank;
- Thobejane, T. D., & Luthada, V. (2019). An investigation into the trend of domestic violence on men: The case of South Africa. *International Journal of Sustainable Development, 12*(3), 11-18.
- Trimble, D.D, Nava, A., & McFarlane, J. (2013) Intimate partner violence and antiretroviral adherence among women receiving care in an urban Southeastern Texas HIV clinic. *The Journal of the Association of Nurses in AIDS Care, 24*(4), 331–340. DOI: <https://doi.org/10.1016/j.jana.2013.02.006>
- Trombetta, T., & Rollè, L. (2022). Intimate partner violence perpetration among sexual minority people and associated factors: A systematic review of quantitative studies. *Sexuality Research and Social policy, 20*(1), 886-935.
- Tsai A. C., Wolfe W. R., Kumbakumba E., Kawuma A., Hunt P. W., Martin J. N., & Weiser S. D. (2016). Prospective study of the mental health consequences of sexual violence

- among women living with HIV in rural Uganda. *Journal of Interpersonal Violence*, 31(8), 1531-1553.
- Tsega, B., Srikanth, B. A., & Shewamene, Z. (2015). Determinants of non-adherence to antiretroviral therapy in adult hospitalized patients, Northwest Ethiopia. *Patient Preference and Adherence*, 9, 373-380.
- Turan, B., Hatcher, A. M., Weiser, S. D., Johnson, M. O., Rice, W. S., & Turan, J. M. (2017). Framing mechanisms linking HIV-related stigma, adherence to treatment, and health outcomes. *American Journal of Public Health*, 107(6), 863-869.
DOI: <https://doi.org/10.2105/AJPH.2017.303744>
- Turan, B., Rice, W. S., Crockett, K. B., Johnson, M., Neilands, T. B., Ross, S. N., ... & Turan, J. M. (2019). Longitudinal association between internalized HIV stigma and antiretroviral therapy adherence for women living with HIV: the mediating role of depression. *AIDS*, 33(3), 571-588.
DOI: <https://doi.org/10.1097/QAD.0000000000002071>
- Tusa, B. S., Kebede, S. A., & Weldesenbet, A. B. (2022). Spatial distribution and determinant factors of intimate partner violence among reproductive age group women in Ethiopia: Using generalized structural equation modeling. *PLOS One*, 17(2), e0263811. DOI: <https://doi.org/10.1371/journal.pone.0263811>
- Joint United Nations Programme on HIV/AIDS (UNAIDS). (2016). *South Africa takes bold step to provide HIV treatment for all*.
URL: https://www.unaids.org/sites/default/files/20160513_PR_SouthAfrica_en.pdf.
- UNAIDS. (2018). *Country factsheets*, South Africa.
URL: <https://www.unaids.org/en/regionscountries/countries/southafrica>, Accessed 03 March 2020.

- UNAIDS. (2023). *Understanding Fast-Track: Accelerating action to end the AIDS epidemic by 2030*.
- Unantenne, N., Warren, N., Canaway, R. et al. (2013). The Strength to Cope: Spirituality and Faith in Chronic Disease. *Journal of Religion and Health*, 52(4), 1147–1161
<https://doi.org/10.1007/s10943-011-9554-9>
- Uthman, O. A., Magidson, J. F., Safren, S. A., & Nachega, J. B. (2014). Depression and adherence to antiretroviral therapy in low-, middle-and high-income countries: a systematic review and meta-analysis. *Current HIV/AIDS Reports*, 11(3), 291-307.
DOI: <https://doi.org/10.1007/s11904-014-0220-1>
- Valdez, C. E., & Lilly, M. M. (2019). Modes of processing trauma: Self-compassion buffers affective guilt. *Mindfulness*, 10(2), 824-832.
- van der Kop, M. L., Muhula, S., Nagide, P. I., Thabane, L., Gelmon, L., Awiti, P. O., Abunah, B., Kyomuhangi, L. B., Budd, M. A., Marra, C., Patel, A., Karanja, S., Ojaka, D. I., Mills, E. J., Ekström, A. M., & Lester, R. T. (2018, March). Effect of an interactive text-messaging service on patient retention during the first year of HIV care in Kenya (WelTel Retain): an open-label, randomised parallel-group study. *The Lancet Public Health*, 3(3), e143–e152. [https://doi.org/10.1016/s2468-2667\(17\)30239-6](https://doi.org/10.1016/s2468-2667(17)30239-6)
- Van der Walt, C. (2019). The Relationships Between First-Year Students' Sense of Purpose and Meaning in Life, Mental Health and Academic Performance. *Journal of Student Affairs in Africa*, 7(2), 109-121
- van Leer, E., Hapner, E. R., & Connor, N. P. (2008). Transtheoretical model of health behavior change applied to voice therapy. *Journal of Voice*, 22(6), 688-698.
- Van Niekerk, A., Tonsing, S., Seedat, M., Jacobs, R., Ratele, K., & McClure, R. (2015). The invisibility of men in South African violence prevention policy: national prioritization,

- male vulnerability, and framing prevention. *Global Health Action*, 8(1), 27649. <https://doi.org/10.3402/gha.v8.27649>
- van Schalkwyk, C., Dorrington, R. E., Seatlhodi, T., Velasquez, C., Feizzadeh, A., & Johnson, L. F. (2021). Modelling of HIV prevention and treatment progress in five South African metropolitan districts. *Scientific Reports*, 11(1), 5652. <https://doi.org/10.1038/s41598-021-85154-0>
- Van Wyk, B., & Moomba, K. (2019). Social and economic barriers to adherence among patients at Livingstone General Hospital in Zambia. *African Journal of Primary Health Care and Family Medicine*, 11(1), 1-6. DOI: <https://hdl.handle.net/10520/EJC-154fe375a8>
- Van Wyk, E.S., & Kagee, A. (2023). Coping with Mental Health Problems and Medication Adherence Challenges Among Persons Receiving Antiretroviral Therapy. *AIDS and Behaviour*, 27(7), 2243–2254. DOI: <https://doi.org/10.1007/s10461-022-03955-4>
- Van Zyl, G. U., Van Mens, T. E., McIlleron, H., Zeier, M., Nachega, J. B., Decloedt, E., ... Maartens, G. (2011). Low Lopinavir Plasma or Hair Concentrations Explain Second-Line Protease Inhibitor Failures in a Resource-Limited Setting. *Journal of Acquired Immune Deficiency Syndromes*, 56(4), 333–339. doi:10.1097/qai.0b013e31820dc0cc
- Velloza, J., Kemp, C. G., Aunon, F. M., Ramaiya, M. K., Creegan, E., & Simoni, J. M. (2020). Alcohol use and antiretroviral therapy non-adherence among adults living with HIV/AIDS in sub-Saharan Africa: a systematic review and meta-analysis. *AIDS and Behavior*, 24(6), 1727-1742. DOI: <https://doi.org/10.1007/s10461-019-02716-0>
- Veronese, G., Fiore, F., Castiglioni, M., Kawaja, H.E., & Said, M. (2013). Can Sense of Coherence Moderate Traumatic Reactions? A Cross-Sectional Study of Palestinian Helpers Operating in War Contexts. *British Journal of Social Work*, 43(4), 651-666.

- Veronese, G., & Pepe, A. (2017). Sense of coherence as a determinant of psychological well-being across professional groups of aid workers exposed to war trauma. *Journal of Interpersonal Violence, 32*(13), 1899–1920.
- Vetter T. R. (2017). Descriptive Statistics: Reporting the Answers to the 5 Basic Questions of Who, What, Why, When, Where, and a Sixth, So What? *Anesthesia and Analgesia, 125*(5), 1797–1802. <https://doi.org/10.1213/ANE.0000000000002471>
- Victor-Aigbodion, V. (2020). HIV Infection, Religion and Spirituality in Nigerian Community Settings. *Indian Journal of Public Health Research and Development, 11*(3), 2255-2257.
- Vissman, A. T., Hergenrather, K. C., Rojas, G., Langdon, S. E., Wilkin, A. M., & Rhodes, S. D. (2011). Applying the theory of planned behavior to explore HAART adherence among HIV-positive immigrant Latinos: elicitation interview results. *Patient Education and Counseling, 85*(3), 454-460.
- Viswanathan, S., Detels, R., Mehta, S. H., Macatangay, B. J., Kirk, G. D., & Jacobson, L. P. (2015). Level of adherence and HIV RNA suppression in the current era of highly active antiretroviral therapy (HAART). *AIDS and Behavior, 19*(4), 601-611.
- Vreeman, R. C., Ayaya, S. O., Musick, B. S., Yiannoutsos, C. T., Cohen, C. R., Nash, D., Wabwire, D., Wools-Kaloustian, K., & Wiehe, S. E. (2018). Adherence to antiretroviral therapy in a clinical cohort of HIV-infected children in East Africa. *PLOS One, 13*(2), e0191848. <https://doi.org/10.1371/journal.pone.0191848>
- Vrijens, B., De Geest, S., Hughes, D. A., Przemyslaw, K., Demonceau, J., Ruppar, T., Dobbels, F., Fargher, E., Morrison, V., Lewek, P., Matyjaszczyk, M., Mshelia, C., Clyne, W., Aronson, J. K., & Urquhart, J. (2012). A new taxonomy for describing and defining adherence to medications. *British Journal of Clinical Pharmacology, 73*(5), 691–705. <https://doi.org/10.1111/j.1365-2125.2012.04167.x>

- Wagner, C., Kawulich, B., & Garner, M. (2012). *EBOOK: Doing social research: A global context*. McGraw Hill.
- Waqas, A., Haider, S., Ahmed, R., Khaliq, A. A., & Selem, K. M. (2022). Workplace violence and interpersonal deviance among Pakistani nurses: role of sense of coherence. *Current Psychology*, 42(4), 3411–3426. <https://doi.org/10.1007/s12144-022-04094-8>
- Wang, M. C., & Dai, X. Y. (2008). Chinese Meaning in Life Questionnaire Revised in College Students and Its Reliability and Validity Test. *Chinese Journal of Clinical Psychology*, 16(3), 459-461. DOI: 10.16128/j.cnki.1005-3611.2008.05.020
- Ware, N. C., Wyatt, M. A., Pisarski, E. E., Bwana, B. M., Orrell, C., Asiimwe, S., ... & META Study Team. (2020). Influences on Adherence to Antiretroviral Therapy (ART) in early-stage HIV disease: qualitative study from Uganda and South Africa. *AIDS and Behavior*, 24(6), 2624-2636.
- Wasti, S. P., Simkhada, P., Randall, J., Freeman, J. V., & van Teijlingen, E. (2012). Factors influencing adherence to antiretroviral treatment in Nepal: a mixed-methods study. *PLOS one*, 7(5), e35547.
- Weathers, E., McCarthy, G., & Coffey, A. (2015). Concept Analysis of Spirituality: An Evolutionary Approach. *Nursing Forum*, 51(2), 79–96.
DOI: <https://doi.org/10.1111/nuf.12128>
- Weber, K., Loi, M., Christen, M., & Kleine, N. (2018). Digital Medicine, Cybersecurity, and Ethics.
- West, R. (2005). Time for a change: putting the Transtheoretical (Stages of Change) Model to rest. *Addiction*, 100(8), 1036-1039.
- Westenberg, L. (2017). ‘When she calls for help’—domestic violence in Christian families. *Social Sciences*, 6(3), 71.

- Wetzel, E. C., Tembo, T., Abrams, E. J., Mazenga, A., Chitani, M. J., Ahmed, S., ... & Kim, M. H. (2021). The relationship between intimate partner violence and HIV outcomes among pregnant women living with HIV in Malawi. *Malawi Medical Journal*, *33*(4), 242-252.
- Whitley Jr, B. E., & Kite, M. E. (2012). *Principles of Research in Behavioral Science*. Routledge.
- Wilkinson, L., Duvivier, H., Patten, G., Solomon, S., Mdani, L., Patel, S., De Azevedo, V., & Baert, S. (2015). Outcomes from the implementation of a counselling model supporting rapid antiretroviral treatment initiation in a primary healthcare clinic in Khayelitsha, South Africa. *Southern African Journal of HIV Medicine*, *16*(1), 356-376. <https://doi.org/10.4102/hivmed.v16i1.367>
- Williams, A. B., Amico, K. R., Bova, C., & Womack, J. A. (2013). A proposal for quality standards for measuring medication adherence in research. *AIDS and Behavior*, *17*(1), 284-297.
- Wilson, A. (2014). Being a practitioner: An application of Heidegger's phenomenology. *Nurse Researcher*, *21*(6), 28-33. <http://dx.doi.org/10.7748/nr.21.6.28.e1251>
- Wilson, I. B., Lee, Y., Michaud, J., Fowler, F. J., Jr, & Rogers, W. H. (2016). Validation of a New Three-Item Self-Report Measure for Medication Adherence. *AIDS and Behavior*, *20*(11), 2700–2708. <https://doi.org/10.1007/s10461-016-1406-x>
- Wisner, B., Blaikie, P., Cannon, T., & Davies, I. (2004). *At risk: natural hazards, people's vulnerability and disasters*. Routledge, New York.
- Wissing, M. P., & Van Eeden, C. (2002). Empirical clarification of the nature of psychological well-being. *South African Journal of Psychology*, *32*(1), 32-44.

- Wissing, M. P., Thekiso, S. M., Stapelberg, R., Van Quickelberge, L., Choabi, P., Moroeng, C., ... & Vorster, H. H. (2010). Validation of three Setswana measures for psychological wellbeing. *SA Journal of Industrial Psychology*, *36*(2), 1-8.
- Wong, C. C. Y., & Yeung, N. C. (2017). Self-compassion and posttraumatic growth: Cognitive processes as mediators. *Mindfulness*, *8*(4), 1078-1087.
DOI: <https://doi.org/10.1007/s12671-017-0683-4>
- Wong, J. Y. H., Fong, D. Y. T., Choi, A. W. M., Tiwari, A., Chan, K. L., & Logan, T. K. (2016). Problem-focused coping mediates the impact of intimate partner violence on mental health among Chinese women. *Psychology of Violence*, *6*(2), 313-322.
- Wong, P. T. P., & Wong, L. C. J. (2012). A meaning-centered approach to building youth resilience. In P. T. P. Wong (Ed.), *Personality and clinical psychology series. The Human quest for Meaning: Theories, Research, and Applications* (pp. 585-616). New York, NY, US: Routledge/Taylor & Francis Group.
- Wong, P. T. (Ed.). (2013). *The Human quest for Meaning: Theories, Research, and Applications*. Routledge.
- Wong, P. T., Reker, G. T., & Peacock, E. J. (2006). A resource-congruence model of coping and the development of the coping schemas inventory. In *Handbook of Multicultural Perspectives on Stress and Coping* (pp. 223-283). Boston, MA: Springer US.
- Wood, S. N., Glass, N., & Decker, M. R. (2021). An integrative review of safety strategies for women experiencing intimate partner violence in low-and middle-income countries. *Trauma, Violence, and Abuse*, *22*(1), 68-82.
- Wools-Kaloustian, K., Kimaiyo, S., Diero, L., Siika, A., Sidle, J., Yiannoutsos, C. T., & Tierney, W. M. (2006). Viability and effectiveness of large-scale HIV treatment initiatives in sub-Saharan Africa: experience from western Kenya. *AIDS*, *20*(1), 41-48.

Woollett, N, & Hatcher, A. M. (2016). Mental health, intimate partner violence and HIV. *South African Medical Journal*, 106(10), 969-972.

<https://dx.doi.org/10.7196/samj.2016.v106i10.11410>

World Health Organization [WHO].(2003). *Adherence to Long-Term Therapies: Evidence for Action*. World Health Organization.

WHO. (2005). *WHO Multi-country Study on Women's Health and Domestic Violence against Women*. World Health Organization, Geneva.

WHO.(2013). *Responding to Intimate Partner Violence and Sexual Violence against Women: WHO Clinical and Policy Guidelines*. World Health Organization.

WHO. (2014). *Violence against women : intimate partner and sexual violence against women: intimate partner and sexual violence have serious short- and long-term physical, mental and sexual and reproductive health problems for survivors: fact sheet*. World Health Organization. URL:

<https://apps.who.int/iris/handle/10665/112325>

WHO. (2016). *Disease Burden and Mortality Rates*.

URL: https://www.who.int/healthinfo/global_burden_disease/estimates/en/

WHO. (2017). *Fact sheet on violence against women*. Geneva: World Health Organization.

URL: from [https:// www. who. int/en/news-room/fact- sheets/detail/violence-against-women](https://www.who.int/en/news-room/fact-sheets/detail/violence-against-women).

WHO. (2017). *Guidelines for managing advanced HIV disease and rapid initiation of antiretroviral therapy*. Geneva, Switzerland. URL:

<http://www.who.int/hiv/pub/toolkits/advanced-HIV-disease-policy/en/>.

WHO. (2021). *Violence against women prevalence estimates, 2018: global, regional and national prevalence estimates for intimate partner violence against women and global*

and regional prevalence estimates for non-partner sexual violence against women.

World Health Organization.

- Wouters, E., & De Wet, K. (2016). Women's experience of HIV as a chronic illness in South Africa: hard-earned lives, biographical disruption and moral career. *Sociology of Health and Illness*, 38(4), 521-542. DOI: <https://doi.org/10.1111/1467-9566.12377>
- Wu, A. D., & Zumbo, B. D. (2008). Understanding and using mediators and moderators. *Social Indicators Research*, 87(3), 367-392.
- Wykowski, J., Kemp, C. G., Velloza, J., Rao, D., & Drain, P. K. (2019). Associations between anxiety and adherence to antiretroviral medications in low-and middle-income countries: a systematic review and meta-analysis. *AIDS and Behavior*, 23(8), 2059-2071. DOI: <https://doi.org/10.1007/s10461-018-02390-8>
- Wynn Jr, D., & Williams, C. K. (2012). Principles for conducting critical realist case study research in information systems. *Management Information Systems Quarterly*, 36(3)787-810.
- Yaghoobzadeh, A., Soleimani, M. A., Allen, K. A., Chan, Y. H., & Herth, K. A. (2018). Relationship between spiritual well-being and hope in patients with cardiovascular disease. *Journal of Religion and Health*, 57(3), 938-950.
- Yang, H. J., Lee, H. K., & Kim, M. R. (2015). The Concept Analysis of Body Image of People Living with HIV/AIDS. *International Journal of Bio-Science and Bio-Technology*, 7(4), 315–324. DOI: <https://doi.org/10.14257/ijbsbt.2015.7.4.31>
- Yeung, H. W. (1997). Critical realism and realist research in human geography: A method or a philosophy in search of a method? *Progress in Human Geography* 21(1), 51–74.
- Yonah, G., Fredrick, F., & Leyna, G. (2014). HIV serostatus disclosure among people living with HIV/AIDS in Mwanza, Tanzania. *AIDS Research and Therapy*, 11(1), 1-5. DOI: <https://doi.org/10.1186/1742-6405-11-5>

- Yonga, A.M., Kiss, L. & Onarheim, K.H. (2022). A systematic review of the effects of intimate partner violence on HIV-positive pregnant women in sub-Saharan Africa. *Biomed Central Public Health*, 22 (1), 220-220. DOI: <https://doi.org/10.1186/s12889-022-12619-w>
- Young C. R., Arnos, D. M., & Matthews, L.T. (2019). A scoping review of interventions to address intimate partner violence in sub-Saharan African healthcare. *Global Public Health*, 14(9),1335–1346. DOI: <https://doi.org/10.1080/17441692.2019.1567802>
- Yu, C. H. (2005). *Misconceived relationships between logical positivism and quantitative research*. Paper presented at Annual Meeting of the 2001 American Educational Research, Seattle, Canada. URL: <http://www.creative-wisdom.com/computer/sas/positivism.pdf>
- Zakar, R., Zakar, M. Z., Mikolajczyk, R., & Krämer, A. (2012). Intimate partner violence and its association with women's reproductive health in Pakistan. *International Journal of Gynecology and Obstetrics*, 117(1), 10-14.
- Zembe, Y. Z., Townsend, L., Thorson, A., Silberschmidt, M., & Ekstrom, A. M. (2015). Intimate partner violence, relationship power inequity and the role of sexual and social risk factors in the production of violence among young women who have multiple sexual partners in a peri-urban setting in South Africa. *PLOS One*, 10(11), e0139430. DOI: <https://doi.org/10.1371/journal.pone.0139430>
- Zhang, L., Li, X., Lin, Z., Jacques-Tiura, A. J., Xu, J., Zhou, Y., Qiao, S., Shen, Z., & Stanton, B. (2016). Side effects, adherence self-efficacy, and adherence to antiretroviral treatment: a mediation analysis in a Chinese sample. *AIDS Care*, 28(7), 919–926. DOI: <https://doi.org/10.1080/09540121.2015.1124984>
- Zhang, Q., Li, X., Qiao, S., Shen, Z., & Zhou, Y. (2020). Comparing self-reported medication adherence measures with hair antiretroviral concentration among people living with

- HIV in Guangxi, China. *AIDS Research and Therapy*, 17(1), 8-15. DOI: <https://doi.org/10.1186/s12981-020-00265-4>
- Zijp, T. R., Touw, D. J., & van Boven, J. F. M. (2020). User Acceptability and Technical Robustness Evaluation of a Novel Smart Pill Bottle Prototype Designed to Support Medication Adherence. *Patient Preference and Adherence*, 14(1), 625-634. DOI: <https://doi.org/10.2147/PPA.S240443>
- Zisette, S., Watt, M. H., Prose, N. S., Mntambo, N., & Moshabela, M. (2016). “If you don’t take a stand for your life, who will help you?”: Men’s engagement in HIV care in Kwazulu-Natal, South Africa. *Psychology of Men and Masculinity*, 17(3), 265. DOI: <https://psycnet.apa.org/doi/10.1037/men0000025>
- Zonp, Z., & Saint Arnault, D. (2022). The Reliability and Predictive Validity of Sense of Coherence Scale for American Survivors of Gender-Based Violence. *Violence Against Women*, 29(9), 1670–1686. DOI: <https://doi.org/10.1177/10778012221120445>
- Zuma, T., Wight, D., Rochat, T., & Moshabela, M. (2018). Navigating multiple sources of healing in the context of HIV/AIDS and wide availability of antiretroviral treatment: a qualitative study of community participants’ perceptions and experiences in rural South Africa. *Frontiers in Public Health*, 6, 73.
DOI: <https://doi.org/10.3389/fpubh.2018.00073>

APPENDIX A: UNISA ETHICAL CLEARANCE



Department of Psychology

29-01-2013

ETHICAL CLEARANCE OF A RESEARCH PROJECT INVOLVING HUMAN PARTICIPANTS

Project: Meaning in life, sense of coherence, spirituality and ART adherence among adults living with HIV

Researcher: Lebogang Lorraine Phiri (49921789)

Supervisor: Prof. M Seedat (ISHS, Unisa)

The proposal was evaluated for adherence to appropriate standards in respect of ethics as required by the Psychology Department of Unisa. The application was approved by the departmental Ethics Committee on the understanding that certain conditions related to the confidentiality of the information will be met, to the satisfaction of the supervisor. These are noted in an accompanying letter.

A handwritten signature in black ink, appearing to read "P Kruger".

Prof P Kruger
*Department of Psychology
College of Human Sciences
University of South Africa*

APPENDIX B: GAUTENG DEPARTMENT OF HEALTH PERMISSION



GAUTENG PROVINCE

HEALTH
REPUBLIC OF SOUTH AFRICA

JOHANNESBURG HEALTH DISTRICT

Enquiries:
Hillbrow CHC
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15/01/2015
Lebogang Phiri
E-mail: lebop@uj.ac.za
Reference number: 2014-15/046

Dear Sir/ Madam,

Re: **TITLE OF RESEARCH:** Meaning in life, sense of coherence, spirituality and ART adherence among adults living with HIV.


Your application dated 10/10/2014 refers. The District Research Committee has reviewed your application. This letter serves as an in-principle approval to access the Districts Health facilities (mentioned below) for the above project subject to following conditions:

- The facility to be visited: Lilian Ngoyi CHC, Diepkloof Provincial Clinic and Lenasia clinic (Nivama drive).
- The research can only commence after you submit an ethics clearance certificate from a recognized institution.
- This facility will be visited from 01/02/2015 to 31/12/2015.
- You will report to the Facility Manager before initiating the study.
- Participants' rights and confidentiality will be maintained all the time.
- No resources (Financial, material and human resources) from the above facilities will be used for the study. Neither the District nor the facility will incur any additional cost for this study.
- The study will comply with Publicly Financed Research and Development Act, 2008 (Act 51 of 2008) and its related Regulations.
- You will submit a copy (electronic and hard copy) of your final report. In addition, you will submit a six-monthly progress report to the District Research Committee. Your supervisor and University of South Africa will ensure that these reports are being submitted timeously to the District Research Committee.
- The District must be acknowledged in all the reports/publications generated from the research and a copy of these reports/publications must be submitted to the District Research Committee.

We reserve our right to withdraw our approval, if you breach any of the conditions mentioned above.

Please feel free to contact us, if you have any further queries. On behalf of the District Research Committee, we would like to thank you for choosing our District to conduct such an important study.

Regards,



Ms M Morewane
Chief Director
Johannesburg Health District
Date:

APPENDIX C: INFORMATION LETTER AND INFORMED CONSENT

INFORMED CONSENT

Title: Meaning in life, sense of coherence, spirituality, intimate partner violence and antiretroviral adherence among people living with HIV

Researcher: Lebo Phiri

Institution: University of South Africa

Department: Department of Psychology

Address: Department of Psychology, University of South Africa, PO Box 392, 0003, Pretoria

Phone: 0746010950

Email: lebops@webmail.co.za

Dear Sir / Madam,

Firstly, I would like to take this opportunity to thank you giving me your time. I would like to invite you to participate in my study which seeks to explore the importance of personal meaning in life, coherence and spirituality in comparison to antiretroviral adherence in people living with HIV who have been exposed to intimate partner violence. This study is part of the requirements for the degree of PhD in psychology at the University of South Africa.

Procedure

As a participant in this research, you will be required to sign this consent form and complete a short questionnaire. It is expected that this should require less than 30 minutes of your time. The questionnaire has guided instructions in each section. Additionally, contact me if you require further explanation on any aspect of the questionnaire or study. Once you have completed questionnaire and signed the consent letter on top of the questionnaire, please hand them back to the researcher.

Participation

Participation in this research is completely voluntary and completely anonymous. The questionnaire does not require you to indicate your name or any form of identification. You are not obliged to take part if you do not wish. If you choose not to participate in this research, your engagements with the healthcare professionals at this facility will not be affected in any way. If you do participate, you have the right to withdraw at any time during the study without any questions or loss of benefits. Although your identity will at all times remain confidential, the results of the research study may be presented at scientific conferences or in specialist publications. Please note that there is no remuneration for your participation. Please feel free to ask the researcher to clarify anything that is not clear to you.

Risks

The questionnaire asks about questions related to your perceived meaning in life, sense of coherence, spirituality and exposure to intimate partner violence. Should you experience any discomfort or distress from participating in the study, please let the researcher know so that you can be referred to the nearest social worker or mental health practitioner in your area. Additionally, the following resources are available:

1. People Opposed to Woman Abuse (Powa)

<http://www.powa.co.za>

Tel: 011 591 6803

2. Sonke Gender Justice:

<https://genderjustice.org.za>

Helpline: 012 941 1802

3. Thuthuzela care centres (TCC):

Baragwanath/Nthabiseng Chris Hani Bara Hospital, Chris Hani Road, Diepkloof

Tel: 011 933 1206

4. AIDS Helpline

Tel: 0800 012 322

5. The South African Depression and Anxiety Group

Tel: 080 021 2223

Potential benefits

The study may be seen as an opportunity to participants to share their experiences with ART adherence and intimate partner violence and whether meaning in life, sense of coherence and spirituality plays in role in these experiences. The findings of the study have important implications for intimate partner violence and adherence care at primary health facilities.

If you have any interest in participating, please fill in the informed consent below.

Yours sincerely

Researcher

Lebo Phiri

Please show your willingness to participate by signing the consent form below and hand it back to the researcher.

I hereby consent to participate in this study.

Name of participant

Participant's signature

Date

APPENDIX D: QUESTIONNAIRE

Dear Madam/Sir

Thank you again for willingness to participate in this project.

Please show your willingness of participation by completing the information below and continue with the rest of the questionnaire.

All the information you disclose will be kept confidential and that your participation is anonymous. You have no obligation to participate if you don't want to.

I give my consent to participate in this research project: YES ____ NO ____

Participant's signature _____

QUESTIONNAIRE

Please respond to all the statements as truthfully and accurately as you can, and also please remember that there are no right or wrong answers.

1. Gender (Please mark X):

1. Male		2. Female	
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2. How old are you (choose one):

1	Late adolescence (18—21)		3.	Middle adulthood (40–65)	
2	Early adulthood (22—40)		4.	Late adulthood (65+)	

3. Date that you first found out that you are HIV positive: Date: _____ Month _____

4. How long have you been on treatment _____

B1. Medication adherence:

5. Think about the last time you missed taking your ARV medication and indicate how many pills you missed over the last for days? Write the number of missed pills for each a day in the boxes.

5.1 How many pills did you miss yesterday?	5.2 How many pills did you miss the day before yesterday?	5.3 How many pills did you miss 3 days ago?	5.4 How many pills did you miss 3 days ago?

B2. People may miss taking their medications for various reasons. Here is a list of possible reasons why you may have missed taking any medications within the **past month**.

Please circle one response for each question:	Never	Rarely	Sometimes	Often
In the past month, how often have you missed taking your medications because you:				
6. Were away from home?	0	1	2	3
7. Were busy with other things?	0	1	2	3
8. Simply forgot?	0	1	2	3
9. Had too many pills to take?	0	1	2	3
10. Wanted to avoid side effects?	0	1	2	3
11. Did not want others to see you taking medication?	0	1	2	3
12. Had a change in daily routine?	0	1	2	3
13. Felt like the pill was toxic/harmful?	0	1	2	3
14. Fell asleep/slept through dose time?	0	1	2	3
15. Felt sick or ill?	0	1	2	3
16. Felt depressed/down?	0	1	2	3
17. Had problem taking ARV's at specified times (with meals, on empty stomach, etc.)?	0	1	2	3
18. Ran out of pills?	0	1	2	3
19. Felt good?	0	1	2	3

C. Meaning in life

Please take a moment to think about what makes your life and existence feel important to you. Please mark the number which expresses your answers to 10 questions below about meaning in life.

Absolutely Untrue 1	Mostly Untrue 2	Somewhat Untrue 3	Can't say true or False 4	Somewhat True 5	Mostly true 6	Absolutely True 7
20. I understand my life's meaning						
1	2	3	4	5	6	7
21. I am looking for something that makes my life feel meaningful.						
1	2	3	4	5	6	7
22. I am always looking to find my life's purpose.						
1	2	3	4	5	6	7
23. My life has a clear sense of purpose.						
1	2	3	4	5	6	7
24. I have a good sense of what makes my life meaningful.						
1	2	3	4	5	6	7
25. I have discovered a satisfying life purpose.						
1	2	3	4	5	6	7
26. I am always searching for something that makes my life feel important.						
1	2	3	4	5	6	7
27. I am seeking a purpose or mission for my life.						
1	2	3	4	5	6	7
28. My life has no clear purpose.						
1	2	3	4	5	6	7
29. I am searching for meaning in my life.						
1	2	3	4	5	6	7

D. Sense of coherence:

This section asks about various aspects of our lives we feel are understandable, manageable, and meaningful. Each question has seven possible answers. Please mark the number which expresses your answer, with numbers 1 to 7.

30. Do you have the feeling that you don't really care about what goes on around you?

Very seldom or never 1 2 3 4 5 6 7 Very often

31. Has it happened in the past that you were surprised by the behaviour of people who you thought you knew well?

Never happened 1 2 3 4 5 6 7 Always happened.

32. Has it happened that people whom you counted on disappointed you?

Never happened 1 2 3 4 5 6 7 Always happened.

33. Until now your life has had:

No clear goals or purpose at all 1 2 3 4 5 6 7 Very clear goals and purpose

34. How many times do you have the feeling that you're being treated unfairly?

Many times 1 2 3 4 5 6 7 Not many times or never

35. Do you have the feeling that you don't know what is happening with your life and don't know what to do?

Many times 1 2 3 4 5 6 7 Not many times or never

36. Doing the things you do every day is:

A source of deep pleasure and satisfaction 1 2 3 4 5 6 7 A source of pain and boredom

37. Do you have very mixed-up feelings and ideas?

Many times 1 2 3 4 5 6 7 Not many times or never

38. Does it happen that you have feelings inside you that you would rather not feel?

Many times 1 2 3 4 5 6 7 Not many times or never

39. Many people—even strong people—sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?

Never 1 2 3 4 5 6 7 Many times

40. When something happened, you have generally found that:

You overestimated or underestimated its importance 1 2 3 4 5 6 7 You saw things as they are

41. How many times do you have the feeling that there's little meaning in the things you do in your daily life?

Many times 1 2 3 4 5 6 7 Not many times or never

42. How many times do you have feelings that you're not sure you can keep under control?

Many times 1 2 3 4 5 6 7 Not many times or never

E. Spiritual well-being: this section asks about your faith and relationship with God or the Higher Power. Please mark the number you agree with to the questions below.

Strongly Agree 1	Agree 2	Slightly Agree 3	Slightly disagree 4	Disagree 5	Strongly agree 6
43. I don't find much satisfaction in private prayer with God/Higher Power					
1	2	3	4	5	6
44. I don't know who I am, where I came from, or where I'm going					
1	2	3	4	5	6
45. I believe that God/Higher Power loves me and cares about me					
1	2	3	4	5	6
46. I feel that life is a positive experience					
1	2	3	4	5	6
47. I believe that God/Higher Power is impersonal and not interested in my daily situations					
1	2	3	4	5	6
48. I feel unsettled about my future					
1	2	3	4	5	6
49. I have a personally meaningful relationship with God/Higher Power					
1	2	3	4	5	6
50. I feel very fulfilled and satisfied with life					
1	2	3	4	5	6
51. I don't get much personal strength and support from God/Higher Power					
1	2	3	4	5	6
52. I feel a sense of well-being about the direction my life is headed in					
1	2	3	4	5	6
53. I believe that God/Higher Power is concerned about my problems					
1	2	3	4	5	6
54. I don't enjoy much about life					
1	2	3	4	5	6
55. I don't have a personally satisfying relationship with God /Higher Power					
1	2	3	4	5	6
56. I feel good about my future					
1	2	3	4	5	6
57. My relationship with God/Higher Power helps me not to feel lonely					
1	2	3	4	5	6
58. I feel that life is full of conflict and unhappiness					
1	2	3	4	5	6
59. I feel most fulfilled when I'm in close communion with God/Higher Power					
1	2	3	4	5	6
60. Life doesn't have much meaning					
1	2	3	4	5	6
61. My relationship with God/Higher Power contributes to my sense of well-being					
1	2	3	4	5	6
62. I believe there is some real purpose for my life					
1	2	3	4	5	6

F. Partner violence

The next set of questions are pertaining to violence you may have experience with a romantic partner in the past we months. Please respond with yes/no

In the last 12 months, have you experienced any of the following?

	Yes	No
63. Has your partner insulted you in a way that made you feel bad about yourself?	Y	N
64. Has he/she belittled or humiliated you in front of other people	Y	N
65. Has your partner tried to scare and intimidate you on purpose (eg, by the way he/she looked at you, by yelling or smashing things)	Y	N
66. Has he/she threatened to hurt you or someone you care about.	Y	N
67. Has he/she pushed or shoved you	Y	N
68. Has he/she thrown something at you that could have hurt you	Y	N
69. Has he/she hit you with a fist or with some other object that could have hurt you	Y	N
70. Has your partner kicked or dragged or beat you up	Y	N
71. Has he/she choked you or burnt you on purpose	Y	N
72. Has he/she hurt you with a knife, a gun or some other weapon	Y	N
73. Has your partner demanded to have sex with you even though you did not want to	Y	N
74. Did you ever have sexual intercourse when you didn't want because you were afraid of what he/she might do?	Y	N
75. Has he/she forced you to do something sexual that you found degrading or humiliating?	Y	N