

**COPING STRATEGIES USED BY CAREGIVERS OF PATIENTS RECEIVING
HAEMODIALYSIS IN A PRIVATE HEALTH CLINIC IN MPUMALANGA**

by

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submitted in accordance with the requirements for

the degree of

MASTER OF ARTS

in the subject

NURSING SCIENCE

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: PROF DD MPHUTHI

SEPTEMBER 2019

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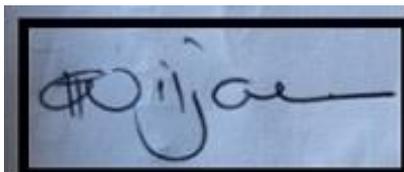
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ABSTRACT

Caregiver burden results from providing care to the haemodialysis patient. However, the multi-disciplinary team often overlooks this issue. The purpose of this study was to explore the coping strategies used by caregivers of patients receiving haemodialysis and make recommendations to avert or mitigate this burden for the caregiver. Quantitative, non-experimental, simple descriptive research was conducted to determine what coping strategies were used by caregivers of patients receiving haemodialysis in a selected private health clinic in Mpumalanga between February 2019 and May 2019. Data collection was done using the Family Crisis Oriented Personal Evaluation Scale (F-COPES) questionnaire. The caregiver participants (n=128) completed the questionnaire, which consist of five subscales with 30 questions.

Findings revealed the subscale that scored the highest mean score was reframing (m=4.01), confirming that positively redefining caregiver problems was the primary significant coping strategy for caregiver adaptation and unity. Renal nurses need to encourage the caregiver to observe the difficulties in a positive way. Seeking spiritual support (m=3.90) followed next. A spiritual or motivational individual needs to be available to support caregivers spiritually. Mobilising family to acquire and accept help (m=3.62) was in the middle, indicating that professional support groups continue to play a significant role. The lowest scoring subscales were passive appraisal (m=3.48) and seeking social support (m=3.45). A library with leisure books and magazines will assist passively, but supportive groups will help the caregivers socially.

Renal nurses have a responsibility to recognise when caregivers are in need of support before it became a burden. Caregiver assessment and intervention should be individualised.

Key terms

Caregivers; chronic renal failure; coping strategies; haemodialysis; F-COPES.

**HANTERINGSTRATEGIEË GEBRUIK DEUR VERSORGERS VAN PASIËNTE WAT
HEMODIALISE ONTVANG IN 'N GESELEKTEERDE PRIVATE
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ABSTRAK

Hierdie eenvoudige beskrywende navorsingstudie het die hanteringstrategieë ondersoek wat versorgers van pasiënte gebruik wat tussen Februarie en Mei 2019 hemodialise in 'n geselekteerde private gesondheidskliniek in Mpumalanga ontvang het. In hierdie studie is die hanteringstrategieë van 128 versorgers ondersoek deur gebruikmaking van 'n nie-eksperimentele, kwantitatiewe navorsingsbenadering. Die Gesinskrisisgeoriënteerde Persoonlike Evalueringskaal (Family Crisis Oriented Personal Evaluation Scale [F-COPES]) is gebruik. Hierdie studie het bevind dat hierdie versorgers verkies om herraming ($m=4.01$) as hul hanteringsmeganisme te gebruik.

Die navorser het altesame 75% voltooide F-COPES-vraelyste ontvang. Vyf subskale is geëvalueer. Die subskaal met die hoogste gemiddelde telling was herraming ($m=4.01$), gevolg deur soeke na geestelike ondersteuning ($m=3.90$). Mobilisering van die familie om hulp te verkry en te aanvaar ($m=3.62$) was in die middel. Die subskale met die laagste telling was passiewe beoordeling ($m=3.48$) en soeke na sosiale ondersteuning ($m=3.45$). Die studie doen aanbevelings wat op die bevindings gegrond is. Die aanbeveling is dat toereikende ondersteuningstelsels tot versorgers en nierverpleërs se beskikking gestel behoort te word.

Sleuteltermes

Chroniese nierversaking; F-COPES; Hanteringstrategieë; hemodialise; versorgers.

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ISIFINYEZO ESISUKETHE UMONGO WOCWANINGO

Lesi sifundo esilula socwaningo lokuchaza, siphenyisisa ngamasu okubhekana nesimo kubanakekeli beziguli ebezithola ukwelashwa kwe-haemodialysis kumakliniki athize angasese eMpumalanga, phakathi kukaFebruwari noMeyi ngo 2019. Kulesi sifundo, amasu okubhekana nesimo sabanakekeli bezigulu abangu 128 ahlolwa ngokusebenzisa inqubo ye-non-experimental, quantitative research ngokusebenzisa inqubo ye-Family Crisis Oriented Personal Evaluation Scale (F-COPES). Lesi sifundo, sithole ukuthi abanakekeli baqoma ukusebenzisa i-reframing ($m=4.01$) njengendlela yokubhekana nesimo.

Umcwaningi ubuyiselwe amaphepha ohla lwemibuzo (questionnaires) angu 75% aphenyuliwe e-F-COPES. Kuhlolwe izikalana ezinhlanu. Izikalana ezibe ne-mean score ephezulu kakhulu kube ngu-reframing ($m=4.01$) kwalandela ukusekelwa ngokomoya ($m=3.90$). Ukugqunguzela umndeni ukuthola nokwamukela usizo ($m=3.62$) bekuphakathi naphakathi. Isikalana samazinga aphansi kube ngu ($m=3.48$) kanti ukufunana nokusekelwa kubantu khona kube ngu ($m=3.45$) Lolu cwanningo lwenza izincomo ngokulandela okutholakele. Izincomo wukuthi kumele kube nezinqubo zosekelo olwanele kubanakekeli beziguli kanye nonesi bezezinsu.

Amathemu abalulekile

Izindlela zokubhekana nesimo; abanakekeli, i-haemodialysis; i-F-COPES; ukuhluleka kwezinsu ukusebenza okuqhubekela phambili.

ACKNOWLEDGEMENTS

Firstly, I would like to thank the Lord for with His love and grace, I was able to overcome all challenges and complete my dissertation.

I want to thank the following people who supported me through my journey:

- My supervisor, Prof DD Mphuthi, who supported me through my journey and for all his guidance and support during my studies. I appreciate all his insightful advice and acute comments.
- My loving husband, Andre Viljoen, for his continuous encouragement and support given during my studies.
- My brother, Helgaardt Meintjes, for being my inspiration and motivator and always be there when I needed support.
- My mother, Betz Meintjes, for always believing in me.
- The selected private health clinic in Mpumalanga for allowing me to form part of its continuous efforts to improve coping strategies for the caregivers of patients receiving haemodialysis.
- To all my participants, you are the reason for my study. Thank you for your time and dedication in the completion of the F-COPES questionnaire.
- All the unit managers and data collectors, of the selected private health clinics in Mpumalanga for assisting me with data collection.
- Mrs Kheswa Velaphi, for her fast and sufficient library support.
- Mr Jack Chokwe, for language editing.

In loving memory of:

My father, Johan Meintjes (1953–2018).

Dedication

I dedicate this dissertation to every compassionate renal nurse who is tirelessly treating and nursing the renal patient holistically.

Thank you for all your time and dedication towards your renal patients, their families and future research projects.

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LIST OF ABBREVIATIONS

AKIN	Acute Kidney Injury Network
ARF	Acute Renal Failure
AVF	Arteriovenous Fistula
BUN	Blood Urea Nitrogen
CRF	Chronic Renal Failure
ESRD	End-Stage Renal Disease
F-COPES	Family Crisis Oriented Personal Evaluation Scale
GFR	Glomerular Filtration Rate
HD	Haemodialysis
KDIGO	Kidney Disease Improving Global Outcomes
KDOQI	Kidney Disease Outcome Quality Initiative
PMP	Per Million Population
QOL	Quality of Life
RBC	Red Blood Cells
RIFLE	Risk, Injury, Failure, Loss of kidney function, and End-stage kidney disease
RRT	Renal Replacement Therapy
SARR	South African Renal Registry Annual Report
SCr	Serum Creatinine
SPSS	Statistical Package for Social Science
STATS SA	The Statistics South Africa
UNISA	University of South Africa

CHAPTER 1

STUDY OVERVIEW AND ORIENTATION TO THE STUDY

1.1 INTRODUCTION

This chapter focuses on the background and orientation of the study. The focus will be on the coping strategies used by caregivers of patients receiving haemodialysis (HD) within a private health clinic in Mpumalanga. Globally, the prevalence of kidney disease seems to be growing (Meyers 2015:232). Chronic renal failure (CRF) is a disease that due to the disease persistence and extensive-term treatment process has a variety of effects on the psychological, physiological, lifestyle changes, functional ability, and independence status of the patient and his caregiver (Mashayekhi, Pilevarzadeh & Rafati 2015:333). Gill, Singh, Matretja, Gupta, Singh, Hosla and Prasher (2011:31) have the same opinion that CRF has an extreme and pervasive effect on the family, carers and friends. Resulting in caregiver burden from providing care to the haemodialysis patient (Mashayekhi et al 2015:333). Alnazly (2018:144) agree that the caregivers frequently report burden and poor mental health. It also results in psychological strain, social isolation, relationships and financial strain from the added responsibilities. As indicated by research conducted by Mphuthi (2010) when assessing the coping behaviours of haemodialysis patients family in a private clinic in Gauteng it was also reported that dialysis nurses have a lot to deal with during their care of these patients. Therefore, renal nurses need to understand the coping strategies needed by caregivers to improve health outcomes for the patient and caregivers. This study aimed to explore the coping strategies of the caregivers of HD patients' through quantitative methodology within a private company in Mpumalanga. The current study compared the outcomes from Mphuthi (2010) study conducted in Gauteng.

1.2 BACKGROUND TO THE RESEARCH PROBLEM

According to Meyers (2015:232), CRF affects ten percent of the global population, and CRF (stage 5) is the fifth-highest cause of death in South Africa. CRF (stage 5) is also known as the End Stage of Renal Disease (ESRD) (Hinkle and Cheever 2014:1325). Furthermore, ESRD refers to advanced, irreversible, chronic kidney failure, which

requires the initiation of Renal Replacement Therapy (RRT). The starting date of haemodialysis is the date of the first commencement of HD on a patient (Davids, Jardine, Marais & Jacobs 2018:61). An approximately 14 percent of the adult population in sub-Saharan Africa is affected by CRF (Moosa, Meyers, Gottlich & Naicker 2016:156). According to Mayosi, Fisher, Lalloo, Sitas, Tollman and Bradshaw (2009:934), CRF is the fifth-highest cause of non-traumatic death in South Africa. Meyers (2015:232) also indicates that from these statistics, it can be estimated that five million South Africans older than 20 years of age have CRF. The South African Renal Registry Annual Report (SARR 2016) (Davids et al 2018:68) indicates that commonly reported causes of CRF (stage 5) include hypertensive renal disease followed by cause unknown, diabetic nephropathy, glomerular disease, cystic kidney disease, and obstruction and reflux. Figure 1.1 indicates the percentage per reported causes of ESRD. CRF in South Africa is an ongoing concern (Meyers & Davies 2017:730).

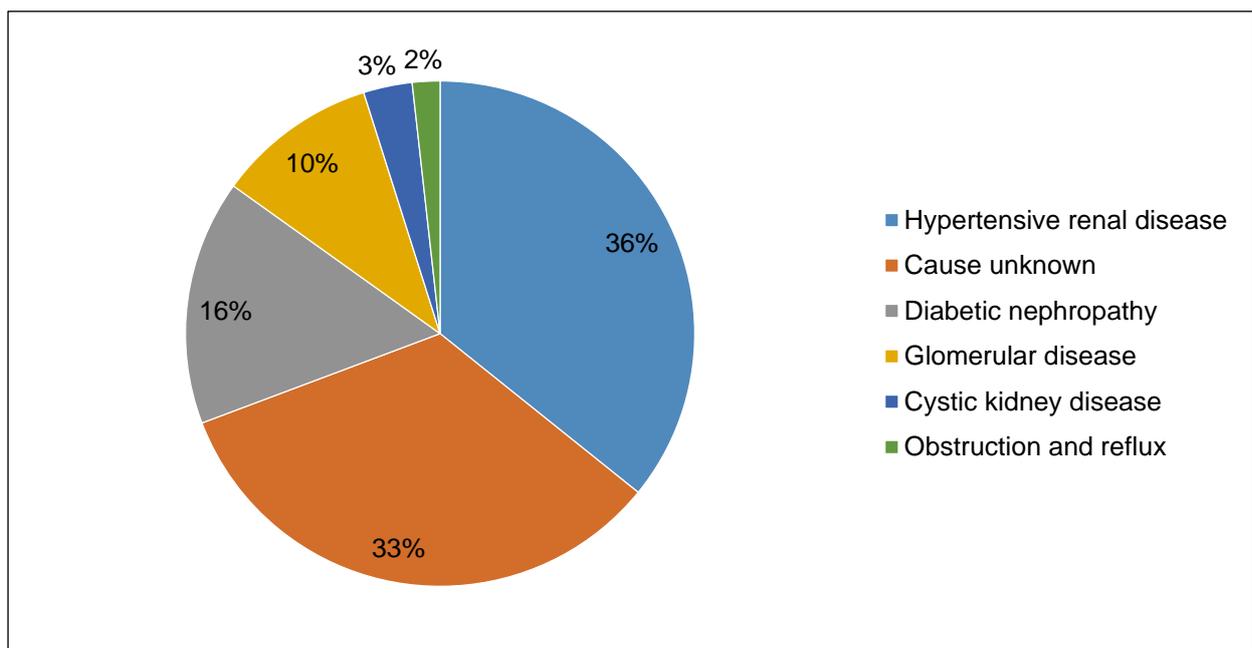


Figure 1.1 Reported causes percentage of ESRD

(Davids et al 2018:68)

Motsoaledi (2015:315) stated that kidney disease poses not only a threat to health but also the overall development of South Africa. In addition to this, CRF is also related to poor quality of life and premature death. This disease leads to very significant morbidity and mortality. Comprehensive studies on the national prevalence of kidney disease are still sparse in South Africa (Motsoaledi 2015:315).

1.2.1 Population

South Africa consists of nine provinces each, as presented in Figure 1.2 below. The Statistics South Africa (Stats SA) mid-year 2018 estimates that the South African population increased by 1.81 million people from mid-year 2016 statistics, to a total of 57.72 million people, as shown in Figure 1.3 (Maluleka 2018:1). As stated in paragraph 1.1, this study was conducted in Mpumalanga Province. The Mpumalanga region’s population increased from 7.7% mid-year 2016 to 7.84% mid-year 2018, in a total population of 4.5239 million people at mid-year 2018 (Maluleka 2018:2, 21).



Figure 1.2 Provinces and major cities of South Africa
(SARR 2016)

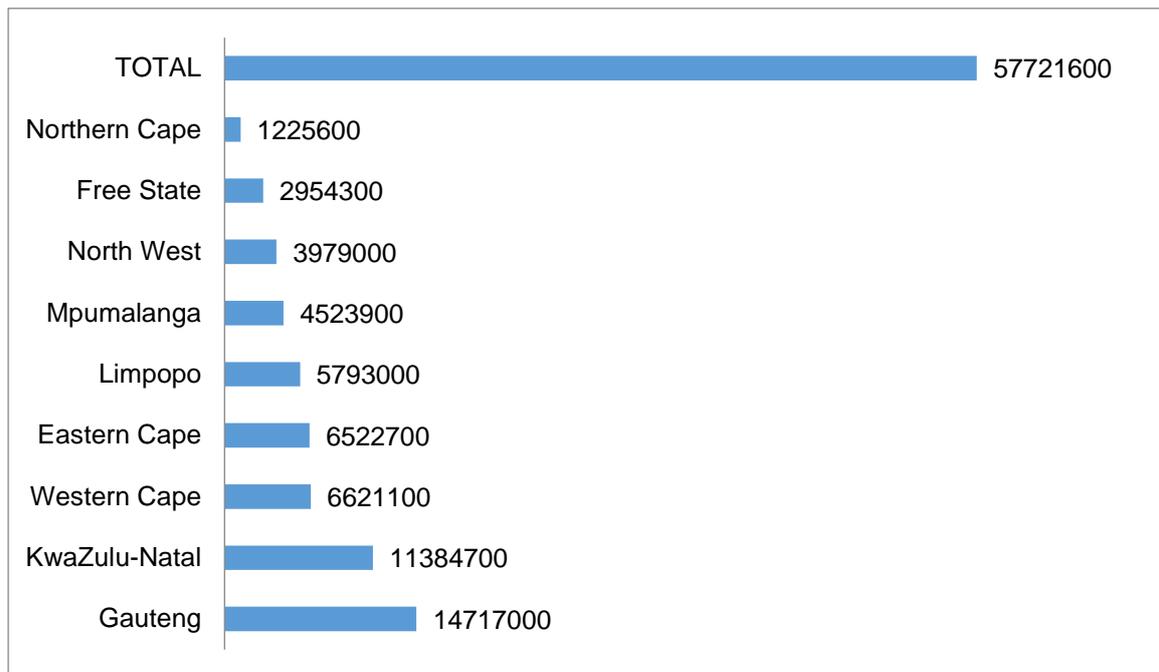


Figure 1.3 Population statistics per province in South Africa
(Maluleka 2018; STATS SA mid-year)

There is a slight female predominance (51.0%). Black/African citizens constitute 80.9% of the population, with people of mixed ethnicity (coloured) making up 8.8%, whites 7.8% and Indians/Asians 2.5% as indicated in Table 1.1.

Table 1.1 Population data per ethnic group

population group	Male		Female		Total	
	NR	%	NR	%	NR	%
Black	22 786 200	80.9	23 896 700	80.9	46 682 900	80.9
Coloured	2 459 500	8.7	2 614 800	8.9	5 047 300	8.8
Indian/Asian	740 200	2.6	708 100	2.4	1 447 300	2.5
White	2 194 200	7.8	2 325 900	7.9	4 520 100	7.8
Total	28 180 100	100.0	29 545 500	100.0	57 725 600	100.0

(Maluleka 2018; STATS SA mid-year)

1.2.2 Dialysis centres

Treatment centres for dialysis consist of public and private centres. In 1994, there were 26 public dialysis centres versus five private dialysis centres within South Africa. These numbers changed significantly over the years. The latest data from SARR 2016 indicated that public dialysis centres increased by four centres to 30 dialysis centres. In addition to

this, the private dialysis centres increased with 225 centres to a total of 230 dialysis centres in South Africa. Data from Table 1.2 below indicate that Mpumalanga had six private dialysis centres in 2012 and no public dialysis centres. In 2016, there were still no public dialysis centres, and the private dialysis centres increased to 11 centres. Nevertheless, the public sector has an agreement with the private dialysis centre to serve its accredited patients. This study was conducted within four of these private health clinics in Mpumalanga.

Table 1.2 Number of dialysis centres and sector in Mpumalanga

	1994	2012	2013	2014	2015	2016
Public		0	0	0	0	0
Private		6	7	9	10	11

(SARR 2012, 2013, 2014, 2015, 2016)

1.2.3 Renal failure

Renal failure, according to Hinkle and Cheever (2014:1535), results when the kidneys cannot eliminate the body's metabolic wastes or execute their regulatory functions. The substances usually eliminated in the urine accumulate in the body fluids because of reduced renal excretion. It affects endocrine and metabolic tasks and leads to fluid, electrolyte and acid-base disturbances.

Renal failure can be either classified as acute or chronic (Kidney Disease Improving Global Outcomes (KDIGO) 2013:5). Hinkle and Cheever (2014:1540) confirm that chronic kidney damage can require RRT permanently. When these patients require RRT, they have moved into the final stage of CRF, also referred to as CRF Stage 5 (Hinkle & Cheever 2014:1540).

1.2.3.1 Acute renal failure

Hinkle and Cheever (2014:1535) define acute renal failure (ARF) as an abrupt decrease in renal function owing to damage to the kidneys. ARF includes an increase in blood urea nitrogen (BUN), plasma creatinine levels, and urine output of less than 40 ml/hr.

1.2.3.2 Chronic renal failure

Hinkle and Cheever (2014:1540) state that CRF exists when the kidneys are no longer able to maintain a stable internal environment and damage to the kidneys is irreversible. The KDIGO (2012:18) defines CRF as abnormalities of kidney structure or their functionality, existing longer than three months, with implications for health. CRF is classified according to the cause of CRF, glomerular filtration rate (GFR), and albuminuria (Kidney International Supplements 3(1) January 2013:19). CRF is known as the reduced clearance of specific solutes excreted by the kidney results in retention in body fluids. Hoang, Green and Bronner (2018:82) state that people will require RRT when they reach CRF (stage 5), which may include HD.

As mentioned above, CRF is classified according to a cause, GFR category and albuminuria category. Table 1.3 below indicates the GFR category. GFR is prevalently accepted as the best overall index of kidney function.

Table 1.3 Glomerular filtration rate category in chronic renal failure

GFR Category	GFR (mL/min/1.73 m ²)	Description
G1	≥90	Normal or High
G2	60-89	Mildly decreased*
G3a	45-59	Mildly to moderately decreased
G3b	30-44	Moderately to severely decreased
G4	15-29	Severely decreased
G5	<15	Kidney failure

(KDIGO 2012:3)

It is essential in this regard to diagnosing the patients GFR category to determine the need for HD. CRF is diagnosed according to the following criteria: GFR <60 ml/min/1.73

m2 (GFR categories G3a-G5) or markers of kidney damage analysis history and previous measurements to determine the duration of kidney disease. If the period is more significant than three months, CRF is confirmed (KDIGO 2012:6).

1.2.4 Dialysis

Daugirdas, Blake and Todd (2015:52) describe dialysis as a process whereby the solute composition of a solution is altered by exposing this solution to a second solution through a semi-permeable membrane. The semi-permeable layer is a sheet with holes or pores. Water molecules and low-molecular-weight solutes can pass through the membrane, but larger solutes such as proteins cannot pass through. There are two different mechanisms of solute transport, which include diffusion and ultra-filtration (Daugirdas et al 2015:52). Diffusion is responsible for clearing solutes from the patient's body in both HD and peritoneal dialysis. Osmosis is responsible for the movement of extra fluid from the patient, particularly in peritoneal dialysis. Ultrafiltration is more effective than osmosis for the elimination of liquid and is used in HD for this reason. During dialysis, osmosis and diffusion or ultra-filtration and diffusion co-occur. Dialysis is done in two different ways that are HD and peritoneal dialysis, as discussed in the paragraphs below (Daugirdas et al 2015:52).

1.2.5 Renal replacement therapy population

According to annual reports of the SARR from 1994 to 2016, data regarding the prevalence and total of patients on RRT in South Africa is shown in Table 1.6 and 1.7 below. Table 1.4 demonstrates an increase of incidence of patients on RRT from 70 per million population (pmp) in 1994 to 183 pmp in December 2016. As indicated in Table 1.6, Mpumalanga pmp increased from 42 pmp in 2012 to 64 pmp in 2016. The number of patients receiving RRT stood at 10 257 which equated to 189 per million population in December 2016. The increasing incidence observed is mainly owing to the increased numbers of patients accessing HD in the private section. The public section provides 84% of South African society. The frequency of RRT (71.9 pmp in 2015) persists at levels reported during 1994 indicating that the inconsistency continues to increase. The differences between provinces remain, with Limpopo and Mpumalanga the most under-served. Blacks are the most under-served group among the different ethnic groups (Davids et al 2018:66).

Table 1.4 Prevalence of patients on RRT by province

Province	1994	2012	2013	2014	2015	2016
Western Cape		285	307	312	327	328
Gauteng		241	230	249	245	241
Kwa-Zulu-Natal		173	184	192	209	182
Free State		158	169	177	193	202
Eastern Cape		112	114	129	150	148
North West		105	109	119	126	123
Northern Cape		134	119	111	125	123
Mpumalanga		42	36	49	64	64
Limpopo		39	45	48	59	70
Total	70	164	167	178	189	183

(SARR 2012, 2013, 2014, 2015, 2016)

A study conducted by Davids, Marais and Jacobs (2014:14) gave a clear indication of the rise of patients with CRF from 1994 until 2014. Figure 1.4 confirms this increase in HD patients from 1994 until 2016. In 1994, there were 846 HD patients. According to the SARR, this number increased yearly to a total of 7525 patients in 2016.

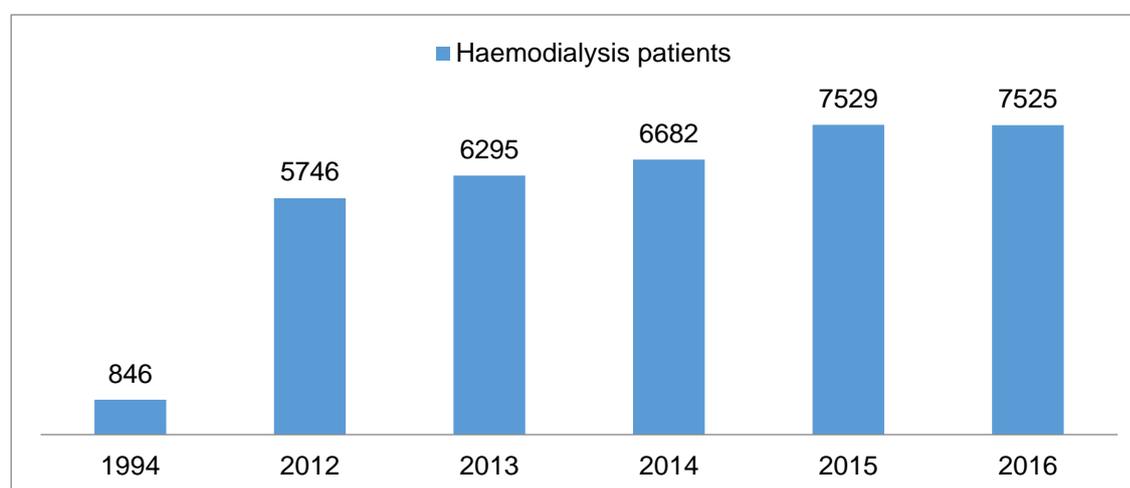


Figure 1.4 Patients receiving haemodialysis from 1994-2016

(SARR 2012, 2013, 2014, 2015, 2016)

Based on the information in Table 1.5, a definite increase of 7414 patients receiving RRT within South Africa is indicated, starting from 1994 SARR until the last SARR report in

2016. As of 2012 SARR report until 2016 SARR report there is a 103 patient increase in RRT patients within Mpumalanga.

Table 1.5 Numbers of patients on RRT by province

Province	1994	2012	2013	2014	2015	2016
Western Cape		1685	1846	1910	2028	2 063
Gauteng		3002	2922	3217	3238	3 255
Kwa-Zulu-Natal		1788	1922	2054	2286	2 022
Free State		433	464	492	544	577
Eastern Cape		737	753	874	1040	1045
North West		373	394	439	466	465
Northern Cape		154	138	130	148	146
Mpumalanga		172	150	207	273	275
Limpopo		215	251	268	337	409
Total	2843	8559	8840	9591	10360	10257

(SARR 2012, 2013, 2014, 2015, 2016)

By the end of December 2016, 10 257 patients were receiving chronic renal replacement therapy (RRT) in South Africa. Seven thousand five hundred twenty-five (7525) of these patients received HD. More than half of these patients were from the private sector, which serves more or less 20 percent of the population. The public sector serves 80 percent of the people with CRF. Within the public sector, the burden of CRF is three times more than in the private sector. However, the facilities in the public area are strictly limited and only 15 to 20 percent of those who require RRT obtain such treatment, clearly because of limited resources (mostly funding).

The approximate annual cost of dialysis based on 2014 figures is R200 000 per patient and that of transplantation R300 000 in the first year. After the first year, the price continues between R160 000–R180 000 in subsequent years (Meyers 2015:232).

CRF remains a poorly recognised and ill-managed clinical entity (Meyers 2015:232). Furthermore, this highlights the importance of diligently screening for and appropriately managing CRF. South Africa is currently able to offer renal replacement therapy to only 20 percent of patients requiring treatment. Therefore, the early detection and prevention

of CRF (stage 5) are paramount (Bovijin 2017:171). Once the patient has developed CRF, they need to be on dialysis as discussed below.

1.2.5.1 Haemodialysis

HD is used to purify the patients' blood from wastes and to maintain electrolytes and regulate fluid balance. Levy, Brown and Lawrence (2016:72) assert that HD makes use of a dialysis machine. This machine is used to pump blood and dialysate through a dialyser. Urden, Stacy and Lough (2014:725) confirm that HD is the management of extracorporeal passage of the patient's blood through a dialyser. Hinkle and Cheever (2014:1548) agree that HD involves shunting of patient's blood from the body through a dialyser in which diffusion and ultra-filtration take place and then back to the patient's blood circulation. HD will be discussed in more detail in Chapter 3.

1.2.6 Impact of chronic renal failure on patient

People living with CRF have an increased morbidity and mortality rate (Fasset, Venuthurupalli, Gobe, Coombes, Cooper & Hoy 2011:806). McAninch and Lue (2012:537) indicate that patients with CRF have several difficulties to overcome. These difficulties include medical, psychological, social, and financial challenges and impaired daily activities. In the same vein, Achempim-Ansong and Donkor (2013:38) concur that HD patients experience psychological experiences, social experiences, economic encounters, and physical experiences, among others. Some of the difficulties include but not limited to the signs and symptoms associated with the condition. According to McAninch and Lue (2012:535), symptoms include pruritus, malaise, lassitude, forgetfulness, and loss of libido, nausea, and fatigability. Heiwe and Dahlgren (2004:147-154) also indicate that patients with CRF have several physical activity impairments. A few of the contributing factors to these limiting conditions include but are not restricted to anaemia, malnutrition, abnormality in glucose and metabolism of muscles, quality of life (QOL) that is reduced as well as psychosocial functioning (Heiwe & Dahlgren 2004:147).

1.2.7 Impact of chronic renal failure on the caregiver

Research regarding the challenges and frustration are done extensively on patients receiving HD. However, the burden on caregivers of patients undergoing HD has not been

researched extensively (Dias-Buxo, White & Himmele 2013:578). Challenges and frustration of caregiver burden still need continuous research (Cohen & Germain 2014:840). In the study conducted by Mphuthi (2010), the author investigated the coping behaviours of haemodialysis patients' families in a private clinic in Gauteng. Mphuthi (2010) made use of the Family Coping Oriented Personal Scale (F-COPES) instrument of McCubbin, Olson and Larsen (1981) to determine coping behaviours of the families of HD patients. Mphuthi (2010:1) argued that the physiological and psychological changes, which took place with patients receiving HD or diagnosed with CRF could easily affect the caregiver of such a patient. These changes included but not limited to exhaustion, change in body image, sexual dysfunction, low fertility, change in diet, eating habits, and anxiety in anticipating early death. Mphuthi (2010) concluded that the subscales: seeking spiritual support, mobilising the family to acquire and accept help, reframing and acquiring social support, illustrated concordance with the classes derived from the quantitative data analysis. Grapsa and Gerogianni (2018:75) indicated in their study regarding caregivers of patients on HD that caregivers have physical and psychological distress, increased workload, limitations to social and personal activities, and financial problems. The caregivers may feel anger, depression, helplessness, isolation, loss of freedom, fear, vulnerable, and neglect their health.

According to Suri, Larvine, Hall, Kimmel, Klinger, Levin, Kurella Tamaru and Chertow (2014:940), patients receiving HD need a variety of support including physicians, nurses, related health professionals, other patients, family, and friends. HD patient's support system may potentially influence the patient outcomes. Cantekin, Kavurmaci and Tan (2016:94) state that caregivers' burdens increase because of their role and responsibilities regarding the care of patients with HD and peritoneal dialysis. Caregivers' duties and tasks begin from the diagnosis of the disease to discharge and home care. Difficulties experienced by caregivers include poor time management for relaxation and social relations. Primary caregivers also experience emotional stress and illness. There are less social activities and family, and work relationships are disrupted (Cantekin et al 2016:95). Rioux, Narayanan and Chan (2012:217) state that there is a conclusive finding of depression and low quality of life for the caregiver of an HD patient.

Lopes, Ferraro and Koch (2014) state that time spent on the road by caregivers and time demanded clinical care leaves little time for personal needs. If the HD patient needs coping with all of these factors mentioned, how do their caregivers cope? With all of these

factors seen as challenges, the researcher aims to determine what coping strategies caregivers of HD patients utilise.

1.3 STATEMENT OF THE RESEARCH PROBLEM

Mashayekhi et al (2015:333) stated that caregivers of haemodialysis patient experience burden. Alnazly (2018:144) be of the same opinion that haemodialysis patient caregivers frequently report burden and poor mental health. Caregiver burden cause psychological strain, social isolation, relationships and financial strain (Mphuthi 2010:28). Despite all the knowledge regarding the caregiver burden, the researcher point out that there is a great deal that need to be researched regarding the coping strategies used by caregivers of patients receiving haemodialysis to reduce their burden. Interventions are in needed to reduce the impact on the health and well-being of the caregiver of an HD patient (Hoang et al 2018:82). The act of resilience in adjusting to the personal and social demands of providing care to an HD patient is underestimated. Understanding the coping strategies used by caregivers of HD patients will assist the renal nurse to be of assistance to reduce or mitigate their burden. This might have an influence on the HD patient well-being as well as the caregivers own well-being.

1.4 DEFINITION OF KEY CONCEPTS

1.4.1 Coping strategies

Coping strategies was constructed in social psychology, as an indication to individual and group reactions to stressors that they encountered (Omeni 2020:9).

Coping is derived from the Latin word 'colpus' meaning to alter. This word is usually used in a psychological paradigm to indicate, "dealing with and attempting to overcome difficulties and problems" (Manoj 2018). Coping is the process in which a person attempts to alleviate, relieve or remove stress or a threat. Coping might consist of an extensive array of covert and overt behaviour. Coping is usually a conscious process. The response could be either active or passive. A person might move towards other people independence behaviour, moving against other people aggressively or moving away from other people in withdrawal behaviour (Uys & Middleton 2014:28). In this study, coping

strategies are operationalised as how the caregiver of an HD patient manages the challenges they are facing.

Strategy is seen as the route provided by the behaviour of strategists in pursuit of organisational goals (Venter 2014:309). In this study, coping strategies are referred to behaviour and choices that the caregiver utilises to alleviate, relieve or remove stressors.

1.4.2 Caregiver

A caregiver is a person or an individual who is involved in delivering direct care to another person (Potts & Mandleco 2012:1450). Mphuthi (2010:56) describes the primary caregiver as the person identified by the patient receiving chronic HD. This caregiver can be a spouse, legitimately registered partner, a live-in partner, children, parents' siblings and children that are adopted among other others. In this study, the caregiver is an individual who is older than 18 years of age and identified by the patient as being the direct carer of the patient receiving chronic HD.

1.4.3 A patient

A patient is somebody who is unwell or is undertaking treatment for a health care difficulty and registered with a general practitioner (Weller 2005:295). Berman, Snyder, Kozier and Erb (2010:13) in addition, define a patient as a person who waits for or undergoing medical management and care. In the context of this study, a patient is someone with CRF (stage 5) who require HD. A CRF (stage 5) patient is a person with a GFR less than 15 ml/min who need HD (Oyebile & Brysiewicz 2017:136).

1.4.4 Haemodialysis

HD is the procedure where a patient's blood is filtered from nitrogenous and other waste products using a semi-permeable membrane two to three times a week by a dialysis machine (Hinkle & Cheever 2014:154). Levy et al (2016:72) state that HD makes use of a dialysis machine. Hinkle and Cheever (2014:154) agree that HD involves shunting of patient's blood from the body through a dialyser in which diffusion and ultra-filtration occur and then back to the patient's circulation. In this study, HD is the procedure used to purify the blood of patient two to three times a week.

1.5 PURPOSE OF THE RESEARCH

The purpose of this study is to describe the coping strategies used by caregivers of patients receiving haemodialysis in a private health clinic in Mpumalanga.

1.6 OBJECTIVE OF THE RESEARCH

The objectives of this study are to:

- Determine coping strategies used by caregivers of patients receiving chronic HD within a private health clinic in Mpumalanga Province.
- Recommend, based on the findings of the study, what support might be needed by the caregivers of HD patients in a private health clinic in Mpumalanga.

1.7 RESEARCH QUESTION

Gray, Grove and Sutherland (2017:691) define the research question as a concise, interrogative statement developed to direct research studies.

The study aims to answer the following question:

- What are the coping strategies used by the caregivers of patients receiving chronic HD in a private health clinic in Mpumalanga?

1.8 RESEARCH METHODOLOGY

1.8.1 Research method

The study utilised a quantitative methodology. Polit and Beck (2017:1031) define a research method as the techniques used to structure a review as well as to gather and analyse information in a systematic way. Gray et al (2017: 689) describe the quantitative method as the collection and analysis of numerical data that is obtainable from tests, questionnaire, checklist, and surveys. Quantitative researchers measure variables on a sample of subjects and express the relationship between variables using effect statistics

such as correlations, relative frequencies, or differences between means; their focus is largely on the testing of theory (Gray et al 2017:689).

1.8.2 Research design

Polit and Beck (2017:1031) defined research design as a complete plan for answering a research question, including specifications for increasing the study's reliability. A research design consists of a framework, which assists the researcher in the collection and analysis of data. The decision on a research design depends on decisions regarding the importance attached to different kinds of dimensions of the research process. These decisions might include the alignment between variables, the application of the results, the understanding and explanation regarding the behaviour and the meaning of the action in a specific social context and the interpretation and interactions (Bryan & Bell 2014:100). Research design is the inclusive plan of gathering data in a research study (Brink, Van der Walt & Van Rensburg 2014:217). Accordingly, a quantitative, non-experimental, simple descriptive research design was used in this study. In the context of this study, no intervention or experiment will be implemented. Non-experimental indicate that no interference or test will be used to conduct the research, and that variable cannot be manipulated (Gray et al 2017:192).

In non-experimental research, the researcher collects data without introducing treatment or making changes and therefore being a bystander. (Polit & Beck 2018:63). According to Polit and Beck (2017:203), descriptive research purpose is to observe, describe and document aspects of a situation. Simple descriptive design is used to determine the characteristics of a single sample (Botma, Greeff, Mulaudzi & Wright 2010:111). This study described and documented aspects, which determine the coping strategies of caregivers of patients receiving chronic HD as a single sample. In the context of this study, an F-COPES questionnaire was utilised to collect data from the caregivers of patients receiving chronic HD without making use of any intervention or experiment.

1.8.3 Research setting

Gray et al (2017:353) describe a research setting as the location where a study is conducted and a natural setting as an uncontrolled, real-life situation or environment.

This research was conducted at four private health clinics throughout Mpumalanga Province. These clinics belong to a private company that offers dialysis services. This region consists of 11 private dialysis units and no government dialysis units (SARR 2016:8). At the end of December 2018, there were 205 chronic HD patients in these four private clinics situated in Mpumalanga, where the research study was conducted. A natural setting was utilised for the study at the specific private clinics in Mpumalanga.

1.8.4 Research population

According to Brink, Van der Walt and Van Rensburg (2008:206), a population is an entire group of persons or objects that hold some similar characteristics that are of concern to the researcher. The people in this research study included the primary caregivers of patients receiving chronic HD as indicated by the patients within four private dialysis units in Mpumalanga. The group of analysis consisted of the primary caregivers whose responsibility includes direct care to patients receiving chronic HD. The dialysis units treat about 205 patients per month. Averages of 33 patients per day are cared for in these private health clinics, excluding Sundays.

1.8.5 Sampling technique

Polit and Beck (2018:356) define sampling as the process of selecting cases to represent an entire population, to permit inferences about the people. Sampling includes the segment of the population that is chosen for the research. It is a subset of the population (Bryman & Bell 2014:383). Stommel and Wills (2004:300) also indicate that the sample selection occurs from the potential subjects or units from the population selected. Non-probability consecutive sampling method was used to select a sample. According to Polit and Beck (2018:222), non-probability sampling is where a researcher selects persons by non-random methods. All primary caregivers of patients receiving chronic HD were recruited over a month to ensure the specified sample size is selected.

Gray et al (2017:680) state that inclusion sampling criterion is the requirements the researcher identified that need to be present for the element or subject to be included in the sample.

1.8.6 Inclusion criteria

Gray et al (2017:680) state that inclusion sampling criterion is the requirements needed by the researcher that must be present for the element or subject to be included in the sample.

Concerning this study, the inclusion criteria include that:

- The caregiver needs to be older than eighteen years of age.
- The caregiver needs to be eligible for basic English.
- The caregiver needs to be the primary caregiver, as indicated by the HD patient.
- The respondent can be either male or female.

1.8.7 Exclusion criteria

Exclusion sampling criteria are seen as the characteristics that can cause a person to be eliminated or excluded from the target population (Gray et al 2017:331).

Concerning this study, the exclusion criteria include that:

- The caregiver younger than 18 years of age will not form part of this study.
- Any person that is older than 18 years of age and do not understand English will be excluded from this study.

1.8.8 Sample

Brink et al (2008:207) defines a sample as a subset of the population that is selected to represent the population. The sample size will be determined using the Raosoft sample size calculator. The following sample size calculator will be used to determine the sample size (Raosoft 2017). The all-inclusive sample includes n=188 patients receiving HD in four private dialysis units. Margin of error used=5%. Confidence level used= 5%.

The sample size n and margin of error E are given by:

$$x = Z^2 \frac{p(1-p)}{n}$$

$$n = \frac{Z^2 p(1-p)}{E^2}$$

$$E = \text{Sqrt}[(N - n) \times r / n(N - 1)]$$

where N is the population size, r is the fraction of responses that you are interested in, and Z(c/100) is the critical value for the confidence level c.

The calculations recommended sample size of at least 119 participants.

1.8.9 Data collection

Data collection is the collecting of the essential information needed to deal with a research problem and answer the research questions (Polit, Becker & Hungler 2001:460). The researcher visited the four private clinics in Mpumalanga and gave intensive training to the unit managers regarding the distribution and collection of demographic data questionnaire and the F-COPES instrument to participants with inclusive criteria. The patient receiving chronic HD needed to identify his or her primary caregiver. The explanation of the study needed to be explained to the patient with the inclusion of a detailed leaflet. Appointments were needed to be set for the primary caregivers to attend the research session at the private clinic. Each participant received a demographic data questionnaire and an F-COPES instrument with an envelope that needed to be sealed after completion. The Family Crisis Oriented Personal Evaluation Scale (F-COPES) designed by McCubbin et al (1981) questionnaire collection method was completed by the caregivers of patients receiving chronic HD in four private health clinics within Mpumalanga over a week. Thereafter, the researcher collected the completed instruments from the unit manager of the private health clinics. This numerical data was then utilised by the researcher to determine the coping strategies used by the caregivers of patients receiving chronic HD in these four private health clinics in Mpumalanga. The researcher also used the data collected to determine the standard deviation, mean as well as frequency.

1.8.10 Data collection instrument

Data includes segments of information or facts collected during a research study (Brink et al 2008:201). A prepared questionnaire is a listing of predetermined questions for which participants are asked to make decisions among rigid response types. The administration of the instrument is standardised as far as possible, including a predetermined sequence of asking the questions (Joubert, Katzenellenbourg, Ehrlich & Abdool 2008:107). Stommel and Wills (2004:2450) support this statement. A questionnaire is a document used to gather self-report data by using self-administration of questions (Polit & Beck 2018:499).

A collection instrument was used in the gathering of specific information regarding the coping strategies of caregivers of patients receiving chronic HD. A demographic data survey was included with the F-COPES questionnaire. This demographic data survey consisted of age, ethnicity, gender, and relationship to the HD patient.

The researcher used F-COPES instrument. The F-COPES instrument recorded useful problem-solving attitudes and behaviour, which families develop to respond to problems or difficulties (Corcoran & Fischer 2013:285). McCubbin et al (1981) designed the F-COPES. This instrument was created to identify problem-solving and behavioural strategies utilised by families in difficult or problematic situations (McCubbin, Thompson & McCubbin 1996:455). F-COPES draw the coping dimensions of the Resiliency Model of Family Adjustment and Adaptation in which the following factors are integrated: pile-up, family resources, and perception. The instrument consists of 30 coping behaviour items, which focus on the two levels of interaction outlined in the Resiliency Model. The first level includes the individual to the family system or the ways a family internally handles difficulties and problems between its members. The second level provides a family to the social environment or how the family externally handles issues or demands that emerge outside its boundaries, but affect the family unit and its members (McCubbin 1996).

This instrument is answered in a Likert-type style with answers such as strongly agree to disagree strongly. High scores indicate that the families will have more coping behaviours. The family with many coping behaviours are likely more successful in adapting to stressful situations. Low ratings indicate a shortage of general coping response within families.

Families that do not have enough resources will likely experience problems when trying to adapt to stressful situations.

The advantages of questionnaires are that they are cheaper and quicker to administer. An absence of the interviewer effect and interviewer variability is also an advantage. It is also seen as more convenient for the respondent. Disadvantages of the self-completion questionnaire might include no presence of somebody to assist with answering the questionnaires. No additional questions can be asked to the respondent other than on the specific questionnaire. The researcher can never be sure who answered the questionnaire. Inclusive criteria need to include people with competent literacy. It is also a significant risk of missing data and might consist of a lower response rate (Bryman & Bell 2014:192).

1.8.11 Data analysis

Data analysis is an organised operation and synthesis of research data and the testing of hypotheses using those data in qualitative studies (Polit & Beck 2017:254). Descriptive statistics were used to summarise the demographic data analyses. Furthermore, descriptive statistics were used as it describes and summarises data (Brink et al 2014:180). A statistician was consulted regarding the data analysis and the interpretation of the results. Epi Info is a public domain of interoperable software tools designed for the community of public health practitioners and researcher. This software provides easy data entry, and data construction will be used (Epi info 2017). After completion of Epi Info, the data will be captured into the Statistical Package for Social Sciences version 25.0 (SPSS 2018) to ensure statistical analysis of data received from participants.

1.9 VALIDITY AND RELIABILITY

1.9.1 Validity

Validity refers to the ability of an instrument to measure the variable that it is intended to measure (Brink et al 2014:218). Validity is the truthfulness of a study. Validity supplies a significant basis for making choices about which results are sufficiently valid to include to the evidence base for patient care (Gray et al 2017:221). According to Polit and Beck (2017:233), external validity concerns whether inferences about noticed connections will

hold variations in persons, setting, time, or measures of the outcome. External validity is about the generalisability of causal intrusions. External validity is a critical concern for research that aims to yield evidence for evidence-based nursing practice. In the context of this study, validity was determined through the caregivers completing the F-COPES instrument. In the context of content validity, five separate studies were conducted (Tway, Connolly & Novak 2007; Greeff & Holtzkamp 2007; Greeff & Fillis 2009; Corocan & Fisher 2013; Mphuthi 2010) and conclude that the content validity was established based on judgment. The researchers ensured that the F-COPES instrument answered all questions of concern regarding coping strategies of caregivers.

1.9.2 Reliability

Reliability deals with the consistency and accuracy of information gathered to measure a concept (Polit & Beck 2018:231). The following are three prominent factors involved when considering whether a measure is reliable. The F-COPES has an excellent internal consistency with a Cronbach's alpha of .86. Specific subscales alphas ranged from .63 to .83. A four-week test-retest was done with a correlation of .81 on the F-COPES, and the individual subscales correlation ranged from .61 to .95 (Corcoran & Fisher 2013:284).

Internal reliability – The indicators that make up the scale or index constant in other words do participants' scores on any one indicator relate to their scores on the other signs. Cronbach's coefficient alphas were used to determine reliability in a research study by Greeff and Fillis (2009) and Greeff and Holtzkamp (2007) with a score of 0.77 and 0.86. Internationally, Tway et al (2007) score was 0.86 and 0.81, Eaton, Davis, Hammond, Condon and McGee (2011) rating ranging from 0.76–0.85, except for passive appraisal at 0.41. More importantly, extensive training was given to the unit managers of the private clinics in Mpumalanga. This training included the researcher making appointments with the unit managers and visiting each unit manager separately explaining the data collection process regarding distribution and answering of the demographic data and F-COPES instruments. Each document used was explained and all questions regarding the F-COPES questionnaire was explained. The training session gave the unit manager opportunity to raise questions regarding any misunderstanding concerning the data collection process or documentation utilised. The training was intended to ensure that the data distribution, collection, and handling were uniformly dealt with in each private health clinic.

1.10 ETHICAL CONSIDERATIONS

Polit and Beck (2017:1007) state that ethics is a structure of moral values that deals with the extent to which research procedures cohere to professional, legal and social obligations to study participants. Ethics includes a set of guidelines, principles, and codes, which in the case of research are used to guide the behaviour of the researcher when conducting research (Merrill & West 2009:168). Ethical principles include autonomy, justice, benevolence, and non-maleficence. The principle of autonomy is seen as the right to self-determination (Grove et al 2017:162).

The Ethical Committee of University of South Africa (Unisa) needs to give ethical clearance before the study can be conducted. In conclusion, this consent needs to be provided by the management of the private clinic in which the research will be done within Mpumalanga.

The ethical position compels the researcher to actively strive to do good and confer a benefit concerning the study subjects or participants. Its moral counterpart is non-maleficence, which forces the researcher to actively attempt to not harm research participants (Gray et al 2017:672).

1.10.1 Respect

Participants were informed of their right to quit at any time during the process of the study and that they participate voluntarily. Participants received an information letter regarding the process and anonymity will be clearly stated. No names were written on the demographic and F-COPES questionnaire. Only numbers were allocated to participants.

1.10.2 Beneficence

The participants have the right to be protected from discomfort and harm. This ethical principle is known as beneficence (Gray et al 2017:173). Beneficence is seen as the duty of the researcher to do no harm to the participant and to ensure benefits to the participant (Polit & Beck 1018:200). Researchers need to ensure that the participant will not be harmed. Knowledgeable, professional persons who posed no harm to the participants

conducted this research. Participants completed the F-COPES instrument with the assistance of the professional unit managers of the private clinics in Mpumalanga. The information received from the primary caregivers of HD patients regarding the coping strategies utilise was used to make recommendations after the completion of the study.

1.10.3 Justice

The principle of justice includes participants' right to fair treatment and their right to privacy (Polit & Beck 2017:204). Stommel and Wills (2004:382) agree with Polit and Beck (2017:204) in the sense of privacy and fair treatment in the context of research participation. Concerning this study, all participants were treated in precisely the same way. Recruitment was done through the patient receiving chronic HD. The patient needs to indicate who the primary caregiver is. An information leaflet was provided to each patient. Participants answered precisely the same demographic data sheet and F-COPES instrument.

Participants' identity was anonymous. No names were used in questionnaires, but only allocated numbers per participant. After completion of documentation, it was sealed in an envelope and given to the unit manager. The researcher collected the completed documentation after a month. Sealed documentation will be placed in a box, which will also be sealed. On completion of the research data collection, the researcher will allocate alphabetic letters (A–D) to the sealed boxes per private clinic. One box at a time was opened, not to get confused with the different private clinic data. Each envelope was opened, and numbers as per box and documentation were allocated. Participant A1 until Box D (the last number assigned) the previous participant were uniformly dealt with.

1.10.4 Informed consent

Participants have a right to decide if they want to participate in the research study or not. Participants need to sign an informed consent form, where they agree in the participation in the research study. Participants have the right to ask questions, refuse to give information, and withdraw from the study at any time (Polit & Beck 2018:202). Information regarding the survey needs to be given to participants before participation. Participants had a choice if they want to participate or not by signing informed consent. This choice

needed to be respected. The participants were not harmed, discomforted, stigmatised or discriminated against if they did not agree to participate.

1.10.5 The Institution

The management of the private health clinics needs to review ethical principles regarding their company and patients before they sign consent to conduct the research study in their clinics in Mpumalanga. Anonymity was also exercised regarding the dialysis units.

1.10.6 Scientific Integrity of the research

The researcher needs to be honest and precise regarding the gathering of information and the conclusion regarding the research done.

1.11 SIGNIFICANCE OF THE STUDY

This research is significant in terms of its contribution towards the results investigated from the F-COPES questionnaire used to determine the coping strategies used by caregivers of patients receiving haemodialysis. This result was used to create recommendations to assist the renal nurse and institution to reduce or mitigate the burden of the caregivers. This will have an influence on the caregivers well-being as well as the HD patient own well-being.

1.12 SCOPE OF THE STUDY

This study concentrated on a private health clinic within Mpumalanga. Four of these clinics was utilised for this research study. The selected private health clinic is one of the leading private dialysis centres in South Africa with an international footprint. This study focused on the coping strategies used by caregivers while looking after a patient receiving HD during a specific period.

1.13 STRUCTURE OF THE DISSERTATION

Chapter 1: Study overview and orientation to the study

Chapter 2: Literature review

Chapter 3: Research design and methodology

Chapter 4: Data analysis, presentation and description of the research findings

Chapter 5: Conclusions, limitations, and recommendations

1.14 SUMMARY

This chapter gave an overview and orientation of the study. An introduction and background to the research problem were given and a problem statement was formulated based on the related information. The research aim and objectives were summarised. A research question was set to be answered after the study, and the significance of the study was stated. The terms used for the study were defined in operational definitions to provide clarity to the terms used in the study. The quantitative research design and methodology has been discussed as an overview with more detail to follow in Chapter 3. The setting, population, and sampling were outlined, along with the process used to collect, manage and analyse the data. Validity, reliability and ethical considerations were discussed, and the permissions obtained to conduct the research study were outlined. The scope of the study was clarified in this chapter. The following chapter will focus on a literature review about this study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In the previous chapter, the background and rationale of the entire study were presented. This chapter focuses on a literature review related to the coping strategies used by the primary caregiver of patients receiving HD. A patient is somebody who is unwell or is undertaking treatment for a health care difficulty and registered with a general practitioner (Weller 2005:295). Berman et al (2010:13) in addition, define a patient as a person who waits for or undergoing medical management and care.

The reason for conducting a literature review is to summarise the most recent and essential research completed on the topic of interest and to place the research problem into context (Polit & Beck 2017:1017). Uys and Middleton (2014:28) state that coping is the process in which a person attempts to alleviate, relieve or removes stress or a threat. It usually consists of a vast array of covert and overt behaviour where it is a conscious process and may be either active or passive behaviour. It can be that a person moves towards other people's independent behaviour, hastily moving against other people or moving away from other people in a withdrawal behaviour (Uys & Middleton 2014:28). Taking into account the limited research on the phenomenon of focus, a comprehensive overview as far as possible of the literature related to the area of interest under investigation will be provided in this chapter.

In reading the literature on the coping strategies of the caregivers of patients receiving HD, various scientific search engines were used during this research study. The following databases were consulted: ResearchGate, Google Scholar Search, Google Search, Bing Search and Science Direct, as well as EbscoHost. Handbooks were utilised using the following keywords; Haemodialysis, coping strategies, caregivers, Chronic Renal Failure (CRF) and Family Crisis Oriented Evaluation Scale (F-COPES).

Most literature seemed to focus on the impact of HD on the patient. Little was told about the impact on the family and caregivers and how they were coping. The majority of articles

available on the coping strategies of a caregiver concentrate on the impact it has on the physical and psychological symptoms of the caregiver. The researcher made use of literature, including anatomy and physiology of the renal system, pathophysiology with a specific focus on CRF to familiarise the researcher of the condition (CRF). Reflected during the literature review were the process of HD and the impact of this disease on the caregiver of the patient. The researcher also reviewed outcomes of strategies used of a similar study of Mphuthi (2010) within Gauteng.

2.2 OVERVIEW OF THE ANATOMY AND PHYSIOLOGY OF THE RENAL SYSTEM

The urinary system is the primary excretory system and consists of two kidneys, two ureters, a urinary bladder, and urethra. The urinary system maintains homeostasis of water and electrolytes within the body (Urden et al 2014:681).

Marieb and Hoehn (2016:982) list the main functions of the kidneys as follows:

- Kidneys regulate the total volume of water and concentration of solutes in the body.
- They also regulate the concentrations of the various ions in the extracellular fluids, ensuring long-term acid-base balance.
- They excrete metabolic wastes and foreign substances such as drugs or toxins.
- They are producing erythropoietin and renin. These molecules are essential for the regulating of blood pressure and red blood cell production.
- It is converting vitamin D to its active form.
- The kidneys are carrying out gluconeogenesis during prolonged fasting.

2.2.1 Anatomy of the kidneys, ureters and urinary bladder

The kidneys are anatomically situated on each side of the vertebral column between T12 and L3 retroperitoneal on the posterior abdominal wall (Urden et al 2014:681). Kidneys are bean-shaped and approximately 11 cm long, 6 cm wide, 3 cm thick, and weighs 150g (Waugh & Grant 2014:338). Figure 2.1 on the following page indicates the anatomical position of the kidneys.

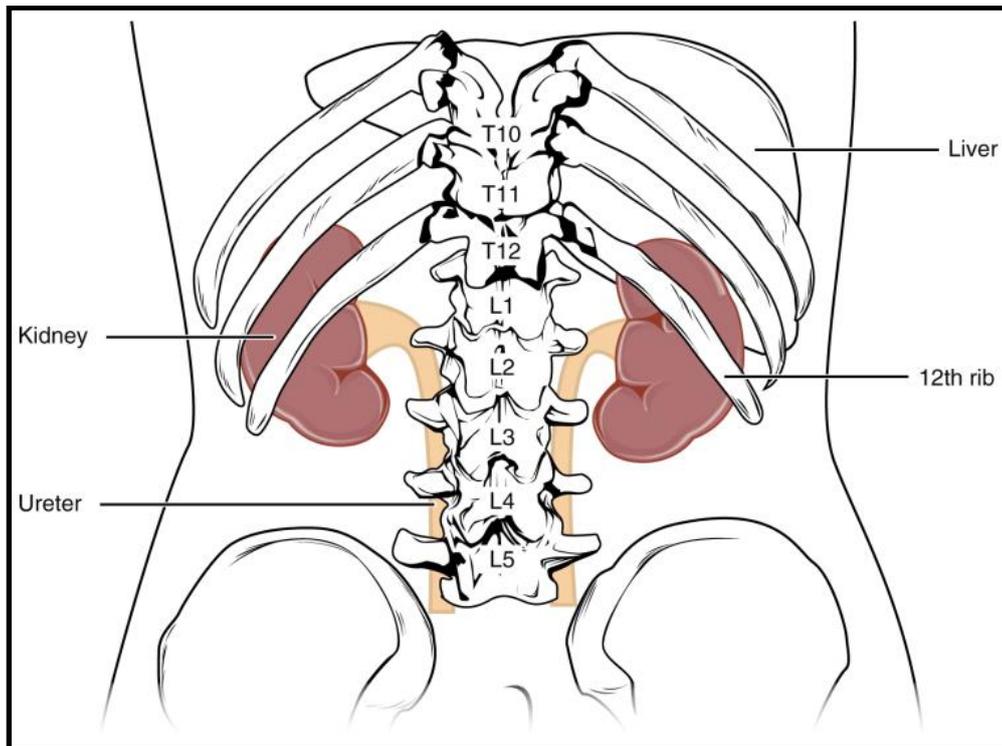


Figure 2.1 Anatomical position of the kidneys

(Anatomy and Physiology: OpenStax 2018)

Internally, the kidneys are made up of three areas, namely, the cortex, medulla and pyramids. It can be observed in Figure 2.2. The outer layer is known as the cortex and 1cm thick. It contains the glomeruli, proximal tubules, cortical portions of the loops of Henle, distal tubules, and cortical collecting ducts. The renal medulla is the inner-part and consists of renal pyramids. The pyramids contain the medullary portions of the loop of Henle, the vasa recta and medullary portions of the collecting ducts (Urden et al 2014:681).

As stated above, the urinary system includes the ureters, urinary bladder and urethra. Fibromuscular tubes called ureters exit the central part of the kidney pelvis. Ureters are between 28 and 34 cm in length and enter the urinary bladder at an oblique angle. The urinary bladder receives the urine through the ureters by peristalsis from the kidneys. The bladder is a muscular sac within the pelvis and can accommodate 280 ml to 500 ml of urine. Urine flows from the bladder through the urethra to be excreted from the body. The female urethra is between 3 cm to 5 cm long and the male urethra is on average about 20 cm long. (Urden et al 2014:681).

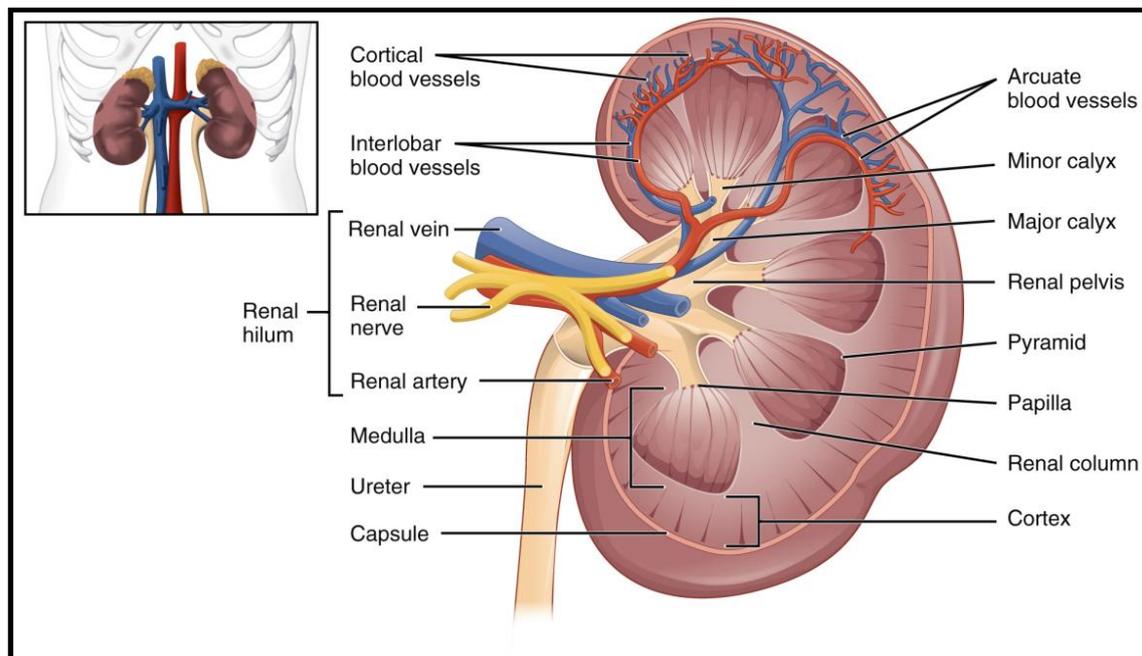


Figure 2.2 Gross section image of the kidney

(Anatomy and Physiology: OpenStax 2018)

2.2.2 Blood and nerve supply to the kidneys

The kidneys need to continuously clean and adjust the composition of the blood. This is the reason for the plentiful blood supply of the kidneys. Furthermore, 1200 ml of blood reach the kidneys through the renal arteries, which delivers almost one-fourth of the total cardiac output. Renal arteries exit at the right aspect from the abdominal aorta. The aorta lies more to the left of the midline. It is for this reason that the right renal artery is longer than the left renal artery. The renal arteries divide into five segmental arteries. These five segmental arteries further divide into several interlobar arteries. The interlobar arteries divide into arcuate arteries at the cortex-medulla junction. The small cortical radiate arteries supply the cortical tissue. The renal cortex is perfused by 90% of the blood entering the kidney. The cortical radiate arteries divide into afferent arterioles. Blood vessels are the most crucial element of kidney function. The veins take the same pathway as the arteries, but just in reverse. The renal veins transfer the blood to the inferior vena cava. The left renal vein is longer as the right renal vein because the inferior vena cava lies more to the right of the vertebral column. The renal plexus provides nerve supply to the kidney and ureters and consist of a network of autonomic nerve fibres and ganglia (Marieb & Hoehn 2016:985). This is illustrated in Figure 2.3.

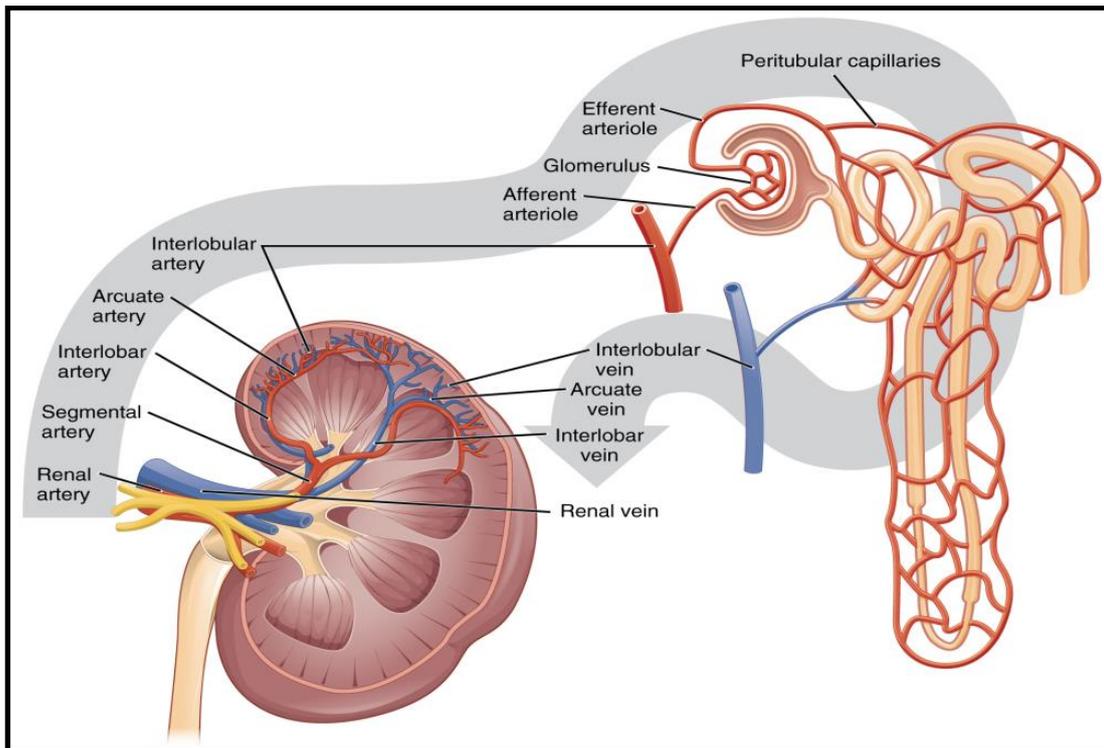


Figure 2.3 Blood supply in the kidney
 (Anatomy and Physiology: OpenStax, 2018)

2.2.3 Nephrons

Figure 2.4 shows the nephrons as the structural and functional unit in the kidneys. More information is provided in the following paragraph. Nephrons are seen as the structural and functional parts of the kidneys. In addition, nephrons are seen as small blood-processing units within the kidneys. Kidneys contain over 1 million of these nephrons and are responsible for the processes that form urine. Nephrons consist of the glomerulus. The glomerulus is a network of twisted capillaries that function as a filter for the movement of protein-free and red blood cell-free filtrate to the proximal convoluted tubules. The structure that contains the glomerulus and acts as a filter for urine is known as the Bowman's capsule. The site of resorption of glucose, amino acids, metabolites, and electrolytes from filtrate is the proximal convoluted tubule. This proximal convoluted tubule reabsorbs substances then returns it to the circulation. The loop of Henle is U-shaped nephron tubule found in the medulla and lengthens from the proximal convoluted tubule to the distal convoluted tubule. The loop of Henle is responsible for the further concentration of filtrate through resorption. The distal convoluted tubule is the site from which filtrate enters the collecting tubule. The collecting tubule is releasing the urine (Woodruff 2016:505).

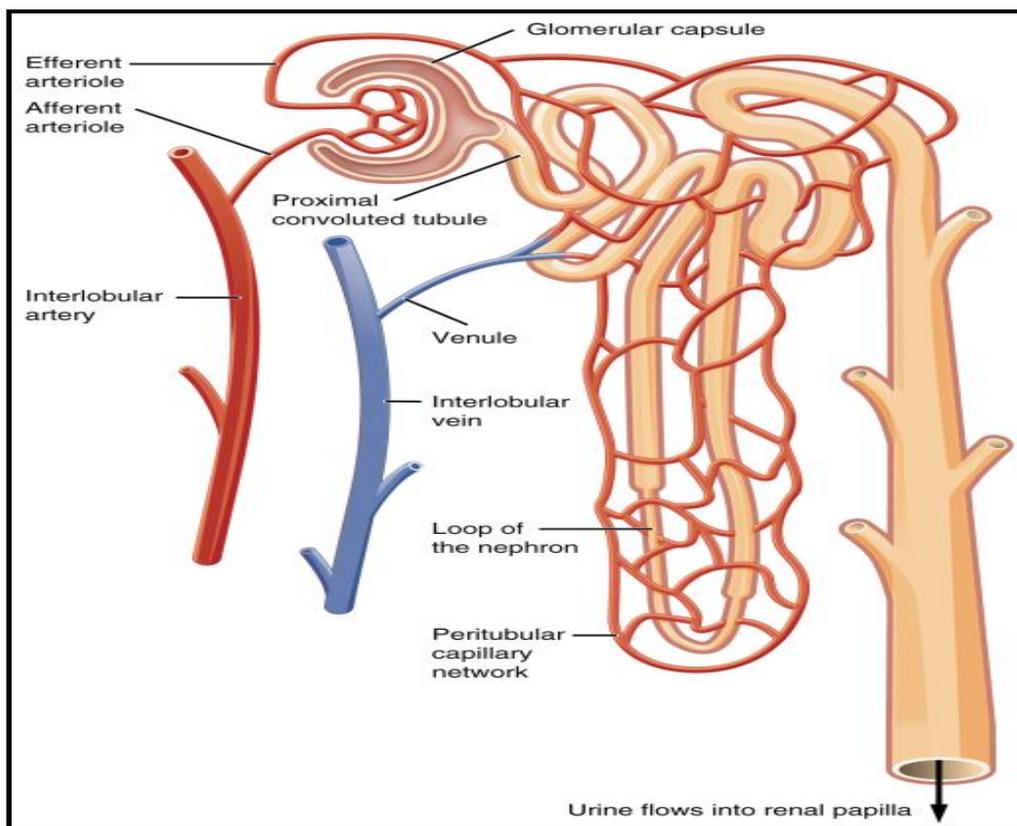


Figure 2.4 Blood flow in the nephron
 (Anatomy and Physiology: OpenStax 2018)

2.2.4 Urine production and filtration

The kidneys are instrumental in processing urine. Exchange of substances occurs between the nephron and the blood in the renal capillaries. Waste products of protein metabolism are excreted and the control of water and electrolytes maintains the pH (acid-base balance) by excretion of hydrogen ions. Urine formation consists of three processes, namely, filtration, selective reabsorption and secretion (Waugh & Grant 2014:341). Figure 2.4 gives an illustration of these processes.

2.2.4.1 Glomerular filtration

Glomerular filtration occurs in the renal corpuscle and produces a cell and protein-free filtrate. It is further a passive process in which hydrostatic pressure forces fluids and solutes through a membrane. It is also seen as "dumping into the waste container" (Marieb & Hoehn 2016:991).

2.2.4.2 Tubular reabsorption

Tubular reabsorption takes place in the renal tubules and collecting ducts. It is the process where substances move selectively from the filtrate back into the blood. Tubular reabsorption recovers almost everything filtered. Glucose and amino acids and some 99% of the water, salt, and other components, anything that is not reabsorbed becomes urine but recover what the body needs to keep (Marieb & Hoehn 2016:991).

2.2.4.3 Tubular secretion

Tubular secretion takes place along the length of the tubule and collecting duct. It is the process where selectively substances move from the blood into the filtrate. It can be seen as selectively adding to the waste container (Marieb & Hoehn 2016:991).

2.3 PATHOPHYSIOLOGY OF THE RENAL SYSTEM

In the previous paragraphs, the anatomy and physiology of the renal system were discussed. The following paragraphs will concentrate on the pathophysiology of the renal system and the treatment thereof. Renal disease can be divided into an acute or chronic phase.

2.3.1 Acute renal disease

Acute renal disease (ARD) is the rapid loss of renal function owing to injure the kidneys, which is often reversible over days or weeks if treated. Urine output may be within normal ranges, or changes may take place. Possible changes might include oliguria (less than 0.5 ml/kg/h) or anuria (less than 50 ml/day). A wide variety of potentially life-threatening metabolic difficulties can take place depending on the period and severity of ARD (Hinkle

& Cheever 2014:1536). Lopes and Jorge (2013:8) assert that there are different ways to classify ARD. The RIFLE (Risk, Injury, Failure, Loss of kidney function, and End-stage kidney disease) classification was introduced in May 2004. This RIFLE classification was established to define and stratify the severity of ARD. It is a good indicator of patient outcomes as it monitors the severity of ARD. The changes in the serum creatinine (SCr) of GFR and urine output and three severity classes risk, injury and failure are a reliable indication of these results. When classifying a patient, use the worst criteria.

The RIFLE classification is shown in Table 2.1.

Table 2.1 The RIFLE classification for acute renal disease

Class	GFR criteria	urinary output criteria
R (Risk)	Increased SCr 1.5 x baseline OR GFR decreased by $\geq 25\%$	0.5 ml/kg/h for 6 h
I (Injury)	Increased SCr 2 x baseline OR GFR decreased by $\geq 50\%$	0.5 ml/kg/h for 12 h
F (Failure)	Increased SCr 3 x baseline OR GFR decreased by $\geq 75\%$ OR SCr ≥ 354 mmol/L With an acute rise of at least 44 mmol/L	<0.3 ml/kg/h for 24 h OR Anuria for 12 h
L (Loss)	Persistent acute renal failure = complete loss of kidney function >4 wk	
E (ESKD)	ESKD >3 months	

(Created by Viljoen: Adapted from Hinkle & Cheever 2014:1536)

In March 2007, a modified version of RIFLE was released, namely, the Acute Kidney Injury Network (AKIN) classification. The AKIN was created to increase the sensitivity and specificity of ARD diagnosis. When using the AKIN classification, an ARD diagnosis can only be made when an adequate hydration status is achieved, and urinary obstruction is

excluded. This classification relies on SCr levels and not on GFR changes. The AKIN classification is shown in Table 2.2. Baseline SCr is not needed but require at least two SCr values within 48 hours (Lopes & Jorge 2013:8).

Table 2.2 The AKIN classification for acute renal disease

Stage	SCr criteria	Urinary output
Stage 1	Increased SCr x 1.5 OR Increase > 0.3 mgr/dL	0.5 ml/kg/h for 6 h
Stage 2	Increase x 2.0	0.5 ml/kg/h for 12 h
Stage 3	Increase x 3.0 OR Increase ≥ 4.0 mgr/dL	<0.3 ml/kg/h for 24 h OR Anuria for 12 h

(Created by Viljoen: Adapted from KDIGO 2012:10)

When a patient is classified in stage 3 of the AKIN classification, it is considered that the patient requires renal replacement therapy (RRT). RRT will be discussed in paragraph 2.4.

Lopes and Jorge (2013:14) indicated that the Kidney Disease Improving Global Outcomes lately combined the RIFLE and AKIN classifications to establish one classification of ARD for practice, research and public health. The combined KDIGO classification for ARD can be seen in Table 2.3 below (KDIGO 2012). According to Lopes and Jorge (2013:14), this integration between the RIFLE and AKIN classification could increase the sensitivity and specificity of ARD diagnosis.

Table 2.3 KDIGO classification of ARD

Stages	SCr criteria	Urinary output
Stage 1	Increased SCr x 1.5 - 1.9 OR Increase > 0.3 mgr/dL	0.5 ml/kg/h for 6-12 hours
Stage 2	Increase x 2.0 - 2.9	0.5 ml/kg/h for ≥ 12 hours
Stage 3	Increase x 3.0 OR Increase ≥ 4.0 mgr/dL OR Initiation of renal therapy OR In patients < 18 years, decrease in GFR to < 35 ml/min	<0.3 ml/kg/h for ≥ 24 hours OR Anuria for ≥ 12 hours

(Created by Viljoen adapted from KDIGO 2012 Vol 2(Issue 1) March 2012:10)

As stated above, there are different classification methods to be used for diagnosing ARD. It depends on the treating medical practitioner of the patient regarding classification method they will implement.

Kidneys have an incredible ability to recover from injury. Medical management is set to repair healthy chemical balance and avoid complications until renal tissue repair and restoration of renal function can occur. This consist of eliminating the underlying cause, maintaining fluid balance, avoiding fluid excesses, and when indicated, providing RRT (Hinkle & Cheever 2014:1538).

2.3.2 Chronic renal disease

Marieb and Hoehn (2016:1007) define CRD as a GFR of less than 60 ml/min for at least three months. Filtrate formation decreases evenly, nitrogenous wastes accumulate in the blood, and blood pH tends to fall in the acidic range below 7.35. Hinkle and Cheever (2014:1528) describe CRD as a general term that describes kidney damage or decrease in the GFR remaining for three or more months. GFR is calculated as the amount of plasma that is filtered through the glomeruli per unit of time. The amount of creatinine cleared by the kidneys in 24 hours is known as the creatinine clearance (Hinkle & Cheever

2014:1529). Daugirdas et al (2015:20) define CRD as decreased in renal function with GFR<60 ml/min or as renal damage persists for at least three months.

Raised serum creatinine levels is an indication of reduced renal clearance of blood products caused by reduced GFR. This points towards an underlying kidney disease. These increased serum creatinine levels lead to CKD symptoms. Kidneys furthermore, release the hormone erythropoietin, which stimulates the production of red blood cells (RBC) by the bone marrow. However, the decreased erythropoietin production cause anaemia, metabolic acidosis, and abnormalities in calcium and phosphorus. Marieb and Hoehn (2016:1001) state the kidneys keep the solute load of body fluids constant by regulating the urine concentration and volume. Urden et al (2014:687) concur that in the absence of active kidney function, fluid retention develops and threatens homeostasis.

Similarly, when the kidneys are unable to conserve fluid, a severe volume deficit occurs that also can influence homeostasis. As the disease progresses, abnormalities in electrolytes occur, heart failure worsens, and hypertension becomes more difficult to control (Hinkle & Cheever 2014:1528). As mentioned in paragraph 2.2.4, the kidneys are responsible for urine production and filtration. When this functionality is reduced, owing to CRD (stage 5) dangerous levels of fluid, electrolytes and waste retention occur because the filtration, selective reabsorption and secretion functionality are reduced (Urden et al 2014:684).

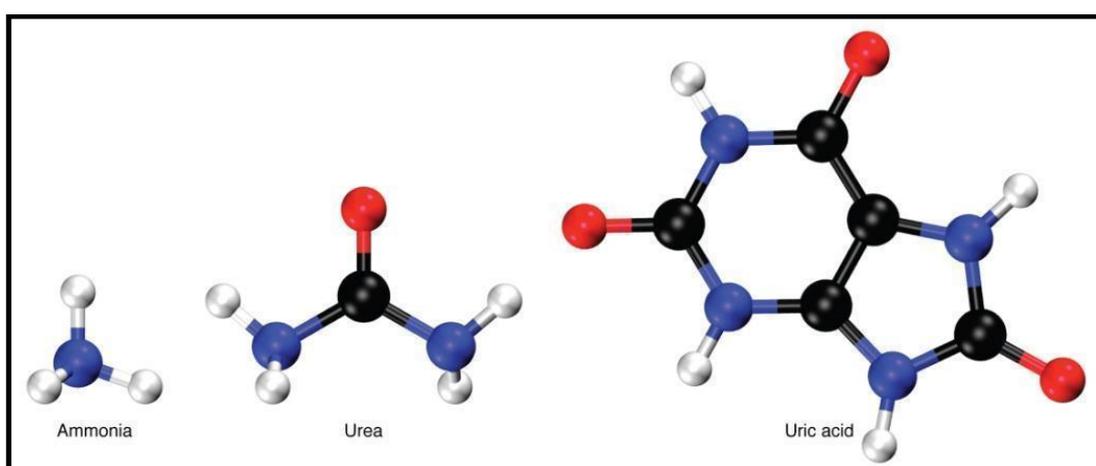


Figure 2.5 Nitrogen waste
(Anatomy and Physiology: OpenStax 2018)

The kidneys are responsible for excreting nitrogen in the form of urea, as indicated in Figure 2.5. When CRD occurs, the excretion of these nitrogen wastes is impaired, and the Blood Urea Nitrogen (BUN) rises (Urden et al 2014:134).

Diabetes mellitus is the leading cause of CRF with 44%, hypertension second with 28% and other causes include repeated renal infections, physical trauma and heavy metal poisoning. The National Kidney Foundation classifies CRD into five stages. The Kidney Disease Outcome Quality Initiative (KDOQI) developed the CRD guidelines in 1997. These guidelines were refined in 2012, adding albuminuria as a predictor of outcome, published in the Kidney Disease Improving Global Outcomes (KDIGO). The stages of CRD are indicated in Table 2.4.

Table 2.4 Chronic kidney disease stages

				Albuminuria stages, description and range		
				A1	A2	A3
				Normally to mildly increased	Moderately increased	Severely increased
				<3 mg/mmol	3-29 mg/mmol	>/30 mg/mmol
GFR Stages, description and range (ml/min per 1.73m ²)	Stage 1 (G1)	Normal/ high	≥90			
	Stage 2 (G2)	Mildly decreased	60-90			
	Stage 3 (G3a)	Mildly to moderately decreased	45-59			
	Stage 3 (G3b)	Moderately to severely decreased	30-44			
	Stage 4 (G4)	Severely decreased	15-29			
	Stage 5 (G5)	Kidney disease	<14			

(Created by HC Viljoen: Adapted from Kidneyhealth 2017)

CRD staging is based on GFR and albuminuria. GFR stages go from G1 to G5, and albuminuria stages go from A1 to A3. As seen in Table 2.4, the indicators show that patients demonstrating with a lower GFR and high Albuminuria are at a higher risk for kidney disease, cardiovascular events, and mortality. Patients in the red zone and some patients in the orange zone and yellow zone may benefit from a referral to the nephrology department.

Diabetes is the primary cause of CRD, followed by hypertension secondary. Other reasons include glomerulonephritis, pyelonephritis, polycystic hereditary or congenital disorders and renal cancers (Hinkle & Cheever 2014:1528).

2.3.3 Chronic renal failure (CRF)

CRF is when the kidneys cannot remove the body's metabolic wastes or perform their regulatory functions; RRT is required to sustain life. If a patient requires RRT permanently owing to renal damage, the patient moved into the fifth or final stage of CRF also known as End-Stage Renal Disease (ESRD) (Smeltzer, Bare, Hinkle & Cheever 2010:1325).

Renal clearance is the ability of the kidneys to clear solutes from the plasma. The initial test of renal clearance is the collection of urine over 24 hours. The creatinine clearance test is used to evaluate how well the kidney conducts this important excretory function. Creatinine is also seen as an endogenous waste product of skeletal muscle. Creatinine is filtered at the glomerulus, then pass through the tubules and excreted in the urine. Creatinine clearance is a proper measurement of the GFR, the amount of plasma filtered through the glomeruli per unit of time. When both creatinine clearance and renal clearance decrease, it is an indication that renal clearance also decreases (Eaton & Pooler 2018).

2.3.4 End-stage renal disease (ESRD)

Levy et al (2016:8) assert that ESRD is the fifth and final stage of CRD. When renal function reduces, the end product of protein metabolism accumulates in the blood. GFR < 15 ml/min and the filtrate formation decreases or stops altogether. Associated with renal failure is uremia, which develops and affects every system in the body. The high waste products in the blood increase the symptoms. Uremia is seen as urine in the blood and

includes fatigue, anorexia, nausea, mental changes, and muscle cramps. This indicates the need for renal replacement therapy, dialysis, or kidney transplantation. Causes of ESRD include arteriopathic renal diseases, glomerulonephritis, diabetes, infective and obstructive nephropathy, familial disease and other conditions (Levy et al 2016:8).

The following paragraphs briefly describe the diagnostic findings of ESRD.

2.3.3.1 *Glomerular filtration rate*

Creatinine clearance decreases, while serum creatinine and BUN levels increase because the GFR decreases (Smeltzer et al 2016:1325).

2.3.3.2 *Sodium and water retention*

During ESRD, the kidneys (Smeltzer et al 2016:1325) cannot dilute urine normally. Furthermore, the daily intake of water and electrolytes, do not take place. In certain cases, some patients preserve sodium and water. This may cause oedema, heart failure, and hypertension. Other cases, some patients lose sodium and this might develop hypotension and hypovolemia.

2.3.3.3 *Acidosis*

Smeltzer et al (2016:1325) declare that the kidneys are not capable to excrete the increased load of acid, resulting in metabolic acidosis. Therefore, result in reduced ammonia excretion and reabsorbing of sodium bicarbonate failure, caused by the inability of kidney tubules. This also results in decreased excretion of phosphates and other organic acids.

2.3.3.4 *Anaemia*

As mentioned above in paragraph 2.3.3., kidneys are responsible for the production of erythropoietin, which is responsible for stimulating the bone marrow to produce RBC. Inadequate production of erythropoietin results in profound anaemia, causing fatigue, angina and shortness of breath (Smeltzer et al 2016:1325).

2.3.3.5 Calcium and phosphorus imbalance

Decreased GFR (Smeltzer et al 2016:1326) will increase the serum phosphate level, and a decrease in serum calcium level. The reduction of serum calcium levels causes increased secretion of the parathormone from the parathyroid glands.

2.3.5 Treatment of chronic renal failure

Current treatment options consist of diet, renal replacement therapies and renal transplantation. Diet consists of regulation protein intake, fluid intake to balance fluid losses, sodium intake to balance sodium losses, and some restriction of potassium. However, simultaneously, adequate caloric intake and vitamin supplementation must be ensured (Hinkle & Cheever 2014:1543). Hinkle and Cheever (2014:154) also stated that RRT becomes essential when the kidneys cannot eliminate waste products, maintain electrolytes and regulate fluid balance. Primary RRT include different types of dialysis and renal transplantation. Dialysis includes HD, continuous RRT and peritoneal dialysis (Hinkle & Cheever 2014:1548).

Hinkle and Cheever (2014:1526) describe continuous RRT as a way used to restore kidney function by circulating the patient's blood through a hemofilter and give it to the patient. Besides, these authors describe peritoneal dialysis as a procedure that uses the lining of the patient's peritoneal cavity as the semi-permeable membrane for the exchange of fluid and solutes.

Renal transplantation is defined by Taiwo (2019:63) as the treatment of choice for nearly all suitable candidates with chronic renal failure end-stage kidney disease. The authors also point out that transplantation improves both patient survival and quality of life.

Patients who are diagnosed with CRF will be assessed for suitability for transplantation. In the meantime, they will receive HD until a suitable transplant donor is found (Levy et al 2016:586). Haemodialysis is seen as an extracorporeal blood purification technique. It is calculated that almost 2.3 million patients worldwide rely on long-term renal replacement. Patients are increasing with six% annually worldwide. Other countries such as Asia, Latin America, Africa, and the Middle East are experiencing an increase in rates of growth of up to ten%. Haemodialysis and acute blood cleansing belong to the division of

extracorporeal blood purification method. Haemodialysis is the most broadly used form of therapy, with a share of 89% (BBraun 2017).

2.4 HAEMODIALYSIS

The first HD was done using a Teflon shunt, as seen in Figure 2.6 on the ninth of March 1960 at the University of Washington Hospital in Seattle (Blagg 2010:2). This shunt has evolved with time as science and technology also improved.

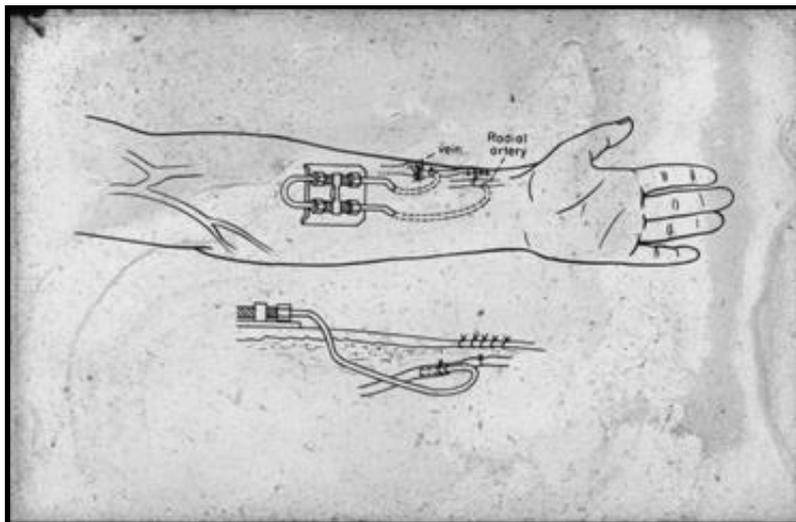


Figure 2.6 Diagram of the original shunt
(Blagg 2010:2)

HD is the procedure where a patient's blood is filtered from nitrogenous and other waste products using a semi-permeable membrane two to three times a week by a dialysis machine (Hinkle & Cheever 2014:154). Levy et al (2016:72) state that HD makes use of a dialysis machine. Hinkle and Cleever (2014:1548) agree that HD involves shunting of patient's blood from the body through a dialyser in which diffusion and ultrafiltration occur and then back to the patient's circulation. In this study, HD is the procedure used to purify the blood of patient two to three times a week.

Hinkle and Cheever (2014:1526) indicated that the objective of HD is to extract toxic nitrogenous matter from the blood and to remove excess water through a dialyser. HD is making use of for patients who are acutely ill and require short-term dialysis and for patients with advanced CRD and CRF who require long-term or permanent RRT. HD prevents immediate death and prolongs life. RRT cannot cure renal disease and does not

compensate for the loss of endocrine or metabolic activities of the kidneys. More than 90% of the patients receiving long-term RRT receive chronic HD (Hinkle & Cheever 2014:1548).

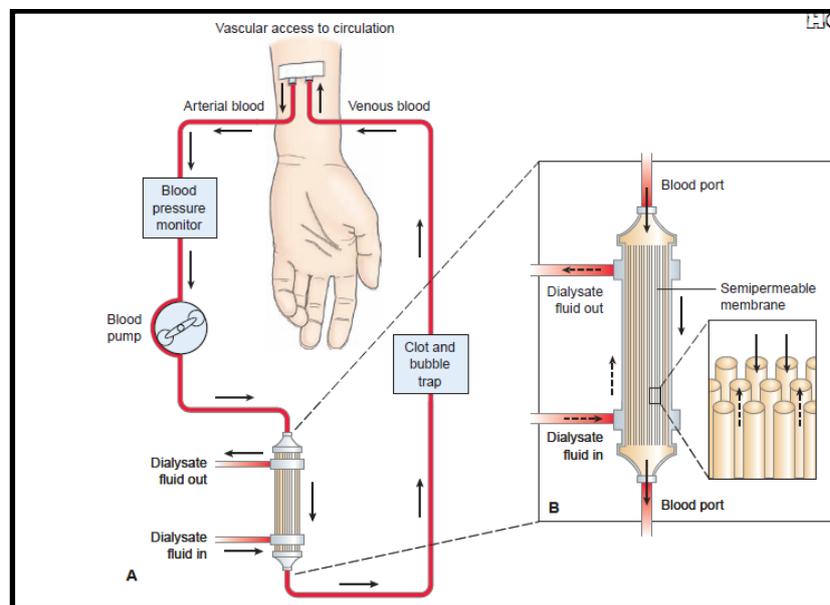


Figure 2.7 Diagrammatic presentation of the patient on HD
(Hinkle & Cheever 2014:1549)

Hinkle and Cheever (2014:1548) state that a dialyser (also referred to as an "artificial kidney") apparatus is used for HD. As Figure 2.7 above indicates, the dialyser serves as a synthetic semi-permeable membrane replacing the renal glomeruli and tubules as the sieve for the damaged kidneys. The patient's blood filled with toxins and nitrogenous wastes is diverted to a machine. A dialyser is utilised where toxins are filtered and removed and the blood is returned to the patients (Hinkle & Cheever 2014:1548).

According to Hinkle and Cheever (2014:1548), the principles of HD are based on diffusion, osmosis, and ultrafiltration. Diffusion is utilised to remove toxins and waste from the blood. Products move from a higher concentration in the blood to a lower concentration in the dialysate. The dialysate is a solution made of electrolytes in their ideal extracellular concentration. Osmosis is used to remove excess water from the blood. Water moves from an area of low concentration, the blood, to a higher concentration, the dialysate bath. Ultrafiltration is where the water moves under high pressure to an area of lower pressure. Ultrafiltration is more efficient than osmosis to remove excess water from the body. Patients with the renal disease usually cannot excrete water; this force is needed to achieve fluid balance. Dialysate bath made up of bicarbonate or acetate is

used to maintain the body's buffer system. Heparin, an anticoagulant, is administered to ensure blood is not clotting in the extracorporeal dialysis circuit. The cleansed blood then travels back to the body to remove fluid, balance electrolytes and managing acidosis (Hinkle & Cheever 2014:1548).

Marieb and Hoehn (2016:1007) state that HD makes use of an "artificial kidney" apparatus. The patient's blood passes through membrane tubing that is penetrable only to specific substances. The tubing is submerged in a solution that differs slightly from normal cleansed plasma. As blood circulates across the tubing, substances such as nitrogenous wastes and potassium present in the blood diffuse out of the blood into the surrounding solution. Substances to be added to the blood mainly buffers for hydrogen move from the bathing solution into the blood. In this way, HD retains or adds needed substances, while removing wastes and excess ions.

Chronic HD is the treatment of choice when both kidneys of the patient have reached CRF, and the GFR is less than 15 mL/min/1.73m². Chronic HD is carried out as an outpatient treatment, and the patient needs to come to the dialysis centre two or three times a week for three to four hours without fail because of its life-sustaining nature.

Daugirdas et al (2015:77) highlight that a HD machine can be divided into a blood circuit and a dialysis solution circuit, which meet at the dialyser. The blood circuit starts at the vascular access. Blood is taken through an inflow (arterial) bloodline to the dialyser and returned to the patient from the dialyser through the outflow (venous) bloodline. When a venous catheter is used, only venous blood is being accessed. Blood is taken to the dialyser by making use of a spring-loaded pump. This pump moves the blood towards the dialyser by occluding the tube and then with a rolling motion, the occluded blood is moved forward.

2.4.1 Dialysers

As mentioned above by Hinkle and Cheever (2014:1548), dialysers are hollow fibre devices accommodating thousands of minute capillary tubes that carry blood through the dialyser. An example of a dialyser is seen in Figure 2.8 below. The capillary tubes are porous and act as a semi-permeable membrane, through which the toxins, fluid and electrolytes pass across the membrane. A continuous flow of the solution through the dialyser ensures the maintenance of concentration gradient to assist with the exchange of wastes from the blood across the semi-permeable membrane into the dialysate solution, where they are removed and discarded.



Figure 2.8 Image of a dialyser

(B Braun 2017:1)

2.4.2 Vascular access

Vascular access of a patient needs to be established to allow blood to be accessed, cleaned and returned to the patient's vascular system at a rapid rate of 300 to 800 mL/min. There are different vascular access routes, which include a vascular access device, arteriovenous fistula or arteriovenous graft (Santoro, Bendetto, Mondello, Pipito, Barilla, Spinelli, Ficiardi, Cernro & Buemi 2014:281).

A double-lumen large-bore catheter inserted into the subclavian, internal jugular or femoral vein by the physician is used as a vascular access device for acute HD. This catheter is removed when no longer needed (Hinkle & Cheever 2014:1550), as shown in Figure 2.9.

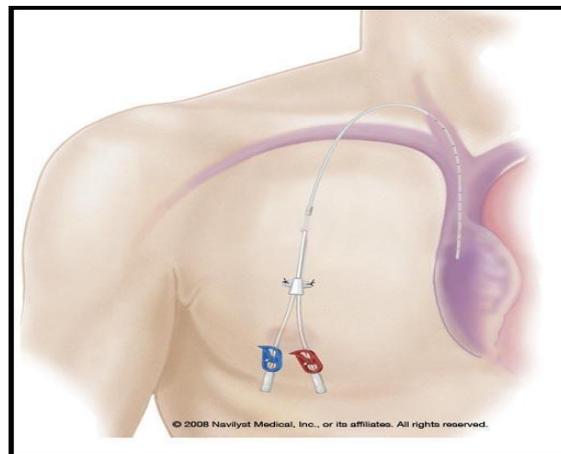


Figure 2.9 Image on double lumen dialysis catheter inserted
(Angiodianamics 2019)

The arteriovenous fistula (AVF) is the preferred method for usage of permanent vascular access for HD. The AVF is created surgically through an anastomosis between an artery and vein, either side by side, or end to side. Needles are placed into the AVF to obtain adequate blood flow to pass through the dialyser. Arterial part of the fistula is used for the arterial flow to the dialyser and the venous part for reinfusion of the dialysed blood. This vascular access is the preferred choice for chronic HD patients, as access has the most extended useful life (Hinkle & Cheever 2014:1550).

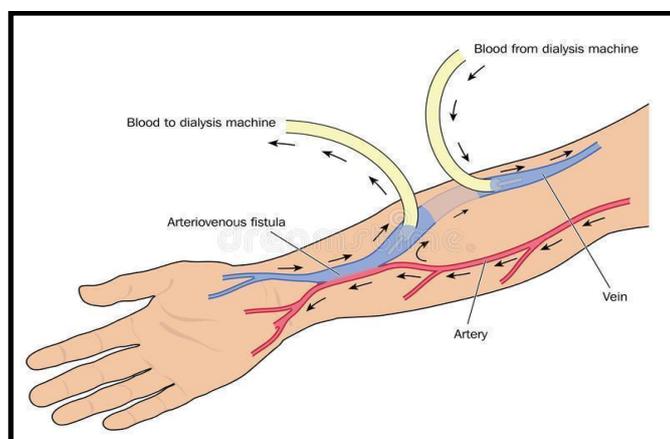


Figure 2.10 Arteriovenous fistula
(Dreamstime 2019)

Hinkle and Cheever (2014:1551) assert that an arteriovenous graft can be created by subcutaneously interposing, a biologic, semi-biologic, or synthetic graft material between an artery and vein. This procedure is done when an AVF cannot be inserted because the patient's blood vessels are not suitable for an AVF. Figure 2.11 illustrates an arteriovenous graft.

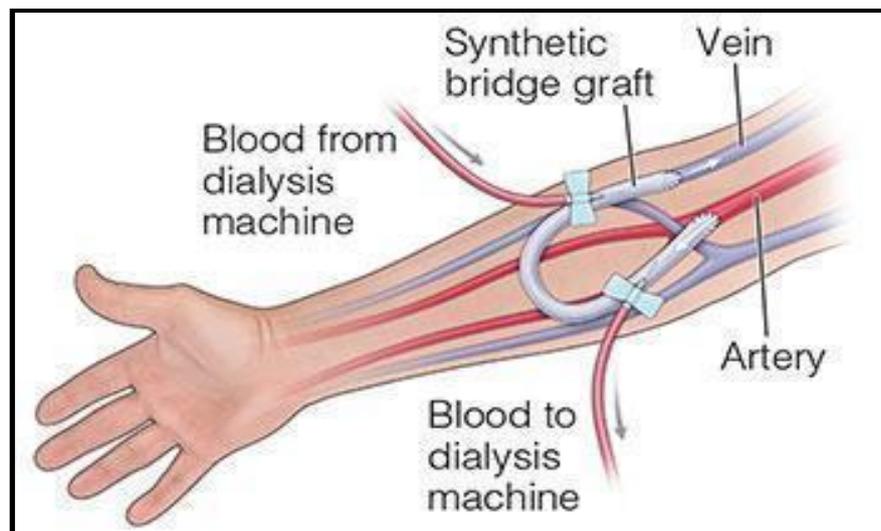


Figure 2.11 Arteriovenous graft
(Medicine for all 2018)

2.5 IMPACT OF HAEMODIALYSIS ON THE PATIENT

Based on the above information, renal diseases and its treatment have an impact on the patient. This study aimed to understand the coping strategies of the caregivers of patients receiving chronic HD. There is a need to understand what impact the patient's health status and mind-set play in this regard. This will ensure a greater understanding regarding the reaction of the caregivers when these symptoms of the patient occur.

When a patient is diagnosed with CRF, HD becomes part of the household daily living. Haemodialysis result in physical limitations and adapting to changes in their social life. Patients feel a sense of loss, and grievance for the life they once knew. When a patient starts with dialysis, they enter a point of dependency. Their lifestyle is complicated, and their survival is reliant on multiple forms of care and caregivers. Possible changes might include physical, social, family, and financial aspects and will be discussed in the paragraphs to follow (Pereira, Fernandes, De Melo, Abrita, Grincenkov & Fernandes

2017:75). Table 2.5 indicates how chronic renal failure affects the patient who may have an impact on the patient.

Table 2.5 Signs and symptoms for chronic renal failure on systems

System	Signs and symptoms
Neurologic	Weakness and fatigue Confusion Inability to concentrate Disorientation Tremors Seizures Asterixix The restlessness of legs Burning of soles of feet Behaviour changes
Integumentary	Grey-bronze skin colour Dry, flaky skin Pruritus Ecchymosis Purpura Thin, brittle nails Coarse, thinning hair
Cardiovascular	Hypertension Pitting oedema decreased libido Pericarditis Periorbital oedema Pericardial friction rub Engorged neck veins Pericardial effusion
Pulmonary	Crackles Thick, tenacious sputum Depressed cough reflex Pleuritic pain Shortness of breath Tachypnea Kussmaul-type respirations Uremic Pneumonitis
Gastrointestinal	Ammonia odour to the breath Metallic taste Mouth ulcerations and bleeding Anorexia, nausea and vomiting Hiccups Constipation or diarrhoea Bleeding from the gastro-intestinal tract
Reproductive	Amenorrhea Testicular atrophy Infertility
Musculoskeletal	Muscle cramps Loss of muscle strength

(Created by HC Viljoen: Adapted from Hinkle & Cheever 2014:1541)

2.5.1 Psychological impact

Patients diagnosed with CRF face numerous psychological stressors. These might include the effect of illness and treatment, functional limitations, sexual dysfunction, dietary restrictions, time constraints, and fear of death. Besides, there may be marital conflict, strained interpersonal relationships with family or medical personnel, and socio-economic concerns regarding the costs of treatment and unemployment (Daugirdas et al 2015:545).

2.5.1.1 Depression

The National Institute of Mental Health defines depression as a common and serious medical illness that negatively influences how a person feels, the way they think and how they act. This mental disorder causes feelings of sadness and a loss of interest in activities. It may cause a variety of emotional and physical problems and can decrease a person's ability to function at work and home. Depression is treatable.

Chilcot, Guirguis, Friedli, Amond, Day, Da Silva-Gane, Fineberg, Spencer, Wellsted and Farrington (2018:2) indicate that depression is a common comorbidity and a psychological constraint for patients receiving HD. It is estimated that approximately 39% of dialysis patients are depressed. Depression contributes to a variety of poor outcomes for the patient and might include increased hospitalisation and mortality.

2.5.1.2 Delirium

According to Urden et al (2014:176), delirium is categorised as an overall impairment of cognitive processes. Delirium usually has a sudden onset, coupled with disorientation, impaired short-term memory, altered sensory perceptions, abnormal thought processes, and inappropriate behaviour.

Neurocognitive disorders are common in CRD patients. Cognitive deficiency may be related to underlying uremia or other coexistent underlying medical conditions (Daugirdas et al 2015:548).

2.5.1.3 Anxiety and behaviour disorders

Cohen, Cukor and Kimmel (2016:2250) report that the exact prevalence of anxiety disorders in HD patients is still unclear, but it is estimated that it ranges between 12% to 52%. Cohen et al (2016:2250) also indicated that a study shows that there was a 45% prevalence of anxiety disorders in a single-centre study of 70 HD patients. The anxiety disorders can be associated with lower patient perception of the quality of life.

2.5.1.4 Marital impact

Daugirdas et al (2015:549) indicated that a few studies had been conducted on the marital relationships in CRD patients. However, one study indicated that more than 50% of couples experience marital issues. It might be the cause of patients' perception of the burden of illness. Another study shows that female CRD patients with higher marital satisfaction had increased survival, and male CRD patients had the same outcome (Daugirdas et al 2015:549).

2.5.1.5 Sexual dysfunction

Sexual dysfunction is a widespread problem with CRD patients (Levy et al 2016:547). Frequently reported symptoms of sexual dysfunction in male patients include decreased libido, difficulty with sexual arousal, erectile dysfunction, or delayed ejaculation, and difficulty achieving orgasm. Conversely, symptoms reported by female patients include decreased libido, difficulty with sexual arousal, and lack of vaginal lubrication, painful intercourse and difficulty reaching an orgasm.

According to Daugirdas et al (2015:549), CRD patients have a high prevalence of sexual dysfunction owing to the effects of uremia, neuropathy, autonomic dysfunction, vascular disease, depression, and medications. Disturbances in the hypothalamic-pituitary-gonadal axis are also encountered. Decreased libido, erectile dysfunction, menstrual disorders, and infertility are experienced. Over two-thirds (70%) of men treated with HD have impotence and women struggle with fertility and menstruation (Daugirdas et al 2015:549).

2.5.1.6 Socio-economic impact

Kutner and Zwang (2017:42) posit that more than half of CRD patients do not continue working after HD has started. Unemployment can have a significant impact on the psychological effect of the patient, contributing to a higher risk of depression, as stated by these authors. The patient's relatives take over the role of provider and face daunting financial challenges over the years as HD is a treatment, which takes place over some time and is extremely expensive. Sources of income may decrease, and many patients are overwhelmed by the cost of health insurance premiums (Burton 2011). Theofilou, Synodinou and Panagiotaki (2013) state that the patients' finances are affected by the high cost of weekly treatment for HD and occasional admissions to hospital owing to complications arising from ESRF, as most of the patients are managed in the private sector.

2.5.1.7 Quality of life (QoL)

According to Onofrio, Simeoni, Rizza, Caroleo, Capria, Mazzitello, Sacco, Muzzuca, Panzino, Cerantonio, Segura-Garcia, Adreucci, De Fazio and Fuiano (2017:53), personality traits and coping strategies play a crucial role in adapting to HD and could affect the QoL perception.

Daugirdas et al (2015:550) aver that patients who rated their QoL higher than other patients will have an increase in compliance with their HD regime. Theofilou (2013:276) state that caregivers and patients are unable to fulfil their personal and professional purpose within the context of living with CRF or ESRD.

2.5.2 Physical changes

2.5.2.1 Change in the body image

According to Leung's (2003) definition, "Body image is the mental picture that people have of their own body and bodily functions including associated external and internal sensations". Sadeghian, Roudsari, Seyedfatemi and Rafiei (2016:14) underscore that a CRD patient's body changes and therefore affects their body image negatively. These authors elaborate on different factors that might cause body image disturbances in

patients receiving HD, such as for overweight, oedema, skin lesion, and use of arteriovenous graft, fistula, neckline, or catheter for HD. Mphuthi (2010:29) concurs that treatment for dialysis causes changes to the body. This might include the constructed fistulae and skin colour changes associated with renal failure. Patients feel different and unattractive.

2.5.2.2 *Change in diet and eating habits*

The diet for a CRF patient plays a vital part in the management of the patient's condition. When such a diet is neglected, it can cause numerous complications for the patient. The adaptation to the new diet can be frustrating for the patient because of the severe restrictions on dietary intake and fluids (Mphuthi 2010:29).

Hong, Wang, Chan, Mohamed and Chen (2017:3664) contend that the suggested dietary and fluid restriction is a constant struggle and a cause of distress among HD patients. However, these patients are generally more compliant to their fluid restrictions because of their survival instinct or to meet the expectations of their family. The suggested dietary restrictions are generally neglected.

2.6 IMPACT OF CHRONIC RENAL FAILURE AND HAEMODIALYSIS ON THE CAREGIVER

Any chronic sickness like CRD involves not only the patient but furthermore his or her family and caregivers. A caregiver is a person or an individual who is involved in delivering direct care to another person (Potts & Mandleco 2012:1450). Mphuthi (2010:56) describes the primary caregiver as the person identified by the patient receiving chronic HD. This caregiver can be a spouse, a cohabitating partner, officially legal partner, children, parents' siblings, and legitimately children that are adopted. In this study, the caregiver is an individual who is older than 18 years of age and identified by the patient as being the direct caregiver of the patient receiving chronic HD.

Usually, a caregiver could be one of the family members that will take this role depending on the patient's situation. Grapsa and Georgianni (2018:75) accentuate that caregivers play a vital position in how the patient perceives and reacts to life on HD and that support from caregivers is critical. Furthermore, caregivers can amplify anxieties of patients, or

they can absorb stress and provide a positive influence on the perceptions of the patient and become their significant support (Grapsa & Georgianni 2018:75). These authors also indicate in their study regarding caregivers of patients on HD that caregivers have physical and psychological distress, increase workload, limitations to social and personal activities, and financial problems. The caregivers may feel anger, depression, helplessness, isolation, loss of freedom, fear, vulnerable, and neglect their health. The caregivers may also face difficulties with dating, marriage and problems with their job.

2.6.1 Physical symptoms

Patients on chronic HD and their caregivers are hazardous groups for the progress into physical and psychological symptoms (Dos Santos Pereira, Da Silva Fernandes, Pires de Melo, Abrita, Dos Santos Grincenkov & Da Silva Fernandes 2017:74). In the same vein, Ghane, Farahani, Seyedfatemi, and Haghani (2016:1) echo that caregivers of HD patients experience high levels of stress which include physical and emotional distress and psychological symptoms including depression, anxiety, anger, despair, and feelings of guilt and shame. The impact of CRF has a severe and prevalent effect on the family and friends, resulting in psychological strain, social isolation, relationship strains, and financial strains from further responsibilities of caring for these patients (Gill et al 2011:31).

2.6.2 Psychological symptoms

Pereira et al (2017:74) indicated that Fan, Sathick, McKitty and Punzalan (2008) stated that patients and caregivers presented with similar mental health regarding their development and improvement of social function. However, it is indicated that with the progression of CRF the caregivers of highly dependent CRF patients presented with worsening of their mental health when it is compared with those caregivers of less dependent patients. As CRF progresses, caregivers of highly dependent CRF patients' mental health worsens, and depression is the most common disorder among the caregiver. In the same vein, Celik, Annagur, Yilmaz, Demir and Kara (2012:524) concur that patients receiving dialysis and their caregivers presented with similar symptoms of anxiety and depression and quality of sleep. Results for the physical and mental component presented similar results for the patient and their caregivers. However, caregivers presented having more problems regarding sleep.

2.6.3 Quality of life (QoL)

Pereira et al (2017:74) postulate that prevalence of anxiety, depression, perceived social support, fatigue, stress symptoms and levels of QoL in patients receiving HD and their caregivers are similar and some scores were higher with the caregivers. QoL with adherence to treatment of the patient and caregiver is negatively influenced because of depression. The QoL of the caregiver affects the functional capacity of the patient. When the quality of life is inferior, it was found that it harms the care provided to the patient (Pereira et al 2017:74). Pereira et al (2017:74) state that in their study, caregivers presented with lower QoL in their vitality and mental health. Cantekin et al (2016:94) posit that caregiver's burdens increase because of their role and responsibilities regarding the care of patients with HD.

Caregiver's responsibilities and roles begin from the diagnosis of the disease to discharge and home care. Difficulties experienced by caregivers include poor time management for relaxation and social relations. Primary caregivers also experience emotional stress and disease. There are fewer social activities and family, and work relationships are disrupted (Cantekin et al 2016:95). A definite finding of depression and low QoL for the caregiver of a HD is stated by Rioux et al (2012:217). Lopes et al (2014) state that time spent on the road by caregivers and time demanded clinical care leave little time for personal needs. These caregivers are often neglected and little research is available on the effectiveness of their coping strategies.

2.6.4 Psychological support

As Golics, Basra, Salek and Finlay (2013:787) postulate, several research question whether families that are confronted with a chronic illness are more likely to suffer emotional distress than families where there is no sign of chronic illness. However, in families where their psychological suffering is caused by renal failure, consideration need to be paid to the psychological support, not only in conditions of the impact on the point of support they offer the patient but in addition to how they are affected by the illness (Golics et al 2013:787).

Therefore, the involvement of educational, social and psychological support is vital to promoting their ability to handle adversities. Celik et al (2012:524) concur that educational, social and psychological support interventions should be considered to improve the caregiver's ability to cope. According to Suri et al (2014:940), patients receiving HD need a variety of multi-interdisciplinary professional support including physicians, nurses, allied health professionals, as well as other patients, family, and friends. Haemodialysis patient's support system may potentially influence patient outcomes. Shahgholian and Yousefi (2015:626) confirm that receiving psychological support from their family can assist patients in tolerating CRD, treatment and complications. As stated above, support of caregivers and family members are extremely important to HD patients.

The enquiry that needs to be answered is: Who is the element of care? Is it only the patient, or does it include the caregiver of the patient? As Potts and Mandleco (2012:1450) accentuate, a caregiver is a person or an individual who is involved in delivering direct care to another person. This includes the primary basis of psychological support for the patient to uphold the level of support we must identify and react to the impact renal failure has on the patient and caregiver.

Limited research has been conducted on the coping strategies of caregivers of HD patients within South Africa. It was envisaged that the results of this research would be useful for health care planning to illustrate the impact of coping strategies for the caregivers and make suggestions to improve these behaviours.

2.6.5 Literature challenge

Research regarding the challenges and frustration of patients receiving HD, was conducted extensively. However, the burden of the caregivers of patients receiving HD has not been researched comprehensively (Dias-Buxo, White & Himmele 2013:578). Cohen and Germain (2014:840) concur that the topic of caregiver burden, challenges and frustration should be researched. Furthermore, only a few studies indicate the significance of burden on the caregivers. In addition to this, data within South Africa regarding this topic is still sparse.

In the study conducted by Mphuthi (2010), the author examined coping behaviours of HD patients' families in a private clinic in Gauteng. The author made use of the Family Crisis Oriented Personal Scale (F-COPES) of et al (1981) to determine the coping behaviours of families of HD patients. The author concluded that the subscales seeking spiritual support, mobilising the family to acquire and accept help, reframing and acquiring social support showed concordance with the categories derived from the quantitative data analysis. Worldwide, this research topic is still in its infancy.

Mphuthi (2010:1) claims that the physiological and psychological changes, which take place with patients receiving HD or is diagnosed with chronic kidney failure, can easily affect the caregiver of such a patient. These changes include but are not limited to exhaustion, change in body image, sexual dysfunction, low fertility, and change in diet, eating habits, and anxiety in anticipating early death. In affirming, Achempim-Ansong (2013:38) is also of the same opinion from his study stating that HD patients experience the following but not limited to psychological experiences, social experiences, economic encounters, and physical experiences.

2.7 THE RENAL NURSE AND THE CAREGIVER

Cultural awareness is about the way people connect. These cultural differences include religious beliefs, languages and backgrounds different from those of the renal nurse (Holland 2018:14).

The patient with CRD requires insightful nursing care to avoid complications of reduced renal function and the stresses and anxieties of dealing with this life-threatening illness. The renal nurse needs to ensure that the HD patients' caregiver receives similar information as the patient i.e. educate about self and continuing care. The renal nurse needs to ensure that the caregiver receives sufficient knowledge about CRF and HD. Ebadi, Sajadi, Moradian and Akbari (2018:225) aver that improved interaction among the renal nurse to understand the conditions of the caregivers, thereby improving the QoL for both patients and their families.

The caregivers who perceived their role as unfavourable expressed feelings of isolation, anxiety, anger and were at risk of developing depression. Female spouse's symptoms were also more prominent (Liedstrom, Kihlgren, Skovdahl & Windahl 2014:275). Ebadi et

al (2018:225) found that the next of kin of patients undergoing HD experienced unpredictable, uncontrollable stressors such as time conflicts between caregiving and occupational affairs care induced fatigue and fear of the future. Aasen, Kvangarsnes, Wold and Heggen (2011:1716) showed that the next of kin of elderly patients on HD felt excluded and forgotten by health providers.

Salehitali, Ahmadi, Zarea and Fereidooni-Moghadam (2018:e63304) indicate that renal nurses' good behaviour, excellent performance, suitable relationship, and focus on the therapeutic care, and educational desires of caregivers of patients, not only assist with the effectiveness of the treatment process, but also assist with the acceptance of care conditions for caregivers. Furthermore, by respecting the caregiver's analysis in the treatment process, the healthcare team can make this condition even easier for caregivers.

Caregivers of patients undergoing HD limit the amount of time for their activities to accommodate the caring for HD patients therefore limiting the amount of time for the caregivers own activities and implying less freedom (Axelsson, Klang, Hagelin, Jacobson & Gileissman 2015:447).

2.8 SUMMARY

This chapter reviewed literature from various studies, local and international. These studies included an overview of the anatomy and pathophysiology related to the renal system and renal failure. HD process was explained, and an insight into the impact of HD on patient, families and caregivers was discussed.

The next chapter will discuss the research design and methodology used in the study. It will give information regarding the research design, setting, sample, the questionnaire used for data collection and the process of data collection.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter provided a comprehensive overview of the literature related to this study. The following main headings were discussed: Overview of the anatomy and physiology of the renal system, pathophysiology of the renal system, HD, impact of HD on the patient, the impact of chronic renal failure and HD on the caregiver, and the renal nurse and the caregiver. This chapter describes how the research methodology was conducted. This includes description on the collection of the data, the target population, sampling, and analysis. A quantitative, non-experimental, simple descriptive research design was conducted to determine the coping strategies used by caregivers of HD patients in selected private health clinics in Mpumalanga during a specific period. To address the main aim of the study, an instrument examining coping strategies was distributed to caregivers of haemodialysis patients. The entire population was involved and had an equal opportunity to participate.

3.2 RESEARCH DESIGN

Polit and Beck (2017:1031) define research design as a complete plan for answering a research question, including specifications for increasing the study's reliability. In addition, a research design consists of a framework that assists the researcher in the collection and analysis of data. The decision on a research design depends on decisions to make regarding the importance attached to different kinds of dimensions of the research process. It might include the alignment between variables, the application of the results, the understanding and explanation regarding the behaviour and the meaning of the behaviour in a specific social context as well as the explanation of the social phenomena interactions and changes over the years (Bryman & Bell 2014:100).

This study followed a quantitative, non-experimental, simple descriptive research design. Furthermore, in the context of this study, no intervention or experiment was used. Non-

experimental design indicates that no intervention or experiment was used to conduct the research and that the variable cannot be manipulated (Gray et al 2017:192). In non-experimental research, the researcher collects data without introducing treatment or making changes and therefore being a bystander (Polit & Beck 2017:1021). Besides, these authors maintain that descriptive research purpose is to observe, describe and document aspect of a situation. Simple descriptive design is used to determine the characteristics of a single sample (Botma et al 2010:111). This study described and documented aspects, which determined the coping strategies of caregivers of patients receiving HD as a single sample. In the context of this study, the Family Crisis Oriented Personal Evaluation Scale (F-COPES) instrument (Appendix 2) developed by McCubbin et al (1981) was utilised to collect data from the caregivers of patients receiving HD, without making use of any intervention or experiment.

3.3 RESEARCH METHODOLOGY

Polit and Beck (2017:1031) define a research method as the techniques used to structure a study as well as to gather and analyse information in a systematic way. The research method is discussed by referring to the setting, population, and sampling, followed by a detailed description of data collection and data analysis.

A quantitative research approach was used for this study. Gray et al (2017:689) describe the quantitative method as the collection and analysis of numerical data obtained from tests, questionnaire, checklist, and surveys. Quantitative researchers measure variables on a sample of subjects and express the relationship between variables using effect statistics such as correlations, relative frequencies, or differences between means; their focus is largely on the testing of theory (Gray et al 2017:689). The evidence in this quantitative methodology was gathered according to an established plan, making use of the F-COPES questionnaire instrument. The numerical data gathered resulted from the formal measurement tool used and analysed with statistical procedures.

3.3.1 Research setting

Burns and Grove (2017:353) describe a research setting as the location where a study is conducted and a natural setting as an uncontrolled, real-life situation or environment. A familiar environment was utilised to ensure a relaxed and comfortable scene. The lounge of the four private health clinics throughout Mpumalanga Province was utilised to conduct the study. These clinics belong to a private health company that offers dialysis services. This region, Mpumalanga, consists of nine private dialysis units and no government dialysis units (South African Renal Registry 2016:8). The setting was accessible to the participants and conveniently situated. It is situated at the private health clinics where the patients receive their treatment.

3.3.2 Population

According to Gray et al (2017:53), the population is a complete set of persons or objects that possess some specific characteristic that is of interest to the researcher. The target population concerning this study was the primary caregivers of patients receiving HD as indicated by the patients themselves within four private health clinics in Mpumalanga from February 2019 to May 2019.

These caregivers were over the age of 18 years and were proficient in English. The target population in this study included 170 caregivers of patients receiving HD at these four private health clinics. The researcher inquired from each unit manager on the total of HD patient per unit with caregivers. The given Table 3.1 below provides information regarding the total of patients receiving HD, as well as the total percentage of patients per unit, as indicated by the unit manager.

Table 3.1 Total inclusive HD patients per unit

Dialysis unit	Number of respondents	Percentage of respondents (%)
A	46	27%
B	20	12%
C	70	41%
D	34	20%
Total	170	100%

(Viljoen 2019)

In order to describe the context and population profile of the family members completing the F-COPES instrument, a demographic sheet (Appendix 1) was included with the F-COPES instrument. The demographic form had the following variables: relationship to the patient, age, race, gender, and the period the patient received HD.

3.3.3 Sample

Gray et al (2017:53) define a sample as a subset of an accessible population that is selected to participate in the study. The caregivers identified by HD patients were invited to participate in this study. A total of 170 HD patients indicated that they do have caregivers with inclusive criteria. The caregivers completed the F-COPES instrument while either by waiting for the HD patient at the unit or at home. An average of 33 patients per day, excluding Sundays was haemodialysed by these four private health clinics.

3.3.4 Sampling technique

Polit and Beck (2017:356) define sampling as the process of selecting cases to represent an entire population, to permit inferences about the population. Sampling includes the segment of the population selected for the research. It is a subset of the population (Bryman & Bell 2014:383). In addition, Stommel and Wills (2004:300) also indicate that the sample selection occurs from the potential subjects or units from the population selected. The non-probability consecutive sampling method was used to select a sample for this study. According to Polit and Beck (2017:222), non-probability sampling is where

a researcher selects persons by non-random methods. The sampling frame of this study was F-COPES questionnaires completed by caregivers of patients receiving HD.

The sample size was determined using the Raosoft sample size calculator (Raosoft 2017). A total of 170 patients with caregivers, received HD within these four private health clinics in Mpumalanga. The all-inclusive sample included n=170 patients received HD in four private dialysis units. The acceptable margin of error was 5%, and the confidence level used was 95%. As mentioned above, the population size was 170 and distribution set at 50%.

The sample size n and margin of error E were given by:

$$n = \frac{Z^2 \cdot r(100-r)}{E^2} \cdot N$$
$$E = \sqrt{\frac{(N-n) \cdot r}{n(N-1)}}$$

where N is the population size, r is the fraction of responses that were interested in, and Z(c/100) was the critical value for the confidence level c.

The calculations recommended sample size of at least 119 participants with n=170.

3.3.4.1 Recruitment strategy

Information regarding the study was presented through a poster; a week before the conduction of actual data collection was implemented. All primary caregivers, as indicated by patients receiving HD, were recruited for two weeks to ensure the specified sample size of 119 participants, according to the Raosoft calculations, were selected. A detailed information leaflet was handed to the HD patient to convey to the caregiver two weeks before the data collection, to ensure clarity regarding the study was conducted.

3.3.4.2 Inclusion criteria

Gray et al (2017:680) state that inclusion sampling criterion is the requirements identified by the researcher that needs to be present for the element or subject to be included in the sample. In this study, the inclusion criterion included that the caregiver needed to be older than 18 years of age, and was proficient in English. The caregiver needed to be the

primary caregiver, as indicated by the HD patient. The respondent could be either male or female. As indicated in Table 3.1, a total of 170 caregivers were inclusive in regards to this study.

3.3.4.3 Exclusion criteria

Exclusion sampling criteria were seen as the characteristics that can cause a person to be eliminated or excluded from the target population (Gray et al 2017:331). Primary caregiver younger than 18 years of age did not form part of this study. Any person that was older than 18 years of age and did not understand English was excluded from this study.

3.4 DATA COLLECTION

Data collection approach, method, instrument and process, will be discussed in this section. Data collection is the gathering of the necessary information needed to address a research problem and answer the research questions presented (Polit & Beck 2017:1003). Grove et al (2017:55) stated that the process of data collection begins when the first data is collected and ends when the last data is obtained. The researcher decided to utilise a quantifiable approach, through collecting data and transform the information to be analysed statistically.

3.4.1 Data collection approach and method

Data for this study were collected from the completed F-COPES instrument by caregivers of haemodialysed patients within the four private health clinics in Mpumalanga from February 2019 until May 2019. The data for this study were collected exclusively within the stated setting, as mentioned in section 3.3.1 above.

3.4.2 Data collection instrument

Data include segments of information or facts collected during a research study (Gray et al 2017:675). A questionnaire is a document used to collect self-report information through self-administration of questions for which participants are asked to make choices among set response categories. The management of the instrument is standardised as

far as possible, including a predetermined series of asking the questions (Polit & Beck 2018:499). The F-COPES questionnaire was utilised as the data collection instrument. The following passage 3.4.3 will discuss the specific characteristics of this collection instrument.

3.4.3 Characteristics of the data collection instrument

Collection method used was the F-COPES instrument developed by McCubbin et al (1981). This instrument was created to identify problem-solving and behavioural strategies utilised by families in difficult or problematic situations (McCubbin et al 1996:455). This scale has also been used in South Africa by Jacobs (2017) studying the coping strategies of parents with physically disabled children at disabled schools and by Wissing (2013) researching the well-being research in South Africa. In addition to this, Mphuthi (2010) made use of this instrument to analyse the coping behaviour of haemodialysed patients' families.

The instrument draws upon the coping dimensions of the Resiliency Model of Family Adjustment and Adaptation. Factors integrated are the following: pile-up, family resources, and perception. The instrument consists of 30 coping behaviour items, which focus on the two levels of interaction outlined in the Resiliency Model. The first level includes the person to the family system or the methods a family internally coping with problems and difficulties between the members. The second level includes the family to the social environment, or how the family is coping externally with demands or problems that emerge outside its boundaries, but affect the family unit and its members (McCubbin et al 1996).

This instrument was answered in a Likert-type style. Likert scale is an instrument designed to determine the opinion or attitude of the participant. It contains several declarative statements with a scale another each statement (Gray et al 2017:682). The F-COPES instrument indicates the degree to which a person agrees or disagrees with each statement (1 = strongly disagree and 5 = strongly agree). High scores indicate that caregivers have increased coping strategies. It is likely those caregivers having more coping strategies are successful in adapting to stressful situations. Low scores indicate a shortage of general coping strategies within the household. Households that do not have enough resources will likely experience problems when trying to adapt to stressful

situations. The five factors included in the F-COPES instrument as sub-scales included acquiring social support, reframing, seeking spiritual support, mobilising family to acquire and accept help, and passive appraisal. These subscales were defined by Mphuthi (2010:45) citing Tway, Connolly and Novak (2007:251) as follows.

3.4.3.1 *Acquiring social support*

This subscale included nine items and measured the participant's capability to actively obtain support from relatives, neighbours, friends, and extended family members. Williamson and O'Hara (2017:1372) assert that social support consists of a range of assisting behaviours performed by one person for the advantage of another. These behaviours might include giving advice, empathising, assisting with practical tasks, and expressing encouragement. They further stated that support is essential since it will ensure an increase in a positive mood.

3.4.3.2 *Reframing*

This subscale included eight items that focused on the participant's capability to re-evaluate demanding events to make them more manageable — in other words, reframing the existing problem. Reframing refers to the family's ability to redefine stressful events to make them more manageable. Canon (2017:179) highlights that reframing is the capability to recognise and drastically change assumptions or perceptions. However, it is a powerful skill, but it can be hard to learn and apply and repositioning something in their mind to see something else. The stressful events may include chronic kidney disease and HD of the patient.

3.4.3.3 *Seeking spiritual support*

This subscale included four items that looked at the participants' capability to obtain spiritual support. These items include seeking advice from a minister, attending and participating in church services, and having faith in God. According to Egan, Wood, MacLeod and Walker (2015:1179), hope is a spiritual source of strength or a goal of concern for patients and their families facing a life-limiting disease such as chronic kidney disease.

3.4.3.4 Mobilising family to acquire and accept help

This subscale measured four items and assessed the participants' capability to seek out community resources and allow help from other people. These items include seeking information and advice from other families, support groups, their family doctor and counsellors. Da Silva, De Souza Neto, De Oliveira, Da Silva, Rocha and Holanda (2016:147) confirm that family support to the patient receiving HD, is an essential part for the psychological aspect of adjustment to the traumatic proceedings brought by the HD treatment. That is why it is of the essence to ensure support to the caregivers.

3.4.3.5 Passive appraisal

This subscale included four items and focused on the use of cognitive distraction. This coping method is an emotion-focused and a mental process. It may prevent concentration or restrict attention by distraction through accepting problematic issues. These items include watching television, reading, relying on luck, feeling helpless about the problem, and believing that time will solve the problem. The caregivers can reduce their reaction by using passive appraisal activities (Eaton et al 2011).

The advantages of questionnaires are that they are cheaper and quicker to administer. A questionnaire is more convenient for the respondent. Disadvantages of the self-completion questionnaire might include no presence of somebody to assist with answering the questionnaires. No additional questions can be asked to the respondent other than on the specific questionnaire. The researcher can never be sure who answered the questionnaire. Inclusive criteria need to include people with competent literacy. It is also a significant risk that data go missing and it might consist of a lower response rate (Bryman & Bell 2014:192).

3.4.4 The utilisation of data collection instrument

This data collection instrument was used in the gathering of specific information regarding the coping strategies of caregivers of patients receiving HD. Gray et al (2017:407) state that a questionnaire is a written report that is designed to obtain specific information from the participant. A demographic data survey was included with the F-COPES instrument. This demographic data survey included age, ethnicity, gender, relationship to HD patient

and time patient started dialysis. The F-COPES instrument was used by the researcher to record productive problem-solving attitudes and behaviour, which families develop to respond to problems or difficulties (Corcoran & Fischer 2013:285).

3.4.5 Training data collectors

The researcher visited four private health clinics in Mpumalanga as indicated in Table 3.2 below and gave intensive training to the unit managers regarding the distribution, collection and obtaining of the informed consent, demographic data questionnaire and the F-COPES instrument to participants with inclusion criteria.

Table 3.2 Training given to unit managers per unit

Health clinic	A	B	C	D
Training date	30 Jan 2019	4 Feb 2019	1 Feb 2019	8 Feb 2019

(Viljoen 2019)

3.4.6 The validity of the study

Validity refers to the ability of an instrument to measure the variable that it is intended to measure (Brink et al 2014:218). Validity refers to the truthfulness of a study. Validity supplies a significant foundation for making decisions about which findings are sufficiently valid to add to the evidence base for patient care (Burns & Grove 2017:221).

According to Polit and Beck (2017:233), external validity concerns whether inferences about observed relations will hold over variations in persons, settings, time, or measures of the outcome. External validity is regarding the generalisability of causal inference, and this is a critical concern for research that aims to yield evidence for evidence-based nursing practice. In the context of this study, validity was determined through the caregivers completing the F-COPES instrument. In the context of content validity, five separate studies were conducted (Tway et al 2007; Greeff & Holtzkamp 2007; Greeff & Fillis 2009; Mphuthi 2010; Corcoran & Fisher 2013) and conclude that the content validity was established based on judgment. All these researchers made use of the F-COPES questionnaire. Tway et al (2007) studied the coping strategies used by parents of children

with autism. Greeff and Holtzkamp (2007) also made use of this questionnaire and researched the prevalence of resilience in migrant families. Greeff and Fillis (2009) studied the resiliency in poor single-parent families. The researcher Mphuthi (2010) concentrated on the coping behaviours of family members of patients receiving haemodialysis in Gauteng. The current study concentrated on the coping strategies used by caregivers of patients receiving haemodialysis in Mpumalanga. Lastly, Corcoran and Fisher (2013:284) stated that the F-COPES has a superior factorial validity as well a concurrent validity, which link with a number of other family measures. The researchers ensured that the F-COPES instrument answered all questions of concern regarding coping strategies of caregivers.

The F-COPES instrument is straightforward and easy to administer and score. A manual and norms are available, and copyright to use the scale was granted. The average time to complete the instrument was estimated to be between 10-15 minutes. As stated in section 3.4, a demographic sheet (Appendix 1) collecting data on the context and population profile was also attached to the F-COPES instrument. Completion instruction on the instrument was provided to the participants on the information sheet (Appendix 3) that was attached. Chapter four and presents and discusses the findings of the study.

3.4.7 Reliability of the study

Reliability refers to the consistency and accuracy of the information gathered to measure a concept (Polit & Beck 2017:231). The following are three prominent factors involved when considering whether a measure is reliable. The F-COPES has an excellent internal consistency with a Cronbach's alpha of .86. Individual subscales alphas ranged from .63 to .83. A four-week test-retest was done with a correlation of .81 on the F-COPES instrument, and the individual subscales correlation ranged from .61 to .95 (Corcoran & Fisher 2013:284).

Internal reliability is believed to be the indicators that make up the scale or index constant. Seen in this context, do participants' scores on any one indicator relate to their scores on the other indicators. Cronbach's coefficient alphas were used to determine reliability in a research study by Greeff and Fillis (2009) and Greeff and Holtzkamp (2007) with a score of 0.77 and 0.86. Internationally, Tway et al (2007) score was 0.86 and 0.81, Eaton et al (2011) score ranging from 0.76–0.85, except for passive appraisal at 0.41. Extensive

training was conducted to assist the unit managers of the private clinics in Mpumalanga with the distribution and answering of the demographic data and F-COPES instruments. Training sessions ensured that the data distribution, collection, and handling were dealt with similarly in each private health clinic.

3.4.8 Data collection process

Figure 3.1 below illustrates step by step the process of data collection the researcher used in this study.

According to the Raosoft sample size calculations discussed in section 3.3.3, a total of 119 questionnaires should be analysed to ensure validity and reliability for this study. As seen in Table 3.3 below a total of 128 questionnaires were received back by the researcher.

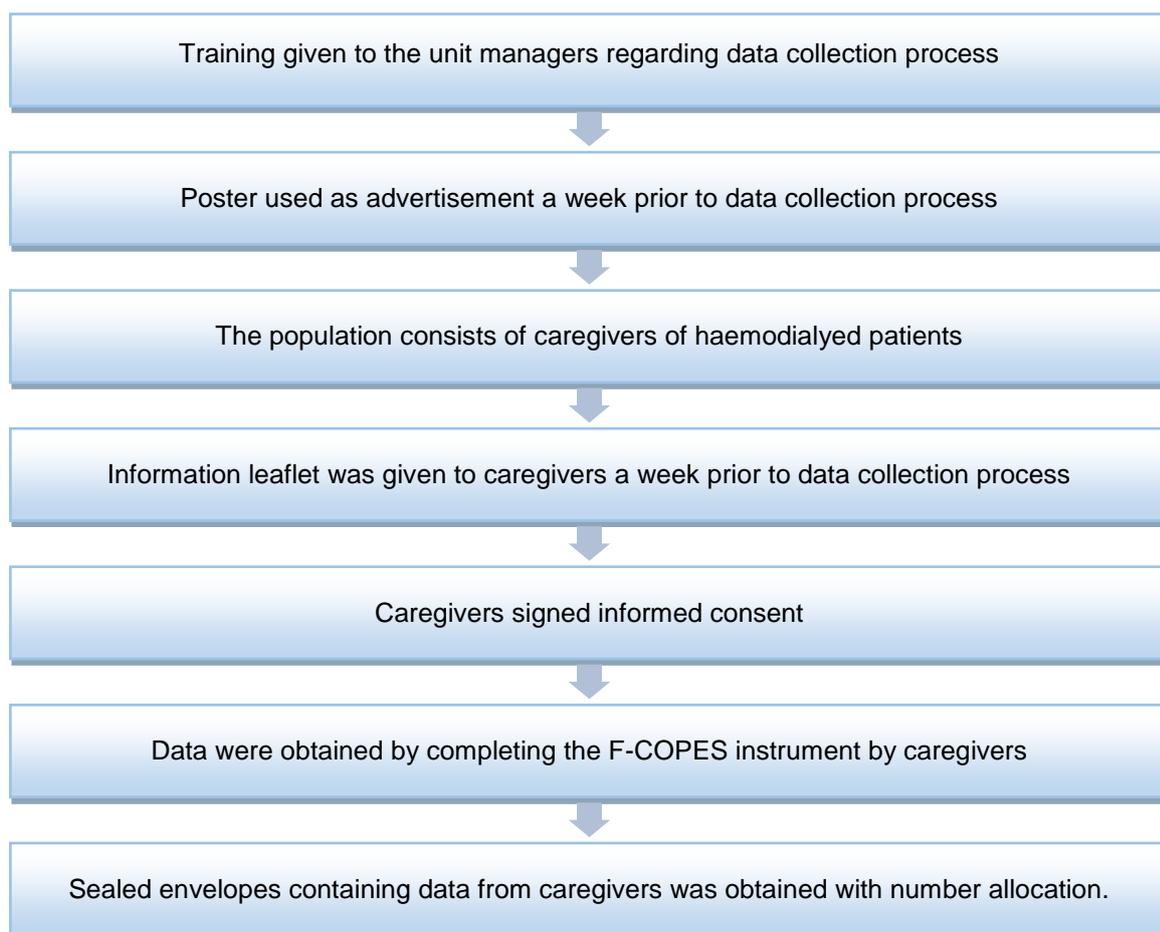


Figure 3.1 Data collection process

(Viljoen 2019)

Figure 3.1 above illustrates the data collection process followed in this study. Firstly, extensive training was given to the data collectors regarding the data collection process, as well as all ethical considerations. Placement of the poster in the entrance wall, two weeks before commencement of the study was utilised as activation of the population inquisitiveness regarding the research. Information concerning the research was shared with inclusive HD patients. A week before the commenced research, information leaflets were distributed to the caregivers to ensure that they do have sufficient knowledge regarding the research. Furthermore, an informed consent form needed to be signed by the caregivers before data was obtained through completing the F-COPES questionnaire. After completion of data collection, the individual information was placed into a sealed envelope and collected by the researcher.

3.5 DATA ANALYSIS

Data analysis in quantitative studies is defined as the reduction, organisation and statistical testing of information gathered during the data collection process (Grove et al 2017:56). Descriptive statistics summarise the demographic data analysis. Descriptive statistics were used to describe and summarise data (Brink et al 2014:180). The researcher used quantitative data collected from sealed envelopes collected from private health clinics.

The researcher used the Statistical Package for Social Science (SPSS version 24) for data analysis of the quantitative data: F-COPES instrument. The researcher interpreted the descriptive statistics derived from the data.

Firstly, data analysis entailed coding of data, populating it in SPSS version 24 on the computer, and examining respondents' demographic characteristics. Secondly, the analysis included transforming the variables into new variables that represented the Likert scale. The researcher extracted data from the SPSS version 24 for analysis, and a trend identification created. The researcher analyses the F-COPES instrument under the five subscales for comparison. Graphs were generated regarding the five subscales to have a visual overview of the results. Clarified interpretation and analysis were made according to these findings from the SPSS system. Chapter Four discussed the findings of data analysis are discussed in Chapter 4.

The researcher used the data collected to determine the standard deviation, mean as well as frequency. This numerical data was then utilised by the researcher to determine the coping strategies of caregivers of patients receiving HD in these four private clinics in Mpumalanga.

3.6 ETHICAL CONSIDERATIONS

Polit and Beck (2017:1007) posit that ethics can be seen as a structure of moral values that is concerned with the level to which research procedures, adhere to professional, legal and social obligations to study participants. Ethics includes a set of guidelines, principles, and codes, which in the case of research are utilised to guide the behaviour of the researcher when conducting research (Merrill & West 2009:168). Ethical principles include autonomy, justice, benevolence, and non-maleficence. The principle of autonomy is seen as the right to self-determination (Burns & Grove 2017:162).

The Ethical Committee of Unisa gave ethical approval before the study was conducted (Appendix 4). In conclusion, with this, the private health clinical research department in Germany (Annexure 5) granted consent. Approval was given to conduct the study within their private health clinics in Mpumalanga. Informed consent was obtained from all participants who completed the F-COPES instrument (Annexure 3). The raw data collected did not include any information by which participants could be identified. The ethical position compels the researcher to actively strive to do well and confer a benefit concerning the study subjects or participants. Its ethical counterpart is non-maleficence, which compels the researcher to actively strive to not harm research participants (Burns and Grove 2017:672).

3.6.1 Respect

Participants were informed of their right to withdraw at any time during the process and that they participate voluntarily. Participants received an information letter regarding the process and anonymity was clearly stated. In addition, participants were encouraged to ask questions relating to the research study to clarify any misunderstanding. There were no risks anticipated in the study and the participants felt free to participate. The participants' autonomy was respected in that no coercion was used to obtain participation and information.

3.6.2 Beneficence

The participants have the right to be protected from discomfort and harm. This ethical principle is known as beneficence (Burns & Grove 2017:173). Beneficence is seen as the duty of the researcher to do no harm to the participant and to ensure benefits to the participant (Polit & Beck 2018:200). The researcher ensured that the participants were not harmed. Professional, knowledgeable persons who ensured no harm is inflicted to the participants conducted the research. Participants completed the F-COPES instrument with the assistance of the professional unit managers of the private health clinics in Mpumalanga. The information received from the primary caregivers of HD patients regarding the coping strategies utilised was used to make recommendations after the completion of the study.

3.6.3 Justice

The principle of justice includes participants' right to fair treatment and their right to privacy (Polit & Beck 2017:204). Stommel and Wills (2004:382) concur with Polit and Beck (2017:204) in the sense of privacy and fair treatment in the context of research participation. Concerning this study, all participants were treated in precisely the same way. Patients receiving HD were recruited to participate in the study. The patient indicated who their primary caregiver was. Patients received an information leaflet. Participants answered precisely the same demographic data sheet and F-COPES instrument.

Participants' anonymity was protected. No names were used on questionnaires, but only allocated numbers per participant. After completion of documentation, it was sealed in an envelope and given to the unit manager. The researcher collected the completed documentation end of May 2019. Sealed documentation was placed in a box, which was also sealed. On completion of the research data collection, the researcher allocated alphabetic letters (A–D) to the sealed boxes per private health clinic. Boxes opened one at a time. To ensure no confusion with the different private health clinic data, each envelope was opened, and numbers as per box and documentation were allocated. Participant A1 until Box D (the last number allocated) the last participant was dealt with similarly.

3.6.4 Informed consent

Participants have a right to decide if they want to participate in the study or not. Participants signed an informed consent form, where they agree in the participation in the study. In addition, participants had the right to ask questions, refuse to give information, and withdraw from the study at any time (Polit & Beck 2017:202). Information regarding the study was given before participation. Participants had a choice if they want to participate or not by signing informed consent. This choice was respected. The participants were not harmed, discomforted, stigmatised or discriminated against if they did not agree to participate in the study (Appendix 3).

3.6.4.1 *The institution*

The chief marketing manager and medical manager nephrology of the private health clinic reviewed ethical principles regarding their company and patients before they signed the approval to conduct the study within their private health clinics in Mpumalanga. Communication regarding the approval was sent from the managing director, head of dialysis business unit, South Africa to the researcher. Anonymity was ensured regarding the private health clinic (Appendix 5).

3.6.4.2 *The scientific integrity of the research*

The researcher was honest and precise regarding the gathering of information and the conclusion regarding the research done. Feedback regarding research findings was given to the institution and private health clinics utilised in the research study. Grove et al (2017:184) state that the researcher is responsible for maintaining honest conduct, reporting and publication of studies.

3.7 SUMMARY

In this chapter, the research design and methodology of the study has been described, followed by the research methodology. The research methodology was discussed under various subheadings, which included the setting, population, sample, and sampling. The data collection process and analysis of collected data were explained. The F-COPES instrument used for data collection was explained under five subheadings. Relevant

ethical considerations for the participant, patient and institution were highlighted and how it was dealt with for this study was examined. The validity and reliability relevant to the instrument been used were also explained. The following chapter will present a discussion on the data collection, analysis thereof and the presentation of the findings of this study.

Results for demographic characteristics are presented in the graph per bar charts and followed by the different coping strategies, which were utilised by the respondents.

CHAPTER 4

DATA COLLECTION, ANALYSIS, AND PRESENTATION OF THE RESEARCH FINDINGS

4.1 INTRODUCTION

The previous chapter described the research design and methodology that was followed to conduct the research. The methodology that was discussed included: the population, setting, and sampling utilised for this research. The data collection process and the Family Crisis Oriented Personal Scale (F-COPES) questionnaire (McCubbin et al 1981) that was used were also conferred to in Chapter 3. Furthermore, was the plan to analyse the data explained. In addition to this, ethical considerations, validity, and reliability were discussed at large. This chapter focuses on the data collection, analysis of the data and the presentation of the research findings.

4.2 CONTEXT AND PARTICIPANT CHARACTERISTICS

As explained in Chapter 4, paragraph 3.3.2, the target population was taken from the total inclusive caregivers of patients receiving HD in four private health clinics in Mpumalanga. One hundred and seventy (170) questionnaires were distributed to four private health clinics in Mpumalanga.

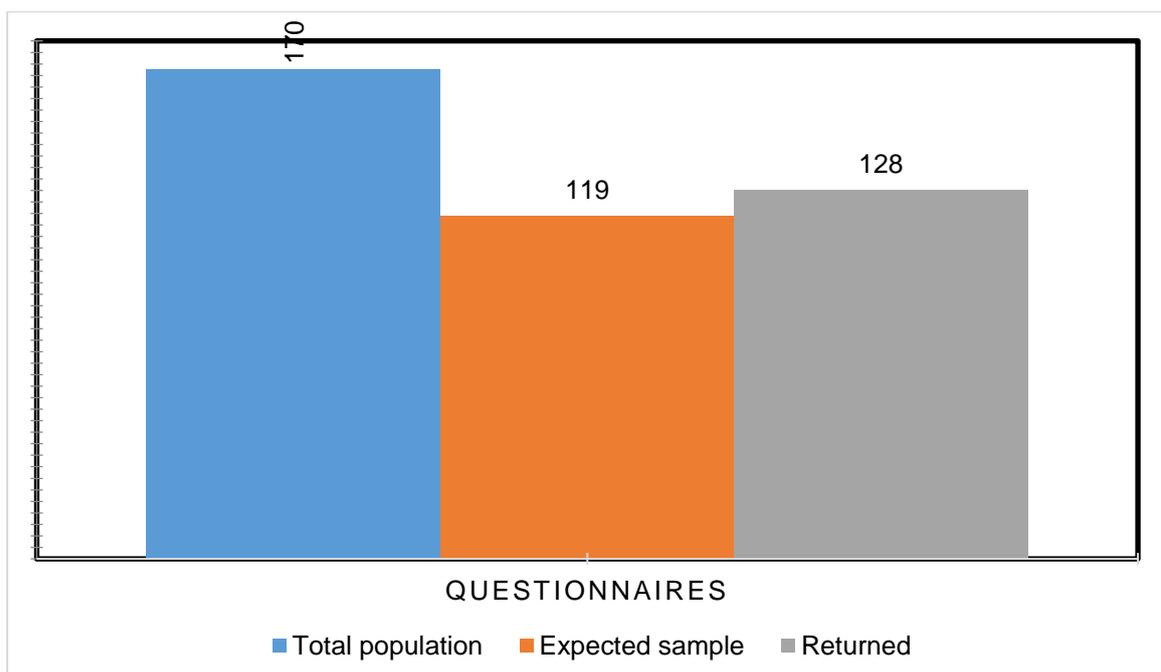


Figure 4.1 Response of participants

(Viljoen 2019)

As per Figure 4.1 above the researcher obtained n=128 (75%) completed questionnaires from the total number of participants n=170 (100%). The recommended sample size is n=119 (70.0%).

To describe the characteristics of the context and participants of the study, a demographic sheet was developed (Appendix 1) that addressed the following variables: age, gender, race, size of the family, relationship to the patient and years patient is on dialysis. Presented in the following paragraph is a discussion of variables.

4.2.1 Renal dialysis unit demographics

As stated in Chapter 3, four private health clinics within Mpumalanga were selected as the research setting for the study. A visual presentation of the percentage of responses of the participants per unit is provided in Figure 4.2 below.

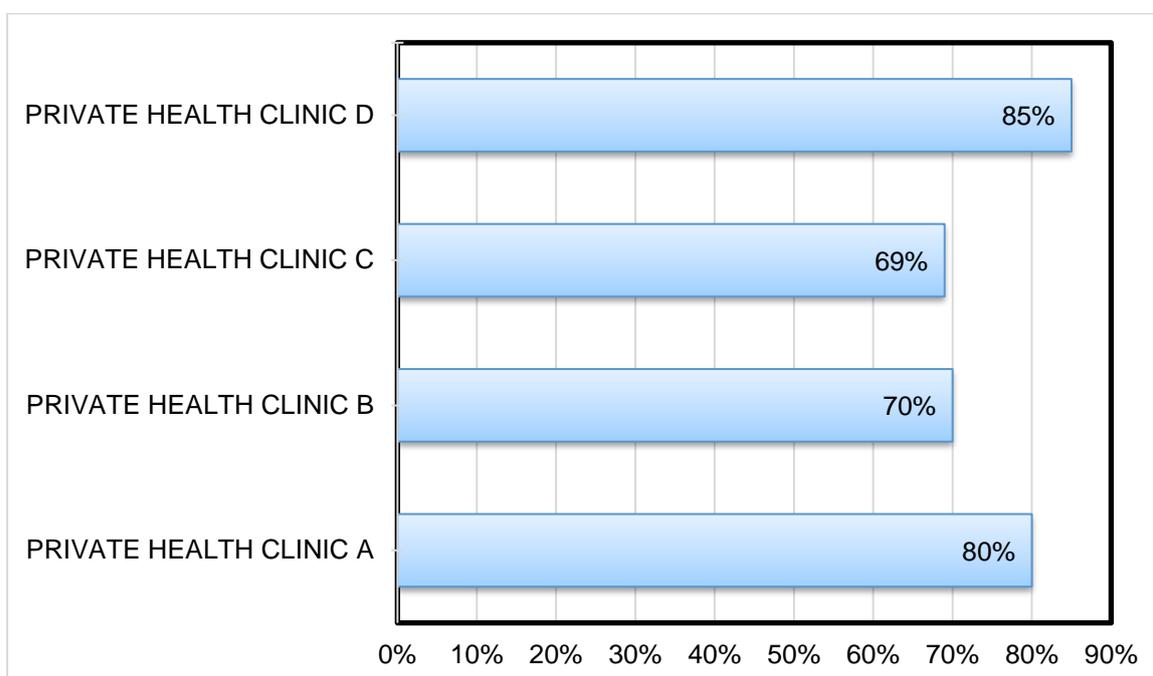


Figure 4.2 Participants response rate percentage per unit (N=128)

(Viljoen 2019)

Private health clinic C shows the lowest response rate percentage. However, Figure 4.3 below demonstrates that this specific health clinic had the highest number of response rate questionnaires received back. The cause for this result is owing to the clinics' high number of participants n=70. Therefore, the data collection process was the most challenging in this clinic.

Table 4.1 Total questionnaires per unit distributed and received back

Dialysis unit	A	B	C	D	Total
Questionnaires distributed	46	20	70	34	170
Questionnaires received back	37	14	48	29	128
Target	33	14	49	24	119
Percentage received back	80%	70%	69%	85%	75%

(Viljoen 2019)

Table 4.1 represents the response rate according to the number of participants per unit, as well as the percentage. Private health clinic D response rate was the highest with 85% and a total of n=34 participants. The data collector of this clinic was an energetic, enthusiastic person and wholly committed to the research study from the beginning.

4.2.2 Participant demographics

Demographic sheet, as stated in paragraph 4.2, was developed and utilised to ensure that the characteristics of the participants of the study were captured. These variables included age, gender, race, size of the family, and relationship to the patient. A total of 128 completed questionnaires (n=128) was included in the analysis for this segment of the study.

A total of n=126 completed the age characteristic. Persons with the age group 31-40 years and 41-50 years dominated the participants with the percentage between 28% and 29% alternatively. Following, this age group was 51 years and older, with only 3% less. With the lowest percentage at 18%, this represents the younger generation of 18-30 years. Figure 4.3 presents this information.

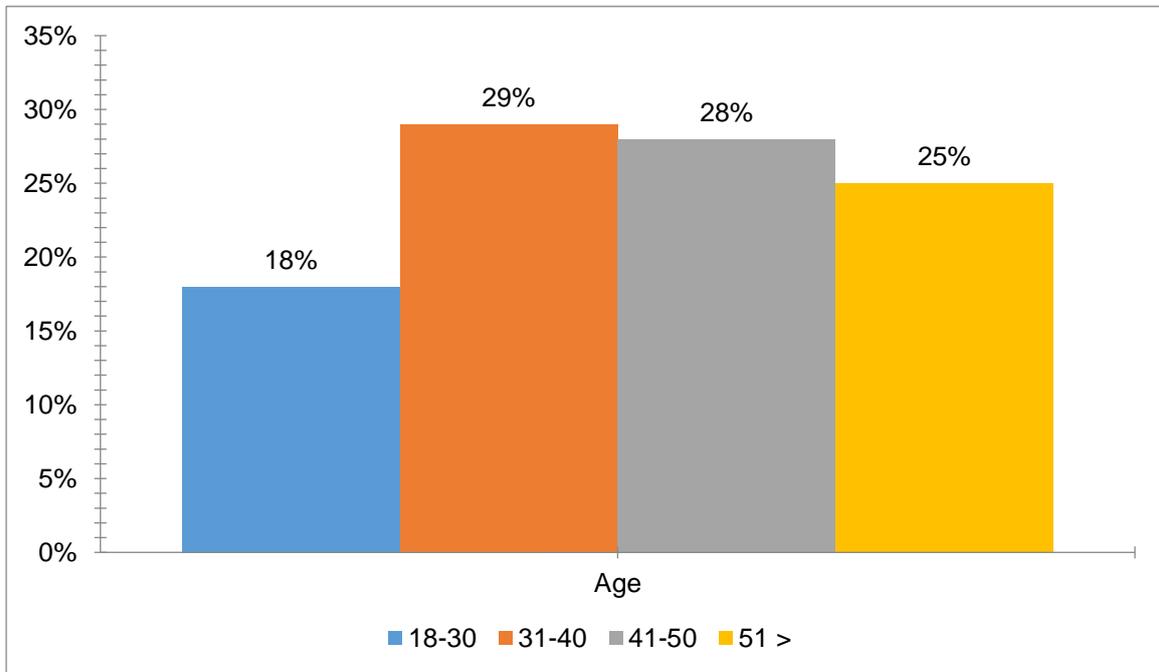


Figure 4.3 Demographics: Age of participants
(Viljoen 2019)

Figure 4.4 below presents the gender percentage participants. As illustrated, 55% of caregivers of patients receiving HD are women, and 45% are men. A total of n=127 completed this part of the demographic characteristics.

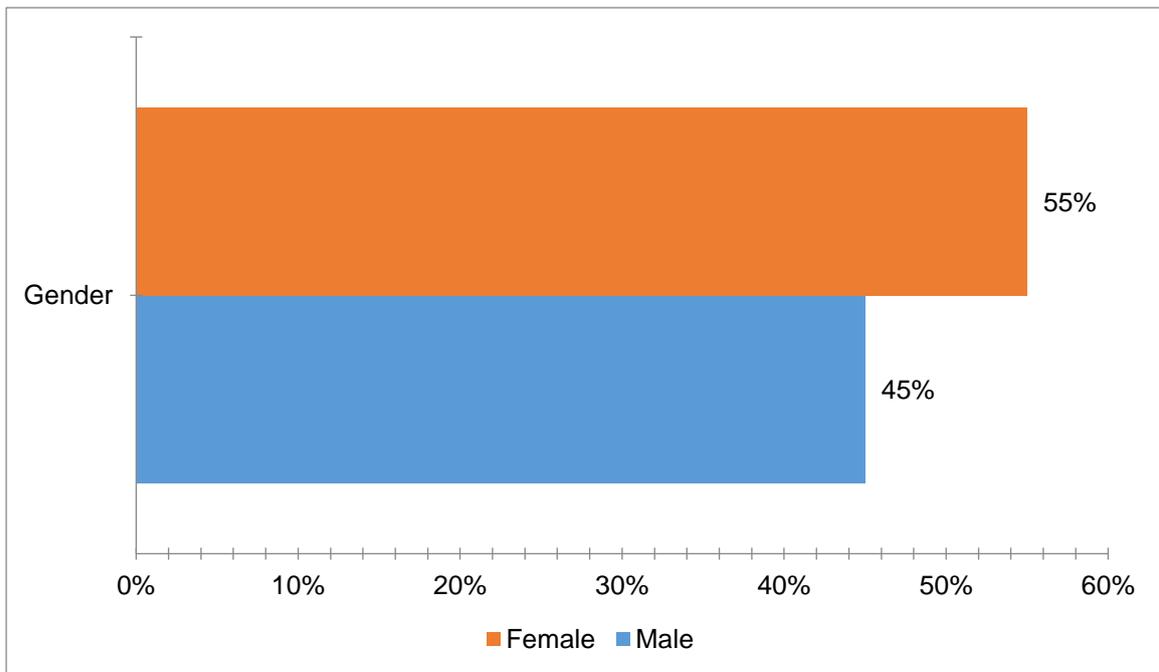


Figure 4.4 Demographic: Gender of participants
(Viljoen 2019)

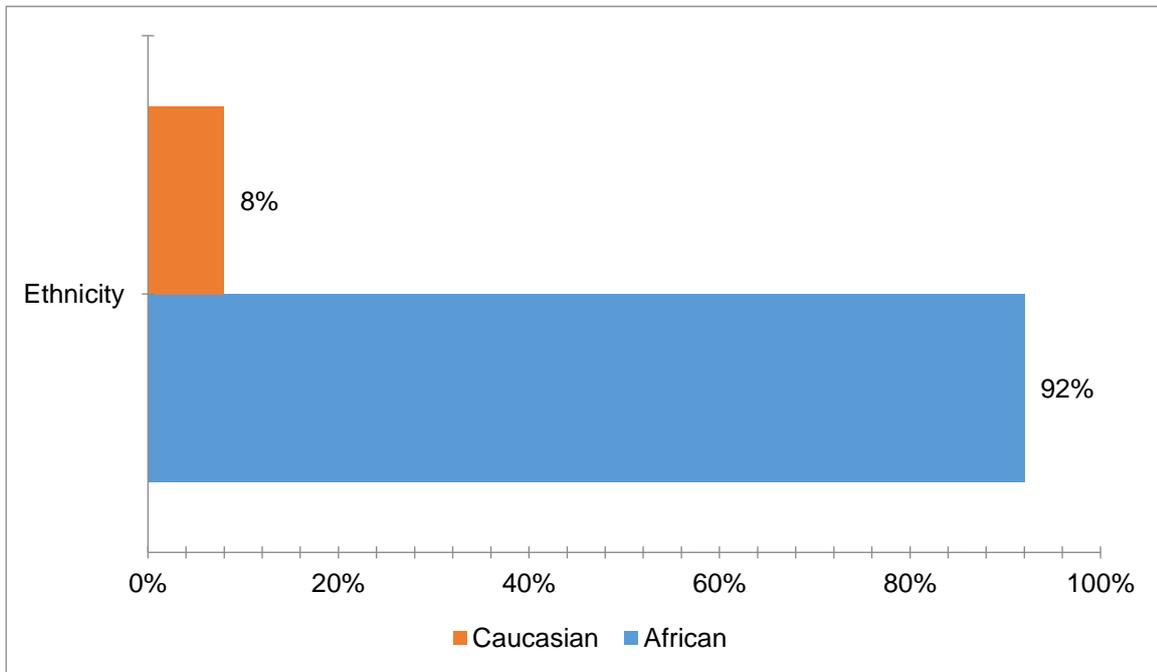


Figure 4.5 Demographics: Ethnicity of participants

Figure 4.5 above illustrates n=128 participants' ethnicity. An overwhelming majority (92%) of participants are Africans, with the Caucasian participants at 8%. However, no participants of Indian or Asian descent completed the questionnaire.

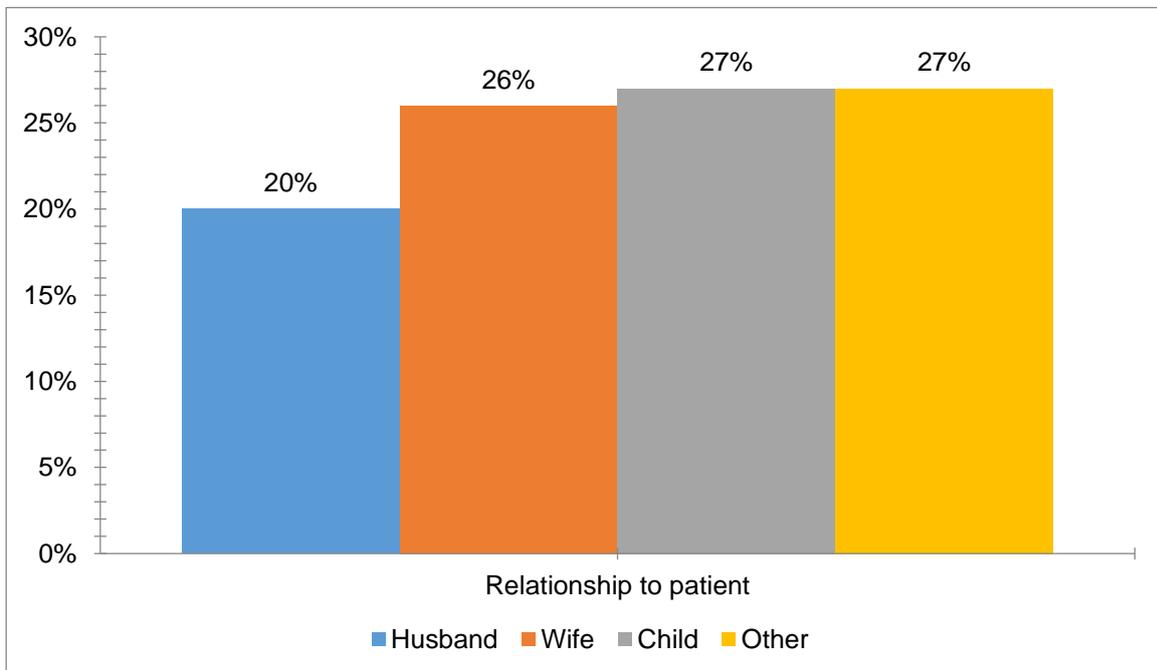


Figure 4.6 Demographics: Participants relationship to patient

Figure 4.6 shows the relationship of the participant to the patient n=128. A definite 27% of caregivers are the children of the haemodialysed patient. Similarly, the category other,

which represents girlfriend, grandmother, niece, cousin, or friends, are included. As seen in the bar chart mentioned above, a higher percentage of wives are caring for their husbands than husbands for their wives. This might be because the men are still seen as the primary breadwinner of the house.

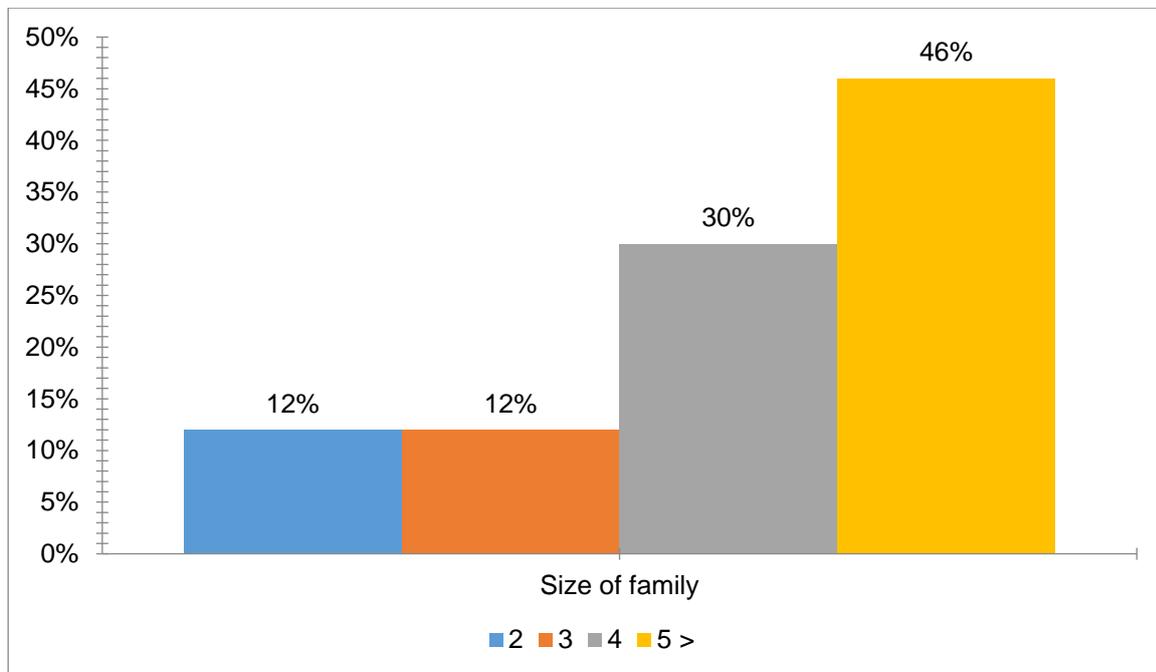


Figure 4.7 Demographics: Participants family size

Family sizes ranged between two and more than five members per family, as presented in Figure 4.7, n=128. Most families consist of five people or more, with the highest percentage at 47%. The majority of caregivers are African, as presented in Figure 4.3 above. This might be the result of the African culture and they believe in Ubuntu. Ubuntu is the foundation of the morals that connects all Africans. Besides, this forms a crucial part of caring for another. Muller, Bezuidenhout and Jooste (2012:82) describe Ubuntu as a metaphor that explains the importance of group unity, on survival matters, that is vital to the survival of African communities.

4.3 DATA COLLECTION APPROACH

Grove et al (2017:55) define data collection as the process of gathering and measuring data on variables of interest, in an established, systematic fashion that enables a researcher to test a hypothesis and evaluate outcomes; the process of data collection

starts from when the first data is obtained and ends when the last data is obtained. As outlined in Chapter Three, the F-COPES questionnaire (McCubbin et al 1981) was used to collect data to address the first objective of the study was to explore and describe the coping strategies of caregivers of a haemodialysed patient (refer to Appendix 4). The details of the F-COPES questionnaire instrument were discussed in Chapter 3, paragraphs 3.4.2. Furthermore, a brief overview of the instrument and data collection of the study is provided in the paragraphs that follow.

4.3.1 Data collection instrument

The F-COPES instrument is a widely used instrument to measure coping strategies among caregivers. This questionnaire is a self-administered assessment containing 30 items that explain a variety of coping behaviours that caregivers may apply in situations of stress or crisis. The subscales of the instrument measure the perception of stressors, the use of family resources, and the coping strategies used by families.

As stated in Chapter 3, the questionnaire consists of five subscales, namely, acquiring social support, reframing, seeking spiritual support, mobilising family to acquire and accept help, and passive appraisal as seen in Figure 4.8 below.

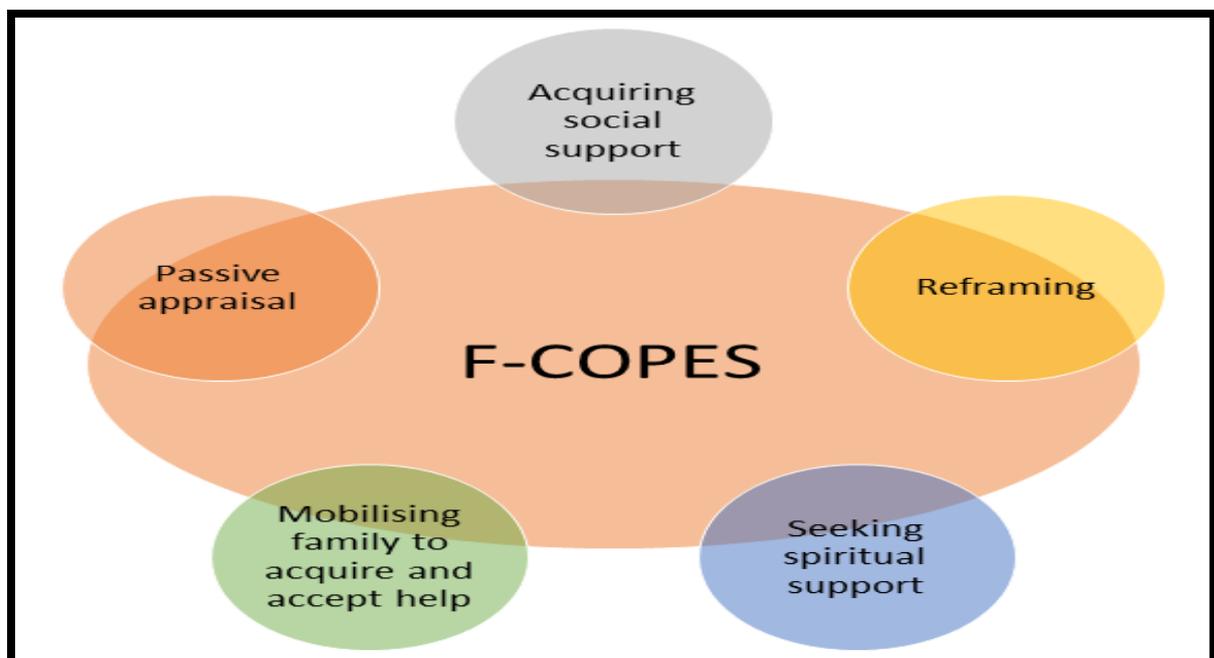


Figure 4.8 F-COPES subscales

(Viljoen 2019)

4.3.1.1 *Acquiring social support*

This subscale included nine items and measured the participant's capability to actively obtain support from relatives, neighbours, friends, and extended family members.

4.3.1.2 *Reframing*

This subscale included eight items that focused on the participant's capability to re-evaluate demanding events to make them more manageable — in other words, reframing the existing problem.

4.3.1.3 *Seeking spiritual support*

This subscale included four items that looked at the participants' capability to obtain spiritual support. It includes seeking advice from a minister, attending and participating in church services, and having faith in God.

4.3.1.4 *Mobilising family to acquire and accept help*

This subscale measured four items and assessed the participants' capability to seek out community resources and allow help from other people. It includes seeking information and advice from other families, support groups, their family doctor, and counsellors.

4.3.1.5 *Passive appraisal*

This subscale included four items and focused on evaluating difficult situations by way of passive or inactive actions such as avoidance. It includes watching television, relying on luck, feeling helpless about the problem, and believing that time will solve the problem.

According to Mphuthi's (2010:55) findings, the subscales of the instrument can further be divided into two dimensions, namely, internal family coping strategies and external family coping strategies. Included in this measurement were the action and the palliative modes of coping.

4.3.1.6 *Internal family coping strategies*

Internal family coping strategies refer to the confidence of the family in active problem-solving methods as well as more passive methods, which include the following subscales (Mphuthi 2010:55):

- **Reframing**

When the family redefines the problem regarding the meaning it has for them, which can either be positive, negative or neutral.

- **Passive appraisal**

When the family tends to do nothing during the crises, but hopes that the situation will fade away.

4.3.1.7 External family coping strategies

According to Mphuthi (2010:56), external family coping strategies refer to the use of resources such as the church, support of the external family, friends, and neighbours as well as available community resources.

This coping behaviour includes the following subscales:

- **Acquiring social support:** Happens when the family obtains support outside the family, for example, from friends and/ neighbours.
- **Seeking spiritual support:** When faced with the crisis, the family seeks spiritual support from church and members.
- **Mobilising family to acquire and accept help:** When the family is mobilised to obtain and accept help, which can be professional or community-based.

4.3.2 Procedure for data collection

The unit managers of the private health clinic units within Mpumalanga were provided with guidance in distributing the questionnaires, as discussed in paragraph 3.4.5 in Chapter Three. These unit managers assist the participants with the completion of the questionnaires and their collection.

The F-COPES instrument designed by McCubbin et al (1981) was utilised as a data collection method. These questionnaires contained guidelines for the participants on how they should respond to the questions. The F-COPES instrument was completed by the caregivers of patients receiving HD in four private health clinics within Mpumalanga over a period starting February 2019 until May 2019.

The HD patient identified his or her primary caregiver, and the unit manager approached the caregiver. The unit manager of the specific private health clinic gave an explanation regarding the study to the patient of the caregiver meeting the inclusion criteria for participation in the study. A detailed leaflet regarding the study was given to the participant via the patient. The leaflet provided the participant with information to ensure clarity regarding the study. Furthermore, appointments were made by the unit manager through the patient to the primary caregivers to attend the research sessions at the private health clinic. Each participant received an informed consent form that was signed before completion of the demographic data questionnaire, and the F-COPES questionnaire instrument. After completion of the documentation, an envelope that was coded with the specific centre code and an allocated participant number was given to the participant to insert all the completed documentation. The envelope was then sealed by the participant and handed to the unit manager to be placed in the sealable box. The researcher collected the box at the end of the data collection process.

Data collection occurred over two weeks and questionnaires collected from the unit managers' end of February 2019 via courier. At the end of February 2019, the researcher received no more than 51 completed F-COPES questionnaires back. The researcher found that the sample size was not met and decided to consult with the unit managers.

The consultation with the unit managers of the private health clinics revealed that it is difficult for the caregivers to visit the private health clinics as some of them are working, or care for the household. After reconsidering the data collection approach, it was decided to extend the data collection process and to change the data collection approach owing to the low response rate of participants. The researcher concluded that the questionnaires could be sent with the patient to be given to the caregiver at home, to be completed and send back via the patient to the private health clinic.

It was decided to provide an envelope with informed consent, demographic data sheet and the F-COPES questionnaire to the participants to complete. The completed documentation was returned in a sealed envelope to the unit managers. Included in the documentation were the researchers' contact details for any queries to be answered by the researcher if it was necessary. The completed instruments were collected at the units either by the researcher or courier services from the unit managers of the private health clinics during May 2019.

A pilot study was not conducted as the instrument had undergone rigorous testing and retesting that showed it to be valid and reliable. Separate studies conducted in the United States and in South Africa (Mphuthi 2010) had used the instrument and confirmed that the F-COPES questionnaire is a reliable and valid tool to study resilience in families coping with chronic illnesses. On completion of the F-COPES questionnaire, the participants were asked to rate the items using a five-point Likert scale with 1 indicating "strongly disagree", and 5, "strongly agree", as they agreed or disagreed with a statement. The scale consisted of the five subscales, as mentioned in section 4.3.1 and 3.4.3 in Chapter 3. Each of the subscales contained several items that related to the conceptual meaning of the subscale. The mean values of the items as they relate to the subscales are discussed in section 4.7 of this chapter.

Data were obtained through completed F-COPES instruments by the caregiver of the haemodialysed patient. This Likert scale type instrument provides statistical data based on the completed F-COPES instrument. The researcher collected the completed data during May 2019. The data were then captured and analysed using the SPSS version 24 during June 2019. For appropriate scoring, the items (12, 17, 26, and 28) of the subscale of the passive appraisal on F-COPES were reversed.

4.4 DATA MANAGEMENT

As stated in paragraph 4.3, data collection was conducted in four private health clinics within Mpumalanga. These four private health clinics completed the F-COPES questionnaires as a quantitative method of research. The researcher made use of SPSS version 24 to analyse all data received. SPSS (v24) is statistical software used to solve research problems using ad-hoc analysis, hypothesis testing, and predictive analytics

(<https://www-01.ibm.com/support/docview.wss?uid=swg24041224>) (World Kidney Day: Chronic Kidney Disease 2015).

4.5 DATA ANALYSIS AND INTERPRETATION OF FINDINGS

Grove et al (2017:56) state that the researcher should give an account of the methods and processes used for analysing data by reduction, organisation and statistical testing of information obtained through the data collection phase. Statistical analysis helps researchers make sense of quantitative information (Polit & Beck 2017:451). These authors also indicate that without statistics, quantitative data would be a total disaster. Furthermore, these authors indicate that these statistical procedures enable researchers to summarise, organise, evaluate, interpret, and communicate numerical information.

Chapter 3 presented a comprehensive discussion of the study population and sampling. It was assumed that family members of the patients in private health clinics were literate and had a basic understanding of English, therefore enabling them to complete the questionnaire on their own. As stated earlier, a total of 128 questionnaires were received for analysis. This results in a 75% response rate. Table 4.2 provides a visual overview of the response rate for the study.

Table 4.2 Response rate of participants

Participants	Number (%)
Questionnaires administered	170
Returned questionnaires	128
RESPONSE RATE	75%

(Viljoen 2019)

4.5.1 Data cleaning and capturing

The raw data were entered into a statistical program by the researcher known as SPSS version 24.0 for statistical analysis. None of the questionnaires was excluded from the analysis process.

4.5.2 Statistical analysis

In the process of data analysis, the frequency, mean scores of the subscales and standard deviation were determined. The mean scores of the subscales ranged from 3.454 to 4.010, as seen in Table 4.7. Standard deviation was used to indicate how the values varied around the mean and also to determine how far out of mean scores were. The individual subscales' means and standard deviations are present in Tables 4.3 to 4.7. A discussion of the reliability indices is presented in Section 4.8 and Table 4.8.

4.5.2.1 Frequency distribution

The frequency distribution is a statistical procedure that engages the listing of all possible values of a variable and tallying the number for every value in the data set. It can either be ungrouped or grouped (Grove et al 2017:679).

4.5.2.2 Mean

Gray et al (2017:683) define the mean (M) as a statistical measure of central tendency used with ratio-level and interval-level data. The authors stated that the mean value is calculated by summing all the values in a data set and dividing that total by the total number of data points in the set. The F-COPES questionnaire makes use of the Likert scale, answering from 1-5. Therefore, the mean calculations will be between 2.0–4.10. The sample mean formula calculation is as follows:

$$\bar{x} = (\sum x_i) / n$$

- \bar{x} just stands for the "sample mean"
- \sum means "add up."
- x_i "all of the x-values."
- n means "the number of items in the sample."

SPSS (v24) was utilised to determine the mean scores from the completed F-COPES Likert questionnaires.

4.5.2.3 **Standard deviation**

Standard deviation (SD) is seen as a measure of the amount of dispersion from the mean that characterises a data set (Grove et al 2017:693). This study conduct group data

$$\sigma = \sqrt{\frac{\sum [x - \bar{x}]^2}{n}}$$

σ = lower case sigma
 \sum = capital sigma
 \bar{x} = x bar

4.5.2.4 **Cronbach's alpha**

Cronbach's alpha measures internal consistency. The Cronbach's alpha indicates how strongly connected a series of items are as a group. It is believed to determine the degree of reliability. It does not imply one-dimensional when the value of alpha is high. Additional analyses can be performed to measure internal consistency to provide the scale in question is not one-dimensional. Exploratory factor analysis is one procedure of checking dimensionality. Cronbach's alpha is a coefficient of reliability.

Cronbach's alpha documented as a function of the number of test objects and the mean inter-correlation among the elements. Below, for conceptual reasons, we show the formula for Cronbach's alpha:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N - 1) \cdot \bar{c}}$$

Here N is equivalent to the number of items, c-bar is the average inter-item covariance among the items, and v-bar equals the average variance (<https://stats.idre.ucla.edu/>)

[spss/faq/what-does-cronbachs-alpha-mean/](https://www.spss.com/faq/what-does-cronbachs-alpha-mean/)) (World Kidney Day: Chronic Kidney Disease 2015).

4.6 RESEARCH FINDINGS

As stated in Section 4.3, the F-COPES questionnaire encompassed five subscales that consisted of 30 items. Overviews of sub-scales, related items, mean sub-scores as well as the standard deviations and a discussion of the results are presented in the paragraphs that follow.

4.6.1 Subscale 1: Acquiring social support

Acquiring social support referred to the participants' ability to actively acquire support from relatives, friends, neighbours, and extended family. Williamson and O'Hara (2017:1372) stated that social support consists of a range of assisting behaviours performed by one person for the advantage of another. This might include giving advice, empathising, assisting with practical tasks, and expressing encouragement. They further stated that support is essential since it will ensure an increase in a positive mood.

As indicated by the individual scores related to the items, most participants preferred to do things with relatives (M=4.00) rather than receiving gifts and favours from neighbours (M=2.58) as seen in Table 4.3 below. The average mean score for this subscale seen in Table 4.8 measured the lowest at M=3.45 and indicated that the participants did not look at social support as the most crucial aspect in their coping strategy.

To support caregivers, private health clinics need to ensure that there is a support system in place. This can include support groups within the unit that includes other caregivers. Supportive meetings held for the caregivers with the information given by a multi-disciplinary team are also necessary. This team include social worker, nephrologist, physician, psychiatrist, physiologist, dietician, physiotherapist, phlebotomist, and nephrology nurses.

Table 4.3 Acquiring social support: Related item means and standard deviations

Subscale 1: Acquiring social support			
	Item	Mean (M)	Standard deviation (SD)
1	Sharing our difficulties with relatives	3.86	1.24
2	Seeking encouragement and support from friends	3.83	1.26
5	Seeking advice from relatives (grandparents)	3.94	1.20
8	Receiving gifts and favours from neighbours, e.g. food, taking in mail	2.58	1.44
10	Asking neighbours for favours and assistance	2.96	1.49
16	Sharing concerns with close friends	3.74	1.31
20	Doing things with relatives (get-together, dinners)	4.00	1.20
25	Asking relatives how they feel about the problems we face	3.39	1.42
29	Sharing problems with neighbours	2.77	1.52

(Viljoen 2019 findings: Acquiring social skills)

4.6.2 Subscale 2: Reframing

This subscale focused on the participant's capability to re-evaluate stressful events to make them more controllable. Canon (2017:179) asserts that reframing is the capability to recognise and drastically change assumptions or perceptions. However, it is a powerful skill, but it can be hard to learn and apply.

The average mean score was seen in Table 4.8, for this subscale measured 4.10 and was the highest of all subscales, indicating that participants prefer to make use of "Reframing" as a method of coping strategy for most participants in this study. This indicates that the participants believed that if they redefined their problems, they would be able to cope better with them. This subscale measured more toward the positive way of looking at how families coped when faced with a problem. The highest mean score (M=4.10) was found in item 13 that related to showing that we are strong. All the mean scores in these subscales items were close to 4, indicating that the participants viewed

all items in this scale as strategies of coping when faced with a problem as seen in Table 4.4.

Table 4.4 Reframing: Item means and standard deviations

Subscale 2: Reframing			
	Item	Mean (M)	Standard deviation (SD)
3	Knowing we have the power to solve problems	3.97	1.16
7	Knowing that we have the strength within our own family to solve our family problems	3.96	1.16
11	Facing the problems “head-on” and trying to get a solution right away	4.09	1.14
13	Showing that we are strong	4.10	1.11
15	Accepting stressful events as a fact of life	3.85	1.29
19	Accepting that difficulties occur unexpectedly	4.06	1.06
22	Believing we can handle our problems	3.91	1.38
24	Defining the family problem more positively so that we do not become too discouraged	4.02	1.21

(Viljoen 2019 findings: Reframing)

4.6.3 Subscale 3: Seeking spiritual support

This subscale focused on the ability of the participants to seek spiritual support when facing a stressful situation. The average mean score for this subscale measured 3.9 (Table 4.8). Although many participants showed that they had faith in God (M=4.45) as seen in Table 4.5, they did not seek advice from the minister (M=3.28). The majority indicated that they will attend church services (M=4.09). However, they will not participate in church activities (M=3.70). To support caregivers, private health clinics need to ensure that a spiritual, motivational speaker or spiritual leader gives an encouraging message monthly to support caregivers spiritually.

Table 4.5 Seeking spiritual support: related means and standard deviations

Subscale 3: Seeking spiritual support			
	Item	Mean (M)	Standard deviation (SD)
14	Attending church services	4.09	1.25
23	Participating in church activities	3.70	1.36
27	Seeking advice from the minister	3.28	1.49
30	Having faith in God	4.45	0.94

(Viljoen 2019 findings: Seeking spiritual support)

4.6.4 Subscale 4: Mobilising family and accept help

This subscale evaluated the ability of the participants to seek out community resources and accept help from others. The average mean score for this subscale measured 3.62 (refer to Table 4.8) and indicated that most of the participants believed that seeking information and advice from the family doctor (M=3.94) would make them cope better with the problems they are facing. In this subscale, the family doctor played an important role as most of the participants exhibited trust in seeking advice from the family doctor when facing a problem. However, seeking information and advice from people in a similar situation also ranked high at M=3.88, as illustrated in Table 4.6. Though some participants felt they would seek professional counselling (M=3.75) and others would make use of community programmes designed to help families in their situation (M=2.94).

Table 4.6 Mobilising family to acquire and accept help: related means and standard deviation

Subscale 4: Mobilising family to acquire and accept help			
	Item	Mean (M)	Standard deviation(SD)
4	Seeking information and advice from persons in other families who have faced the same or similar problems	3.88	1.25
6	Seeking assistance from community agencies and programmes designed to help families in our situation	2.91	1.48
9	Seeking information and advice from the family doctor	3.96	1.28
21	Seeking professional counselling and help for family difficulties	3.75	1.31

(Viljoen 2019)

4.6.5 Subscale 5: Passive appraisal

This subscale included four items and focused on evaluating problems by way of assisting caregivers in understanding problematic concerns through reducing reactivity through making use of passive or inactive actions such as avoidance. This includes watching television, reading, relying on luck, feeling helpless about the problem, and believing that time will solve the problem. Private health clinics need to establish a library with leisure books, through donations for caregivers and patients to utilise. Magazines and television within the units have to be available for caregivers to use while waiting for haemodialysed patients for relaxation.

This subscale focused on appraising problems by being inactive or doing nothing about the problem and hoping that the problem will fade away. The average mean score was 3.482, as illustrated in Table 4.8. Most participants indicated that they are watching television (M=3.93), and feel that no matter what they do to prepare, they will have difficulty to handle the problem (M=3.96). Some participants believe that luck plays a big part in how well they can solve family problems (M=3.37). All the items in this subscale

scored above average. However, participants answered that if they waited long enough, the problem would go away (M=3.00). Table 4.7 gives an overview of the passive appraisal.

Table 4.7 Passive appraisal: related means and standard deviations

Subscale 5: Passive appraisal			
	Item	Mean (M)	Standard Deviation (SD)
12	Watching television	3.93	1.22
17	Knowing luck plays a big part in how well we can solve family problems	3.37	1.41
26	Feeling that no matter what we do to prepare, we will have difficulty handling problems	3.62	1.24
28	Believing if we waiting enough, the problem will go away	3.00	1.56

(Viljoen 2019 findings: Passive appraisal)

To identify and describe the coping strategies of caregivers of haemodialysed patients using the F-COPES questionnaire, the reliability indices and mean scores of the subscales are presented in Table 4.8 below.

Table 4.8 Reliability indices and mean score for the F-COPES scale

Subscale	Number of items	Cronbach's Alpha (n=xx)	M (SD)
Acquiring social support	9	0.818	3.45 (0.842)
Reframing	8	0.849	4.01 (0.812)
Seeking spiritual support	4	0.767	3.90 (0.975)
Mobilising family to acquire and accept help	4	0.581	3.62 (0.891)
Passive appraisal	4	0.718	3.48 (1.000)

(Viljoen 2019)

4.7 COMPARISON

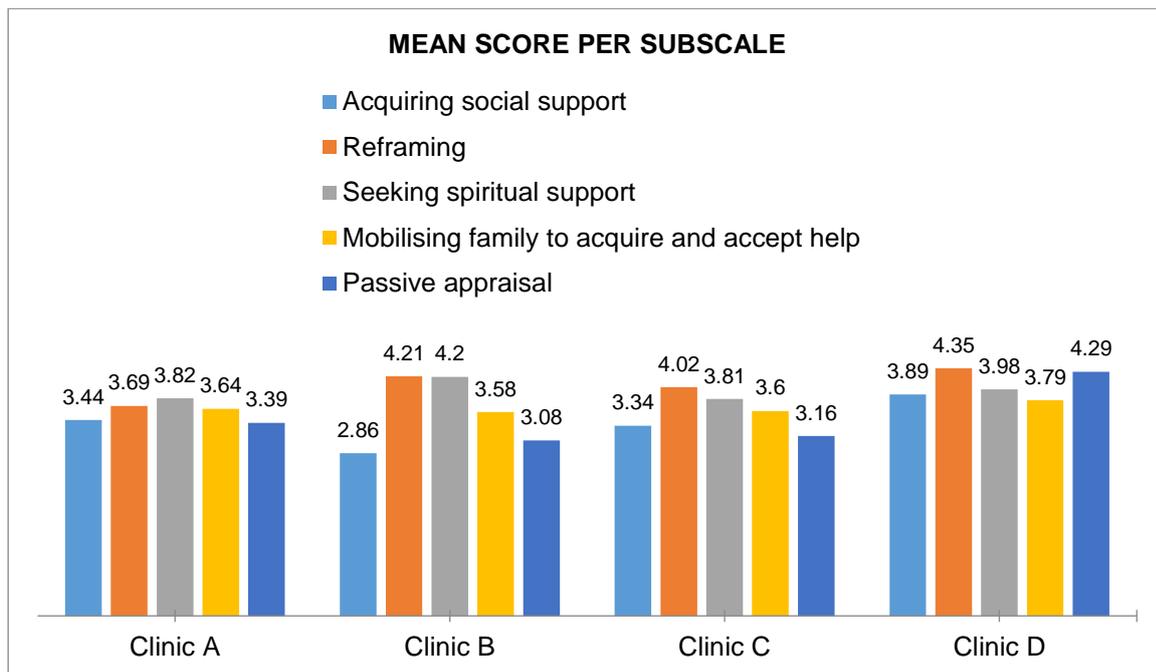


Figure 4.9 Mean scores per subscale

(Viljoen 2019)

Figure 4.9 above illustrates the mean scores per subscale of each private health clinic separately. This table will be discussed in the following paragraphs to follow.

4.7.1 Private health clinic A

The preferred method of coping used within private health clinic A was indicated as “seeking spiritual support” with an $M=3.82$ with “passive appraisal $M=3.39$ the least preferred.

4.7.2 Private health clinic B

The preferred method of coping used within private health clinic B was indicated as “reframing” with an $M=4.21$. In total contrast with private health clinic A who prefer “seeking spiritual support” private health clinic B prefer this coping strategy the least $M=2.86$.

4.7.3 Private health clinic C

The preferred method of coping used within private health clinic C is similar to private health clinic B as “Reframing” with an M=4.01. Both private health clinic A and C find “Passive Appraisal” the least used as a coping strategy. “Passive appraisal” mean score is M=3.39.

4.7.4 Private health clinic D

Three private health clinics preferred the method of coping used was indicated as “reframing” with an M=4.35. Different from the other private health clinics, they find “Mobilising family to acquire help” M=3.79 as the least culpable strategy.

4.8 COMPARISON OF DIFFERENT STUDIES WITHIN SOUTH AFRICA

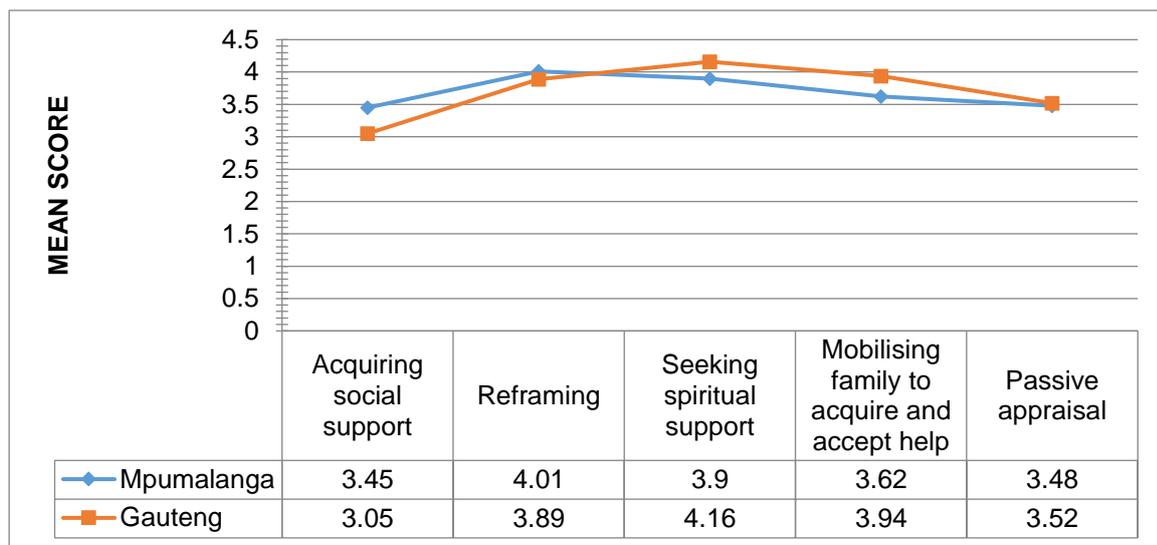


Figure 4.10 Mean score for F-COPES subscales South African studies
(Viljoen 2019)

Figure 4.10 above gives an illustration regarding the subscales mean scores of both studies conducted in South Africa.

Mphuthi’s (2010) study titled “Coping behaviours of haemodialysed patients’ families in a private clinic in Gauteng”, South Africa”, the sample size was n=57, whereas the current study sample size was n=170.

4.8.1 Acquiring social support

The lowest mean score for both studies was “acquiring social support”. Gauteng study score was $M=3.05$ and the current study score $M=3.45$. These scores indicate that both studies do not perceive their family, neighbours or friends as a major part of their coping strategies

4.8.2 Reframing

The current study within Mpumalanga indicated that “reframing” is vital to their coping strategies $M=4.01$. The caregivers in this study indicated that the use of reframing was the most effective coping skill to manage their crises. This strategy indicates that the caregivers interpret their crises positively. However, in Mphuthi’s (2010) study the participants scored this coping strategy in the middle $M=3.89$.

4.8.3 Seeking spiritual support

Mphuthi’s (2010) study indicated that the participants within Gauteng prefer “seeking spiritual support” with an $M=4.16$ in comparison with the researcher study in Mpumalanga, the participants score “seeking spiritual support” secondary to “reframing” with a score of $M=3.90$.

4.8.4. Mobilising family to acquire and accept help

The average mean score for this subscale measured in the centre of the current study $M=3.62$ as indicated in figure 4.10. Whereas the Gauteng study participants prefer this coping strategy secondary to “seeking spiritual support” $M=3.94$.

4.8.5 Passive appraisal

Both studies indicated that the participants prefer this coping strategy as minor with a score of $M=3.48$ for the current study and $M=3.54$.

4.9 VALIDITY

Polit and Beck (2017:1038) define validity as the degree to which an instrument measures what it is supposed to measure, that is measuring the correct thing. Validity in this study implied that the instrument measured the coping strategies of the caregiver of the HD patient.

Polit and Beck (2017:1008) describe face validity as to whether the instrument looks as though it measures the appropriate construct. For this study, the F-COPES questionnaire was reviewed by an expert in the field of nephrology nursing, Dr D Mphuthi, and was found to include variables considered relevant to the phenomenon under investigation in this study.

Polit and Beck (2017:1001) describe content validity as the degree to which an instrument has an appropriate sample of items for the construct being measured for both cognitive and practical measures. In terms of the content validity, three separate studies (Greeff & Fillis 2009; Greeff & Holtzkamp 2007; Tway et al 2007) concluded that content validity was established on the basis of judgment that is, the researchers or experts was of the opinion that the questionnaire covered the full range of meanings of the variable being measured.

4.10 RELIABILITY

Reliability of data collection for a quantitative research study is the consistency with which it measures the target attribute (Polit & Beck 2017:1030). Burns and Grove (2017:690) stated that reliability exists in degrees and therefore indicated as a correlation coefficient. As such, a correlation coefficient of 1.00 is indicative of perfect reliability while a coefficient of 0.00 indicates no reliability. Cronbach's alpha coefficient is the most commonly used measure of reliability. The Cronbach's alpha for the subscales of F-COPES ranged from 0.581 to 0.849 and was considered satisfactory. The subscale "Mobilising family to acquire and accept help" had modest reliability with an alpha value of 0.581. The rest of the subscales ranged from 0.718 to 0.849.

4.11 SUMMARY

In this chapter, the researcher discussed the data collection process and data management, followed by the data analysis and interpretation of the research findings. The findings for each of the subscales have been presented as well as their reliability indices. From the findings, it was evident that most of the participants seemed to rely on reframing and to seek spiritual support as the coping strategies of choice when faced with chronic renal disease, a description of the context as it related to the information obtained from the demographic sheet was also presented. The following chapter discusses the conclusions, tests the hypothesis, discusses the limitations of the study, and makes recommendations based on the findings of this chapter.

CHAPTER 5

CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

5.1 INTRODUCTION

According to McCubbin et al (1981:38), the family "has been the channel for cultural transmission, providing a natural atmosphere for traditions to be passed from generation to generation and it has evolved throughout the ages to keep the culture and ethnic heritage alive. In turn, the traditions themselves have given families a sense of stability and support from which they draw comfort, guidance and a means of coping with the problems of daily life". This is the reason why family resilience has increase within families and communities to get rid of stressful situations.

It is again vital for the researcher to state that the purpose of the study was to describe and explore the coping strategies used by caregivers of patients receiving HD in Mpumalanga. Chapter 4 presents the quantitative research findings of the study and describes the coping strategies used by the caregivers of the patients. In Chapter 5, the researcher focuses mainly on the conclusions and recommendations based on what was discussed in the previous chapter.

5.2 RESEARCH DESIGN AND METHOD

A quantitative, non-experimental, simple descriptive research design was utilised to conduct the study in a private health clinic in Mpumalanga. The participants completed a demographic datasheet. McCubbin et al (1981:285) F-COPES questionnaire was used to collect data regarding the coping strategies used by caregivers of patients receiving HD. The F-COPES questionnaire consists of five subscales; acquiring social support, reframing, seeking spiritual support, mobilising family and accept help and passive appraisal. Data collection took place from February 2019 until May 2019.

A total of 128 F-COPES questionnaires were completed, consisting of 75% response rate. The data collected was processed and analysed using SPSS (v24) statistical

package. Statistical data of the demographic information and F-COPES subscales was presented in Chapter 4.

5.3 RESEARCH QUESTION

Gray et al (2017:691) define the research question as a concise, interrogative statement developed to direct research studies.

The study aims to answer the following question:

- What are the coping strategies used by the caregivers of patients receiving chronic HD in a private health clinic in Mpumalanga?

The research design and method facilitated the achievement of the following research objectives:

- Determine the coping strategies used by caregivers of patients receiving chronic HD within a private health clinic in Mpumalanga Province.
- To make recommendations based on the findings of the study regarding the support that might be needed by the caregivers of HD patients in a private health clinic in Mpumalanga.

The conclusions are derived from the completed F-COPES questionnaires by caregivers of HD patients within Mpumalanga based on the purpose, research question and the results of the study. The recommendations are based on the conclusions and the purpose of the study.

5.4 SUMMARY AND INTERPRETATION OF RESEARCH FINDINGS

In this section, the following conclusions were drawn, based on the significant findings on the completed F-COPES questionnaires by the caregivers of HD patients. The subscales will be concluded individually.

The data analysis indicated that reframing, seeking spiritual support and mobilising family to acquire and accept help were significant positive predictors of caregiver satisfaction.

However, passive appraisal was not a significant positive predictor of caregiver satisfaction. Acquire social support was not a significant negative predictor of caregiver satisfaction. Therefore, the result revealed that Mpumalanga caregivers of patients receiving HD.

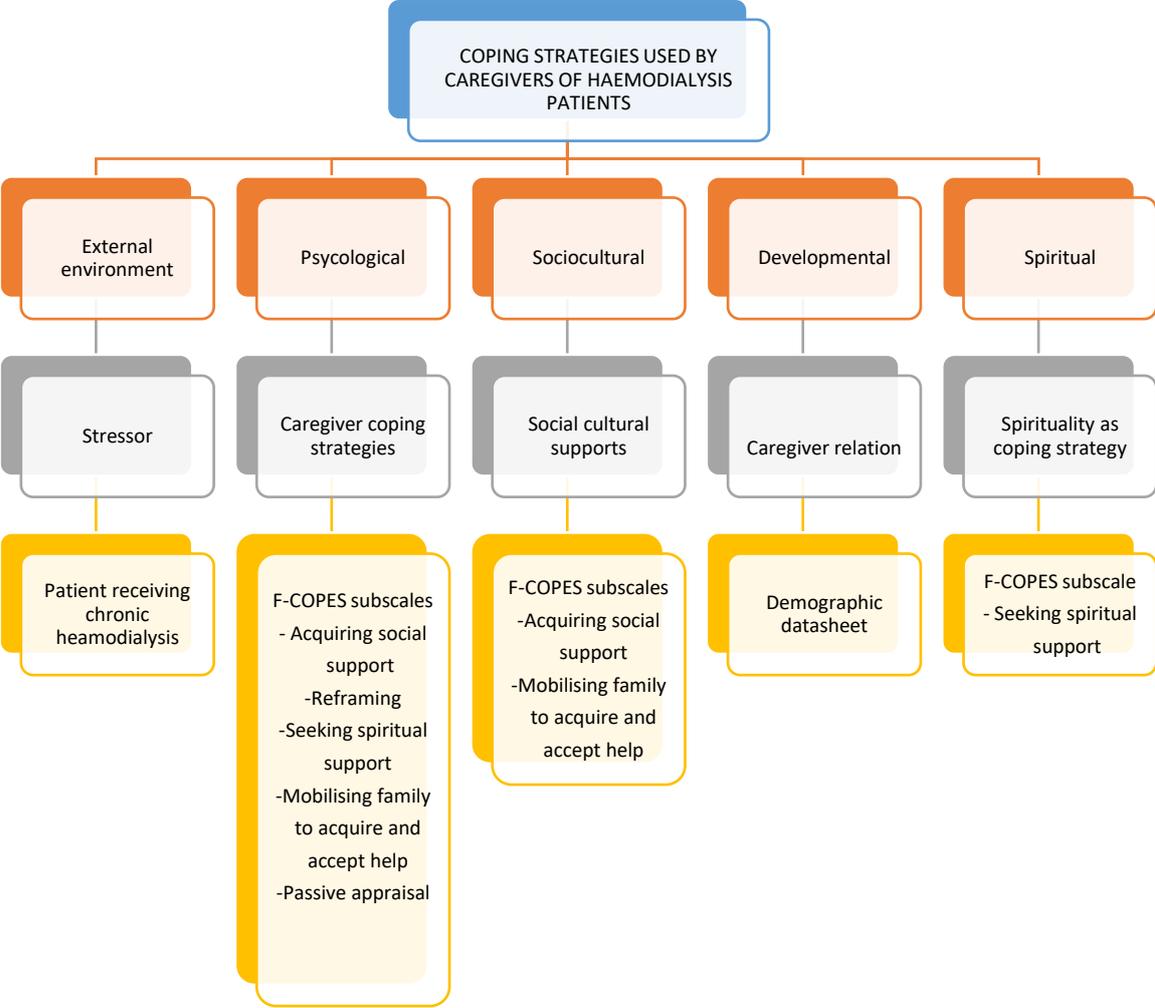


Figure 5.1 Factors affecting caregivers coping behaviour

Illustrated in Figure 5.1 are the factors affecting the caregivers’ coping behaviour. When a patient receives chronic HD, it is seen as an external environment stressor. Psychologically, the caregiver will use the F-COPES subscales as coping strategies. These subscales were discussed in Chapter 3. The subscales that support the caregiver socio-culturally consist of acquiring social support and mobilising family to acquire and accept help. The demographic datasheet explains the relationship towards the patient

receiving HD. Lastly, seeking spiritual support is seen as the subscale assisting the caregiver spiritually through the coping mechanism.

5.4.1 Conclusions on F-COPES subscales

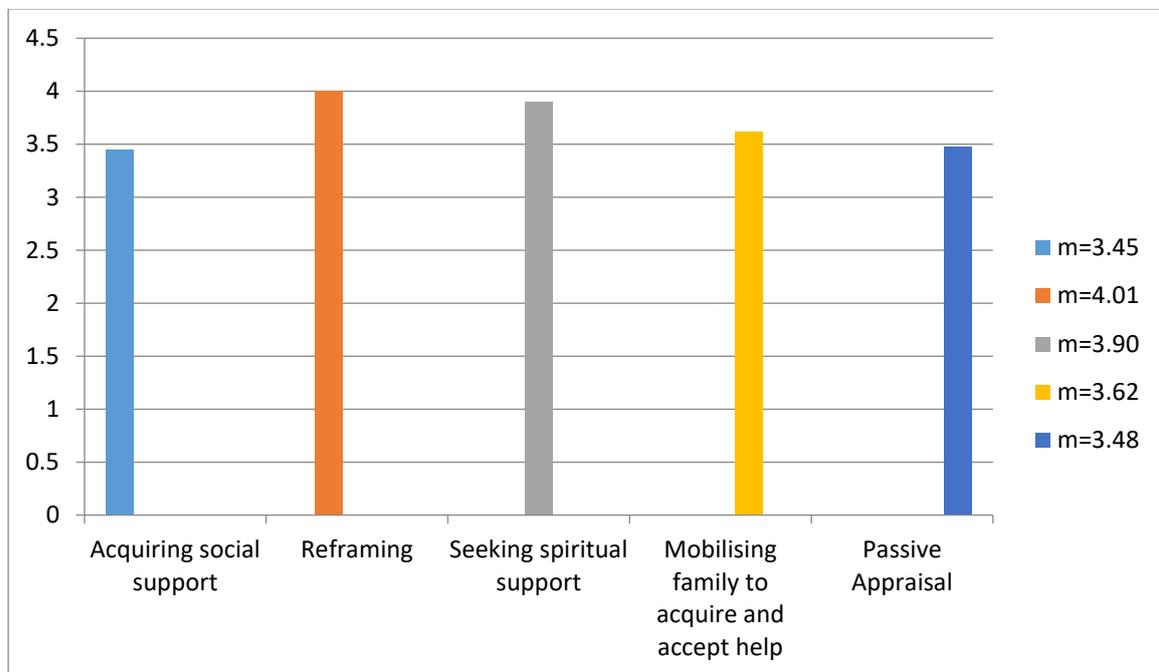


Figure 5.2 Mean score of F-COPES subscales

5.4.1.1 *Acquiring social skills*

The result of the present study confirmed that seeking social support from relatives, neighbours, and friends is the lowest coping skill used. With a mean score of $m=3.45$, the caregivers do not prefer to share difficulties and accept help from relatives, neighbours, and friends.

5.4.1.2 *Reframing*

The result of this study found that the reframing coping strategy was the most preferred coping mechanism used among caregivers of patients receiving HD, with the highest mean score of $m=4.01$. In other words, the caregivers who used reframing were more likely to experience higher satisfaction. Reframing reflects whether families interpret their crises positively, negatively or neutrally. The caregivers in this study indicated that the use of reframing was the most effective coping skill to manage their crises. This result is

similar to the findings of other researchers who reported that utilising reframing was the most common coping method among Korean families of autistic children (Lee 2014:86).

The present findings further confirmed that positively redefining caregiver problems was the primary significant coping strategy for caregiver adaptation and unity. The researcher recommends that the renal nurse encourage the caregiver to observe the difficulties in a positive way. This indicates that the participants believed that if they redefined their problems, they would be able to cope better with them. This subscale measured more toward the positive way of looking at how families coped when faced with a problem.

5.4.1.3 *Spiritual support*

The result of this study found that spiritual support was the second most preferred coping strategy used among caregivers of patients receiving HD. With the mean score of $m=3.90$, these spiritual supports include support from church activities and the minister. However, these support items might be seen as church activities rather than personal spirituality (Lee 2012:100). Only the last item reflects personal belief (believing in God).

5.4.1.4 *Mobilising family to acquire and accept help*

The current study proposed that mobilising family would be a significant positive predictor of caregiver satisfaction. With a mean score of $m=3.62$, this statement was confirmed. Therefore, caregivers who seek professional community resources and accepting help show higher levels of satisfaction. Lee (2012) echoes that family members seeking professional support find this subscale helpful in family adaptation and cohesion.

5.4.1.5 *Passive appraisal*

The results of the present study confirmed that passive appraisal is not seen as a preferred coping strategy. With a mean score of $m=3.48$, the caregivers do not prefer to watch television, read, rely on luck, feel helpless about the problem, or believe that time will solve the problem. Furthermore, it might be seen as escape-coping behaviour.

5.5 ETHICAL CONSIDERATIONS

The researcher needed to be aware of ethical considerations and ethically conduct the research. Ethics guides the researcher towards proper research and protect the participants from any violation of their rights and respect (Leedy & Ormrod 2005).

The researcher considered informed consent as the first issue. Consent gave potential participants the power to decide on their own if they wanted to participate in the study. The informed decision would only be reached if the study was clearly explained and in the language, they best understood. In the case of adolescents, parents and guardians were at liberty to accept or decline on their behalf.

It was also crucial to consider the confidentiality and anonymity of the participants' identity and information. Information gathered from participants must be handled privately and secretively to avoid misuse of the information, and providing pseudonyms in case of their identity. Any information that participants disclosed to the researcher was not used against them.

The participant's right to privacy should be adhered to at all times. Participants were not pressurised to disclose information they are not comfortable with. The data collected were at the participant's awareness. They had their right to privacy, and the participants determine which information they wanted to disclose and at which time they wanted to disclose it.

5.6 LIMITATIONS OF THE STUDY

Gray et al (2011:57) assert that limitations are seen as characteristics of the study that reduce the generalisability of the results.

The findings of this study have to be seen in the light of some limitations mentioned below. The study was conducted within one private company in Mpumalanga Province, therefore, limiting the findings to that context. Only four units of the 11 units within Mpumalanga participated in the study therefore making it hard to generalise the findings.

Excluded from this study were potential participants from Asian and Indian descent as they refused to complete the F-COPES questionnaire. Sample size needed $n=119$. After the first session of data collection, sample size consists of $n=51$.

The researcher had to change the data collection method as the sample size $n=51$, was insufficient after the first data collection process. Participants needed to complete the questionnaires at the facility where the patients received their HD. However, it was noted that only $n=51$ caregivers were able to complete the questionnaire at the facility. Caregivers do have other responsibilities, for example, permanently employed as they need to provide for the family or care for the household. It was decided that questionnaires need to be sent home to the participant via the haemodialysed patient.

The data collection process was prolonged owing to insufficient sample size.

No funding was given to the researcher. The training was given to four private health clinics throughout Mpumalanga. The researcher travelled by private transport to these clinics. Data were collected either personally or by courier services. This was done twice as the sample size was not met, and the data collection method was changed. Only quantitative research methodology was utilised. Mixed method might be preferable for clarification purposes.

5.7 RECOMMENDATIONS

Based on the aim of this research, the data collected and the findings, the following recommendations are made regarding how to ensure caregivers receive adequate support regarding their coping strategies.

The findings of the study need to be presented to the management of the private health clinic to facilitate holistic nursing care.

The following specific recommendations have been formulated on the basis related to nursing practice and research in research nursing.

5.7.1 Recommendations for acquiring social support

To support caregivers, private health clinics need to ensure that there is a support system in place. These systems can include support groups within the unit that includes other caregivers. Supportive meetings held for the caregivers with the information given by a

multi-disciplinary team are also necessary. This team consist of social worker, nephrologists, physician, psychiatrist, physiologist, dietician, physiotherapist, phlebotomist and nephrology nurses.

These supportive strategies might include giving advice to caregivers, empathising with their current situation, assisting with practical tasks, and expressing encouragement towards utilising coping strategies. These supportive strategies are essential because it will ensure an increase in a positive mood.

5.7.2 Recommendations for reframing

The present findings further confirmed that positively redefining caregiver problems was the primary significant coping strategy for caregiver adaptation and unity. The researcher recommends that the renal nurse encourage the caregiver to observe the difficulties in a positive way. This indicates that the participants believed that if they redefined their problems, they would be able to cope better with them. This subscale measured more toward the positive way of looking at how families coped when faced with a problem.

5.7.3 Recommendations for spiritual support

To support caregivers, private health clinics need to ensure that a spiritual, motivational speaker or spiritual leader gives an encouraging message monthly to support caregivers spiritually. They should ensure invitations are sent out in advance.

5.7.4 Recommendations for mobilising family to acquire and accept help

The researcher recommends that caregivers of patients receiving HD need to continue seeking professional support groups. Private health clinics need to ensure that support groups are available for support and participation of the caregivers need to be encouraged through invitation and information leaflets.

5.7.5 Recommendations for passive appraisal

To assist caregivers with passive appraisal, private health clinics need to establish a library with leisure books through donations for caregivers and patients to utilise. Magazines and television within the units have to be available for caregivers to use while waiting for haemodialysed patients for relaxation.

Reframing strategies were frequently used whereas the passive appraisal strategies were least used. It became clear from the findings that the majority of the participants were coping through positive thinking skills.

5.7.6 Recommendations for nursing practice

There needs to be a support system in place for the renal nurses and their colleagues within the dialysis units. Renal nurses should be encouraged to share their views and experiences of caregivers coping strategies into the nursing sphere. It is crucial that renal nurses recognise the importances of different coping strategies caregivers utilise and that these supporting interventions facilitate these strategies.

The reason for this is that renal nurses need to be optimistic with a positive outlook on the future to assist the caregivers with their coping mechanisms.

Renal nurses should always be alert and on the lookout for opportunities to support and assist in meeting the needs of their HD patients caregivers through their monthly support group meetings.

Encourage the nephrology nurses to continue with their own personal growth and development through further studies. This will ensure that they entirely understand the

holistic care of patients receiving HD, as well as their caregivers. Furthermore, they will be sensitised on how to connect and interact with the caregivers so that they can create a better relationship and coping experience for all caregivers and their HD patients.

Preliminary and three monthly psychosocial assessments on caregivers of HD patients should be done to ensure their coping strategies are adequate to support the HD patient.

5.7.7 Recommendations for research in nursing

This study is quantitative research; there are limitations to examining the participants' underlying motives of replies to the questions. A qualitative approach needs to be included to have further comprehensive exploration of caregivers' coping method, such as conducting interviews. In addition to this, coping strategies between the caregivers of patients receiving peritoneal dialysis and HD patients need to be compared. This will ensure further recommendations regarding assistance toward their psychological well-being. Replicate research may also be conducted to assess the caregivers' different levels of adaptability and cohesion by using the Family Adaptation and Cohesion Scales.

There are different types of coping strategies identified in this study. However, different questionnaires can be used to analyse other coping mechanisms.

It is also advise that, further studies on a broader scale including both provincial and private health clinics related to dialysis treatment within South Africa need to be conducted regarding the coping strategies utilised by HD patient and their caregivers.

However, there and only a few intervention studies conducted to determine the impact of the implementation of support structures in HD units.

Importantly, research is still lacking regarding coping mechanisms of renal nurses in practice and their support systems.

5.8 CONTRIBUTIONS OF THE STUDY

This study has enabled the researcher to explore and describe the coping strategies used by the caregivers of patients receiving HD. During the study, the researcher explored different coping styles of caregivers utilise. The majority of participants preferred reframing as a method of coping. Other caregivers' preferred spiritual support given. The researcher has embarked on a significant study, which gave a picture of the coping mechanisms used by the caregivers of patients receiving HD within Mpumalanga.

The findings or the results discussed in chapter 4 will be useful to the professionals, especially the multidisciplinary renal team that includes the social workers, dietician, psychologists, nephrologists and the renal nurses, working with patients receiving HD and communicating directly with their caregivers.

Support interventions and information are vital for caregivers; since it can support them to improve their quality of life and their ability to manage more effectively with their HD patients' treatment.

5.9 CONCLUSION

In this chapter, the researcher presented an overview of the limitations of the study as well as recommendations for nursing science, nursing practice and nursing research.

The overall intent of the study was to establish the coping strategies used by caregivers of patients' receiving HD within a private clinic in Mpumalanga. The results of the current study demonstrate that the caregivers prefer reframing and spiritual support as the most important coping strategies used to reduce or mitigate their burden. Caregivers choose acquiring social support strategy as the least preferred strategy used to reduce their burden. Familiarity with the coping strategies used by the caregivers and the method to use these strategies could balance the emotional, psychological and social consequences of caregivers of patients receiving haemodialysis within Mpumalanga.

LIST OF REFERENCES

Aasen, EM, Kvangarsnes, M, Wold, B & Heggen, K. 2011. The next of kin of older people undergoing haemodialysis: A discursive perspective on perceptions of participation. *Journal of Advanced Nursing* 68(8):1716-1725.

Achempim-Ansong, G & Donkor, ES. 2013. Psychosocial and physical experiences of haemodialysis patients in Ghana. *Africa Journal of Nursing and Midwifery* 14(1):38-48.

Alnazly, EK. 2018. The impact of an educational intervention in caregiving outcomes in Jordanian caregivers of patients undergoing haemodialysis: A single group pre-and-post test. *International Journal of Nursing Science* 5(2):144-150.

Axelsson, L, Klang, B, Hagelin, CJ, Jacobson, H & Gileissman, SA. 2015. Meanings of being a close relative of a family member treated with haemodialysis approaching end of life. *Journal of Clinical Nursing* 24(3-4):447-456.

BBraun. 2017. *BBraun Dialyzer Brochure-Druckhboegen-Ansicht-tbu.pdf*.

From: https://www.bbraun.com/content/dam/b-braun/global/website/products-and-therapies/dialysis/hemodialysis/2017-10-16-Dialyzer_Brochure-Druckboegen-Ansicht-tbu.pdf.bb-.32644720/2017-10-16-Dialyzer_Brochure-Druckboegen-Ansicht-tbu.pdf

(accessed 12/12/2018).

Berman, A, Snyder, S, Koziar, B & Erb, G. 2010. *Fundamentals of nursing concepts, process and practice*. 9th edition. New Jersey: Prentice-Hall.

Blagg, CR. 2010. The first dialysis for chronic renal failure 50 years ago. *Hemodialysis International* 14(1):1-2.

Botma, Y, Greeff, M, Mulaudzi, FM & Wright, SCD. 2010. *Research in health sciences*. Cape Town: Pearson Education.

Bovijin, J. 2017. Chronic kidney disease at primary care level: Significant challenges remain. *South African Medical Journal* 107(3):171.

Brink, H, Van der Walt, C & Van Rensburg, G. 2014. *Fundamentals of research methodology for health professionals*. 3rd edition. Cape Town: Juta

Brink, H, Van der Walt, C and Van Rensburg, G. 2008. *Fundamentals of research methodology for health professionals*. 2nd edition. Cape Town: Juta .

Bryman, A & Bell, E. 2014. *Research methodology, business and management contexts*. Cape Town: Oxford.

Canon, MD. 2017. The power and challenge of facilitating reframing: applications in teaching negotiation. *Management Teaching Review* 2(3):179-192.

Cantekin, I, Kavurmaci, M & Tan, M. 2016. An analysis of caregiver burden of patients with hemodialysis and peritoneal dialysis. *Hemodialysis International* 20:94-97.

Celik, G, Annagur, BB, Yilmaz, M, Demir, T & Kara, F. 2012. Are sleep and quality of life of family caregivers affected as much as those of hemodialysis patients? *General Hospital Psychiatry* 34(5):518-524.

Chilot, J, Guiguis, A, Friedli, K, Almond, M, Day, C, Da Silva-Gane, M, Davenport, A, Fineberg, NA, Spencer, B, Wellsted, D & Farrington, K. 2018. Depression symptoms in haemodialysis patients predict all-cause mortality but not kidney transplantation: a cause-specific outcome analysis. *Annals of Behavioural Medicine* 52(1):2.

Cohen, SD, Cukor, D & Kimmel, PL. 2016. Anxiety in patients treated with hemodialysis. *Clinical Journal of the American Society of Nephrology* 11(12):2250-2255.

Cohen, LM & Germain, MJ. 2014. Caregiver burden and haemodialysis. *Clinical Journal of the American Society of Nephrology* 9:840-842.

Corcoran, K & Fischer, J. 2013. *Measures for clinical practice and research*. 5th edition. New York: Oxford.

Da Silva, RA, De Souza Neto, VL, De Oliveira, GJN, Da Silva, BCO, Rocha, CCT & Holanda, JRR. 2016. Coping strategies used by chronic renal failure patients on hemodialysis. *Escola Anna Nevy* 20(1):147-154

Daugirdas, JT, Blake, PG & Todd, S. 2015. *Handbook of dialysis*. 5th edition. Wolters Kluwer: Illinois.

Davids, MR, Jardine, T, Marais, N & Jacobs, JC. 2018. *South African renal registry annual report 2016*. Cape Town: South African Renal Society.

Davids, MR, Marais, N & Jacobs, JC. 2014. *South African renal registry annual report 2012*. Cape Town: South African Renal Society.

Dos Santos Pereira, B, Da Silva Fernandes, N, Pires de Melo, N, Abrita, R, Dos Santos Grincenkov, RAFA & Da Silva Fernandes, NM. 2017. Beyond quality of life: a cross sectional study on the mental health of patients with chronic kidney disease undergoing dialysis and their caregivers. *Health and Quality of Life Outcomes* 15:74.

Dreamstime. 2019.

From: <https://www.dreamstime.com/stock-photography-arteriovenous-fistula-image25440522> (accessed 12 March 2018).

Eaton, DC & Pooler, JP. 2018. *Vander's renal physiology*. 9th edition. New York: McGraw-Hill Education.

Eaton, PM, Davis, BL, Hammond, PV, Condon, EH & McGee, ZT. 2011. Coping strategies of family members of hospitalized psychiatric patients. *Nursing Research and Practice*. 2011(2011):392705.

Ebadi, A, Sajadi, SA, Moradian, ST & Akbari, R. 2018. Suspended life pattern: A qualitative study on personal life among family caregivers of hemodialysis patients in Iran. *International Quarterly of Community Health Education* 38(4):225-232.

Egan, R, Wood, S, MacLeod, R & Walker, R. 2015. Spirituality in renal supportive care: A thematic review. *Healthcare (Basel)* 3(4):1174-1193.

Epi info. 2017. *Centers for disease control and prevention*.

From: <https://www.cdc.gov/epiinfo/index.html> (accessed 24 March 2018).

Fasset, RG, Venuthurupalli, SK, Gobe, GC, Coombes, JS, Cooper, MA & Hoy, WE. 2011. Biomarkers in chronic kidney disease: a review. *Kidney International* 80(8):806-821.

Ghane, G, Farahan, M A, Seyedfatemi, N & Haghani, H. 2016. Effectiveness of problem-focused coping strategies on the burden on caregivers of hemodialysis patients. *Nursing and Midwifery Studies* 5(2):1-15

Gill, AS, Singh, A, Matreja, PS, Gupta, AK, Singh, N, Khosla, PP & Prasher, PK. 2011. Assessment of the quality of life of caregiver's of patients suffering from chronic kidney disease. *BANGAO Journal* 9(1):31-35.

Golics, JC, Basra, MKA, Salek, MS & Finlay, AY. 2013. The impact of patients' chronic disease on family quality of life: an experience from 26 specialities. *International Journal General Medicine* 6:787-798.

Grapsa, E & Gerogianni, G. 2018. Caregivers of patients on haemodialysis. caregiving and home care, edited by Prof. Mukadder Mollaoglu. InTech, DOI: 10.5772/intechopen.72400.

From: <https://mts.intechopen.com/books/caregiving-and-home-care/caregivers-of-patients-on-haemodialysis> (accessed 2 April 2018).

Gray, JR, Grove, SK & Sutherland, S. 2017. *Burns and Grove's the practice of nursing research: Appraisal, synthesis, and generation of evidence*. 8th edition. Elsevier: Missouri

Greeff, A & Fillis, A. 2009. Resiliency in poor single-parent Families. *Families in Society: The Journal of Contemporary Social Services* 90:279-285.

Greeff, AP & Holtzkamp, J. 2007. The prevalence of resilience in migrant families. *Family Community Health* 30(3):189-200.

Hinkle, JL & Cheever, KH. 2017. *Medical-surgical nursing*. 14th edition. Wolters Kluwer: China.

Hinkle, JL & Cheever, KH. 2014. *Medical-surgical nursing*. 13th edition. Wolters Kluwer: China.

Holland, K. 2018. *Cultural awareness in nursing and health care*. 3rd edition. New York: Taylor and Francis.

Hoang, VL, Green, T & Bronner, A. 2018. Informal caregivers' experiences of caring for people receiving dialysis: A mixed-methods systematic review. *Journal of Renal Care* 44(2):82-95.

Hong, LI, Wang, W, Chan, EY, Mohamed, F & Chen, HC. 2017. Dietary and fluid restriction perceptions of patients undergoing haemodialysis: Exploratory study. *Journal of Clinical Nursing* 26(21-22):3664-3676.

Jacobs, L. 2017. Coping strategies of parents with physically disabled children at disabled schools in Plateau state: a descriptive study. MCur Thesis. Department of Health Studies, University of Kwa-Zulu Natal, Durban.

Joubert, G, Kartzellenbourg, J, Ehrlich, R & Abdool, KS. 2008. *Epidemiology: A research manual for South Africa*. 2nd edition, South Africa: Oxford University Press.

Kidney Disease Improving Global Outcomes (KDIGO). 2013. *Kidney international supplements* 3(1):3-62.

Kidney health. 2017. From: <http://www.kidneyhealth.ca/wp/wp-content/uploads/pdfs/MRP-CKD-stages-HCP.pdf> (accessed 2 April 2018).

Kutner, NG & Zhang, R. 2017. Ability to work among patients with ESKD: Relevance of quality care metrics. *Healthcare (Basel)* 5(3):42.

Lee, JJ. 2012. A study of family-coping strategies related to family satisfaction among Korean families of children with Autistic spectrum disorders. DPhil Dissertation. Texas: Faculty of Southwestern Baptist Theological Seminary.

Levy, J, Brown & Lawrence, A. 2016. *Oxford handbook of dialysis*. 4th edition. Oxford: Oxford University Press.

Liedstrom, E, Kihlgren, A, Skovdahl, K & Windahl, J. 2014. Being a next of kin experiences of burden and quality of life. *Open Journal of Nursing* 4:275-286.

Lopes, JA & Jorge, S. 2013. The RIFLE and AKIN classifications for acute kidney injury: a critical and comprehensive overview. *Clinical Kidney Journal* 6(1):8-14.

Lopes, M, Ferraro, A and Koch, VH. 2014. Health-related quality of children and adolescents with CKD stages 4-5 and their caregivers. *Pediatric Nephrology* Jul:29(7):1239-1247.

Maluleka, R. 2018. *Statistics South Africa. Mid-year population estimates 2018*. Pretoria: Stats SA. From: <https://www.statssa.gov.za/publications/P0302/P03022018.pdf> (accessed 5 October 2019).

Manoj, S. 2018. *Coping strategies*. New York: Salem Press Encyclopedia. Research Starters.

Marieb, EN & Hoehn, K. 2016. *Human anatomy and physiology*. 10th edition. San Francisco. Pearson Benjamin Cummings.

Mashayekhi, F, Pilevarzadeh, M & Rafati, F. 2015. The assessment of caregiver burden in caregivers of hemodialysis patients. *Materia Socia-medica* 27(5):333-336.

Mayosi, BM, Fisher, AJ, Lalloo, UG, Sitas, F, Tollman, SM & Bradshaw, D. 2009. The burden of non-communicable diseases in South Africa. *Lancet* 374(9693):934-947.

McAnnich, JW & Lue, TF. 2012. *Smith and Tanago's general urology*. 18th edition. Europe: McGraw Hill Education.

McCubbin, HI, Olson, D & Larsen, A. 1981. Family crisis oriented personal scales (F-COPES). In McCubbin, HI Thompson, AI and McCubbin MA 1996. *Family assessment:*

resiliency, coping and adaptation. Inventories for research and practice. Madison: University of Wisconsin System.

McCubbin, HI. 1996. *Family crisis oriented personal scales.* From: www.mccubbinresilience.org (accessed 2 October 2017).

Medicine for all. 2018. *The arteriovenous graft part 3.*

From: <https://ezzy2017.com/2018/09/18/the-arteriovenous-av-graft-part-3/> (accessed 9 September 2018).

Merril, B & West, L. 2009. *Using biographical methods in social research.* London: Sage.

Meyers, AM. 2015. Chronic kidney disease. *South African Medical Journal* 105(3):232.

Meyers, AM & Davies, M. 2017. Recent important strategies in the management of chronic kidney disease. *South African Medical Journal* 107(9):730-733.

Moosa, MR, Meyers, A, Gottlich, E & Naicker, S. 2016. An effective approach to chronic kidney disease in South Africa. *South African Medical Journal* 106(2):156.

Motsoaledi, A. 2015. Guest editorial. *South African Medical Journal* 105(4):315.

Mphuthi, DD. 2010. Coping behaviors of haemodialysed patients' families in a private clinic in Gauteng. MCur Thesis. Department Health Studies, Northwest University, Potchefstroom.

Muller, M, Bezuidenhout, M & Jooste, K. 2012. *Healthcare service management.* 2nd edition. Cape Town: Juta.

Omeni, E. 2020. *Violence exposure and transitional coping strategies among international students in Poland*. Wiesbaden: Springer VS.

Onofrio, GD, Simeoni, M, Rizza, P, Caroleo, M, Capria, M, Mazzitello, G, Sacco, T, Mazzuca, E, Panzino, MT, Cerantonio, A, Segura-Garcia, C, Adreucci, M, De Fazio, P & Fuiano, G. 2017. Quality of life, clinical outcome, personality and coping in chronic hemodialysis patients. *Renal Failure* 39(1):45-53. From: <https://cnx.org/contents/FPtK1z mh@12.8:7I9EIHui@7/Gross-Anatomy-of-the-Kidney> (accessed 20 December 2018).

Pereira, B, Fernandes, N, De Melo, N, Abrita, R, Grincenkov, FR & Fernandes, NM. Beyond quality of life: a cross sectional study on the mental health of patients with chronic kidney disease undergoing dialysis and their caregivers. 2017. *Health and Quality of Life Outcomes* 15:74.

Polit, DF & Beck, CT. 2018. *Essentials of nursing research*. 9th edition. *Appraising evidence for nursing practice*. Philadelphia: Wolters Kluwer.

Polit, DF & Beck, CT. 2017. *Nursing Research Generating and Assessing Evidence for Nursing Practice*. 10th edition. China: Wolters Kluwer.

Polit, DF, Beck, CT & Hungler, BP. 2001. *Essentials of nursing research: Methods, appraisal, and utilization*. Philadelphia: Lippincott.

Potts, NL & Mandelco, BL. 2012. *Pediatric nursing. Caring for children and their families*. New York: Delmar Cengage Learning.

Rioux, J, Narayanan, R & Chan, CT. 2012. Caregiver burden among nocturnal home hemodialysis patients. *Hemodialysis International* 16:214-219.

Raosoft. 2017. From: www.raosoft.com/samplesize.html (accessed 23 July 2017).

Santoro, D, Bendetto, F, Mondello, P, Pipito, N, Barilla, D, Spinelli, F, Riciardi, CA, Cernaro, V & Buemi, M. 2014. Vascular access for hemodialysis: current perspectives. *International Journal of Nephrology Renovascular Disease* 7:281-294.

Sadeghian, J, Roudsari, DM, Seyedfatemi, N & Rafiei, H. 2016. Body-Image Disturbance: A Comparative Study among Haemodialysis and Kidney Transplant Patients. *Journal of Clinical and Diagnostic Research* 10(5):14-16.

Salehitali, S, Ahmadi, F, Zarea, K & Fereidooni-Moghadam, M. 2018. The role of health team in coping process of family caregivers with patients under hemodialysis: A qualitative study. *Jundishapur Journal of Chronic Disease Care* 7(1):e63304.

Shahgholian, N & Yousefi, H. 2015. Supporting hemodialysis patients: A phenomenological study. *Iranian Journal of Nursing and Midwifery Research* 20(5):626-633.

Stommel, M & Wills, CE. 2004. *Designing and implementing small-scale clinical studies, clinical research: concepts and principles for advanced practice nurses*. Philadelphia: Lippincott.

Suri, RS, Larvine, B, Hall, Y, Kimmel, PI, Kliger, AS, Levin, N, Kurella Tamaru, M & Chertow, GM. 2014. Frequent hemodialysis network trial group effects of frequent hemodialysis on perceived caregiver burden in the frequent hemodialysis network trials. *Clinical Journal of American Society of Nephrology* 9:936-942.

Taiwo, A. 2019. Chronic and end-stage renal disease and indications for renal transplantation. In: *Psychosocial care of end-stage organ disease and transplant patients*, edited by Y Sher and J Maldonado. Stanford: Springer.

Theofilou, P. 2013. Self-reported functional status: An important predictor of mental health outcomes among chronic dialysis patients. *European Journal of Psychological Assessment* 29(4):276-282.

Theofilou, P, Synodinou, C & Panagiotak, H. 2013. Undergoing HD: A qualitative study to investigate the lived experience of patients. *Europes Journal of Psychology* 9(1):19-32.

Twoy, R, Connolly, PM & Novak, JM. 2007. Coping strategies used by parents of children with autism. *Journal of American Academy of Nurse Practitioners* 19(5):251-260.

Urden, LD, Stacy, KM & Lough, E. 2014. *Critical care nursing. Diagnosis and management*. 7th edition. Missouri: Elsevier.

Uys, L & Middleton, L. 2014. *Mental health nursing*. 6th edition. Cape Town: Juta.

Waugh, A & Grant, A. 2014. *Ross and Wilson anatomy and physiology in health and illness*. 12th edition. Churchill Livingstone: Elsevier. 338-341.

Weller, BF. 2005. *Baillieres nurses' dictionary for nurses and health care workers*. 24th edition. New York: Elsevier.

Williamson, JA & O'Hara, MW. 2017. Who gets social support, who gives it, and how it's related to recipients' mood. *Personality and Social Psychology Bulletin* 43(10):1355-1377.

Wissing, M. 2013. *Well-being research in South Africa*. Dordrecht: Springer.

Woodruff, DW. *Critical care nursing made incredibly easy*. 4th edition. China: Wolters Kluwer Health.

World Kidney Day: Chronic Kidney Disease. 2015.

From: www.worldkidneyday.org/faqs/chronic-kidney-disease/ (accessed 7 November 2017).

<https://www-01.ibm.com/support/docview.wss?uid=swg24041224> (accessed 7 November 2017).

(<https://stats.idre.ucla.edu/spss/faq/what-does-cronbachs-alpha-mean/>) (accessed 8 November 2017).

www.kidney.org/atoz/content/about-chronic-kidney-disease (accessed 23 July 2017).

Ziergert, K, Fridlund, B & Lidell, E. 2009. Time for dialysis as time to live, experience off time in everyday life of Swedish next of kin of HD patients. *Nursing Health Science* 11(1):45-50.

ANNEXURES

ANNEXURE 1: ETHICAL CLEARANCE UNISA HIGHER DEGREES RESEARCH AND ETHICS COMMITTEE



RESEARCH ETHICS COMMITTEE: DEPARTMENT OF HEALTH STUDIES REC-012714-039 (NHERC)

3 October 2018

Dear Henriette Cornelia Viljoen

Decision: Ethics Approval

HSHDC/877/2018
Student: Henriette Cornelia Viljoen

Student No.39186032
Supervisor: Dr DD Mphuthi
Qualification: D Litt et Phil
Joint Supervisor: -

Name Henriette Cornelia Viljoen

Proposal: Coping strategies used by caregivers of patients receiving haemodialysis in a private health clinic in Mpumalanga

Qualification: MPCHS94

Risk Level: Low Risk

Thank you for the application for research ethics approval from the Research Ethics Committee: Department of Health Studies, for the above mentioned research. Final approval is granted from 3 October 2018 to 3 October 2020

The application was reviewed in compliance with the Unisa Policy on Research Ethics by the Research Ethics Committee: Department of Health Studies on 3 October 2018

The proposed research may now commence with the proviso that:

- 1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.*
- 2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Research Ethics Review Committee, Department of Health Studies. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.*



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3) *The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.*

4) *You are required to submit an annual report by 30 January of each year that the study is active. Reports should be submitted to the administrator HSREC@unisa.ac.za. Should the reports not be forthcoming the ethical permission might be revoked until such time as the reports are presented.*

Note:

The reference numbers [top middle and right corner of this communiqué] should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the Research Ethics Committee: Department of Health Studies.

Kind regards,


Prof JE Maritz
CHAIRPERSON
maritje@unisa.ac.za


Prof A Phillips
DEAN OF COLLEGE OF HUMAN SCIENCES



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ANNEXURE 2: REQUEST TO CONDUCT RESEARCH

B BRAUN

Study Submission Form
(studies@bbraun.com)

Page

1 of 2

Submitted by B. Braun employee:		Study site:	
Dept./Name: Date of submission:	Karishma Singh Managing Director of B. Braun Avitum Head of Dialysis Business Unit BBraun Medical (Pty) Ltd 251 - 253 Aintree Avenue Northriding 2194 South Africa	Name: Med. Discipline: Address / e-mail address:	B Braun Mpumalanga Haemodialysis Investigator Henriette Cornelia Viljoen 07/11/2018 Not a B. Braun employee. Trichardt, Nelspruit, Witbank, Ermelo
Are any results of own experiences or previous studies available? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no If yes, please enclose the relevant documents! families in a private clinic in Gauteng. DD Mphuthi.		Coping behaviours of haemodialysed patients	
Responsible Division at B. Braun: <input type="checkbox"/> Hospital Care <input checked="" type="checkbox"/> Medical Technology <input type="checkbox"/> Aesculap <input type="checkbox"/> Out Patient Market		Product category: <input type="checkbox"/> Clinical nutrition <input type="checkbox"/> Volume replacement <input type="checkbox"/> Generics <input type="checkbox"/> Medical device Other Haemodialysis	
1. Title of the study:			
Coping strategies used by caregivers of haemodialysis patients in a private health clinic Mpumalanga			
1.1 Primary endpoint / hypothesis:			
No interventions are in place to reduce the impact on the health and well-being of the caregiver of a haemodialysis patient. The act of resilience in adjusting to the personal and social demands of providing care to a haemodialysis patient is still underestimated. Understanding the coping strategies of caregivers of haemodialysis patients might have an influence on the haemodialysis patient well-being as well as the caregivers own well-being.			
1.2 Study design:			
Blinding: <input checked="" type="checkbox"/> open <input type="checkbox"/> single <input type="checkbox"/> double		Randomized: <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Phase: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> IV <input type="checkbox"/> post-marketing surveillance / observational study		Controlled: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	
Number of centers: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> more than 3		Conduct: <input type="checkbox"/> prospective <input type="checkbox"/> retrospective	
		Type: <input checked="" type="checkbox"/> parallel-group <input type="checkbox"/> cross-over <input type="checkbox"/> single group	
1.3 Study outline (including calculated sample size, study product(s), concomitant medication, secondary criteria, methods and study schedule):			
<p>A quantitative, non-experimental, simple descriptive research design will be used. This research will be conducted at four private clinics throughout the province of Mpumalanga. A sample size of at least 127 participants. Inclusion criteria for data collection include the following i) adult male or female, 18 years or older iii) primary caregiver of the haemodialysed patient within the four clinics in Mpumalanga. Exclusion criteria include peritoneal dialysis patients. Non-probability consecutive sampling method will be used. The patient receiving chronic haemodialysis need to identify his or her primary caregiver. Explanation regarding the study needs to be explained to the patient with inclusion of a detailed leaflet. Invitation will be sent in a sealed envelope to caregivers via haemodialysed patient to participate in the research. Appointments need to be set for the primary caregivers to attend the research session at the private clinic. Each participant will receive a demographic data questionnaire and a Family Crisis Oriented Personal Evaluation Scale (F-COPES) instrument with an envelope that need to be sealed after completion. F-COPES instrument will be used by the researcher to record effective problem-solving attitudes and behaviour which caregivers develop to respond to problems or difficulties. It is a self-administered survey consisting of 30 items describing a variety of coping strategies that caregivers might use in cases of crises or stress. Dr D Mphuthi made use of the F-COPES instrument and copyright was granted to use the scale. The completion of these instruments by the caregivers of patients receiving chronic haemodialysis in four private clinics within Mpumalanga will take place over a period of a week in January 2019. The completed instruments will be collected by researcher from the unit manager. Data collection will occur during a period of one week. The statistician will use the data collected to determine the standard deviation, mean as well as frequency.</p> <p>Participants have a right to decide if they want to participate in the research study or not. Participants need to sign an informed consent form, where they agree in the participation in the research study. Participants have the right to ask questions, refuse to give information, and withdraw from the study at any time. Information regarding the study needs</p>			

to be given to participants before participation. This choice needs to be respected. The participants will not be harmed, discomforted, stigmatised or discriminated against if they do not agree to participate. Researcher need to ensure that the participant will not be harmed. This research will be conducted by professional knowledgeable persons who will ensure no harm to the participants. Participants will complete the F-COPES instrument with the assistance of the professional unit managers of the private clinics in Mpumalanga. The information received from the primary caregivers of haemodialysis patients regarding the coping strategies utilise will be used to make recommendations after completion of the study. The researcher will not be able to link the participant's identity to the F-COPES instrument. To ensure anonymity, numbers will be allocated and not participants names. The specific clinics will also be indicated as letters and not by name. Training will be given to the unit managers of the dialysis units by the researcher regarding the process of distributing and completing F-COPES instrument. Ensuring anonymity and confidentiality throughout the completion of F-COPES. Participants will receive an information letter regarding the process and anonymity will be clearly stated in the sense of no names of participants will be allocated to the instrument only numbers. The unit managers of the dialysis units will hand out a demographic and F-COPES questionnaire to each participant with an envelope. No names will be written on the demographic and F-COPES questionnaire. Only numbers will be allocated to participants. After completion of the questionnaires the participant will place the questionnaire in the sealed envelope. The sealed envelope will be placed in a sealed box that will be fetched by the researcher after completion.

1.4 Ethics:

Ethics approval; comment, if required:

yes no

1.5 Support:

Financial support required:

yes no

If yes, cost estimate:

Currency:

Other support required:

yes no

If yes, please specify:

Use of transport for caregivers if available

2. Evaluation and decision (for internal use only):

Date of decision	Name/Signature	Name/Signature
2018-11-09	 Prof. Dr. C. Barth CMO B.Braun Avitum	 Dr. B. Weise Medical Manager Nephrology

2.1 Evaluation:

Study idea relevant for B. Braun?

yes

no

Study conduct according to GCP necessary?

yes

no

2.2 Decision:

Rejected

Immediate action approved

Assigned to:

Dept./Name: Karishma Singh
Managing Director of B. Braun Avitum
Head of Dialysis Business Unit
BBraun Medical (Pty) Ltd
251 - 253 Aintree Avenue
Northriding 2194
South Africa

For later consideration

To be resubmitted by:

Dept./Name:

Date for resubmission:

2.3 Reasons for decision:

study has potential to improve patient care

Study Submission Form.dot / Bericht_e (04-10/0001)

Qualifikation des Studienzentrums zur Durchführung der Studie/ <i>Qualification of the Study Site for the Study Conduct</i>	GCP required
Fazit / <i>Conclusion</i>	We do recommend the conduct of this study

Für die Stellungnahme standen folgende wichtige Eckdaten zur Verfügung: / *The statement is based on the following information:*

- X Study
- X Hypothesis and Design
- X Number of Sites
- X Calculated Sample Size
- X Indications
- X Objectives
 - Variables
- X Inclusion /Exclusion Criteria
- X Study Schedule
- X Statistical
- X Methods

4. Unterschriften / Signatures

Karishma Singh
Managing Director of B. Braun Avitum
South Africa
Contact MSA: Dr. B. Weise

Project manager MSA: First name, last name 2018-11-09 B. Weise
Date, Signature

Karishma Singh
Managing Director of B. Braun Avitum
South Africa
Contact MSA: Dr. B. Weise

Budget responsible: First name, last name 2018-11-09 B. Weise
Date, Signature

Prof. Dr. C. Barth
CMO B. Braun Avitum AG

Chief Medical Officer : First name, last name 2018-11-27 C. Barth
Date, Signature

Anhänge/Appendix (optional): Study synopsis or other study-relevant documents

ANNEXURE 3: DEMOGRAPHIC SHEET

Participant code: _____ Centre code: _____ (official use only).

Dear Participant

In order to describe the context of this research study, the following information must be obtained. Please do not write your name on any of the pages included in this package.

Please mark the applicable option.

Biographic data

1.	Age	18-30		1
		31-40		2
		41-50		3
		51 and above		4
2.	Gender	Male		1
		Female		2
3.	Ethnicity	African		1
		Asian		2
		Caucasian		3
		Indian		4
4.	Relationship to Patient	Husband		1
		Wife		2
		Child		3
		Other (Specify)		4
5.	Size of family	2		1

		3		2
		4		3
		5 or more (Specify)		4
6.	Year dialysis started			

ANNEXURE 4: FAMILY ORIENTED PERSONAL SCALES: F-COPE SCALE

Purpose:

--

The Family Crisis Oriented Personal Evaluation Scale is designed to record effective problem-solving attitudes and behaviour, which families develop to respond to problems or difficulties they experience.

Dear Participant

Please read the following before completing the scale.

- First, read the list of "Response Choices" one at a time.
- Secondly, decide how each statement will best describe your attitudes and behaviour in response to problems or difficulties.
- If the statement describes your response very well, then select the number 5 indicating that you STRONGLY AGREE; if the statement does not describe your response at all, then select the number 1 indicating that you STRONGLY DISAGREE; if the statement describes your response to some degree, select a number 2, 3, 4 to indicate how much you agree or disagree with the statement about your response.

Example

1	2	3	4	5	X
---	---	---	---	---	---

When we have a problem with the family, we call the neighbours.

- Do not write your name on the questionnaire
- Use a black pen, please
- In case of any uncertainties, please contact the researcher:
Corli Viljoen: 0832273382 (Mobile)

Thank you for taking the time to complete the scale.

--

When we face problems or difficulties in our family, we respond by:

	Statement	Strongly Disagree	Moderately Disagree	Neither agree nor disagree	Moderately agree	Strongly Agree
		1	2	3	4	5
1.	Sharing our difficulties with relatives					
2.	Seeking encouragement and support from friends					
3.	Knowing we have the power to solve major problems					
4.	Seeking information and advice from persons in other families who have faced the same or similar problems					
5.	Seeking advice from relatives (Grandparents, etc.)					
6.	Seeking assistance from community agencies and programs designed to help families in our situation					
7.	Knowing that we have the strength within our own family to solve our problems					
8.	Receiving gifts and favours from neighbours (e.g. food, taking in mail, etc.)					
9.	Seeking information and advice from the family doctor					
10.	Asking neighbours for favours and assistance					
11.	Facing the problems "head-on" and trying to get a solution right away					
12.	Watching television					

	Statement	Strongly Disagree	Moderately Disagree	Neither agree nor disagree	Moderately agree	Strongly Agree
		1	2	3	4	5
13.	Showing that we are strong					
14.	Attending church service					
15.	Accepting stressful events as a fact of life					
16.	Sharing concerns with close friends					
17.	Knowing luck plays a big part in how well we are to solve family problems					
18.	Exercising with friends to stay fit and reduce tension					
19.	Accepting that difficulties occurs unexpectedly					
20.	Doing things with relatives (get together, dinners, etc.)					
21.	Seeking professional counselling and help for the family difficulties					
22.	Believing we can handle our own problems					
23.	Participation in church activities					
24.	Defining the family problem in a more positive way so that we do not become discouraged					
25.	Asking relatives how they feel about problems we face					
26.	Feeling that no matter what we do to prepare, we will have difficulty handling problems.					
27.	Seeking advice from a minister					

	Statement	Strongly Disagree	Moderately Disagree	Neither agree nor disagree	Moderately agree	Strongly Agree
		1	2	3	4	5
28.	Believing if we wait long enough the problems will go away					
29.	Sharing problems with neighbours					
30.	Having faith in God					

Scoring of questionnaire

F-COPES

Responses are weighted as indicated on the questionnaire. Take note that item 18 is taken into account in neither the subscales nor the total score.

Summarise scores subscales and total.

Acquiring social support	1, 2, 5, 8, 10, 16, 20, 25, 29
Reframing	3, 7, 11, 13, 15, 19, 22, 24
Seeking spiritual support	14, 23, 27, 30
Mobilising family to acquire and accept help	4, 6, 9, 21
Passive appraisal	12*, 17*, 26*, 28*
* The scores of the last subscale must be reversed	1=5, 2=4, 3=3, 4=2, 5=1

ANNEXURE 5: PARTICIPANT INFORMATION LEAFLET

Title of Project: Coping Strategies used by Caregivers of Patients Receiving Haemodialysis in a Private Company: Mpumalanga

Researchers' name: Henriette Cornelia Viljoen

College of Human Sciences

UNISA

Dear Participant

My name is Henriette Cornelia Viljoen, and I am a postgraduate student in Masters Nursing Science degree of the College of Human Sciences at the University of South Africa (UNISA). You are invited to volunteer to participate in my research project on the coping strategies of the caregivers of patients receiving haemodialysis. This research project form part of my requirements for the completion of this degree.

This letter will provide you with the necessary information regarding the research study. It will assist you in whether you would like to participate in this research study. In the instance of not understanding what is expected of you, do not hesitate to ask me any questions.

I would like you to complete a questionnaire. This will take approximately 10–15 minutes. The unit manager will hand out the questionnaire to you with an envelope. The envelope is for you to put the completed questionnaire to ensure complete confidentiality. It will be kept in a safe place for confidentiality purposes. Do not write your name on the questionnaire.

The Research Ethics Committee of UNISA, Faculty of Human Science, granted me permission regarding the conduction of my research study. Your participation in this study is voluntary. You can refuse or stop anytime you do not want to participate any longer without giving any reason.

The information will be given anonymously because no names will be written on the questionnaire. I will not be able to trace the information back to you. Once you have submitted your questionnaire, you cannot take it back. Any publication that might lead out of this study will protect your anonymity.

I sincerely appreciate your assistance.

Yours truly

Henriette Cornelia Viljoen

ANNEXURE 6: INFORMED CONSENT TO BE PART OF THIS RESEARCH STUDY

Title of the Project: Coping strategies used by caregivers of patients receiving haemodialysis in a private company: Mpumalanga

Researcher Name: Henriette Cornelia Viljoen. College of Human Sciences. UNISA.

Supervisor: Prof David Mphuthi

Invitation to be part of a research study

You are invited to participate in a research study. To participate, you must be eighteen years and older, and be English proficient. Taking part in this research project is voluntary.

Important information about the research study

Things you should know:

- The purpose of the study is to describe the coping strategies of caregivers of haemodialysis patients. If you choose to participate, you will be asked to complete a questionnaire. This will take approximately 10–15 minutes.
- The outcome of this study will assist the nephrology nurse in understanding and supporting the caregivers of haemodialysis patients. This will ensure the increased quality of life for the caregiver and the haemodialysis patient.
- Taking part in this research project is voluntary. You don't have to participate, and you can stop at any time.

Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

What is the study about and why are we doing it?

The purpose of the study is to determine the coping strategies of the primary caregiver of patients receiving haemodialysis in a private company in Mpumalanga. The information collected from the questionnaire will be used to understand the caregiver coping mechanisms better. This information will be then used to improve the relationship between the nephrology nurse and the caregiver. Quality of life of the caregiver and haemodialysis patient will improve through this information sharing.

What will happen if you take part in this study?

If you agree to take part in this study, you will be asked to answer a questionnaire once. The completion of the questionnaire will take approximately 10–15 minutes, and this will be done at the dialysis unit where your haemodialysis patient is receiving his or her haemodialysis.

How could you benefit from this study?

Although you will not directly benefit from being in this study immediately, others might benefit in the future because of information gathered through answering the questionnaire. Support systems improvements toward caregivers will be beneficial in the future.

What risks might result from being in this study?

We don't believe there are any risks from participating in this research. No names or institution names will be used in this study. You, as a participant, will not write your name on the questionnaire, and only numbers will be allocated to your questionnaire.

How will we protect your information?

If any results of this study are published, your information will be protected. No information will be included that could directly identify you.

The researcher will protect the confidentiality of your research records by using numbers and not names. Your name and any other information that can directly identify you will be stored separately from the data collected as part of the project.

How will we compensate you for being part of the study?

Transport will be provided for you as a participant from your home and back to your home by the private dialysis company with their private minibus, or transport expenses will be remunerated.

Refreshments will be provided at the dialysis premises on the day of commencement of the research study.

Your participation in this study is voluntary

It is totally up to you to decide to be in this research study. Participating in this study is voluntary. Even if you decide to be part of the study now, you may change your mind and stop at any time. You do not have to answer any questions you do not want to answer.

Contact Information for the study team and questions about the research

If you have questions about this research, you may contact:

Corli Viljoen

Phone: +2717 6388363

Email: 39186032@mylife.ac.za

Consent to participate in this Study

By signing this document, you agree to be in part of this study. Make sure you understand what the study is about before you sign. The researcher will give you a copy of this document for your records and a copy will be kept with the study records. If you have any questions about the study after you sign this document, you can contact the researcher using the information provided.

I understand what the study is about and my questions so far have been answered. I agree to take part in this study.

Printed Participant Name

Signature

Date

Printed Investigator's Name

Signature

Date

ANNEXURE 7: INTERESTING RESEARCH TO BE CONDUCTED IN THE DIALYSIS UNIT

We are looking for participants to participate in a new study

- Title:** **Coping strategies used by caregivers of patients receiving haemodialysis in a private health clinic in Mpumalanga.**
- What?** The researcher wants the primary caregivers of patients receiving haemodialysis to complete a questionnaire regarding their coping strategies. This questionnaire will only take 10 minutes of the caregivers time.
- Eligibility:** All participants willing to participate must be:
- Older than 18 years of age
 - English literate
- Benefits:** The indirect benefits of this study is that there will be new insight for management into current practices that will lead to meaningful recommendations regarding support given to caregivers.
- Risks** There are no risks involved in this study, as discussed in the informed consent document. The researcher has taken every possible precaution to eliminate and reduce any potential risks involved in this study.
- Compensation** There will be no remuneration for participation, although public transport will be paid at a set rate. Your name will be entered into a lucky monetary draw.
- Contact** For any enquiry about the research please contact:
Corli Viljoen
Cell: 0832273382
Email: corliviljoen@gmail.com
- Date:** February to May 2019

ANNEXURE 8: LANGUAGE EDITING CERTIFICATE

7542 Galangal Street

Lotus Gardens

Pretoria

0008

26 August 2019

TO WHOM IT MAY CONCERN

This certificate serves to confirm that I have edited and proofread Ms HV Viljoen's dissertation entitled, "**COPING STRATEGIES USED BY CAREGIVERS OF PATIENTS RECEIVING HAEMODIALYSIS IN A PRIVATE HEALTH CLINIC IN MPUMALANGA**".

I found the work easy and intriguing to read. Much of my editing basically dealt with obstructionist technical aspects of language, which could have otherwise compromised smooth reading as well as the sense of the information being conveyed. I hope that the work will be found to be of an acceptable standard. I am a member of Professional Editors' Guild.

Hereunder are my particulars:



Jack Chokwe (Mr)

Contact numbers: 072 214 5489

jackchokwe@gmail.com

Professional
EDITORS 
Guild



ANNEXURE 9: TURNITIN ORIGINALITY REPORT

Turnitin Originality Report

Processed on: 24-Jan-2020 07:22 SAST
 ID: 1245749069
 Word Count: 28361
 Submitted: 1

Similarity Index	Similarity by Source	
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Coping strategies used by caregivers of patients receiving haemodialysis in a private health clinic in Mpumalanga By Henriette Cornelia Viljoen

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< 1% match (Internet from 03-Dec-2017) http://www.kidneyhealth.ca/wp/wp-content/uploads/pdfs/MRP-CKD-stages-HCP.pdf
< 1% match () https://www.ncbi.nlm.nih.gov/pubmed/30918708
< 1% match (Internet from 08-Sep-2017) http://uir.unisa.ac.za/bitstream/handle/10500/22247/thesis_marx_aa.pdf?isAllowed=y&sequence=1
< 1% match (student papers from 11-Nov-2019) Submitted to Southern New Hampshire University - Continuing Education on 2019-11-11
< 1% match (student papers from 13-Sep-2019) Submitted to Victoria University on 2019-09-13
< 1% match (Internet from 22-Jan-2020) https://hglo.biomedcentral.com/articles/10.1186/s12955-017-0646-4
< 1% match (student papers from 05-Jul-2017) Submitted to University of Derby on 2017-07-05
< 1% match (student papers from 09-May-2017) Submitted to University of Kufa on 2017-05-09
< 1% match (student papers from 22-Oct-2018) Submitted to University of Stellenbosch, South Africa on 2018-10-22
< 1% match (Internet from 27-Jan-2019) https://nurseslabs.com/chronic-renal-failure/
< 1% match (student papers from 30-Apr-2018) Submitted to Midlands State University on 2018-04-30
< 1% match (publications) Phyllis M. Eaton, Bertha L. Davis, Pamela V. Hammond, Esther H. Condon, Zina T. McGee. "Coping Strategies of Family Members of Hospitalized Psychiatric Patients", Nursing Research and Practice, 2011
< 1% match (student papers from 07-Mar-2019) Submitted to Higher Education Commission Pakistan on 2019-03-07
< 1% match (Internet from 05-Jul-2015) http://etd.uovs.ac.za/ETD-db/theses/available/etd-11222010-121604/unrestricted/NophaleLE.pdf
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