

**FACTORS CONTRIBUTING TO LOW UPTAKE OF ISONIAZID  
PREVENTIVE THERAPY AMONGST HEALTH CARE WORKERS IN A  
HOSPITAL OF MANZINI REGION, SWAZILAND**

by

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submitted in accordance with the requirements

for the degree

**MASTER OF PUBLIC HEALTH**

in the subject Health  
Studies

at the

**UNIVERSITY OF SOUTH AFRICA**

**SUPERVISOR: PROF DSK HABEDI**

SEPTEMBER 2022

## **DEDICATION**

*I dedicate this study to my late mother and my beloved FAMILY, who were there for me all the time, especially my children whom I have always been busy for them.*

## DECLARATION

I declare that **FACTORS CONTRIBUTING TO LOW UPTAKE OF ISONIAZID PREVENTIVE THERAPY AMONGST HEALTH CARE WORKERS IN A HOSPITAL OF MANZINI REGION, SWAZILAND** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.



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**Nondumiso Dlamini**

SEPTEMBER 2022

**DATE**

## ACKNOWLEDGEMENTS

I would like to extend my heartfelt thanks to the following persons for their respective contributions to this dissertation:

- First and foremost, the almighty GOD who gave me strength, and made it possible for me to complete the study.
- My husband and better half, Bhekani Malaza, who supported me from day one and at times helping me with the typing and technical work of the study.
- My two beautiful kids, my son Nqobizwe and my daughter Nozwelihle.
- My two supportive brothers Musa and Sabelo.
- A special thank you to my supervisor, who has always been there and supportive to me and propelling me into becoming the best person, Professor DSK Habedi.
- My colleagues at my workplace.
- Special thanks go to Raleigh Fitkin Memorial (RFM) Hospital, the management and the rest of the staff.
- Also, my special thank you goes to the people who have assisted me with compiling the whole study that is my editor Dr M Lupupa and the statistician who put meaning to the numbers obtained from the study Mr Sikhulile Nxumalo the actuarial statistician.
- Last, but not least, I acknowledge everyone who assisted me in one way or another.

**FACTORS CONTRIBUTING TO LOW UPTAKE OF ISONIAZID PREVENTIVE THERAPY AMONGST HEALTH CARE WORKERS IN A HOSPITAL OF MANZINI REGION, SWAZILAND.**

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**ABSTRACT**

The purpose of this study was to determine the factors that contribute to the low uptake of isoniazid preventive therapy amongst health care workers (HCWs) in a hospital of Manzini region, Swaziland. A quantitative, descriptive cross-sectional research design was used as the researcher aimed at getting precise measurements, quantification and generalizable results (Polit & Beck 2017:163). Two hundred and one (201) health care workers responded and completed the questionnaires faithfully, and then the researcher gathered the results, compiled the study, assigned numerical values to variables, and specified how the variables were measured. The research site was a hospital of Manzini region, Swaziland. The dependent variables were the factors that contribute to the low uptake of isoniazid preventive treatment (IPT) and the independent variables were the selected respondents who were working in medical wards and outpatient departments and have worked there for more than a year.

**Data Analysis**

The researcher was available to clarify any misunderstanding. Data coding was used, to organize the data collected. It was entered into Microsoft Excel 2014 and

then imported to Statistical Package for Social Sciences (SPSS) v24.0 for statistical analysis. Tables and graphs were used to present the collected data.

## **Study Results**

The results of the study suggest that health care workers generally do not support the implementation of IPT on them as a preventative measure against TB. The results further suggest that the long period of taking Isoniazid as compared to the limited durability of IPT benefit of 2-3 years is a major deterrent factor to HCWs taking IPT. Lastly, the results indicate that knowledge is not as great a determinant factor to IPT uptake as previously posited in other studies, and that most HCWs support the provision of alternative prevention methods such ventilation of spaces and wearing of masks. This illustrates that the topic of the factors contributing to the low uptake of IPT amongst health care workers is a worthwhile topic for further research.

## **KEY CONCEPTS**

Health care workers, Isoniazid, Low uptake, Preventive protective equipment, Preventive therapy, Prophylaxis and Tuberculosis.

## **TRANSLATED ABSTRACT**

Inhloso yalolucwaningo kucacisa tigci letingumtselela ekunatseni kancane emaphilisi i-isoniazid emkhatsini wetisebenti tasesibhedlela, esifundzeni saka Manzini, Swaziland. Kusetjentiswe I quantitative descriptive, cross sectional kulelicwaningo ngoba umbhali bekafuna kuvisisa tizatfu, nekubala kutsi tiyini tizatfu letibanga lokunatsa ngelizinga leliphansi kwe IPT.

Tisebenti temphilo letingu 201, taphendvula phindze bagcwalisa imibuto yalolucwaningo ngekwetsembeka. Umcwaningi wabese ugogca lemuphumela wayihlanganisa wabeka ngemanani etinombolo letigucugucukako futsi wacacisa kutsi lolokugucugucukako kukalwa kanjani.

Lolucwaningo lwentiwa esibhedlela saka Manzini Swaziland. Kuhluka lokucikile sici lesinemtselela ekutsatfweni kancane kwe IPT futsi lokugucugucukayo lokutimele kwakungulabaphendvuli labakhetsiwe lasebasebente iminyaka

lengetulu kwemunyaka munye emagumbini ebantfu lakungatfolakala khona I TB.

### **Luhlathiyo Lwelucwaningo**

Imiphumela yelucwaningo ikhombakalisa kutsi tisebenti temphilo atilusekeli ngalokuphelele kunatfwa kwemaphilisi ekuvikela sifuba sengati. Lelicwaningo liphindze kwente tisebenti temphilo tidzebesele kunatsa lamaphilisi kutsi anatfwa sikhatsi lesindze kani avikelana iminyaka lemibilikuya kulemitsatfu.

Kwekugcina lemiphumela ikhombise kutsi lolwati labanalo ngaleliphilisi lwenta bangalijabuleli ngoba bati imivukela yawo, nekutsi ngeke bakhone lokunatsa betsembeke kulamaphilisi. Kungaleso sizatfu ke bona banconota kutsi bativikele ngaletinye tindlela lokufaka ekhatsi kuvula emafasitelo nekufaka sifonyo sonkhe sikhatsi. Lokusho kutsi kusadzingeka kufundzisa lokunengi neku

### **Imiphumela yalelicwaningo**

Lolucwaningo lutofaka sandla ehlalakahleni yema HCWs kanye nemibono yabo mayelana nekuvikela sifuba sengati. Lolucwaningo lutobhekana netintfo letibalulekile letinemtselela ekutsatfweni kancane kwe –IPT. Lomphumela utophindze usite hulumende welive kutsi ngumiphi leminywe imitamo lengentiwa kusita lokunatfwa kwe IPT, etisebentini tesibhedlela, kute wonkhe muntfu atotisakala phindze atfole inzuzo lenhle ngalomkhankhaso wemaphilisi. Utophindze ufake sandla emnyangweni kutsi bangawathuthukisa kanjani emasu abo ekuvimbela i-TB.

- I. DEDICATION
- II. DECLARATION
- III. ACKNOWLEDGEMENT
- IV. ABSTRACT

TABLE OF CONTENTS

CHAPTER 1

ORIENTATION TO THE STUDY.....	1
1.1 INTRODUCTION .....	1
1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM .....	2
1.2.1 Statement of the research problem.....	3
1.3 PURPOSE OF THE STUDY.....	3
1.3.1 Research Objectives.....	3
1.4 SIGNIFICANCE OF THE STUDY.....	4
1.5 DEFINITION OF TERMS AND OPERATIONAL DEFINATION .....	4
1.6 FOUNDATION OF THE STUDY.....	5
1.7 RESEARCH DESIGN AND METHODS .....	6
1.7.1 Research design.....	7
1.7.2 Research methods .....	7
1.7.2.1 Study population.....	7
1.7.2.2 Sampling and sampling techniques.....	8



1.7.2.3	Study site.....	8
1.7.2.4	Date collection .....	9
1.7.2.5	Data analysis .....	9
1.8	SCOPE OF THE STUDY .....	9
1.9	STRUCTURE OF THE DISSERTATION.....	10
1.10	CONCLUSION.....	10
CHAPTER 2		
LITERATURE REVIEW.....		
		11
2.1	INTRODUCTION.....	11
2.2	RISKS OF HEALTH CARE WORKERS .....	12
2.3	MEASURES TO BE IMPLEMENTED.....	12
2.3.1	Barriers to infection prevention control implementation .....	13
2.3.2	Major tuberculosis control measures.....	13
2.3.2.1	Environmental of controls.....	14
2.3.2.2	Administrative controls.....	14
2.3.2.3	Personal protective equipment.....	15
2.3.3	Aim of the infection prevention.....	16
2.4	POSSIBLE IMPLICATIONS OF ISONIAZID PROPHYLAXIS'S TREATMENT .....	19
2.5	RECOMMENDATIONS OF PREVENTING TUBERCULOSIS IN HEALTH CARE WORKERS.....	21
2.6	TUBERCULOSIS AND ISONIAZID MECHANISM .....	23
2.7	SUMMARY .....	24

## CHAPTER 3

RESEARCH METHODS .....	25
3.1 INTRODUCTION .....	25
3.2 RESEARCH DESIGN .....	25
3.3 DESCRIPTIVE DESIGN .....	26
3.4 STUDY SETTING .....	26
3.5 POPULATION AND SAMPLE .....	27
3.5.1 Inclusion criteria.....	27
3.5.2 Exclusion criteria .....	28
3.5.3 Sample and Sampling .....	28
3.5.4 Sampling method.....	28
3.5.5 Sample Size .....	29
3.5.6 Sample size example .....	29
3.6 DATA COLLECTION .....	30
3.6.1 Instruments.....	30
3.6.2 Data Collection procedure .....	31
3.6.3 Data management .....	31
3.6.4 Data Analysis plan .....	31
3.7 PRE-TEST .....	32
3.8 VALIDITY AND RELIABILITY OF THE STUDY.....	32
3.8.1 Validity.....	32

3.8.2	Reliability .....	33
3.9	BIAS .....	33
3.10	ETHICAL CLEARANCE .....	33
3.10.1	The Right To Privacy .....	34
3.10.2	The Right to Autonomy .....	34
3.10.3	Beneficence.....	34
3.10.4	Non maleficence.....	34
3.10.5	The Right to Full Diclosure .....	35
3.10.6	The right to Anonymity and confidentiality.....	35
3.10.7	The Right to Protection from harm and Discomfort.....	35
3.10.8	Justice.....	35
3.10.9	Informed Conccent.....	36
3.11	Summary.....	36
 CHAPTER 4		
	ANALYSIS AND PRESENTATION OF RESULTS .....	37
4.1	INTRODUCTION .....	37
4.2	STUDY OVERVIEW .....	37
4.3	DEMOGRAPHIC DATA.....	38
4.4	DATA ANALYSIS AND RESEARCH RESULTS.....	39
4.5	THE FACTORS RESULTING IN LOW UPTAKE OF IPT .....	40

Table 4.2	.....	41
4.6	DURATION OF THE TREATMENT.....	41
4.6.1	Health care workers' perceptios towards IPT implementation on them.....	42
Table 4.3.....		43
4.6.2	Exposure on duty .....	43
4.7	MEASURES DONE TO REDUCE TB BESIDES IPT .....	44
Table 4.4.....		45
4.8	ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND KNOWLEDGE ON IPT .....	45
Table 4.5.....		45
4.9	ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND IF HAVING LTBI WOULD THEY LIKE TO BE OFFERED IPT .....	46
Table 4.6.....		47
4.10	SUMMARY .....	48
CHAPTER 5		
DESCRIPTION OF THE RESEARCH RESULTS .....		49
5.1	INTRODUCTION.....	49
5.2	PARTICIPANTS SOCIO-DEMOGRAPHIC CHARACTERISTICS .....	49
5.3	HEALTH CARE WORKERS' PERCEPTIONS TOWARDS IPT IMPLEMENTATION ON THEM REGARDLESS OF HIV STATUS.....	50
5.4	EXPOSURE ON DUTY .....	51
5.5	THE FACTORS RESULTING IN LOW UPTAKE OF IPT .....	51
5.6	DURATION OF THE TREATMENT .....	52

5.7	MEASURES DONE TO REDUCE TB BESIDES IPT .....	52
5.8	ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND IF HAVING LTBI WOULD THEY LIKE TO BE OFFERED IPT... ..	53
5.9	SUMMARY .....	54
CHAPTER 6		
CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS.....		55
6.1	INTRODUCTION .....	55
6.2	OVERVIEW OF THE STUDY .....	55
6.3	OVERALL CONCLUSIONS.....	56
6.4	RECOMMENDATIONS .....	56
6.5	CONTRIBUTION OF THE STUDY .....	57
6.6	LIMITATIONS .....	58
6.7	CONCLUDING REMARKS.....	58
LIST OF REFERENCES .....		59

## **ANNEXTURES**

Annexure 1	Participant Information Leaflet.....	69
Annexure 2	Informed Consent.....	71
Annexure 3	Request to enter study site .....	72
Annexure 4	Questionnaire .....	73
Annexure 5	Ethical Clearance Certificate.....	84

Annexture 6	Proof reader certificate.....	87
Annexture 7	Response letter from research study site.....	88
Annexture 8	Statistician certificate.....	86

## LIST OF ABBREVIATIONS

AIDS	Acquired Immuno-deficiency Syndrome
ART	Anti-retroviral therapy
HCW	Health Care Workers
HIV	Human Immuno-deficiency Virus
HRDC	Health Research and Development Committee
HSREC	Health Studies Research Ethics Committee
INH	Isoniazid
IPT	Isoniazid Preventive Treatment
MOH	Ministry of Health
PPE	Personal Protective Equipment
RFM	Raleigh Fitkin Memorial hospital
TB	Tuberculosis
WHO	World Health Organization

# CHAPTER 1

## ORIENTATION TO STUDY

### 1.1 INTRODUCTION

“It is estimated that about three health care workers (HCWs) die of tuberculosis (TB), per month in Swaziland”. Those words were verbatim quoted from Dr Jonase from International Centre for AIDS Care and Treatment Programs (ICAP) during a workshop on the benefits of Isoniazid Preventive Treatment (IPT) as a TB preventive measure amongst health care workers. IPT is the provision of prevention measures to people at high risks of developing active TB (Van Rensburg, Engelbrecht, Kigozi & Van Rensburg 2018:88). The researcher then decided to do research on IPT after discovering that many studies revealed that HCWs support IPT. However, there were few or none of them who are taking IPT as preventive measure against TB. Therefore, this study seeks to find key factors contributing to the low uptake of IPT as a TB preventive measure amongst HCWs in one of the hospitals in Manzini.

TB remains a major public health problem throughout the world. Globally, almost one third of the population is estimated to be latently infected with *Mycobacterium TB* and hence at risk of developing active TB disease. According to (Van Rensburg et al 2018:67), health care associated with TB has become a major occupational hazard for HCWs who are inevitably exposed to TB, due to frequent interaction with patients with undiagnosed and potentially contagious TB. This has since been a huge challenge that affects the health sector, as a result the IPT has been seen to be a solution. This is done by isoniazid that reduces the latent TB that later develops into active TB. Exclusion of active TB is critically important before IPT is started.

Prophylaxis with isoniazid (INH) has been shown to reduce the incidence of TB in



Human Immunodeficiency Virus (HIV) infected persons either by eradicating latent infection or preventing progression of new infection to active TB (WHO 2016:42). IPT is efficacious and is recommended for all people living with HIV in countries where tuberculosis is common. According to Swaziland annual TB program report 2017, Swaziland is still one of the countries that have the highest prevalence of HIV in countries where tuberculosis is common. Swaziland is still one of the countries that have the highest prevalence of HIV in the world.

Studies have demonstrated that the burden amongst HCWs is three times as high as in the general population, and that incidence of latest tuberculosis infection (LTBI), may be twice as high among HCWs as the general population (Calnan, Haumba, Matsebula, Shongwe, Pasipamire, Kruse Levy, Mirira, Preko, Smith-Arthur & Ghazaryan 2016:5). The risk of occupational exposure to TB in health settings in Swaziland is acute, and fear of TB has resulted in organized action by HCWs in the form of labor strikes Calnan et al (2016:3).

## **1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM**

The risk of transmission of mycobacterium tuberculosis from patients to HCWs is neglected in many low to middle-income countries, which has since led to death of HCWs due to TB. In Swaziland, it is estimated that in one month three HCWs die of TB and few of them take IPT as a TB preventive measure. According to Calnan et al (2016:4), Swaziland is one of the countries that has the highest prevalence of HIV in the world.

Zinatsa (2018:2) indicated that TB in South Africa in 2015 was 1565 per 100,000. HCWs have shown to be significantly more reluctant to accept treatment for LTBI than non-HCWs. He further stated that HCWs have lower rates of initiation of treatment for LTBI and the exact reasons for lower uptake of this evidence-based intervention among HCWs remains unclear. This raises up a question as to why HCWs still have a low uptake of IPT even after it had been proven that it decreases chances of developing active TB by (46%). Therefore, this study focused on finding out the key factors contributing to the low uptake of IPT amongst HCWs as a TB preventive measure. In addition, there are no previous

studies done to find the factors that result in low uptake of IPT amongst HCWs to prevent TB in Manzini, Swaziland.

### **1.2.1 Statement of the research problem**

The risk of transmission of mycobacterium tuberculosis from patients to HCWs is neglected in many low and middle-income countries, which has since led to death due to TB. In Swaziland, it is estimated that three HCWs die of TB in one month and few of them take IPT as a TB preventive measure. According to Calnan et al (2016:5), Swaziland is one of the countries that have the highest prevalence of HIV in the world. Studies in South Africa have demonstrated that the TB burden among HCWs is three times as high as in the general population, and that incidence of LTBI may be twice as high amongst HCWs as the general population.

Bar- Meir, Pariente, Romen and Wiener- Well (2021:2) indicated that HCWs have shown to be significantly more reluctant to accepting treatment for LTBI than non-HCWs. The authors further stated that HCWs have lower rates of initiation of treatment for LTBI and the exact reasons for lower uptake of this evidence-based intervention among HCWs remains unclear.

This raises up the question, why HCWs still have a low uptake of IPT even after it has been proven that it decreases chances of developing active TB by 46%.

## **1.3 PURPOSE OF THE STUDY**

The purpose of this study was to determine the factors that contribute to the low uptake of isoniazid preventive therapy amongst health care workers in a hospital of Manzini region, Swaziland.

### **1.3.1 Research Objectives**

- To describe the key factors which contribute to low uptake of IPT as a TB

preventive measure amongst health care workers.

- To assess the health care workers' perceptions towards IPT implementation on them regardless of HIV status.
- To acquire information on what other means besides IPT could be implemented to reduce the incidence of TB amongst health care workers.

#### **1.4 SIGNIFICANCE OF THE STUDY**

The results of this research are anticipated to promote effective initiation and implementation of IPT amongst HCWs regardless of their line of duty by further improving the knowledge and attitude of them towards IPT. The study will benefit the government and stakeholders in the implementation of IPT amongst HCWs, which will lead to the reduction of the incidence of TB.

#### **1.5 DEFINITION OF TERMS AND OPERATIONAL DEFINITIONS**

To clarify the concepts used in this study, the researcher has given the following definitions.

**Factor** – is anything that contributes causally to the results (Weller 2018:56). In this study, factors refer to the agents or elements that cause low uptake of IPT amongst HCWs as a TB preventive measure.

**Health care worker** – is a person who works in a hospital or health care center (Weller 2018:86). In this study, health care workers refer to nurses, doctors, cleaners and grounds men who work in the hospital.

**Isoniazid Preventive Therapy (IPT)** – is the provision of the drug isoniazid to people at high risk of developing active TB who do not have any symptoms of active TB (Adams, Mahlalela, Talbot, Pasipare, Ginindza, Calnan & Haumba 2017:9). In this study, IPT refers to the program of giving the isoniazid drug to individuals with latent TB and are at risk of developing it, in this case HCWs.

**Low uptake** – means using something at a minimum pace or standard than expected or should (Weller 2018:123). In this research, low uptake refers to the small rate of the use of the IPT amongst health care workers.

**Preventive measure** – This is an action intended or used to prevent or hinder the occurrence of something (Assebe, Reda, Wubeneh, Lerato & Lambert 2015:3). In this research, preventive measure refers to the prophylactic (isoniazid drug) that prevents the course of illness, which is TB in this case.

## **OPERATIONAL DEFINITIONS**

The researcher empirically established the concept of the dependent and independent variable. The dependent variable being the factor contributing to the low uptake of IPT and the independent being the selected respondents who are in the inclusion criteria of the study selection.

### **1.6 FOUNDATION OF THE STUDY**

Theoretical framework is when a study is based on a particular theory. In a study that has its roots in a specified conceptual model, the framework may be called the conceptual model. The Health Belief Model (HBM) is a framework for explaining peoples' health related behavior, such as health care use and compliance with a medical regimen. According to the model, health- related behavior is influenced by a person's perception aimed at reducing the threat as cited in (Becker 1976:134; Polit & Beck 2017:211).

In this study the researcher used the Health Belief Model as a conceptual framework guiding the study on the basis for understanding human health attitudes and beliefs such as health care use and compliance (Polit & Beck 2017:209). The focus was on low uptake of IPT amongst HCWs at a hospital in Manzini, Swaziland. The model was used in this study because not only does it focus on the health of the HCWs, but it was also lending itself into the belief of the respondents digging deeper into their beliefs, customs and knowledge about this prophylaxis. Probing questions used in the questionnaire were

based on the model, focusing on two dynamic characteristics, namely: their demographic data and the factors contributing to the low uptake of IPT. The researcher was able to identify challenges faced by the respondents that made them have a low uptake to the prophylaxis IPT.

The HBM was one of the first models that adapted theory from the behavioral sciences to health problems and it remains one of the most widely recognized conceptual framework of health behavior. It can be divided into three categories: individual perceptions, modifying factors and likelihood of action.

Individual perceptions are factors that affect the perception of illness and with the importance of health to the individual, perceived susceptibility, perceived severity.

Modifying factors, which can be demographic variables, perceived threat, and cues to action.

Likelihood of action is the perceived benefits minus the perceived barriers of taking the recommended health action. The above combination of these factors causes a response that often manifests into the likelihood of that behavior occurring (Janz & Becker 1984:182; Rosenstock & Strecher 1988:176).

Hence the researcher used theory to obtain the factors contributing to the IPT low uptake.

## **1.7 RESEARCH DESIGN AND METHODS**

This section serves to orientate the reader to the research design and methods used in this dissertation. It provides answers to the research questions posed by the researcher in the planning of the study.

### **1.7.1 Research design**

The researcher used a quantitative, descriptive cross-sectional research design in this study because she aimed at getting precise measurements and quantification and the researcher's desire to generalize the results (Polit & Beck 2017:163). In this study, numerical values were collected from respondents to assess systematically

the key factors that contributed to low uptake of IPT as a TB preventive measure amongst HCWs. The design further controlled the study through imposing conditions on the research situation so that biases were minimized whilst maximizing precision and validity (Polit & Beck 2017:238).

Cross-sectional research design was used in this study because data was only collected once from the sampled group within a brief span of time. As stated in Polit and Beck (2017:239) that cross-sectional study designs are economical in terms of time and resource as a large sample can be studied within a relatively short period of time and easy to manage, even though they can pose a problem for inferring changes over time.

## **1.7.2 Research methods**

Research methods are techniques that researchers use to structure a study and to gather and analyze information relevant to the research questions (Polit & Beck 2017:15). A quantitative study was used in this research and this section is discussed in detail in Chapter 3.

### **1.7.2.1 Study population**

In this study, the population comprised of all HCWs who were involved in the clinical practice in a hospital of Manzini region, Swaziland, who are clinicians and met the following.

#### Inclusion Criteria

- HCWs who delivered care in the wards where there was a high possibility of meeting and treating patients who were TB positive such as medical wards and outpatient departments.
- HCWs who worked in above specified departments for more than a year and above.
- Males and females HCWs.

- HCWs aged 21 to 60 years.

#### Exclusion Criteria

- HCWs who worked for less than a year in medical and outpatient departments.
- HCWs who were not on duty during the data collection period.
- HCWs who fell outside the age category of 21 to 60 years.
- HCWs from other hospitals of the same region.

#### **1.7.2.2 Sampling and sampling technique**

A quantitative, descriptive cross-sectional research design was used in this study because the researcher aimed at getting the precise measurements and quantification and to generalize the findings (Polit & Beck 2017:163). In this study, numerical values were collected from respondents to assess systematically the key factors that contribute to low uptake of IPT as a TB preventive measure amongst HCWs. The design was also chosen because of its ability to control the study through imposing conditions on the research situation so that biases would be minimized, and precision and validity maximized. Cross-sectional research design was used because data was collected once from the sampled group within a brief span of time.

About 201 HCWs who offered health care services in the wards where there was a high possibility of meeting or treating TB positive clients responded. Such wards were medical wards and outpatient departments. Respondents were those HCWs who have worked in the departments for more than a year.

#### **1.7.2.3 Study site**

The study site was one of the public hospitals in Manzini Region, Swaziland. The researcher got permission from the directors of the hospital.

#### **1.7.2.4 Data collection**

The researcher used a self-report instrument in the form of a self-administered modified questionnaire from a study done by Polit and Beck (2017:343) for data collection in this study. The questionnaire consisted of two sections, the first section was about demographic data, and the second section was having questions on the factors that contribute to the low uptake of IPT amongst health care workers. Potential respondents were given information leaflets about the study. Respondents who had read as well as comprehended the information in the leaflets volunteered to respond and those who volunteered to respond were given consent forms to sign and then the questionnaires to complete for data collection purposes. The researcher was always available to clarify misunderstandings and answer questions arising from the questionnaires. Consent forms were attached to the questionnaires, and these ensured anonymity, privacy and confidentiality.

#### **1.7.2.5 Data analysis**

The relationship between the numbers of attribute variables were assessed using cross-tabulation and Pearson's chi-squared test. The researcher used Statistical Package for the Social Sciences (SPSS) Version 24.0 software to analyze the aggregated data. A statistician assisted the researcher with compiling the statistical numbers and representing them in tables and charts.

### **1.8 SCOPE OF THE STUDY**

The scope of the study was to cover and protect all HCWs from TB. It aimed at increasing knowledge about INH and to create a good uptake of the prophylaxis amongst HCWs. Increasing their knowledge would broaden their mindset and perceptions about the treatment limited to the factors. In addition, it aimed at changing their attitudes on the prophylaxis and the period taken for the treatment. In studying the phenomenon, limitations included insufficient funds for conducting the investigation and to cater for all expenditures involved.



## **1.9 STRUCTURE OF THE DISSERTATION**

The study is divided into six chapters as follows:

**Chapter 1:** This chapter outlined what the study intended to do. It described the background to the problem, the purpose of the study, as well as the objectives. It also briefly described the design and methods of the study, its scope, and the data-analysis procedure to be followed.

**Chapter 2:** Chapter 2 reviewed literature from different settings that were relevant to the topic of the study.

**Chapter 3:** This chapter explained the research design and methods and the data-collection methods and processes used to obtain the relevant information.

**Chapter 4:** Data analysis using different statistical methods was presented in this chapter.

**Chapter 5:** The discussion of the the research results was presented in this chapter.

**Chapter 6:** Chapter 6 presented the conclusions, recommendations, and limitations of the study.

## **1.10 CONCLUSION**

This chapter provided an overview and introduction to the study. It gave a general background to the study and outlined the research questions, the purpose of the study, the research objectives, and the research design and methods. This chapter also briefly described the data-collection procedure for the study, contents of which are discussed in detail in the chapters that follow, especially in Chapter 3.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 INTRODUCTION

This chapter outlines the literature review that was undertaken for this study. It reviews literature that is relevant to the topic of study (Creswell 2014:26). The literature review shall discuss factors that contribute to the low uptake of isoniazid preventive therapy as a TB preventive measure amongst healthcare workers worldwide and particularly in Swaziland. A study of literature provides an insight to what others have done that is related to the topic of study (Burns & Grove 2015:1198).

As discussed by Calnan, Haumba, Matsebula, Shongwe, Pasipamire, Kruse Levy, Mirrira, Preko, Smith, Arthur and Ghazaryan (2017:3), IPT is the intervention that has shown to be effective in decreasing the risk of new TB, the risk of re-infection amongst health care workers, who had TB in the past and the risks of latent TB progressing to active TB. IPT must be routinely given to HCWs to prevent them from activating their latent TB, since they are highly exposed.

It is worth noting that the healthcare industry is one of the most hazardous environments to work in. Employees in this industry are constantly exposed to a complex variety of health and safety hazards in the course of their work, thus a health care worker needs protection from these workplace hazards just as much as any other category of workers such as miners and construction workers (Joseph 2016:2).

A health facility is a workplace as well as a place for giving and receiving care. HCWs are most often viewed as immune, and patients are most of the time put first than the caregivers instead of them first. They are often expected to sacrifice their own well-being for the sake of their patients. Unsafe working environment contribute to health workers' attrition in many countries due to work-related illness and injury and resulting in fear of HCWs for occupational infection, including TB and HIV. Protecting the health of health workers is critical to having an adequate workforce of trained and healthy health personnel (CMH1503 Only Study Guide 2018:38).

## **2.2 RISKS OF HEALTH CARE WORKERS**

Calnan et al. (2017:2) stated that health care workers in Swaziland are at high risk of being infected with TB, but existing infection control and occupational health policies often fall short in mitigating the risk of contracting TB in the workplace. Health service failure to systematically offer IPT to HCWs, which was endorsed by the World Health Organization (WHO) contributes significantly to the TB incidence among HCWs in high HIV prevalent settings. The increased risk of TB infection among healthcare workers is well established and widespread; encompassing not just direct providers but also a range of health personnel in the healthcare settings, particularly in high TB burden countries (Calnan et al 2017:4). This can lead to absenteeism due to illness or death, and the perceived risk of acquiring TB may negatively affect a health care performance in that facility.

By definition health care workers include nurses, physicians, nursing and medical students, dental workers, laboratory workers and other specialists who work in health care facilities (Gawande 2020:270). HCWs at risk of TB are all HCWs who are exposed to patients with suspected or confirmed TB (including transport staff) or dealing with specimen for the diagnosis of TB (Calnan et al 2017:4). TB is an infection caused by mycobacterium TB that is transmitted via airborne particles called droplets nuclei. Droplets only travel for three feet before the gravity pulls them to the ground. The droplets nuclei are generated when persons who have pulmonary or laryngeal TB cough, sneeze, shout, speak, or spit. TB has been recognized as one of the important infectious occupational diseases affecting health care workers. FPD (2015:6-7) reports that there has been an increase in TB cases among health care workers worldwide. The chain of preventing transmission to HCWs can be introduced by isolating patients with active disease, starting effective anti-TB treatment and taking appropriate control measures.

## **2.3 MEASURES TO BE IMPLEMENTED**

According to Ehrlich, Spiegel, Adu and Yassi (2020:2) a comprehensive occupational health approach is an essential complement to Infection Prevention and Control (IPC) guidelines. Such an approach includes a health system framework focusing on upstream

or mediating components, such as a statutory regulation, leadership, information system, and staff trained in protective disciplines. They also mention that within the classical prevention framework, primary prevention needs to be complemented by occupational health services (secondary prevention) and worker's compensation (tertiary prevention). High rates of TB in the low- and middle-income countries are associated with high rates of latent TB and TB disease in health care workers (Ehrlich et al 2020:2).

### **2.3.1 Barriers to Infection Prevention Control Implementation**

Barriers to IPC implementation vary with the study design and questions asked but cover the whole gamut: lack of a regulatory framework and associated budget, lack of management support and unfamiliarity of staff with IPC guidelines. Failure to triage or screen patients include insufficient infrastructure, and equipment, such as isolation spaces and Personal Protective Equipment (PPE), deficient ventilation, inadequate staffing and training, poor functioning of infection control committees, and neglect of exposed nonclinical staff (Ehrlich et al 2020:2).

Additional barriers included weaknesses in communication between the facilities and central medical stores and frequent turnover of personnel who had been trained to administer IPT (Calnan et al 2017:3).

### **2.3.2 Major Tuberculosis Control Measures**

According to Calnan et al (2017:3) occupational health and safety strategies to protect HCWs in settings with a high TB burden have lagged and tend to focus on strengthening traditional infection control measures, including improving administrative and environmental controls and increasing the use of PPE and strengthening reporting tools for IPT. These are three majors which play a vital role in the control of TB in the health care settings. The Swaziland national TB management guidelines emphasise provision of IPT to HCWs. However, the introduction of IPT to HCWs was not prioritized until the World Health Organisation (WHO) classified preventive controls into three, namely:

1. Environmental controls
2. Administrative controls (managerial) and

### 3. Personal protective equipment.

This includes the prophylaxis of INH, which is the focus of this study, equipping the health care workers with prophylaxis so they can protect themselves, be it that their line of duty is a risk and should be given the surety of having a right to protect themselves from the danger of TB (CDC, Tuberculosis Infection Control 2016:199).

#### **2.3.2.1 Environmental controls**

Certain areas of the health care facility can be considered as high risk and priority should be given in implementing environmental controls such as the TB wards, treatment rooms, isolation rooms, HIV care facilities, outpatient department and radiology department to name a few. Environmental control is important in preventing the spread and reducing the concentration of infectious droplets in the air. To reduce transmission, three principles must be considered, and these are dilution, filtration, and disinfecting (WHO 2019:21).

#### **2.3.2.2 Administrative controls**

Administrative controls are important measures in reducing the risk of exposure of HCWs and patients to TB. These controls consist of certain activities, which are aimed at preventing health care workers from being infected. This includes initiating a TB infection control committee, which can be incorporated to the existing infection control committee. Administrative controls should be spelled out in a TB infection control plan that includes Standard Operating Procedures (SOPs) with the steps that should be taken in a given home, school, or community setting. Train the persons responsible for implementing and enforcing the TB infection control program (Kielman, Karat & Zwama 2020:42).

According to End TB strategy (2015:2) there should be designated person with a back-up as the TB resource person to whom questions and problems should be addressed. Such as measures to control TB transmission, screening and medical surveillance for HCWs at risk, training, educating and counselling HCWs, personal protective equipment, periodic evaluation of the program and giving out the prophylaxis to health care workers.

### **2.3.2.3 Personal protective equipment**

Workplace risk care setting should conduct initial and ongoing evaluation of the risk for transmission of TB; however, a risk assessment should include the following: determine risk classification of TB infection at health facility, analysis of screening test for HCWs, evaluation and auditing of administrative infection control measures, including isolation policies, anti TB therapy regimens. In addition, evaluation of the function and maintenance of environmental controls and implementation of appropriate control measures to control and prevent the spread of TB should be done (Calnan et al 2017:3). Occupational health and safety strategies to protect HCWs in settings with a high TB burden have lagged and tend to focus on strengthening traditional infection control measures, including improving administrative and environmental controls and increasing the use of personnel protective equipment. The consistent application of these measures is often hampered by health system constraints, including weak infrastructure, lack of resources for infection control materials, and poor knowledge and awareness provision. A number of factors, including job roles, duration of employment, and availability of personal protective equipment may impede the worker's ability to reduce the risk of exposure to TB over the long term, as stated by (Brouwer, Coelho & Moses 2014:4;5).

The administration of prophylactic therapy for HCWs at high TB burden settings is a potential strategy for reducing TB incidences. Bhebhe, Van Rooyen, Steinberg (2014:5) noted that prophylactic therapy in the form of isoniazid- based preventive therapy is a commonly adopted approach for reducing the risk of developing active TB disease among high-risk groups such as people living with HIV (PLHIV) and children under the age of five who are exposed to TB. The World Health Organization endorses a strategy for preventing TB among high –risk groups based on administration of isoniazid for six months and calls for a case-by-case evaluation and further operational research regarding the provision of IPT among HCWs. The routine provision of IPT to HCWs requires one to be honest and dedicated to the screening and the medication taken, to rule out active TB (WHO 2016: 36)

To date, the operational and ethical challenges have prevented many healthcare infection

prevention control settings from attempting IPT provision for HCWs. Though some evidence suggests that the introduction of IPT reduced the relative from tuberculin skin testing and chemo- prophylaxis programs among HCWs, conducted in 2016 yielded only three examples from high TB prevalence settings, while supporting a recommendation that IPT should be provided to HCWs with LTBI once active TB is ruled out. The operational dimensions of recommendations remain explored in many countries (Bhebhe et al 2014:5).

### **2.3.3 Aim of the Infection Prevention Control prophylaxis**

The purpose of the study is to determine the factors that contribute to the low uptake of isoniazid preventive therapy amongst HCWs, in a hospital in Manzini region Swaziland. The objectives are to determine and describe health care workers' attitude towards the prevention of tuberculosis. To describe the health care workers' beliefs about the use of isoniazid preventive therapy as one of the measures to prevent tuberculosis in terms of perceived barriers, severity, benefits and susceptibility and lastly to assess the risks imposed to health care workers and assess their level knowledge on IPT. Swaziland has the highest estimated incidence of TB in the world (Calnan et al 2017:4).

The researcher is not aware of any specific studies on TB among HCWs in Swaziland but studies in South Africa have demonstrated that the TB burden among HCWs is three times as high as in the general population and that the incidence of LTBI may be twice as high among HCWs as the general population as stated by the IPT guidelines (Nasreen, Shokoohi & Malvankar- Mehta 2016:18). The risk of occupational exposure to TB in health settings in Swaziland is acute and fear of TB has resulted in organised action by HCWs in the form of labour strikes. National TB program in 2009 and technical assistance partners introduced the IPT regime (Calnan et al. 2016: 4).

Eligibility for IPT focused on pre- antiretroviral therapy when it was first introduced to people nationwide and it was for all PLHIV without active TB. Expansion of the IPT program was accomplished through consecutive national trainings starting in 2011. The current Swaziland guidelines (2019:173-174) state that the investigations identified recurrent impediments to implementation of IPT, including the inconsistent availability of

isoniazid, the lack of standardized recording and reporting tools for IPT and conflicting views on the importance of IPT. Perceptions of increased pill burden and the increased clinic visits are the indicators that hinder IPT success in HCWs. Additional barriers included weaknesses in communication between the facilities and central medical stores and the frequent turnover of personnel who had been trained to administer and explain the IPT. Although the national IPT policy focuses on the provision for people who are infected with HIV, the national TB management guidelines emphasise provision of IPT to HCWs (Swaziland guidelines 2019:173). However, the introduction of IPT to HCWs was not prioritized until a national pilot of screening among HCWs, which was initiated in early 2012 in the wellness clinic, which cater for HCWs (Calnan et al 2017:5).

IPT based on a six-month course of treatment was first offered to HCWs in June 2012. All HCWs visiting the wellness clinic were screened for TB symptoms and eligible for IPT. HCW were deemed ineligible for IPT if they were suffering from liver disease, had symptoms or signs of TB, have been in contact with someone with TB, previous history of sensitivity to isoniazid, alcohol dependence or had taken isoniazid in the preceding two years. Tuberculin skin tests are not routinely offered in Swaziland and HCWs did not receive one prior to IPT (Swaziland guidelines 2019:171)

It is believed though that HCWs in general have a positive attitude towards the IPT but stressed that the strongest determinants on acceptance of IPT was better information and uninterrupted availability of IPT and continuity in taking it. The need to counter misinformation about IPT was the other recurrent theme. McCarthy, Scott, Gous, Tellie, Venter, Stevens & Van Rie (2015:118) made a discovery that IPT still needs to be re-introduced and more campaigns should be conducted to reach HCWs about it, in conjunction with efforts to improve systematic TB screening for all HCWs.

Results from a pilot study done in Swaziland showed that provision of IPT for HCWs at high risk of TB requires expanding existing as well as establishing new service delivery models, including use of occupational wellness sites (Calnan et al 2017:4). The review of the pilot study implementation shows that HCWs want more proactive and supportive systems in place to protect them from TB. The need for better sensitisation and education



to motivate HCWs to take the IPT was a recurring theme, including emphasising the importance of IPT to reduce TB risk and to counter misinformation. Further studies with large sample sizes are better to understand determinants of IPT acceptance and adherence among HCWs as well as service delivery models and support systems are recommended, hence the researcher undertaking this study on HCWs and IPT, in a large scale.

Bhebhe et al (2014:2) described isoniazid as the most effective bactericidal drug currently available for TB. It protects both against progression of latent TB infection to active disease as well as from reinfection when exposed to active TB, Maharaj, Gengiah, Yende – Zuma, Naidoo and Naidoo (2017:543) discovered that. The efficacy of IPT in the prevention of a first episode of TB among persons with HIV infection or among people more exposed to the disease like health care workers is very high. Their observational study also suggests that IPT reduces the risks of TB and death among PLHIV during early ART. Moreover, IPT and ART in combination result in a greater reduction in TB risk than does either treatment alone (Maharaj et al (2017:540). The researcher then asked herself, why are health care workers not taking IPT after it has been proven to reduce chances of TB by 33%?

According to the highlights of the Global TB Report (2017:21), there were 10.4 million cases of TB in 2016, including 1.1 million people living with HIV, 10% of the cases were children. It is estimated that 1.67 million people died from TB, including 374 000 people living with HIV. Globally, TB mortality has fallen by 3% per annum and TB incidence has declined by 2% per annum (Global TB Report 2017:59). Despite such evidence, implementation of IPT in HIV care and treatment programs in resource-constrained environments has been limited for several years. One reason for this includes concerns about emergence of isoniazid resistance because of inability to exclude active TB. However, findings from a systematic review suggesting that the effect of IPT on isoniazid resistance is likely to be small (Assebe et al 2015:3). Calnan et al (2017:4) proved that only 2% of HCWs who started on IPT reported side effects. However, it is unclear whether instances of side effects may have gone unreported or were not adequately captured in the recording tools. The researcher discovered that HCWs have not compared the

benefits with the risk associated with IPT because nothing has a positive side only; everything has both the good and bad sides.

Furthermore, it is possible that pros and cons of IPT are not known by HCWs for them to be able to choose between taking IPT and experiencing those side effects or dying from TB. Mindachew, Deribew, Memiah and Biadgilign (2014:1-2) in their qualitative study that was conducted in Addis Ababa describe barriers of IPT implementation from healthcare providers and patients' perspectives and they discovered that primary barriers to IPT use were lack of knowledge and experience by health care workers.

The health care workers were not aware of the benefits of IPT and unclear about guidelines. Mindachew et al (2014:2) also agree that poor awareness or understanding of IPT, including eligibility and accessibility were factors contributing to health care workers not taking IPT as a preventive measure against TB. The researcher found out that HCWs lack information as far as IPT is concerned and the fact that HCWs are not on IPT due to lack of knowledge.

This means that health facilities lack in-service education to the staff about IPT whereby an outside speaker who is knowledgeable in that field, there are no charts that display benefits and risk associated with IPT or HCWs are ignorant.

## **2.4 POSSIBLE IMPLICATIONS OF ISONIAZID PREVENTIVE TREATMENT**

A study conducted by Hermans, Grant, Chihota, Lewis, Vynnycky, Churchyard and Fielding (2016:1) raised concerns about the prolonged period of taking the drug (six months). They stated that there is limited durability of isoniazid protective benefit as it takes only two to three years, and the need to provide adherence support to achieve high rates of adherence and treatment completion are very vital and important.

The WHO guidelines group reviewed evidence from different studies on the provision of IPT and drug-resistant TB. The results of the meta-analysis concluded that INH resistance is not significantly associated with the provision of IPT. The relative risk of developing

INH-resistant TB among all of those receiving isoniazid and found no statistically significant increased risk of resistance was 8.5% (RR 95% CI= 7.4-9.7), (World health organization global TB report 2017:47).

McCarthy, Casey, Devane, Murphy, Murphy and Lacasse (2017:649) both indicated that HCWs have been shown to be significantly more reluctant to accept treatment for LTBI than non-HCWs. HCWs have lower rates of initiation of treatment for LTBI and the exact reasons for lower uptake of this evidence-based intervention among HCWs remain unclear. The researcher, however, suggests that this might be because HCW's are aware of the side effects of the drugs compared to non-HCWs who may be unaware of these side effects, which is why HCWs have a low rate of initiation of the treatment compared to non- HCWs.

A systematic study review was conducted in the US in 2017 to identify studies published over the last ten years reporting on TB prevalence or incidence among HCWs, and a control group, and the outcome showed that the overall risk of both LTBI and TB to HCWs continues to be significantly higher than that of the general population, consistent with previous findings. This study highlighted the continuing need for improvements in infection control and HCWs screening programs (Aden, Barber, Ford &Cooke 2017:2). Staff working in respiratory medicine was significantly less likely to support preventive TB treatment in health care workers in general or for them personally if they would have evidence of LTBI compared to other specialties. Only 13% (14/106) of respondents with evidence of LTBI indicated that they were offered preventive TB treatment. Twenty-one percent (64/306) of respondents indicated that they did not know the difference between active and latent TB. Among staff that had undergone testing for LTBI, only 33% (75/230) felt adequately informed about the meaning of their test results. Staff working in respiratory medicine show less support for the IPT. This might be because they are well versed in the mechanism of action of the drug and the associated risks (Calnan et al 2016:3).

## **2.5 RECOMMENDATIONS OF PREVENTING TUBERCULOSIS IN HEALTH CARE WORKERS**

Malotle, Spiegel, Ngubeni, O'Hara, Adu, Bryce, Melanogenic and Zungu (2017:260) argued that even though HCWs had high risk of being infected with TB, they are reluctant to accept the IPT. It is of interest in this context that staff working in respiratory medicine showed significantly lower support for treatment of LTBI in HCWs in general (22%, 6/27). More skepticism towards treatment of LTBI among respiratory staff may be the result of increased awareness about potential side effects of preventive therapy with isoniazid, in particular the risk of drug-induced hepatitis. This was proved by a United States study that found that the perception of LTBI treatment was harmful, was an important barrier to HCWs adherence to work site with TB screening and treatment policies (Assebe et al 2016:4).

More than one in five respondents indicated that they did not know the difference between active and latent TB. The lack of perceived knowledge was more prevalent among nurses than doctors and in those aged 30 years or less. This clearly indicates that the more experience you are as a HCW, the more you are knowledgeable about latent TB (Pathak, Harrington & Dobler 2016:9).

In another study according to Steenland, Levine, Bieber, Schulte and Aziz (2014:7) in an era of recently resurgent TB and accompanying concern about the occupational TB risk of health care workers, the Institute of Medicine has been asked by the United States to conduct a study on TB prevalence on HCWs. The study was done to ascertain if indeed the HCWs are at a greater risk of infection, disease, and mortality due to TB than the general community within which they reside. If so, what is the excess risk due to occupational exposure, Calnan et al (2017:6). Can the occupationally acquired risk be quantified as work environments and different job classifications? Moreover, why are health workers not taking any prophylaxis to prevent them from such diseases or be given proper PPE so they can be protected?

Studies of the risk of nosocomial transmission TB performed in developed and developing countries have shown that HCWs caring for infectious TB patients are at risk of TB infection and the disease (Chen, Liu, Gu, Wang, Qiu, Shen & Jiang 2014:7). A review of the most common factors of transmission in health care facilities at the district and referral levels in the developing world shows that many can be remedied with simple and in most instances, inexpensive control measures (WHO 2016:2-3). There is an increased incidence of TB among ministry of health workers than any other portfolio ministries. The increase in the incidence of TB among health workers is likely to be related, since investigations showed that the source of infection was to be more from health care facilities than from outside. Nasreen et al. (2016:18) mentioned in their study that for a long time there was no prevention program specific for TB in health facilities, and the current TB program emphasizes more on detection and treatment but less on prevention programs at the workplace.

There is a major desire to provide guidelines in the prevention and control of TB infection among HCWs. Maharaj et al (2017:248) recommends that there is also a need to prevent occupational related TB among HCWs to reduce the risk of TB. TB transmission between patients to HCWs and vice versa in a healthcare setting and to promote TB control measures in health care settings. Certain measures must be initiated and taken such as administrative control to significantly reduce the risk of TB transmission by preventing the generation of droplet nuclei, Jo (2017:3).

The World Health Organization recommends IPT to treat TB infection in high-risk populations such as those living with HIV, health care workers who are exposed to TB and patients as well. Despite its proven efficacy, uptake of IPT, to reduce future TB has been poor in most high TB burden countries. The lack of IPT implementation has been driven among others by concerns regarding inadequate adherence, potentially leading to isoniazid mono resistance (Yotebieng, Edmonds, Lelo, Wenzel, Ndjibu, Lusiana, Kauai & Behets 2016:2).

In a study conducted by Cronin, Calnan and Adams (2017:5) on the underutilization of IPT in preventing disease progression in Swaziland, their objective was to determine if

the policy of IPT was being implemented. Adams et al (2017:1128) conducted a study too, on high completion of a six months course of IPT given to HCWs and they discovered that more emphasis should be given to adherence during treatment.

Healthcare workers in Swaziland are at an increased risk of contracting TB, but existing infection control and occupation health policies often fall short in mitigating the risk of contracting TB in the workplace (Cronin et al (2017:4). Health service failure to offer IPT to HCWs, which was endorsed by the WHO, contributes significantly to the TB incidence among HCWs in high HIV prevalence settings. Acceptance of the widespread use of IPT among HCWs can be improved through education on risk and counseling (Swaziland guidelines 2019:174).

To improve acceptability of IPT for HCWs, the patient-friendly services delivery models including the use of occupational wellness sites must be in use. However, there is need for better sensitization and education to motivate HCWs to take IPT. Occupational TB, among health care workers is an important public health issue, especially in India where HCWs are exposed to high burden (Calnan et al 2017:5).

## **2.6 TUBERCULOSIS AND ISONIAZID MECHANISM**

TB caused by infection with mycobacterium TB, kills over 2 million people per year, with between one and 2 billion people latently infected worldwide (WHO 2017:315). Not only has the unfortunate synergy between TB and HIV increased the already high human life toll, but also the emergence of multidrug resistant strains, which are both difficult and very costly to treat, pose an additional public health hazard and another hurdle in effective control of TB. Although there has been a renewal of activity in the development of anti-mycobacterial agents, such as nitroimidazo and diaryl-quinoline derivatives (Guy, Tichauer, Kay, Phillips, Bailey, Harrison, Furze, Millard, Gibson, Pallen & Fullam 2017:13), there remains as much need for new drug discovery as there is for fundamental research from which to delineate mechanisms and targets of already proven and effective agents. Thus, the mechanisms of action of many older TB drugs were poorly defined, yet many are still part of first and second line, meaning that they are still highly effective to date.

There are common side effects that include increased blood levels of liver enzymes and numbness in the hands and feet. Serious side effects may include liver inflammation and acute liver failure. It is unclear if use during pregnancy is safe for the baby or not, since when used as a prophylaxis during breastfeeding is likely safe. Isoniazid works in part by disrupting the formation of bacteria's cell wall, which results in cell death. Isoniazid was first made in 1952 (Saifur & Arno 2019:6).

According to Janagond, Ganesan, Anand and Mariappan (2017:253) health care workers are at increased risk of contracting TB than the public population. Their study suggests that more than one-third of the HCWs had LTBI. Health care workers are at risk of contracting TB in their workplace although this has been declining in recent decades. The risk of TB to health care workers varies with job category. In general, health care workers in contact with patients are at high risk compared to those with no patient contact. Noncontact employees often have a higher incidence of infection than contact employees do, but this is due to community exposure risk. Job situations of exceptionally high risk are those involving the generation of respiratory aerosols from patients including bronchoscopy, endotracheal suctioning, and intubation.

Although delineation of the mechanisms of action of isoniazid required many years, convincing progress has been made in the last decade through the combined approaches of bacterial genetics (Saifur & Arno 2019:2).

## **2.7 SUMMARY**

This chapter reviewed literature that is relevant to the factors that contribute to the low uptake of isoniazid preventive therapy as a TB preventive measure amongst healthcare workers worldwide and particularly in Swaziland. Many studies on that topic under study have been discussed. It also emphasizes different methods of controlling the disease further.

## **CHAPTER 3**

### **RESEARCH METHODS**

#### **3.1 INTRODUCTION**

This chapter serves to describe the research methodology including the study design, reliability and validity, analysis of the collected data, ethical considerations, study limitations, and dissemination of results. Moreover, it gave a clear picture of the type of study that was conducted, respondents included, methods used to select them as well as where the study took place.

#### **3.2 RESEARCH DESIGN**

Research design is the “architecture” of the study or the structured approach to be followed by the researcher to answer the questions raised by the research objectives (Creswell 2017:77). Burns and Grove (2016:253) also state that a research design is a blueprint for conducting a study that maximizes control over factors that could interfere with the validity of the results. It is a plan guide for providing sound answers to research questions.

A quantitative, descriptive cross-sectional research design was used in this study; this was because the researcher aimed at getting precise measurements and quantification and the researcher's desire to generalize the results (Polit & Beck 2018:164). In this study, numerical values were collected from respondents to assess systematically the key factors that contribute to low uptake of IPT as a TB preventive measure amongst health care workers. This design was also chosen because of its ability to control the study through imposing conditions on the research situation so that biases were minimized, and precision and validity maximized (Polit & Beck 2018:167).



Cross-sectional research design was used in this study because data were collected only once from the sampled group within a brief span of time. As stated in Polit and Beck (2017:472), cross-sectional study is also less costly in terms of time and resources, as a large sample can be studied within a relatively short period.

There were 250 questionnaires given to willing respondents who were health care workers, who met the inclusion criteria, and out of which 30 questionnaires were not completed or answered and 19 were answered but not completely. Hence, the researcher remained with 201, which then became the sample size for the study. The study used 201 respondents.

### **3.3 DESCRIPTIVE DESIGN**

Descriptive study is designed to gain more information about characteristics within a particular field of study (Burns & Grove 2016:526). Its purpose is to provide a picture of situations as they naturally occur. Polit and Beck (2017:192) concur, stating that the purpose of descriptive research design is to observe, describe and document aspects of a situation as it naturally occurs and sometimes to serve as a starting point for hypothesis generation or theory development. In this case, the researcher described the information as gathered from the health care workers' responses regarding their behaviour and attitude towards taking IPT as one of the TB prevention measures. Results were documented and used for IPT scale up interventions and for further research ideas.

### **3.4 STUDY SETTING**

According to Polit and Beck (2017:511), study setting is the overall location where a study is conducted, which should be in a safe and respectful environment for respondents to be comfortable. The study was conducted at the Raleigh Fitkin Memorial (RFM) Hospital, which is a hospital in the Manzini region. The RFM Hospital has about 350 beds and about 200 health care workers. The hospital provides services to about 200 patients in the outpatient department daily, and the hospital has two medical wards that is the female and the male medical wards where there are more than 30 patients in each ward and of

those about 50% of the patients have TB. It also has two surgical wards that are divided into male and female, the maternity wards that include labour ward, postpartum ward and the special care nursery, the children ward, and the private ward. This setting was chosen because it is in the Manzini region, which had a required population, and RFM is one of the largest central hospitals in Swaziland, thus having many health care workers that gave the researcher large population size suitable for the study. It was also easily accessible to the researcher.

### **3.5 POPULATION AND SAMPLE**

Population is a particular group of individuals or elements who are the focus of the research. The target population is the full set of individuals or elements who meet the sampling criteria (Morgan & Hoffman 2018:251). An accessible population is the portion of the target population to which the researcher has reasonable access (Burns & Grove 2018:330). In this study, the population comprised of all health care workers who were involved in clinical practice in a hospital of Manzini Region, Swaziland and the target populations were health care workers who were clinicians.

The study group focus was those who have worked for more than a year in the TB manifested departments, which are departments that are prone to have admitted or have treated patients with TB, hence certain departments were chosen over the others.

The significance of the group was that those that have worked for a year and above were used because they were now used to the departmental environment and probably, they would have finished their prophylaxis of six months phase if they had intended to take it. They have been exposed enough to be infected with the disease. They were chosen because by the rate of the exposure by now, the researcher could conclude that if one develops TB, it would likely be occupational acquired sickness.

#### **3.5.1 Inclusion criteria**

- HCWs who deliver care in the wards where there was a high possibility of meeting and treating patients who were TB positive such as medical wards and outpatient departments.

- HCWs who have worked in the above-mentioned departments for more than a year.
- Males and females HCWs.
- HCWs aged 21 to 60 years.

### **3.5.2 Exclusion criteria**

- HCWs who were not on duty during data collection periods.
- HCWs who fell outside the age category of 21 to 60 years.
- HCWs from other hospitals in the same region.
- HCWs who had worked less than a year, in medical wards and outpatient departments wards, where there was less possibility of meeting or treating patients who were TB positive.

### **3.5.3 Sample and Sampling**

Polit and Beck (2017:743) define a sample as a subset of a population selected to participate in a study and sampling is the process of selecting a portion of the population to represent the entire population. Sampling involves selecting a group of people, events, behaviours, or other elements with which to conduct a study. Researchers select study subjects from the sampling frame, which is the list of every member of the population using a sampling plan or methods (Burns & Grove 2016:513). Only 201 health care workers participated in the study. The respondents chosen were those who had worked for more than a year in TB manifested departments.

### **3.5.4 Sampling method**

Sampling refers to the procedure of selecting a subset of the population to represent the whole population (Polit & Beck 2017:743). For the purpose of this study, the researcher

used the simple random sampling method where suitable respondents were chosen randomly from their departments for two weeks. As there were HCWs who also work night duty the researcher also sampled those. This sampling method was used in order to generalize the results and it was easier for the researcher to get the population required (Polit & Beck 2017:742).

### **3.5.5 Sample Size**

Sample size is the number of respondents who are necessary for the achievement of a statistically valid conclusion (Polit & Beck 2017:492). This requirement dictates the minimum number of participants who have to be included in the sample (Polit & Beck 2017:494). The participants used in this study shared “common ground,” which enables them to share their experiences and generate good interaction (Morgan & Hoffman 2018:256); Polit & Beck 2017:511). The respondents chosen to respond in this study were 201 HCWs who had worked in departments where known TB patients were treated and taken care of and they had worked in those departments for more than a year.

### **3.5.6 Sample size calculation**

The appropriate sample size will be determined using the following formula.

$$n = z^2 (p q) / e^2$$

where, n = minimum sample

z = standard deviation (1.96), corresponds to 95% CI

e = margin of error, estimated to be 5%, if CI = 95%

p = estimated proportion of the outcome (DV), based on previous local or regional/global studies. If not sure, 50% may suffice

$$q = 1-p$$

$$n = z^2 (p q) / e^2$$

$$n = 1.96^2 ((84.5/100) \times (1 - (84.5/100))) / (5/100)^2$$

$n = 3.8416(0.130975) / 0.0025$

$n = 0.9604 / 0.0025$

$n = 201$ .

### **3.6 DATA COLLECTION**

Data collection is the systematic approach to accurately collect information from various sources to provide insights and answers, such as testing a hypothesis or evaluating an outcome (Qadri 2021:5). [www.egnyte.com](http://www.egnyte.com) stated that the main driver of data collection is to gather quality information that can be analysed and used to support or provide evidence to the study done.

#### **3.6.1 Instruments**

In this study, the researcher collected data using a questionnaire. For the purpose of this study, the researcher modified the questionnaire used in a study conducted by Polit and Beck (2017:511). Questionnaires are traditionally discussed as the quantitative data collection methods (Polit & Beck 2017:269) that are self-administered, which means that the respondents completed the documents themselves without the researcher being present. The questionnaire consisted of two sections, the first section was about demographic data, and the second section about questions on the factors that contribute to the low uptake of IPT amongst HCWs. The data generated were therefore richer, although questions were more complex to answer and analyse (Polit & Beck 2017:270). Open-ended questions are, however not without critique. Respondents may have difficulty in articulating themselves well and questions tend to invade more on respondents' privacy.

### **3.6.2 Data collection procedure**

Before data collection took place, the researcher requested ethical clearance from the Swaziland Ministry of Health Scientific Ethics Committee (MOH SEC) and the University of South Africa College Research Ethics Committee (UNISA CREC). After being granted permission by the Swaziland MOH SEC to continue with the study, the researcher then requested permission from the directors of the RFM hospital. After permission was granted by RFM, potential respondents were identified and given information leaflets about the study. Respondents who have read as well as comprehended the information in the leaflets volunteered to respond. Those who volunteered to respond were given consent forms to sign and then the questionnaires to complete for data collection purposes. The researcher was available to clarify misunderstandings and questions about the questionnaire during the time, which the respondents were responding to it. Consent forms were not attached to questionnaires to ensure anonymity and privacy.

### **3.6.3 Data management**

Completed questionnaires were stored safely in the researcher's lockable house and data in soft copy were kept in the researcher's password locked computer. The researcher kept the data until results were discussed after which the data were then discarded because it had served its purpose. Collected data were locked away from unauthorized persons to ensure confidentiality.

### **3.6.4 Data analysis plan**

In this study, coding was used to organize data collected in questionnaires; reduction was used to eliminate unnecessary information. Data were entered into Microsoft Excel 2014 and then imported to SPSS v24.0 for statistical analysis. Tables and graphs were used to present the data.

### **3.7 PRE-TEST**

After the UNISA CREC granted permission, the researcher conducted a pre-test of the study questionnaire. According to Polit and Beck (2017:743), a pre-test must be performed to identify potential weaknesses of the questionnaire. The researcher first requested permission to enter the pre-testing setting, which was RFM hospital. This setting was chosen because it had a group of people who have remarkably similar characteristics with the actual study sample. The pre-test involved 10% of the total sample 201 size, which were 20 HCWs. Information leaflets about the study were distributed before voluntary and informed consent were given by the pre-tested respondents. The purpose of the pre-test study was to determine if the questions in the adopted questionnaire were simple, clear, useful, and necessary and to determine the time required to complete the questionnaire. Any inconsistencies in the design and contents of the questionnaire that were identified from the pre-test results were corrected accordingly before the questionnaires were distributed to the respondents for the main study to be conducted.

### **3.8 VALIDITY AND RELIABILITY OF THE STUDY**

According to Polit and Beck (2017:725) the purpose of data analysis is to discover, communicate, bring order and make sense of the data collected hence, validity must be attained in all the study. Validity of an instrument is the determination of how well the instrument reflects the abstract concept being examined, whereas reliability is concerned with the consistency of the measurement method.

#### **3.8.1 Validity**

Validity refers to the extent to which a concept is accurately measured (Creswell 2017:178). It is the ability of the data collection instrument to measure what it was formulated to measure. Both the content and face validity of this study were checked during the pre- test study and by the experts in the TB field. In this, study the respondents

chosen were those who have worked in the TB departments for a certain period of time, which in this case was a year and above, so that they could give the researcher their onsite knowledge and experience.

### **3.8.2 Reliability**

According to Creswell (2017:177), reliability or precision refers to the degree of similarity of the results obtained when the measurement is repeated on the same subject or same group. Reliability in this study was assessed during the pre-test and the researcher was able to evaluate the instrument's precision or consistency from the response of health care workers. As a result, some appropriate corrective measures like; rephrasing and reordering of question items, adding more relevant questions, and removing less relevant, were taken to enhance the reliability of the instrument.

### **3.9 BIAS**

Bias is the tendency, which prevents unprejudiced consideration of a question (Morgan & Hoffman 2018:392). A representative sample of 201 HCWs were supposed to respond in the study as respondents in an effort to minimize bias, because the larger the sample size the more generalizable are the results (Polit & Beck 2017:512). To avoid biasness, the researcher remained as objective as possible to ensure non-involvement of her personal feelings or beliefs about IPT which may influence the outcome of the results.

### **3.10 ETHICAL CONSIDERATIONS**

The investigator sought ethical clearance from the Ministry of Health Scientific and Ethics Committee Swaziland through the University of South Africa, Department of Health Studies Research Ethics Committee. The researcher further ensured privacy.



### **3.10.1 The Right to Privacy**

The researcher ensured privacy of respondents by not asking their names anywhere in the questionnaire but in the consent form. Data were also put in strict confidence using a password accessed computer where only the researcher and the supervisor could be able to view the data. The interview was carried out in a room where there were only the researcher and the respondent to further enhance privacy.

### **3.10.2 The Right to Autonomy**

In this study, respondents voluntarily chose to respond or decline responding without undue influence or coercion. An informed consent was signed before participation in this study. Respondents were allowed to ask questions before, during and after the interview. The option to withdraw responding at any time during the course of the study was also open, including the right to refuse to answer certain or parts of the questions.

### **3.10.3 Beneficence**

Full explanation of the study was discussed with the respondents before starting the interview. Respondents were assured that there were no possible risks associated with responding in the study.

### **3.10.4 Non maleficence**

Study respondents were assured of no harm, either physically or psychologically. Their willingness to respond was respected as well as any respondent feeling the need to pull out was allowed and was not judged in any way.

### **3.10.5 The Right to Full Disclosure**

The researcher fully disclosed all information about the study to the respondents without concealing any information. Respondents' rights were clearly stated, including the right to refuse or withdraw responding. Possible risks and benefits of participation were addressed as well.

### **3.10.6 The Right to Anonymity and Confidentiality**

The researcher ensured anonymity by not asking respondents names in the questionnaire but assigned codes or numbers to respondents and did not attribute comments to individuals that were interviewed. Information sought from respondent was not accessible to anyone who was not part of the study. Informed consent forms were locked in the researcher's locker where agreements of confidentiality were made with the researcher.

### **3.10.7 The Right to Protection from Harm and Discomfort**

The researcher conducted data collection in a setting convenient to the respondents and there was no potential harm known in this study but in the case if discomfort or harm was experienced, the researcher would intervene accordingly. The questionnaires were given to respondents to complete them in their own space and their own time but were given deadline for submission.

### **3.10.8 Justice**

Justice means that respondents have an inalienable right to fair treatment and that the information that they impart for the purpose of research needs to be kept completely private (Polit & Beck 2018: 173). All information obtained from the respondents was treated confidentially and no names were mentioned in the questionnaire. All respondents were treated equally, including those who would decline or withdraw responding in the

middle of the study. A consent form was also signed by respondents in agreement to respond in the study.

### **3.10.9 Informed consent**

Letters requesting participation with brief but detailed information about the study were sent to every respondent. Attached to that were a consent forms, which should be voluntarily signed by willing respondents. Respondents were informed that the study was a non- coercive disclaimer and that they all have the right to withdraw from the study anytime without risking penalty or prejudice and they shall be ensured of their right to an incomplete disclosure.

### **3.11 SUMMARY**

In chapter 3 the research design, study setting, population and sample, sampling strategy, sampling procedure, sample size, data collection, data management and data analysis, reliability and validity and ethical considerations were discussed.

## CHAPTER 4

### ANALYSIS AND PRESENTATION OF RESULTS

#### 4.1 INTRODUCTION

In this chapter, the research results obtained from the questionnaires are presented in the form tables, pie charts and bar graphs. The data presented is descriptive statistics and measures of relationships. Post reporting on socio-demographics, the results were presented in accordance with the study objectives. A significance level of 5% was used with a  $p \leq 0.05$  to determine statistical significance of relationships. Associations are reported only when it was statistically significant, and the chapter ended with a conclusion.

#### 4.2 STUDY OVERVIEW

A quantitative, descriptive cross-sectional research design was employed in this study where numerical data were collected at one point in time to describe the characteristics of the study variables. The data were obtained from HCWs in one of the hospitals in Swaziland. The main purpose of the study was to determine factors contributing to low uptake of IPT amongst HCWs in one hospital of Manzini Region, Swaziland.

##### **The Study objectives were:**

- To describe the key factors which contribute to low uptake of IPT as a TB preventive measure amongst health care workers.
- To assess the health care workers' perceptions towards IPT implementation on them regardless of HIV status.
- To acquire information on what other means besides IPT could be implemented to reduce the incidence of TB amongst health care workers.

Self-administered questionnaires were distributed to 210 HCWs who were available in the study sites during the data collection period even in such a time of Covid-19. Amongst the distributed questionnaires, nine were incomplete for most survey questions. According to Burns and Grove (2017:412), subjects must be excluded from the survey analysis when data considered essential to that analysis is missing and as a result, the nine subjects were excluded from the data analysis of the study. Therefore, the data analysis and discussion were made based on the feedback from a sample of n= 201 respondents.

### **4.3 DEMOGRAPHIC DATA**

This section comprises of data on the respondents' demographic data that comprise of their gender, age, working department, working position, and working experience. Table 4.1 combines all the demographic information of the respondents. The study involved 201 HCWs who were working in areas where there is high possibility of taking care of TB infected patients. In this study, most respondents of 54.7% (n=110) were female whereas men encompassed only 45.3% (n=91), this is because the health sector is dominated by women. About 34.8% were between the ages of (n= 21-30) years, 44.8% were between the ages of (n= 31-40) years this is because most of the working population ranges between this age group and only 20.4% were older than (n= 40+) years. The mean age of the study subjects was (n= 33.62) years with minimum age of 21 and maximum age of 58 years, mode was 29 years whilst median 32 years. The study showed that 48.8% (n=98) of the HCWs were single, 46.2 % (n=93) were married, and 5.0 % (n=10) were divorced.

The study intended to target health care workers who were in departments which were exposed to TB. In the present case, 46.0% (n= 89) were nurses and the least number of respondents were laboratory technicians 3% (n= 6) and professional nurses of higher working positions such as medical officers 7% (n =34.6) and sisters in charge 3.5% (n=7). The study also included wards aides who were 7.9% (n= 36) in total. The HCWs were also grouped according to their departments, in this case the department that recorded

the highest number of respondents was the outpatient department with 25.0% (n= 50). HCWs of male surgical wards 11.4% (n= 23) recorded the lowest number of respondents.

In this study the most respondents were those who had worked between 1-3 years which were 24.4% (n=49), 3-5 years encompassed of 54.2% (n=109) and those that have worked for 5-10 years were 11.4% (n =23) and had the least number of respondents. Lastly was a category of HCWs who had worked for more than 10 years and above with 10.0 % (n=20). Most of the respondents 78.1% (n=157) were Christians. The socio-demographic characteristics of the participants are as shown in table below.

**Table 4.1 Distribution of the respondents by socio-demographic characteristics**

<b>Variable</b>	<b>n</b>	<b>Percentages (%)</b>
<b>Gender</b>		
Male	91	45.3
Female	110	54.7
<b>Age</b>		
21-30 years	70	34.8
31-40 years	90	44.8
41 + years	41	20.4
<b>Mean= 33.62</b>	<b>SD=0.97</b>	<b>Maximum=59</b> <b>Minimum =21</b>
<b>Marital status</b>		
Single	98	48.8
Married	93	46.2
Divorced	10	5.0
<b>Religion</b>		
Christianity	157	78.1
Other	44	21.9
<b>Working position</b>		
Sister in charge	7	3.5
Medical officer	14	7.0
Nurse	89	46.0
Nursing assistant	16	8.0
Student nurse	33	16.4

Laboratory technician	6	3.0
Ward aides	36	17.9
<b>Departments</b>		
Male medical ward	28	14.0
Female medical ward	34	17.0
Male surgical ward	23	11.4
Outpatient department	50	25.0
Children's ward	25	12.4
Maternity ward	41	20.4
<b>Working experience</b>		
Less than 1 year	49	24.4
1-5 years	109	54.2
5-10 years	23	11.4
10 years or more	20	10.0

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#### 4.4 DATA ANALYSIS AND RESEARCH RESULTS

The questionnaire comprised of sections that were completed, analyzed and discussed as research results. These results were presented under the subheadings that correlate with objectives of the study as follows:

**Objective 1:** To describe the key factors which contribute to low uptake of IPT as a TB preventive measure amongst health care workers.

#### 4.5 THE FACTORS RESULTING IN LOW UPTAKE OF IPT

Table 4.2 below shows the most factors that contribute to low uptake of IPT amongst health care workers in their descending order as follows:

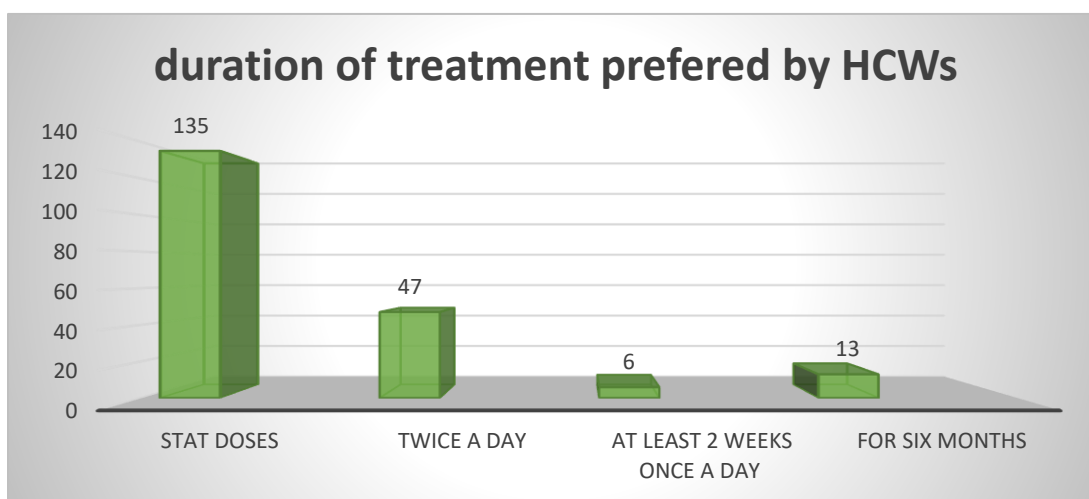
The fear of side effects 71% (n= 143), the fear of drug resistance 69% (n= 138), small period of protection 68% (n=137), long duration of taking the drug 64% (n= 129), IPT only treats one form of TB which is the pulmonary TB 51% (n=104) and the least factor is the one that they trust IPT 4% (n=9).

**Table 4.2 Factors that contribute to HCWs not to take IPT as a TB preventive measure.**

<b>Variable</b>	<b>n</b>	<b>Percentage%</b>
Lack of knowledge of the effectiveness of IPT	34	17%
Fear of developing resistance to the INH drug	138	69%
Too long duration of taking the treatment	129	64%
Fear of the side effects of the drug	143	71%
TB is curable	88	43%
They trust the IPT as compared to the drugs	9	4%
The period of protection of the drug (2 years)	137	68%
IPT only treats one type of TB (pulmonary TB)	104	51%

#### 4.6 DURATION OF THE TREATMENT

Most of the respondents (n=135) prefer a stat dose of the treatment followed by those who prefer twice a day (n=47), then by those who can take it for six months (n=13) and the least number of respondents prefer twice a week (n=6).



**Figure 4.1 Duration of the treatment preferred by HCWs.**



Zinatsa (2018:9) added that some of the factors could be that the HCWs have experience of the side effects, which makes them fear taking the prophylaxis. There are also health information system-related factors such as lack of interoperability between HCWs, lack of an effective monitoring and evaluation system and lastly, the added non- uniformity in data entry, follow-ups, and adherence.

**Objective 2:** To assess health care workers' perceptions towards IPT implementation on them regardless of HIV status.

#### **4.6.1 Health care workers' perceptions towards IPT implementation on them**

Table 4.3 below shows the fear of getting TB scares many HCWs n=119, (5.9%). Whilst most of the HCWs (n=133, 6.2%) feel that TB is not a large hopeless disease to them. 123/201 of HCWs had heard of a staff member who developed TB since they worked in their departments, and 125/201 of HCWs responded that isoniazid (INH) prophylaxis is available for health care workers.

However, only (69.2%) of HCWs said that they think staff that has LTBI should be given the IPT. (45.3%) of HCWs could accept to be given IPT if they would be found to have LTBI. Almost all the HCWs (95.3%) need more information before they can be given IPT. (60.7 %) of HCWs, would take IPT if TB were incurable as a TB preventive measure. About (72.6%) of HCWs would take IPT if the INH side effects would be minimal. (51.7 %) of HCWs had knowledge about IPT. Lastly, most of the participants (n=147, 73.1%) feel that they are embarrassed by taking IPT whilst (n=54, 26.9%) of them are not. On the other hand, HCWs (n=107, 53.2%) are not scared of stigmatisation when found to be taking IPT. Some HCWs raised concerns about the duration of the treatment that it is too long (six months) yet it is not a once off thing.

They are also worried about the treatment and its potential adverse drug reactions, side effects on their liver and kidneys, some also worry that they will just default and have poor adherence count. Some fear of isoniazid-associated hepatotoxicity was reported by HCWs as the cause for reluctance in prescribing IPT amongst HCW's. In addition, the

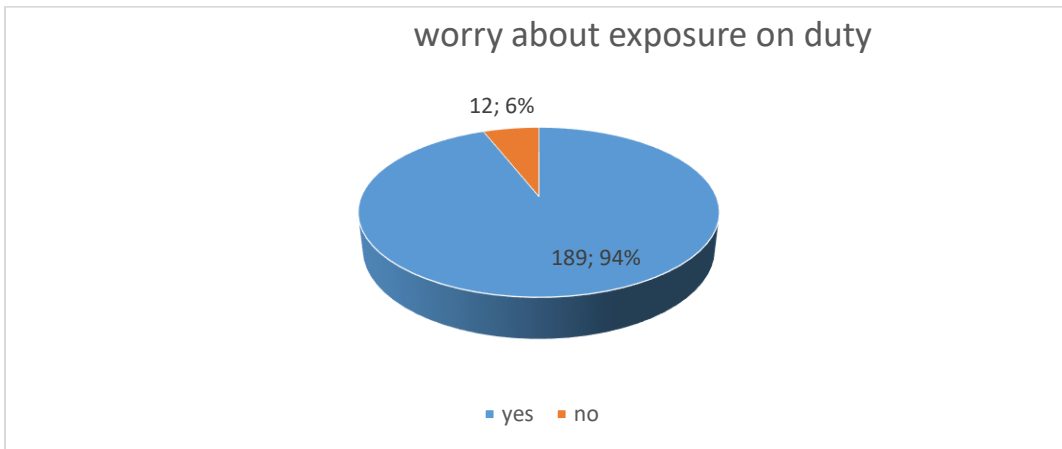
issue of pill burden was reported as another reason-influencing uptake and completion of IPT.

**Table 4.3** Health care workers' perceptions towards IPT implementation on them.

<b>Variable</b>	<b>Yes (n (%))</b>	<b>No (n (%))</b>
1. Does the thought of getting TB scares you?	119,59.2	82, 40.8
2. Is TB a large hopeless disease to you?	68, 33.8	133, 61.2
3. Have you heard of a staff member who developed TB since you worked there?	78, 38.8	123, 61.2
4. 4. Is isoniazid (INH) prophylaxis for vulnerable health care workers?	125, 62.3	76, 37.8
5. Do you think HCWs that have LTBI should be given the IPT?	139, 69.2	62,30.8
6. If you have LTBI, would you like to be offered IPT?	91, 45.3	110, 54.7
7. Do you think you need more information before you decide whether to take IPT or not?	165, 82.1	36, 17.9
8. If TB was incurable, will you take IPT as preventive measure?	122, 60.7	79, 39.3
9. If the side effects of the drugs will be minimal, will you take IPT?	146, 72.6	55, 27.4
10. Do you know about the IPT?	104, 51.7	97, 48.3
11. Is it embarrassing for health care workers to take the IPT?	147, 73.1	54, 26.9
12. Are health care workers scared or afraid of stigmatization?	94, 46.8	107, 53.2

#### **4.6.2 Exposure on duty**

Most of the respondents (n=189, 94%) worry about exposure on duty whilst n=12, 6% of them do not worry about exposure on duty.



**Figure 4.2** Health care workers worry about exposure on duty

**Objective 3:** To acquire information on what other means besides IPT could be implemented to reduce the incidence of TB amongst health care workers.

#### **4.7 MEASURES DONE TO REDUCE TB BESIDES IPT**

Most of the HCWs (n=179, 89.1%) believe that providing a highly well-ventilated working condition reduces the risk of TB in HCWs. (n=184, 91.5%) of HCWs believe that providing the N95 masks all the time can be a solution in preventing TB in HCWs. Lastly, most of the health care workers (n=136, 67.7%) believe that health care workers gain from taking the IPT.

**Table 4.4** Measures done to reduce TB besides IPT

<b>Variable</b>	<b>Yes (n, %)</b>	<b>No (n, %)</b>
Providing a highly well -ventilated working condition reduces the risk of TB in HCWs.	179 = (89.1%)	22 = (10.9%)
Providing the N95 masks a solution for preventing TB in HCWs.	184= (91.5%)	17 = (8.5%)
Do health care workers gain from taking the IPT?	136= (67.7%)	65 = (32.3%)

#### 4.8 ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND KNOWLEDGE ON IPT

According to the results, there is no significance between gender, age, and marital status to their socio- demographic knowledge on taking the IPT. On the other hand, there is relationship between working position and knowledge on IPT ( $p = 0.01$ ). There is a relationship between working experience and knowledge on IPT ( $p = 0.03$ ). More experienced HCWs are more knowledgeable as compared to those with less experience.

**Table 4.5 Association between socio-demographic characteristic and knowledge on IPT**

<b>Variable</b>	<b>Yes</b>		<b>No</b>		<b>p-value</b>
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
<b>Gender</b>					
<b>Male</b>	51	56.4	40	43.6	.66
<b>Female</b>	66	60	44	40	
<b>Age</b>					
<b>21-30 years</b>	40	58.6	30	41.4	.84
<b>31-40 years</b>	50	56.0	50	44.0	
<b>41+ years</b>	23	55.0	18	45.0	

<b>Marital status</b>					
<b>Single</b>	57	59.1	41	40.9	
<b>Married</b>	58	62.5	35	37.5	
<b>Divorced</b>	4	37.5	6	62.5	.74
<b>Working positions</b>					
<b>Sister in charge</b>	7	100.0	0	0.0	
<b>Medical officer</b>	10	75.0	4	25.0	
<b>Nurse</b>	51	57.4	47	42.6	
<b>Nursing assistant</b>	9	57.4	7	42.6	
<b>Student nurse</b>	27	81.2	6	18.8	
<b>Laboratory technician</b>	2	44.4	4	55.6	
<b>Ward aides</b>	10	27.8	26	72.2	.01*
<b>Working experience</b>					
<b>1-3 years</b>	0	0.0	49	100	
<b>3-5 years</b>	44	40.0	65	60.0	
<b>5-10 years</b>	15	65.7	8	34.3	
<b>10 years or more</b>	11	52.2	9	47.8	.03*

P-value < .05 means there is significance.

Those in asterisk (\*) are variables that are significance.

#### **4.9 ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND IF HAVING LTBI WOULD THEY LIKE TO BE OFFERED IPT**

According to the results on Table 4.6, there is association between marital status and the likelihood of taking IPT as a TB preventive measure with p-value-0.001. About (57.6%) of the single and (64.3%) of married would not like to be offered IPT if they may be found to have LTBI. However, the divorced (75.0%), widowed (85.7%) and separated (92.3%) had likelihood of taking IPT if they found to have LTBI.

There was also association between working position and likelihood of taking IPT with p-value-0.025. About (83.3%) of wards aides would agree to taking IPT while with the other

working positions there were about (26.7%) or less who agreed to take IPT as a TB preventive measure. Working experience also had effects on the likelihood of taking IPT with p-value-0.03, as HCWs with less than 10 years working experience were not likely to take IPT while HCWs who had an experience of more than ten years had an increase likelihood of taking IPT.

There is an association between department of the HCWs and the likelihood of taking IPT with p-value- 0.012, where most of the workers who were likely to take IPT if found to have LTBI are those working at outpatient department with (77.8%). This may be because HCWs in this area knew that they were highly exposed to TB (active TB) as they were rendered primary health care workers, since they are the ones that have the first contact with the clients, which exposes them to active TB that was not yet detected. Surprisingly there was low likelihood of taking IPT in medical wards (male medical-39.3%, female medical-26.5%) whilst these wards usually have about (70%) patients who had TB, of which the HCWs kept on rendering care to those patients now and then which made them exposed to getting the TB infection.

**Table 4.6 Association between socio-demographic characteristics and likelihood of taking IPT.**

<b>Variable</b>	<b>Yes</b>		<b>No</b>		<b>p- value</b>
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
<b>Gender</b>					
Male	36	40.0	55	60.0	
Female	40	35.8	70	64.2	.61
<b>Age</b>					
21-30 years	25	35.7	45	64.3	
31-40 years	38	42.0	52	58.0	
41+ years	10	25.0	31	75.0	.55
<b>Marital status</b>					
Single	41	42.4	57	57.6	
Married	33	35.7	60	64.3	
Divorced	8	75.0	2	25.0	0.01
<b>Working positions</b>					
Sister in charge	4	57.1	3	42.9	

Medical officer	7	50.0	7	50.0	
Nurse	47	52.9	42	47.1	
Nursing assistant	2	12.5	14	87.5	
Student nurse	9	27.8	24	72.2	
Laboratory technician	4	66.7	2	33.3	
Ward aides	30	83.3	6	16.7	.025
<b>Working experience</b>					
1-3 years	24	49.0	25	51.0	
3-5 years	62	57.1	47	42.9	
5-10 years	9	38.8	14	61.2	
10 years or more	16	82.6	4	17.4	.003
<b>Departments</b>					
Male medical ward	11	39.3	17	60.7	
Female medical ward	9	26.5	25	73.5	
Male surgical wards	9	38.9	14	61.1	
Outpatient departments	39	77.8	11	16.7	
Children wards	9	37.5	16	62.5	
Maternity wards	19	47.2	22	52.8	.012

P-value < .05 means there is significance.

Those in asterisk (\*) are variables that are significance.

#### 4.10 SUMMARY

This chapter has provided a detailed description of the results from the survey questionnaires and were presented and discussed. The next chapter will present the discussion of the research results.

## CHAPTER 5

### DISCUSSION OF THE RESEARCH RESULTS

#### 5.1 INTRODUCTION

In this chapter, the researcher presents discussions of the results. The chapter focuses on factors contributing to low uptake of Isoniazid preventive therapy amongst health care workers.

#### 5.2 PARTICIPANTS SOCIO-DEMOGRAPHIC CHARACTERISTICS

Evidently, the majority of respondents were females (54, 7%, n =110) a result which is consistent with other studies which also reported female dominance with respect to medical services as noted by (Al-Omari 2015:6) and (Shinwon, Sunguk, Mihyun, Namgyu, & Sunguk 2015:180). The majority of females in this study could be explained by the fact that female nurses form the largest proportion of employees in the hospital. In addition, this could be associated with the female dominancy in the nursing profession in general.

Most respondents (48.8%) in the study were single. The result was similar to those of other researchers (Al-Omari, 2015:6), (Ferri, Guadi, Marcheselli, Balduzzi, Magnani & Lorenzo 2016:203). In their studies, they noted that more than half of their participants were single as well. In this study majority of respondents (54.2%) had between less than 5 years working experience and a minority had more than 10 years working experience within the hospital. This could be attributed to the high exodus of nurses in the study setting who lacked terminal benefits which other similar organization offered to their employees. Most respondents (78.1%, n=157) were Christians. This could be because Swaziland has a population of Christians as mentioned by the King in all his opening remarks.



### **5.3 HEALTH CARE WORKERS' PERCEPTIONS TOWARDS IPT IMPLEMENTATION ON THEM REGARDLESS OF HIV STATUS**

The thought of getting TB scares many HCWs (n=119, 59.2%) whilst most of the HCWs (n=133, 6.2%) do not fear the disease anymore. 123/201 of HCWs had heard of a staff member who developed TB since they worked in the departments, and 125/201 of HCWs responded that isoniazid (INH) prophylaxis is available for health care workers. It is believed though, that HCWs in general have a positive attitude towards the IPT but stressed that the strongest determinants on acceptance of IPT were better information and uninterrupted availability of IPT. The need to counter misinformation about IPT was the other recurrent theme (McCarthy, Scott & Gous 2015:118). However, only (69.2%) of HCWs said that they think staff that has LTBI should be given the IPT.

This is contrary to a study by Uden, Barber, Ford and Cooke (2017:5) who revealed that staff working in respiratory medicine were significantly less likely to support preventive TB treatment in health care workers in general or for them personally, if they would have evidence of LTBI compared to other specialties. (45.3%) of HCWs could accept to be given IPT if they could be found to have LTBI. This is similar to a study by Uden et al (2017:3) who revealed that only 13% (14/106) of respondents with evidence of LTBI indicated that they had been offered preventive TB treatment. Similarly, McCarthy, Casey, Devane, Murphy, Murphy and Lacasse (2015:649) both indicated that HCWs shown to be significantly more reluctant to accept treatment for LTBI than non-HCWs.

HCWs have lower rates of initiation of treatment for LTBI and the exact reasons for lower uptake of this evidence-based intervention among HCWs remains unclear. Almost all the HCWs (95.3%) need more information before they can take IPT. Most, which is (60.7%) of HCWs, would take IPT if TB was incurable as a TB preventive measure. About (72.6%) of HCWs would take IPT if the INH side effects would be minimal. Lastly, (51.7 %) of HCWs had knowledge about IPT. This means knowledge cannot be a factor that can hinder HCWs from taking IPT which is contrary to a qualitative study that was conducted in South Africa to describe barriers to IPT implementation from health care providers and

patients' perspectives (Jacobson, Niccolai, Mntungwa, Moll & Shenoï 2017:6). In contrary, to this study, health care workers have found out that primary barrier to IPT use was lack of knowledge and experience.

The health care workers were not aware of the benefits of IPT and unclear about guidelines. Van Ginderdeuren, Bassett, Hanrahan, Mutunga and Van Rie (2019:6) also agree that poor awareness or understanding of IPT, including eligibility and to access it, all these are factors that contribute to health care workers not to take IPT as preventive measure against TB. Lastly most of the respondents (n=147, 73.1%) felt that they were embarrassed by taking IPT whilst (n=54, 26.9%) of them were not, on the other hand most of the health care workers (n=107, 53.2%) were not scared of stigmatisation when found to be taking IPT.

#### **5.4 EXPOSURE ON DUTY**

Most of the respondents (n=189, 94%) worry about exposure on duty whilst (n=12, 6%) of them did not worry about exposure on duty. Joseph and Joseph (2016:71) also echoed the above statement in their study that indeed health care workers did not take proper precautions as far as hazards were concerned and as far as nosocomial infections were concerned. They did not practise what they preach in most instances in their scope of practice.

#### **5.5 THE FACTORS RESULTING IN LOW UPTAKE OF IPT**

Most factors that contribute to low uptake of IPT amongst health care workers in their descending order were as follows; the fear of side effects (n= 143), fear of drug resistance (n= 138), small period of protection (n=137), long duration of taking the drug (n= 129), IPT only treated one form of TB which was the pulmonary TB (n=104) and the least factor being that they trusted Infection Prevention and Control (IPC) (n=9). Insufficient knowledge of IPT and inadequate counselling regarding the duration of IPT was

conversely a barrier to IPT uptake and completion respectively (Ngugi, Muiruri, Odero & Gachuno 2020:7).

## **5.6 DURATION OF THE TREATMENT**

Most of the respondents (n=135) preferred a stat dose of the treatment followed by those who prefer twice a day (n=47), then those who could take it for six months (n=13), and the least number of participants preferred twice a week (n=6). This also links with what has been found by Churchyard et al (2017:30) in their study which revealed that HCWs were not taking IPT due to its lengthy period of taking the drug 6 months. While the limited durability of isoniazid protective benefit, as it took only 2-3 years and the need to provide adherence support to achieve high rates of adherence and treatment completion. They fear that they would not be able to adhere to the treatment and the burden of taking drugs while you are not sick. IPT based on a six-month course of treatment was first offered to HCWs in June 2012. All HCWs visiting the wellness clinic were screened for TB symptoms and eligibility for IPT. HCWs were deemed ineligible for IPT if they were suffering from liver disease, had symptoms or signs of TB, or have been in contact with someone with TB, previous history of sensitivity to isoniazid, alcohol dependence, or had taken isoniazid in the preceding two years. Tuberculin skin tests are not routinely offered in Swaziland and HCWs did not receive one prior to IPT (Swaziland Guidelines 2019:171).

## **5.7 MEASURES DONE TO REDUCE TB BESIDES IPT**

Most of the HCWs (n=179, 89.1%) believed that providing a highly well-ventilated working condition reduces the risk of TB in HCWs, also (n=91.5%) of HCWs believed that providing the N95 masks all the time could be a solution in preventing TB in HCWs. Lastly, most of the health care workers (n=136, 67.7%) believed that health care workers gain from taking the IPT. According to Ehrlich et al (2020:2) a comprehensive occupational health approach is an essential complement to IPC guidelines. Such an approach includes a health system framework focusing on upstream or mediating components,

such as a statutory regulation, leadership, information system, and staff trained in protective disciplines. High rates of TB in the low- and middle-income countries are associated with high rates of latent TB and TB disease in health care workers (Ehrlich et al 2020:2).

## **5.8 ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND IF HAVING LTBI WOULD THEY LIKE TO BE OFFERED IPT**

There is association between marital status and the likelihood of taking IPT as a TB preventive measure with p-value-0.001. About (57.6%) single and (64.3%) married HCWs would not like to be offered IPT if they might be found to have LTBI. However, the divorced (75.0%), widowed (85.7%) and separated (92.3%) had likelihood of taking IPT if they found to have LTBI.

There was also an association between working position and likelihood of taking IPT with p-value-0.025. These was seen by (80.0%) of wards aides who agreed to take IPT while with the other working position there are about (50%) or less who agreed to take IPT as a TB preventive measure. Similarly, Steenland, Levine, Sieber, Schulte and Aziz (2014:3) revealed that more than one in five respondents indicated that they did not know the difference between active and latent TB. The lack of perceived knowledge was more prevalent among nurses than in doctors and in those aged 30 years or less. This clearly indicated that the more experienced you were as a HCW the more you were knowledgeable about latent TB. Working experience also influenced the likelihood of taking IPT with p-value-0.03, as HCWs with less than 10 years working experience were not likely to take IPT while HCWs who had an experience of more than 10 years had an increase likelihood of taking IPT.

Also, there was an association between department of the HCWs and the likelihood of taking IPT with p-value- 0.012, where most of the workers who were likely to take IPT if found to have LTBI were those working in the outpatient department with (77.8%). This might be because HCWs in this area knew that they were highly exposed to active TB as

they render primary health care, they had the first contact with the clients, which exposed them to active TB that was not yet detected. Surprisingly there was low likelihood of taking IPT in medical wards (male medical-39.3%, female medical-26.5%), whilst these wards usually had about (50%) patients who had TB, of which the HCWs kept on rendering care to those patients now and then which made them exposed to getting the TB infection. This corresponds to a study by (Uden et al 2017:4) that staff working in respiratory medicine was significantly less likely to support preventive TB treatment in health care workers in general or for them personally if they would have evidence of LTBI compared to other specialties.

## **5.9 SUMMARY**

This study has provided helpful insight on the key factors contributing to low uptake of IPT amongst HCWs. The results show that HCWs did not support the IPT taken by themselves but did support it when taken by clients.

## CHAPTER 6

### CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS

#### 6.1 INTRODUCTION

This chapter presents the conclusions, recommendations, and limitations of the study.

#### 6.2 OVERVIEW OF THE STUDY

This study employed a quantitative, descriptive, and cross-sectional design to collect numerical data to describe the characteristics of the study variables. Data were collected from HCWs by means of self-administered structured questionnaires to a total sample of 210 healthcare workers from which total feedback of 201 complete (or valid) questionnaires were obtained. The topic of the study was “Factors contributing to the low uptake of IPT amongst health care workers in a hospital of Manzini Region, Swaziland.

**The objectives of this study were:**

- To describe the factors which contribute to the low uptake of IPT as a TB preventive measure amongst health care workers.
- To assess health care workers' perceptions towards IPT implementation on them regardless of HIV status.
- To acquire information on what other means besides IPT could be implemented to reduce the incidence of TB amongst health care workers.

### **6.3 OVERALL CONCLUSIONS**

This study attempted to determine factors contributing to the low uptake of IPT amongst health care workers in a hospital of Manzini Region, Swaziland. The results of the study suggest that health care workers generally do not support the implementation of IPT on them as a preventative measure against TB. The results further suggest that the long period of taking Isoniazid as compared to the limited durability of IPT benefit of 2-3 years is a major deterrent factor to nurses taking IPT. Lastly, the results indicate that knowledge is not as great a determinant factor to IPT uptake as previously posited in other studies, and that most HCWs support the provision of alternative prevention methods such as ventilation of spaces and wearing of masks. This illustrates that the topic of the factors contributing to the low uptake of IPT amongst health care workers is a worthwhile topic for further research.

### **6.4 RECOMMENDATIONS**

Based on the study objectives and results, the research was able to make the following recommendations:

#### **Recommendations for education**

- IPT as a preventative measure against TB should be included or incorporated into the curriculum when training health care workers in training institutions.
- There should be periodic in-service education for health care workers on IPT to ensure that education is ongoing.

#### **Recommendations for health facilities**

- Alternative preventative measures such as ventilation of spaces and wearing of masks should be reinforced or strengthened in health facilities. Health facilities should provide alternative therapies such as Rifampicin, which has been proven

to have fewer side effects, therefore might be more attractive than Isoniazid monotherapy.

### **Recommendations for policy making.**

- A clear policy framework is needed to guide, promote, and even mandate the uptake of IPT as a preventative measure against TB amongst health care workers. There is need for increased consultation by policy makers with health care workers to formulate and implement effective policies to promote the uptake of IPT.

### **Recommendations for further studies**

- There is need for the study to be conducted in the future with a larger, more diverse sample size, which would add to the depth and accuracy of the results therefore, enabling the generalization of the results to larger populations. Future research on IPT uptake amongst health care workers could incorporate qualitative methods into the methodology.

## **6.5 CONTRIBUTION OF THE STUDY**

The results of this study would add to the limited body of literature on the uptake of IPT as a preventative measure against TB amongst health care workers. Therefore, the results of this study may inform health management and policy makers on the different factors that contribute to the uptake of IPT as a TB preventative measure amongst HCWs. Consequently, the study results may contribute in informing the formulation and implementation of effective health policies to improve the uptake of IPT amongst health care workers thereby ensuring the safety of both HCWs and patients. Lastly, the results of this study may form a springboard for future research to address further aspects of the uptake of IPT as a preventative measure against TB amongst health care workers.



## **6.6 LIMITATIONS**

Firstly, this study was conducted in one hospital and in one region of the country, which compromised the external validity of the study. Therefore, the results are limited to HCWs in this hospital or region and cannot be generalized to the health care workers' population of the country. There is a need for a similar study to be conducted in all the four regions of the country. In addition, the sample size was much smaller relative to the HCWs population in the country. The stability and reliability of the results of this study could have been increased had a larger sample size been chosen. Lastly, the knowledge of the research process could have interrupted with the data collection and analysis process. All these limitations are aspects for consideration and caution in future research.

## **6.7 CONCLUDING REMARKS**

This quantitative, descriptive cross-sectional study sought to determine the factors contributing to the low uptake of IPT as a preventative measure against TB amongst health care workers in one of the hospitals in the Manzini region. Overall, the results of this study suggest that health care workers do not support the implementation of Isoniazid on them as a preventative strategy against TB. There was no association between knowledge and willingness to take IPT. In the future, including both health care workers and patients in a similar study could provide a multifaceted perspective on the factors contributing to the uptake of IPT. It is the researcher's hope that more understanding of the factors affecting the uptake of IPT is of importance so that safe health environments or spaces for both health care workers and patients could be created.

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Zinatsa, F., Engelbrecht M., van Rensburg A.J., Kigozi G. 2018. Barriers and strategies to improve tuberculosis infection control in primary health care facilities in South Africa. *BMC. Health serv. Res.* 2018 doi :10.1186/s12913, 018-3083-0

## Annexure 1

### **Respondent Information Leaflet**

**Title of the study:** Factors contributing to low uptake of isoniazid preventive therapy amongst health care workers in a hospital of Manzini region, Swaziland.

The purpose of this information leaflet is to give information to help you decide whether to participate or not in this study. You are urged to carefully read it. You may ask questions about what you will be required to do, the benefits, the risks, your right as respondents or anything concerning this study that you find not clear. When all of your questions have been answered, you can then decide to be a participant or not. This process is called an informed consent; a copy of this form shall be given to you.

**Procedure:** You will be asked to share your knowledge concerning the key factors that contribute to low uptake of IPT amongst health care workers as a TB preventive measure. The questionnaires shall be distributed at a comfortable place in the departments. The proposed questionnaires are written in English. The information will be kept private in a lock and shall only be accessed by the researcher and possibly the supervisor.

**Possible risks or side effects:** There are no foreseen possible risks that you are likely to fall into.

**Costs:** As a respondent, you will only be asked to sacrifice 15- 30 minutes of your time.

**Compensation:** There will be no compensation of any form for your response in the study.

**Benefits:** This study will not benefit only you as an individual, but information gathered here might lead to the implementation of IPT amongst health care workers being reviewed and strengthened or even new ways of fighting against TB can be devised, this will lead to few or no HCW will die of TB infection.

**Confidentiality:** Only the researcher, her supervisor and I shall have access to the information gathered. The information shall be kept in lock and answered questionnaires shall be destroyed at least after five years, after publication of the study. Names or any other revealing data will not be used or shall be withdrawn in the process of data reporting

to ensure that there is no unnecessary disclosure of your identity.

**Voluntariness of participation and the right to withdraw.**

Your participation in the study is voluntary and you have all the rights to ask questions, refuse to respond or withdraw your participation at any time without undue coercion, penalty, or prejudice and without supplying reasons. You are allowed not to answer any of the questions if you feel uncomfortable with them.

**Contact details.**

If you have any question about this study or you would like to raise any concern, please contact me at (+268)76281500 or by e-mail at [nondumisobdlamini@gmail.com](mailto:nondumisobdlamini@gmail.com) or my research supervisor Professor Habedi D at E-mail [habeddsk@unisa.ac.za](mailto:habeddsk@unisa.ac.za) for any questions that may arise concerning the study.

Yours Sincerely

---

Nondumiso Dlamini- Malaza

Cell: (+268) 76281500

**Annexure 2**

**Informed Consent**

Statement concerning participation in a Research project.

**Name of the study:** Factors contributing to low uptake of isoniazid preventive therapy amongst health care workers in a hospital of Manzini region, Swaziland.

I have read the information on the proposed study and was provided the opportunity to ask questions and given adequate time to rethink the issue. The aim and objectives of the study are sufficiently clear to me. I have not been pressurized to respond in any way. I understand that responding in this study is voluntary and that I may withdraw from it at any time and without supplying reasons. I know that this study has been approved by UNISA, Department of Health Studies. I am fully aware that the results of this study will be used for scientific purposes and may be published. I agree to this, provided my privacy is guaranteed.

I hereby give consent to participate in this study.

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Signature of participant

\_\_\_\_\_  
Place

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Date

Statement by the researcher

I provided written information regarding this study.

I agree to answer any questions concerning the study as best as I am able.

I agree to adhere to the approved protocol.

\_\_\_\_\_  
Researcher

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Place

**Annexure 3**

**Request to enter study site.**

Nondumiso Dlamini  
P O Box 402  
MANZINI  
April 16, 2020

The Administrator  
Raleigh Fitkin Memorial Hospital  
P.O. BOX 14  
Manzini

Dear Sir/Madam

**Permission to conduct a research.**

This letter serves to request your permission and advice you that I, Nondumiso Dlamini, student number (61456195), a Masters' degree student in Public Health at the University of South Africa, I am seeking for permission to be granted to conduct a research study in the hospital. My research is being conducted as part of my graduate requirement, only for academic purposes. I request that I may be assisted in the establishment with essentials necessary for my research.

My research topic is "**Factors contributing to low uptake of Isoniazid preventive therapy amongst health care workers in a hospital of Manzini region, Swaziland**". My research proposal is still undergoing the research ethics committee of the University of South Africa.

Looking forward to your approval regarding my academic research.

Yours sincerely

.....

Nondumiso Dlamini

## Annexure 4

### **Questionnaire**

#### **Section A**

#### **Biographic data**

1.What is your age?

- 20-30
- 30-40
- 40+

2.What is your gender?

- Male
- Female

3.What is your working position in the facility?

- Chief medical officer
- Matron
- Sister in charge
- Medical officer
- Nurse
- Nursing assistant
- Student nurse
- Laboratory technician
- Ward aides

4. Marital status

- Single
- Married
- Divorced

5. What is your religion?

- Christianity
- Other ..... (Specify)

6. What is your department?

- Male medical ward
- Female medical
- Male surgical ward
- Female medical ward
- Outpatient department
- Children's ward
- Other ..... (Specify)

**Section B**

**Susceptibility**

1. In a scale of 10, what are the chances of getting TB?

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

2. Does your physical health make you more likely to be exposed to TB, regardless of the IPT?

.....

.....

.....

3. Do you worry about being exposed to TB in your line of duty?

.....  
.....  
.....  
.....

**Section C**

**Perceptions**

1. Does the thought of getting TB scares you?

Yes

No

2. Is TB a large hopeless disease to you?

Yes

No

3. What are your feelings about the exposure to TB, here at your workplace?

How long have you been working in that department?

More than 1 year

1-5 years

5-10 years

10 years or more

**Section D**

**Severity**

1. a) Have you heard of a staff member who developed TB since you worked there?



- Yes
- No
- b) If yes how many
  - less than 2
  - 2 or more

2. Is isoniazid (INH) prophylaxis for vulnerable health care workers?

- Yes
- No

3. Do you think HCWs that have LTBI should be given the IPT?

- Yes
- No

4. If you have LTBI would you like to be offered IPT?

- Yes
- No

5. Do you think you need more information before you decide whether to take IPT or not?

- Yes
- No

6. What do you think makes staff not to take IPT as a TB preventive measure?

**Choose any THREE.**

- Lack of knowledge of the effectiveness of IPT
- Fear of developing resistance to the INH drug
- Too long duration of taking the treatment.
- Fear of the side effects of the drug

- TB is curable.
  - They trust the PPE as compared to the drugs
7. If you can be given to choose duration of the IPT treatment, which duration will you prefer?
- A stat dose
  - A day i.e. b d
  - At least 2 weeks once a day
  - For six months
8. If TB was incurable, will you take IPT as preventive measure?
- Yes
  - No
9. If the side effects of the drugs will be minimal, will you take IPT?
- Yes
  - No
10. IPT is effective in preventing TB, do you agree?
- Agree
  - Strongly agree.
  - Disagree
  - Strongly disagree.
11. Do you know about the IPT?
- Yes
  - No

## Section E

### Benefits

1. Will providing a highly well-ventilated working condition reduce the risk of TB in HCWs?

- Yes
- No

2. Can providing the N95 masks all the time be a solution for preventing TB in HCWs. Can N95 be put for the entire day while rendering care to TB patients?

- Yes
- No

3. HCWs starve themselves, some with intention to look good, some for weight maintaining purposes and yet some due to being without food. Can cooking for the HCWs working in the TB departments make them eat a balanced diet to enhance their immunity to be able to fight infection?

- Yes
- No

4. Do health care workers gain immunity for TB from taking the IPT?

- Yes
- No

### Barriers

5. Is it embarrassing for health care workers to take the IPT?

- Yes
- No

6. Are health workers scared or afraid of stigmatization?

- Yes
- No

*Thank you for taking off some time to fill this questionnaire.*

## Section A

### Biographic data

1. Uneminyaka lemingakhi 20-30

- 30-40
- 40+
- Ubulili buni
- Wesilisa
- Wesifazane

2. Usebenta umsebenti muni kulesibhedlela.?

- Umphatsi wabodokotela
- Umphatsi wabo webahlengikati
- Umhlengikati lophetse
- Dokodela
- Umhlengikati
- Umsiti webahlengikati
- Ufundzela buhlengikati
- Njinela wekuhlolwa kwetingati
- Umsiti wasemagumbini ekulalilswa

3. Sigaba ngakutemendvo

- liculuculu
- Wendzile

- Sekwaphela umendvo

3..1.1.1.1. Ukhontaphi?

- Kresto
- Emadloti
- angikhonti
- lokunye ..... (ngicela

uchaze kafisha)

3..1.1.1.1.1.1. Usebentela kuluphi  
luhlangotsi?

- Egumbini labobabe labaphatsekile
- Egumbini labomake labaphatsekile
- Egumbini labobabe labalimele
- Egumbini labomake labalimele
- Ekupopoleni
- Egumbini lebantfwana
- Lokunye.....

(ngicela uchaze kafisha)

**Section B**

**Susceptibility**

Kulokulishumi, anganani ematfuba ekutfola sifuba sengati?

.....

.....

.....

1. Kuphila kwakho emtimbeni kuyawakhulisa yini ematfuba ekutfola sifo

sesifuba sengati noma ungawatsatsa emaphilisi ekuvikela esifubeni sengati?

- Yebo
- Chake

2. Uyakhatsateka yini ngekuba khona kwematfuba ekutfola sifuba sengati ngenca yemsebenti wakho?

- Yebo
- Chake

### Section C

#### Severity

1. Kuyakwesabisa yini kwati kutsi ungasitfola lesifo?

- Yebo
- chake

2. Ngabe ngekubuka kwakho, sifuba sengati sifananiswa nadzilika jele yini?

- Yes
- No

3. Utiva njani ngekwati kutsi umsebenti wakho uphakamisa ematfuba ekutfola sifo sesifuba sengati?

.....

.....

.....

4. Sonesikhatsi lesidze kanganani usebenta kuleligumbi losebenat kulo nyalo?

- Ngetulu kwemnyaka
- Ngetulu kwemnyaka , kepha ngaphansi kwalesihlanu
- Kusuka kulesihlanu kuya kulelishumi
- Ngetulu kwalelishumi

## Section D

### Severity

1. a) sewuke weva yini ngesisebenti lenisebenta naso lesibanjwe ngulesifuba sengati?

- Yebo
- Chake

b) nangabe bakhona, bangakhi

- Ngephansi kwalababili
- Ngetulu kwalababili

2. Yini locabanga kutsi kwenta labanye bangawanatsi lamaphilisi ekuvikela.?

#### ***Khetsa Lokutsatfu kuphela.***

- Kubabete lwati ngalamaphilisi
- kwesaba kutsi angasakusebenteli kahle esikhatsini lesitako
- Sidze kakhulu sikhatsi sekunatsa lamaphilisi
- Kugula likungake kuchakele umasenginatsa lamaphilisi
- Sifuba sengati siyelapheka

3. betsemba kuvikela kunekwelapha lesifo

4. Ungakhetsa kutsi sikhatsi semaphilisi sibe ngabani.

Kanye nje vo?

- ekuseni nasentambama



- emaviki lamabili kanye ngelilanga.
- Lokungenani, kanye ngelilanga, emaviki abe mabili
- Tinyanga letisitfupha

3..1.2. Kube sifo sengati aselapheki, bongawajabulela yini emaphilisi?

- Yebo
  - Chake
6. Nakungatsiwa emafuba ekuchakela kwekugula akukho nawunatsa emaphilisi, bongawajabulela yini?
- Yebo
  - Chake
7. Uyavuma yini kutsi kunatsa emaphilisi kuyasivikile sifuba sengati?
- Ngiyavuma
  - Ngivuma kakhulu
  - Angivumi
  - Angivumi nakancane
8. Unalo yini lwati ngemaphilisi eskulapha sifuba sengati?
- Yebo
  - Chake

## SECTION E

## Tinzuzo

1. Kusuka nyalo kuya embili, uyetsembisa yini kutsi utociniseka kutsi ligumbi lakho lekusebentela lishaywa ngumoya ngalokwenele?

- Yebo
- Chake

3..1.3. Ngekubuka kwakhho, tifonyo yelukhobo lwe K95 tingasita yini ekuvikeleni sifuba sengati? Letifonyo, uyakhona yini kutisebentisa sonkhe sikhatsi nawusanakekela labagula ngesifuba sengati?

- Yebo
- Chake

3. Ngekubuka kwakho, kuphekela tisebenti tetemphilo kungadlala yiphi indzima ekucinisekiseni kutsi imitimba yabo inemaseko onkhe ladzingekekako?

- Yebo
- Chake

4. Ngabe kunatsa emaphilisi esifuba sengati, kuyatenta yini tisebenti tetemphilo kutsi tingasatseleleki ngalesifo?

- Yebo
- Chake

## Tihibe

5. Ngabe kulihlazo yini kwateka kutsi unatsa emaphilisi esifuba sengati?

- Yebo
- Chake

6. Ngabe tisebenti tetemphilo tiyakwesaba yini kukhishwa inyumbazana ngekwateka kutsi tinatsa emaphilisi esifuba sengati?

- Yebo
- Chake

*Sibonga sikhatsi sakho usaphendula lemibuto lengenhla.*

**UNISA HEALTH STUDIES HIGHER DEGREES ETHICS REVIEW COMMITTEE**

Date 8 July 2020

Dear Nondumiso Dlamini

Decision: **Ethics Approval from  
8 July 2020 to 8 July 2023**

NHREC Registration # : REC-012714-039

ERC Reference # : **HS HDC/1003/2020**

Name : Nondumiso Dlamini

Student #: 61456195

Staff #:

**Researcher(s):** Name Nondumiso Dlamini

Address

E-mail address [nondumisobdlamini@gmail.com](mailto:nondumisobdlamini@gmail.com), telephone #

+268 76281500

**Supervisor (s):** Name Prof DK Habedi

E-mail address [habledsk@unisa.ac.za](mailto:habledsk@unisa.ac.za), telephone # 0725201130

**Working title of research:**

**Factors contributing to low uptake of isoniazid preventive therapy amongst health care workers in a hospital of Manzini region, Swaziland**

**Qualification:** MA

Thank you for the application for research ethics clearance by the Unisa Health Studies Higher Degrees Ethics Review Committee for the above mentioned research. Ethics approval is granted for three (3) years.

*The **low risk application** was **reviewed** by a Sub-committee of URERC on 7 July 2020 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment. The decision was approved on 7 July 2020.*

The proposed research may now commence with the provisions that:

1. The researcher will ensure that the research project adheres to the relevant guidelines set out in the Unisa Covid-19 position statement on research ethics attached.

2. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
3. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the Health Studies Research Ethics Committee [HSREC@unisa.ac.za](mailto:HSREC@unisa.ac.za).
4. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
5. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
6. 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. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
7. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
8. No field work activities may continue after the expiry date (8 July 2023). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

*Note:*

*The reference number **HSHDC/1003/2020** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Signatures :



Chair of HSREC : Prof JM Mathibe-Neke

**E-mail:** [mathijm@unisa.ac.za](mailto:mathijm@unisa.ac.za)

**Tel:** (012) 429-6443



Executive Dean : Prof K Masemola

**E-mail:** [masemk@unisa.ac.za](mailto:masemk@unisa.ac.za)

**Tel:** (012) 429-6825

8 August 2022

TO WHOM IT MAY CONCERN

Dear Sir/Madam

RE: Assistance Rendered to Nondumiso Dlamini-Malaza with the Master of Public Health  
Thesis

This serves as a formal acknowledgment that I Sikhulile Nxumalo, ID number: 9502216100210 did assist  
Nondumiso Dlamini-Malaza, student number: 61456195 with her

Thesis titled: "Factors contributing to low uptake of isoniazid preventive therapy amongst health care  
workers in a hospital of Manzini region, Swaziland. The assistance included proof reading, editing,  
correction of some literature components, proper presentation of data, tables and figures and technical  
analysis of some of the collected data.

I hold a Bachelor's of Science in Financial Mathematics and Actuarial Sciences from the University of  
Pretoria. I am currently registered with the Actuarial Society of South Africa pursuing my board exams  
and work at ESRIC as their internal Actuarial Analyst.

For more information, please feel free to contact me on the above-mentioned contact details.

Yours Sincerely



Sikhulile Nxumalo



**UNIVERSITY OF ESWATINI**  
**DEPARTMENT OF ELECTRICAL AND**  
**ELECTRONIC ENGINEERING**

Private Bag 4  
Kwaluseni, M201

Eswatini

---

Email: [mlupupa@uniswa.sz](mailto:mlupupa@uniswa.sz)

01<sup>st</sup> August 2022

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

**RE: Assistance Rendered to Nondumiso Dlamini-Malaza with the Master of Public Health Thesis**

This serves as a formal acknowledgment that I Mzabalazo Lupupa, ID number: 8203256100357 did assist Nondumiso Dlamini-Malaza, student number : 61456195 with her thesis titled: "Factors contributing to low uptake of isoniazid preventive therapy amongst health care workers in a hospital of Manzini region, Swaziland. The assistance included proof reading, editing, correction of some literature components, proper presentation of data, tables and figures and technical analysis of some of the collected data. Recommendations and suggestions were also sent to the candidate as a way of further improving the quality of her work.

I hold a PhD in Electronic Engineering from the University of Reading in the United Kingdom. I am currently a lecturer at the University of Eswatini, Faculty of Science and Engineering, Department of Electrical and Electronic Engineering.

For more information, please feel free to contact me on the above-mentioned contact details.

Your sincerely,

A handwritten signature in black ink, appearing to read 'Mzabalazo Lupupa'.

Mzabalazo Lupupa, PhD



**Eswatini Nazarene Health Institution (ENHI)  
Raleigh Fitkin Memorial (RFM) Hospital  
& the Community Health Clinics**

*Ndawabangeni, Mshungishingini, Piggs Peak, Bhalekani, Ndzingeni, Shezinda,  
Malandzela, Sitsatsaweni, Mhba, Bhekinkhosi, Mafutseni, Siteki, New Village,  
Vulamehlo, Manyeni, Mgazani, Phunga, Sigaweni, Ngcibuni, Buhanga.*



09 May 2020

Nondumiso Dlamini  
P O BOX 116 Manzini

Dear Sir

**RE: AUTHORIZATION To DO RESEARCH IN THE HOSPITAL**

Your request on the fore mentioned endeavors has been duly considered and permission granted on the following conditions please:

- a). That confidentiality is strictly observed
- b). That the hospital receives a copy of the report on the proposed research.

Yours Sincerely

**Leonard S. Dlamini (Mr.)**

HOSPITAL ADMINISTRATOR

CC: Matron 1

SMO

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enhiswaziland.com

O [www.enhiswaziland.com](http://www.enhiswaziland.com)