

An investigation into the expenditure per patient day equivalent for public hospitals in North West Province, South Africa

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DECLARATION



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SOLEMN DECLARATION OF OWN WORK BY THE STUDENT

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I declare herewith that the mini-dissertation which I herewith submit to the North-West University in partial compliance with the requirements set for the Master of Business Administration (MBA) degree is my own original work, has been text-edited in line with professional communication standards, and has not already been submitted to any other institution for evaluation purposes.

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PREFACE

This report adopts the structure of a mini-dissertation, following the format suggested by North-West University (NWU). It comprises an introduction and background, a literature review, an analysis section on the case study presented, and a final chapter to conclude the key findings and proposed recommendations.

The layout of the dissertation is as follows:

Chapter 1: This section introduces the study, providing its background, problem statement, and research aim. This section also delves into the research methodology adopted for this investigation, offering insight into the study's approach and design.

Chapter 2: The literature review concentrates on and explores the social determinants of health, specifically examining the landscape of public hospitals in South Africa and focusing on the North West Province.

Chapter 3: The data analysis section is presented, wherein the study identifies and discusses seven key themes derived from the gathered data. This chapter offers a comprehensive analysis and interpretation of the data collected within the context of the study's objectives.

Chapter 4: The conclusion, summary of findings, policy brief, and recommendations based on the study's outcomes. Additionally, this section acknowledges the study's limitations, critically assessing the research process and potential constraints on its outcomes.

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ABSTRACT

The North West Department of Health initiated this study to investigate the rising healthcare expenditures in public hospitals within the North West Province compared to other regions. The study focuses on identifying key factors contributing to this financial strain. The literature review emphasises social determinants of health in South African public hospitals, particularly within the North West Province. It explores various influences on healthcare spending, encompassing socio-economic factors, infrastructure, and broader systemic impacts.

Following ethical and scientific clearance, the data collection process commenced through semi-structured interviews, applying a qualitative descriptive methodology. These interviews served as a rich source of qualitative data, offering insights into the factors influencing the high ExpPDE. Subsequently, the collected data underwent analysis using the Atlas.Ti software.

The detailed analysis categorises seven themes impacting the increased healthcare expenditures in the province's healthcare facilities. These themes cover multiple aspects, including challenges in resource allocation, staffing shortages, irregularities in procurement, prolonged patient stays, technological limitations, and broader socio-economic effects. Visualisation of these themes underscores their collective impact on the financial dynamics of the healthcare system.

The study concludes by proposing strategic recommendations aimed at addressing identified challenges. These recommendations seek to enhance cost management strategies and operational efficiency, optimise the workforce, refine procurement processes, integrate technology, and streamline administrative procedures. The insights aim to assist the North West Department of Health foster a more sustainable healthcare system and improve patient care.

Keywords: expenditure per patient day equivalent, social determinants of health, public hospitals, healthcare, sustainable development goals

ABBREVIATIONS

AUTHeR	Africa Unit of Transdisciplinary Health Research
ExPDE	Expenditure per Patient Day Equivalent
GDP	Gross Domestic Product
NWDoH	North West Department of Health
NWU	North West University
SDG	Sustainable Development Goals
SDoH	Social Determinants of Health

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INTRODUCTION TO THE RESEARCH PROBLEM AND METHODOLOGY

1.1 INTRODUCTION

This study aims to examine the Expenditure per Patient Day Equivalent (ExPDE) in the South African healthcare system, focusing on understanding the factors that contribute to the high costs of hospital stays, specifically in the North West Province. ExPDE is a widely used metric for measuring the financial burden of healthcare, and it is an important indicator of the efficiency and effectiveness of a healthcare system. In the North West Province, high ExPDE is a significant concern as it can limit access to healthcare for many individuals, particularly those from lower socio-economic backgrounds.

Ensuring equitable financing and delivering proper healthcare to all citizens is a crucial goal for countries worldwide. The healthcare system in South Africa, like many other countries, consists of both private and public sectors that provide medical care for their people. The private sector relies on individual payments and health insurance to fund its services, while the government finances the public sector through tax revenue. However, the private sector is only accessible to a fraction of the population with the financial means to purchase private healthcare; this can lead to a significant disparity in access to healthcare between those who can afford it and those who cannot (Ataguba & McIntyre, 2012). The South African government's budget for the 2022/2023 term is R259 billion (Department of National Treasury, 2022) and provides healthcare to 71% of the population (Rensburg, 2021). However, this budget can be seen as insufficient as it is overburdening the system, leading to unfairness of services for those who rely on the public sector for healthcare.

Braveman and Gottlieb (2014:23-27) explain social determinants of health, referring to the broader social, economic, and political factors that shape health outcomes. In South Africa, a country with a history of apartheid and ongoing economic inequality, these factors are particularly salient. Individuals from lower socio-economic backgrounds are at a greater risk of poor health outcomes and are more likely to require frequent and prolonged hospital stays.

The study will employ qualitative research methods, such as interviews with healthcare professionals and document analysis, to gather in-depth information about the leading factors causing the high ExpPDE in the North West Province. In addition, an examination of relevant policies and data will be done to understand how the healthcare system addresses, or fails to address, social determinants of health and their impact on healthcare costs in this specific region.

By limiting the scope of the study to the North West Province, we aim to gain a nuanced understanding of the unique challenges and opportunities facing healthcare in this region and how they relate to ExpPDE and social determinants of health. With this knowledge, we hope to identify opportunities for improving the efficiency, effectiveness, and equity of the healthcare system in the North West Province.

1.2 BACKGROUND

The expenditure per ExpPDE is a critical factor in determining the efficiency of public hospitals. It provides an overview of the costs associated with providing care to patients and can be used to compare different facilities offering similar levels of care. The calculation of ExpPDE considers the resources required to provide care to a patient for a single day. It is an important tool for hospital administrators to assess their performance and make necessary improvements.

In recent years, there has been growing concern around the high ExpPDE in the North West Province of South Africa. The region has the highest average ExpPDE among the nine South African provinces, indicating that drastic changes are required to improve the efficiency of its public hospitals. According to a study by Massyn *et al.* (2020:169-171), the average ExpPDE in South Africa was R3179 in the 2019/2020 financial year, which was higher than the previous two financial years. In the North West Province, the average ExpPDE was even higher, at R3671. The ExpPDE for each of the North West Province's district hospitals is shown in Table 1. The data highlights the need for a thorough examination of the factors contributing to the high ExpPDE in the region, as well as the development of strategies to improve the efficiency of its public hospitals. The goal of this study is to conduct a comprehensive analysis of the factors that influence the ExpPDE for public hospitals in the North West Province and to provide recommendations for reducing the cost of providing care.

Table 1: ExPDE for the North West Province's public hospitals

District Hospitals	Expenditure per Patient Day Equivalent (R)
Bojanala Platinum	3933
Dr Kenneth Kaunda	3478
Dr Ruth Segomotsi Mompatimpiati	3398
Ngaka Modiri Molema	3626

1.3 DEFINITION OF TERMS

District hospital: Primary healthcare must be given in a 24-hour period to a defined population within a health district. The hospital must have general practitioners and clinical nurse practitioners to provide services that include in-patient, ambulatory health services as well as emergency health services (Department of Health, 2004).

Expenditure: The term expenditure refers to the exchange of goods and services for payments or the incurring of a liability (Accounting Tools, 2022).

In-patients: In-patients are patients who need to stay overnight and are monitored by the healthcare team throughout the stay (Wang *et al.*, 2021:2).

Out-patients: Out-patients are patients who leave the hospital the same day, and the reason for the visits is usually planned or routine visits (Wang *et al.*, 2021:2).

Patient Day Equivalent: The Patient Day Equivalent is a unit representing patients in a 24-hour period depending on the hospital resources distributed to the patient or patients. All in-patient days, half of out-patient visits and a third of emergency department visits are used to calculate the PDE (Steyn & Gebremariam, 2019:4).

1.4 PROBLEM STATEMENT

Public hospitals consume a large portion of the total South African budget to provide good healthcare for citizens who cannot afford private healthcare (Department of National Treasury, 2022). The North West Health Department is concerned that the ExpDE is too high compared to other provinces, and the hospitals are being operated inefficiently. The ExpDE is one of the indicators of how efficiently a hospital is managed and operated. Currently, the North West Province has the highest ExpDE of all the provinces in South Africa (Massyn *et al.*, 2020:170). A study must be done to investigate the factors contributing to the high ExpDE to assess how state resources are currently utilised and to identify potential strategies for enhancing resource efficiency.

1.5 RESEARCH QUESTION

How can the factors influencing ExpDE for public hospitals in the North West Province be managed towards better efficiency?

1.6 RESEARCH OBJECTIVES

1.6.1 Aim

To provide insight into the optimal management of the dominant factors influencing the ExpDE in the public hospitals of the North West Province.

1.6.2 Objectives

Objective 1: To explore the concepts and current contextual factors that influence the ExpDE for public hospitals in the North West Province.

Objective 2: To explore the social determinants of health that influence the ExpDE in the public hospitals in the North West Province.

Objective 3: To develop a policy brief for the Department of Health in the North West Province towards more efficient cost management.

1.7 SCOPE OF THE STUDY/DELIMITATIONS

1.7.1 Field of study

The field of study was classified within healthcare management, focusing on operational and financial management. The investigation aimed to understand the factors influencing the ExpDE, which included identifying inefficiencies in the processes of healthcare delivery.

1.7.2 Sector under investigation

This study focused on the healthcare sector in the North West Province of South Africa, specifically public district hospitals.

1.7.3 Geographical demarcation

The study focused on the public district hospitals located in the North West Province of South Africa. The selected hospitals for the study were Dr. Kenneth Kaunda, Ngaka Modiri Molema District, and Bojanala Platinum District. The study participants consisted of individuals who worked at these three district hospitals. The geographical demarcation of the study to the North West Province provided a focused area of investigation. It allowed for a more in-depth analysis of the factors contributing to the ExpDE in the area. By analysing these specific hospitals, the findings of the study could be used to inform policies and decision-making in the North West Province to improve the efficiency and cost-effectiveness of the public district hospitals.

1.8 RESEARCH DESIGN AND METHODS

1.8.1 Literature review

An extensive literature review from previous case studies is presented in Chapter 2 to understand the factors that influenced the ExpDE for public hospitals.

The literature study began with an exposition of the social determinants of health to better understand the broad concept. The health landscape of South Africa was then explored, and how this translated to the North West Province was examined. Next, a focus was given to specific metrics along which different hospitals could be compared to each other.

Textbooks, Google Scholar, and journal articles were the main sources for the literature review. Data was collected through semi-structured interviews to determine the factors contributing to the high ExpDE in the North West Province. The final factors influencing the ExpDE of the public hospitals were illustrated with a Lewin's force field analysis.

1.8.2 Empirical study

1.8.2.1 Research paradigm

An interpretive research paradigm, which emphasised understanding the perspectives and experiences of individuals within organisations, as described by Bryman *et al.* (2014:20), was followed for this study. This approach was particularly appropriate for understanding the factors that influenced the expenditure of ExpDE in public hospitals in the North West Province of South Africa.

The primary data collection method for this study was semi-structured interviews. This method allowed for flexibility in the interview process and enabled the exploration of emerging themes and ideas. As stated by Bothma *et al.* (2014:208-209), semi-structured interviews were useful for gathering information about individuals' beliefs, perceptions, and experiences within an organisation. The interviewer could ask follow-up questions to explore exciting avenues arising from the interviews.

1.8.2.2 Research approach

A research approach could be developed using deductive, inductive, and abductive approaches, as discussed by Melnikovas (2018). However, this study followed an inductive research approach, characterised by its openness to new and unexpected findings, with an emphasis on discovering patterns, themes, and relationships in the data. It allowed the researcher to adapt the research direction as new information emerged.

The study began with a comprehensive literature review to gather existing knowledge on the factors influencing the ExpDE in international and national public hospitals, providing a broad understanding of the field and serving as a foundation for the study.

Subsequently, semi-structured interviews were conducted with healthcare professionals working in public hospitals in the North West Province to gather in-depth information about their experiences and perspectives on the factors influencing EXPDE in their specific context. The data collected through the interviews were analysed to identify patterns and themes, which were used to generate new theories or explanations about the phenomenon being studied.

1.8.2.3 Methodological choice

Qualitative research involves in-depth analysis of qualities, characteristics, or properties to better understand and explain a phenomenon. The researcher gives meaning to the study through their engagement. Little numerical data is used; instead, thoughts, words, insights, and actions are observed or collected in the research (Botma *et al.*, 2014:182).

The study used qualitative descriptive research methodology in the following ways:

- Semi-structured interviews were the primary means of data collection to gather the necessary information for the study.
- The study encompassed both numerical and non-numerical data, making qualitative research the most appropriate method.
- An inductive approach was used to analyse the collected data, meaning that the researcher drew general conclusions from the specific observations made during the interviews.
- The researcher interpreted the data obtained through the interviews, leading to a subjective analysis. However, efforts were made to ensure the results were as accurate and unbiased as possible.
- The study adopted an interpretivism research paradigm, which recognised that the understanding of reality was constructed by interpreting subjective experiences and perceptions.

1.8.2.4 Research strategy

Melnikovas (2018:34) explains that the research strategy refers to the overall plan for collecting and analysing data in a study. Various research strategies, such as experiments, surveys, archival research, case study, ethnography, action research, grounded theory, and narrative inquiry, can be used.

This study used a qualitative case study research strategy, focusing on collecting data through semi-structured interviews. The case study approach allowed for a thorough examination of a specific phenomenon within a real-life context. It was well-suited for understanding the factors influencing the ExpDE in public district hospitals in the North West Province.

The sampling method used to determine the participants for the case study was snowball sampling. This method involved using a small number of initial participants to identify and recruit additional participants through their networks. Snowball sampling was appropriate for this study as it allowed for identifying healthcare professionals with relevant knowledge and experience to contribute to the research.

1.8.2.5 Time horizon

Melnikovas (2018:34) explains that the time horizon in research refers to the period of time over which data is collected and analysed. It can be either cross-sectional, which is a snapshot of data collected at a single point in time, or longitudinal, which involves collecting data over an extended period.

A cross-sectional design was used for this study, as it was appropriate for understanding the factors influencing the ExpDE in public hospitals in the North West Province at a specific point in time. This choice was justified for the following reasons:

- The factors influencing ExpDE were not expected to change significantly over a short period of time, so data collected simultaneously would provide an accurate representation of the current situation.
- Multiple public hospitals in the North West Province were investigated, providing a more comprehensive understanding of the factors influencing ExpDE across the province.

- The patterns and relationships between the variables were investigated to determine the factors influencing ExpDE in public hospitals.

1.8.2.6 Study population and sampling

The North West Department of Health (NWDoH) had identified the research topic and had requested the collaboration of the NWU Business School and the Africa Unit for Transdisciplinary Health Research (AUTHeR) to conduct the research on their behalf. They provided all necessary access and permissions to gather the required data for the study.

The study population consisted of employees of three district hospitals within the North West Province, specifically Dr. Kenneth Kaunda (Klerksdorp), Ngaka Modiri Molema District (Mahikeng), and Bojanala Platinum District (Rustenburg). These hospitals were identified as the "best functioning" from a baseline assessment conducted by AUTHeR on behalf of the NWDoH.

A non-probability, snowball, and purposive sampling method was used to identify the relevant hospital personnel needed for data collection. The sample size consisted of five to seven participants per hospital or until data saturation was reached. Participants were informed in advance and were required to assist with the study as part of the department's request. Personal identifiers were not collected, and the data were anonymised and managed in accordance with the AUTHeR data management policy, which was aligned with the NWU requirements and the Protection of Personal Information Act (POPIA) of 2013.

The researcher prioritised the ethical treatment of the participants throughout the study. Informed consent was obtained from each participant before they participated in the study. The consent form outlined the purpose of the study, the nature of participation required, potential risks and benefits, and their rights to withdraw at any time. During the data collection process, the researcher ensured that the participants were treated with respect and that their rights to privacy and confidentiality were protected. The researcher communicated with the participants clearly and respectfully and answered any questions they had in a timely and comprehensive manner.

The researcher, being an external individual and not employed by the participating hospitals or the health department, minimised potential conflicts of interest. Additionally, to further ensure unbiased data collection, no incentives were provided to participants in the study.

1.8.2.7 Designing the measuring instrument

For a semi-structured interview, the researcher must create an interview schedule. This schedule, with open-ended questions, is meant to guide rather than control the discussion. Three to six questions must be developed in the schedule (Bothma *et al.*, 2014:209).

A maximum of three main self-developed questions was prepared, with three to four subsets of questions. These questions were open-ended to ensure that more comprehensive data was collected. As the data was revealed during the interview, more detailed questions were developed and asked. The interview schedule can be seen in Appendix A.

1.8.2.8 Collection of data

The following process was followed before conducting interviews:

Step 1: Scientific approval for the study.

Step 2: Ethical clearance for the study.

Step 3: Registration of the study on the national database.

Step 4: Contacting the NWDoH to appoint a gatekeeper for the study.

Step 5: Conducting interviews with the identified participants.

Appendix B contains the email confirmation of the research topics identified by the NWDoH and the working relationship between AUTHeR and the NWDoH.

AUTHeR served as the mediator between the researcher, hospitals, and the participants. The researcher, AUTHeR, and, if needed, an intern, communicated with

and had contact with the participants. Only the factors influencing the calculation of the ExpDE were communicated between the parties.

The role of the researcher was to determine these factors and suggest solutions to improve the ExpDE of the district hospitals, while the role of the participants was to provide the researcher with the necessary information.

Data was collected in the form of interviews. The background for the study and the main interview questions were sent to the relevant participants in advance for preparation, and then the interviews were conducted.

Emails, telephonic conversations, and in-person interviews were conducted to gather the data and communicate the necessary arrangements. Telephonic conversations and emails were used to schedule the meetings, sample all the participants, and inform them about the study. The interview questions were emailed to the participants before the in-person interviews. The information could be gathered in hard copies, soft copies, or verbally during the interviews. When the data was in soft copies, emails were used to transfer the data.

1.8.2.9 Data analysis

For this qualitative study, the following six steps were used, as described by Creswell (2014:247-249):

Step 1: Organising and preparing the data for analysis.

Step 2: Reading or reviewing all the data.

Step 3: Initiating the coding process for all the data.

Step 4: Using the coding process to generate a description of the setting, people, and categories or themes for analysis.

Step 5: Advancing how the description and themes will be represented in the qualitative narrative.

Step 6: A final step in data analysis involved interpreting the qualitative research findings or results.

All the interviews were recorded and transcribed for subsequent data analysis. Since this was a qualitative study, Atlas.Ti was used to transcribe, process, and analyse the data to conclude the study, following Creswell's guidance (2014:245).

Lewin's force field analysis model (Capatinaa *et al.*, 2017) was used to illustrate the factors influencing the ExpDE. This model highlights the interplay between driving forces that promote change and restraining forces that maintain the status quo within an organisation. It assists in identifying and analysing these forces and their impact. By understanding these forces, the study aimed to determine what changes needed to be made and how to address resistance to achieve the desired outcome. The final report was prepared using Microsoft Word and then converted to PDF for the final revision report.

1.8.2.10 Rigour

The reliability and validity of a study are crucial in determining the trustworthiness of the findings. According to Bryman *et al.* (2014:44-45), trustworthiness comprises four criteria: credibility, transferability, dependability, and confirmability. In this study, measures were taken to ensure that the research was reliable, meaning that the findings were consistent, reproducible, and valid, meaning that the findings accurately represented the phenomenon being studied. This section describes the steps taken to ensure the reliability and validity of the study, including the use of multiple data collection methods, external review, and a systematic approach to data analysis to meet the criteria of trustworthiness.

Credibility

To ensure the credibility of the study, a thorough literature review was conducted to provide an understanding of the existing knowledge on the topic and to identify any gaps in the literature. Triangulation of data collection methods was used by combining semi-structured interviews with document analysis to provide multiple perspectives on the phenomenon being studied. Additionally, the study was reviewed by experts in the field, such as the AUTHeR, to provide an external validation of the findings and ensure that the study adhered to ethical standards.

Transferability

The study and the policy suggestions were designed to be transferable to other public hospitals in the North West Province and other regions of South Africa; this was achieved by providing a detailed description of the study context, including the socio-economic factors of the region, as well as the specific characteristics of the public district hospitals under investigation. Furthermore, a diverse group of participants with knowledge and experience regarding ExpDE was selected. This group represented different roles and levels within the healthcare system, to ensure that the findings were representative of the population of interest.

Dependability

The study was made dependable by ensuring that all interviews were recorded and transcribed and that the records were safeguarded. The researcher was able to trace the information back to the participants, but the data was anonymous in all published records. Detailed documentation of the research process was kept, including the research questions, data collection methods, data analysis techniques, and the researcher's reflexivity. The documentation allowed for replication of the study and for other researchers to verify the findings.

Confirmability

Confirmability was ensured by providing a detailed description of the research methodology, including data collection and analysis procedures, as well as the researcher's reflexivity throughout the research process. The data was analysed using a rigorous and systematic approach, such as thematic analysis, to ensure the findings were valid and reliable. Furthermore, the study was reviewed by experts in the field to provide external validation of the findings and ensure that the study adhered to ethical standards.

1.9 ETHICAL CONSIDERATIONS

The ethical considerations of the research study were paramount in ensuring that the rights and welfare of the participants were protected. This study, aiming to investigate the factors contributing to the high expenditure of ExpDE in public district hospitals in

the North West Province, South Africa, adhered to the highest ethical standards. It was crucial that the study was conducted in a manner that was respectful of the participants and ensured that their rights and well-being were protected throughout the research process. According to Bryman *et al.* (2014:120), ethical principles in research include ensuring that participants are not harmed, that they give informed consent, that there is no invasion of privacy, and that there is no deception involved. These principles were upheld throughout the study.

The inclusion criteria for participants were based on their knowledge, experience, and access to information regarding the calculation of ExpDE or being cost-driven personnel. The CEO of each hospital was interviewed first, and they provided access to the relevant parties and permission for the subsequent interviews with the relevant personnel at each hospital, including the operational managers, financial managers, procurement managers, and human resource managers. Participants had to be able to speak English and be literate to be included in the study. Non-decision makers, people without a background in ExpDE calculations and those without access to relevant data were excluded from the study.

1.9.1 Respect and autonomy

Respect for the autonomy and privacy of the participants was of utmost importance in this study. Informed consent was obtained from all participants before any data collection took place. They were provided information about the study, including the purpose, procedures, potential risks and benefits, and their right to withdraw at any time. They were also briefed on the steps taken to maintain the confidentiality and security of their personal information, ensuring it remained private and safe. Only authorised personnel involved in the study had access to the collected data.

Furthermore, the participants' time was respected by scheduling specific meetings and ensuring that the interviews were conducted within the scheduled time limit; this was done in a way that was not disruptive to their work schedule or routine. The researcher ensured that any inconvenience caused to the participants was kept to a minimum and that the participants were not coerced in any way to participate in the study.

1.9.2 Risk/benefit analysis

All risks and benefits relating to the study were combined in the same balance to create a risk-benefit analysis (Hansson, 2009). Risk/benefit analysis was an essential step in the research process, as it helped assess the potential risks and benefits of the study; this ensured that the study was conducted ethically and responsibly, mitigating potential risks as much as possible.

In this study, some of the potential risks included:

- Confidentiality: Participants might have been hesitant to share sensitive information due to the potential for their identity to be disclosed.
- Informed consent: Participants might not have fully understood the purpose and implications of the study, leading to a lack of informed consent.
- Data protection: There was a risk that the data collected during the study might be accessed or used for purposes outside of the study.
- Bias: There was a risk that the researcher might have had personal biases that could influence the results of the study.

However, all these potential risks could be mitigated by following the procedures and guidelines set out for the study.

The study also presented several potential benefits, including:

- Improved efficiency: The findings of this study might help the NWDoH develop a more efficient cost management system, potentially reducing costs and improving overall outcomes.
- Advancement of knowledge: The results of the study might contribute to the overall body of knowledge in the field of healthcare efficiency and cost management.
- Increased transparency: The study might help to increase transparency and accountability in the NWDoH, potentially leading to improved trust in the system.

In conclusion, the potential risks and benefits of this study needed to be carefully considered and monitored throughout the research process. It was important to take steps to mitigate the risks as much as possible while maximising the benefits to the participants and the wider community.

1.9.3 Permission and informed consent

The purpose of obtaining informed consent from the participants in this study was to ensure that they were aware of the nature of the research and the potential consequences of their involvement. The NWDoH provided permission for the conduct of this study. The details of the working arrangement can be found in Appendix B. Before any interviews were conducted, all participants were fully informed about the purpose and intentions of the study, including the nature of the data that would be collected and the potential consequences of their involvement. Each participant was then asked to sign a consent form indicating that they understood the nature of the study and were willing to participate.

1.9.4 Confidentiality and anonymity

The confidentiality and anonymity of participants were of utmost importance in this study. All data collected from the interviews were kept secure to maintain confidentiality, and only the researcher and the research team had access to it. To ensure anonymity, personal identifiers such as names, job titles, and hospital names were not used to report or disseminate the findings. Instead, participants were referred to using anonymous labels such as "Participant A," "Participant B," and so on. Furthermore, all data were stored on a secure and encrypted device that was password-protected. The device could only be accessed by the researcher and the research team. These measures ensured that participants' privacy was protected, and there was no risk of harm to anyone as a result of the study.

1.9.5 Data management

Data management is the collection, storing and sharing process of digital data, and it raises new concerns regarding confidentiality and ethical concerns (Bryman *et al.*, 2014:128). The researchers adhered to strict protocols to protect the privacy and confidentiality of the data. These protocols were in line with the Protection of Personal

Information Act of 2013 and the AUTHeR data management policy, which were consistent with the North-West University (NWU) requirements. All participants were informed about the purpose and intended use of their data and had to provide informed consent before participating in the study. The data collected was treated with the utmost discretion and stored on a secure, password-protected computer system. The role of AUTHeR as the mediator in the study ensured that the data was used only for the purposes of the research and that all necessary measures were taken to protect the data and maintain its confidentiality.

1.9.6 Dissemination of research results

The results of the study were developed into a policy brief for the NWDoH to facilitate a more efficient cost management system. The results were also shared through multiple channels to reach a wide audience and ensure maximum impact, and distributed through academic and professional networks. The aim was to make the results of the study accessible to all relevant parties and to ensure that the findings could be translated into action that led to improvements in the efficiency of public hospitals in the North West Province.

1.9.7 Role of the members of the research team

The research team for this study consisted of the researcher, an NWU MBA student, who was responsible for conducting the interviews to obtain the data for the case study. The student was supported by the supervisor, who provided guidance, oversight, and expertise throughout the entire research process, from the design and implementation of the study to the interpretation and dissemination of the results. They also acted as a critical review panel to ensure the validity and reliability of the findings and the soundness of the methodology. Additionally, an assistant was available to assist with the interviews and administrative tasks, such as setting up meetings.

The software program Atlas.Ti was used to analyse qualitative data and identify the factors contributing to the ExpDE. The supervisor acted as the mediator of the study, ensuring that all aspects of the research were carried out in a responsible and ethical manner.

1.9.8 Conflict of interest

The potential for the results and presented findings to be influenced usually increases when funding is involved for the researcher (Bryman *et al.*, 2014:129). In this study, the researcher was not funded for this project and did not work for the NWDoH or in the health sector; this eliminated any potential conflict of interest that could arise from funding sources or institutional affiliations. The researcher was committed to conducting an independent study and focused only on the relevant data, free from outside influence.

In addition, the researcher worked under the guidance and supervision of a lead supervisor responsible for ensuring that the study was conducted ethically and in accordance with AUTHeR and the NWU's ethical guidelines.

1.9.9 Monitoring

The monitoring of the study was crucial in ensuring its success and that the objectives of the study were met. The following measures were put in place to monitor the progress of the study:

- **Regular Progress Reports:** The researcher sent regular progress reports to the Chief Director of Strategy and Systems of the NWDoH and to the supervisor at AUTHeR. The progress reports provided an overview of the work that had been done, the current status of the study, and the timeline of the work that remained to be done.
- **Supervision Meetings:** The researcher met regularly with the supervisor to discuss the progress of the study and receive guidance and feedback. These meetings were also used to identify potential challenges or issues and develop strategies to address them.
- **Data Management Plan:** A data management plan was implemented to ensure the data collected during the study was properly managed and safeguarded. The plan outlined the processes for collecting, storing, and sharing the data, as well as the measures taken to protect the confidentiality of the participants.

- Risk Management Plan: A risk management plan was implemented to identify and mitigate any potential risks associated with the study. The plan outlined the steps that were taken to minimise the risk of harm to the participants and the measures taken to ensure the quality and validity of the data collected.

By implementing these monitoring measures, the study was able to stay on track and achieve its objectives in a timely and efficient manner.

1.10 CONTRIBUTION OF THE STUDY

1.10.1 Theoretical contribution

The theoretical contribution of this study was to provide a comprehensive understanding of the factors influencing ExpDE in public hospitals in the North West Province. A comprehensive literature review of previous studies on the calculation of ExpDE in public district hospitals, followed by interviews with relevant personnel at three public district hospitals in the North West Province, ensured that this was achieved. The data collected was analysed and presented in a force field analysis, identifying the key factors that drove and inhibited the ExpDE in public district hospitals. The results of this study could be used as a reference for other provinces to consider when calculating their own ExpDE. They could potentially provide insights for improving financial management in the public healthcare system.

1.10.2 Practical contribution

The practical contribution of this study lies in its ability to provide hospital managers with valuable insights and strategies for reducing ExpDE. The research, calculations, and force field analysis presented in this study helped managers identify key factors contributing to ExpDE and develop targeted plans for addressing them. By implementing these strategies, hospitals could optimise their use of resources and ultimately improve the overall efficiency of the healthcare system. Furthermore, the study could serve as a benchmark for other provinces to use in calculating and managing their own ExpDE, potentially leading to more widespread improvements in healthcare delivery.

1.10.3 Policy contribution

The policy contribution of this study aimed to provide actionable insights for decision-makers at the North West Health Department. Regular progress reports were submitted to the Chief Director of Strategy and Systems, keeping them informed of the study's progress and findings. Additionally, a policy brief was developed that synthesised the key findings and recommendations of the study, providing clear and actionable steps for hospital managers to improve cost management and increase efficiency. This policy brief was made available to the North West Health Department and other relevant stakeholders to support the implementation of the study's recommendations and contribute to the overall improvement of the healthcare system in the North West Province.

1.11 LIMITATIONS OF THE STUDY

The primary limitation was the geographical demarcation because the study was only conducted on three district hospitals in the North West Province. The study contributed to the available body of literature on ExpDE and the influencing factors that needed to be adapted for each hospital.

For a more representative study, research should be conducted on more public hospitals, not limited to the North West Province. Each hospital faces different situations that can cause the factors to differ. A broader sample would provide a more comprehensive understanding of the factors influencing ExpDE.

CHAPTER 2: AN OVERVIEW OF EXPENDITURE PER PATIENT DAY EQUIVALENT AND THE SOCIAL DETERMINANTS OF SOUTH AFRICA

INTRODUCTION

Following the first chapter's establishment of the research foundation, including its background, aim, research problem, and methodology, Chapter 2 focuses on the literature surrounding ExpPDE in public hospitals. This chapter provides an in-depth review of relevant literature, theories, and empirical studies, specifically emphasising the North West Province in South Africa. Examining the factors influencing ExpPDE sets the stage for understanding resource allocation challenges in public healthcare institutions. This literature review informs our central research question: How can the factors influencing ExpPDE in North West Province public hospitals be managed more efficiently?

2.1 SOCIAL DETERMINANTS OF HEALTH

The World Health Organisation (WHO) (2023) defined health in 1946 as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. It is considered a fundamental right for all individuals, irrespective of race, religion, political beliefs, or socio-economic status, to enjoy the highest achievable standard of health. The health of all populations is not only vital for peace and security but also relies on the collaboration of both individuals and governments. The progress made by any nation in promoting and safeguarding health is beneficial to all, given the common risks posed by uneven development and the spread of diseases, particularly communicable ones. Recognising the significance of healthy child development and the dissemination of medical and psychological knowledge to all is crucial for overall health. Informed public engagement and cooperation are essential for enhancing the health of communities, and governments have a duty to provide adequate health and social measures to fulfil this responsibility (WHO, 2022).

2.2 BRONFENBRENNER'S ECOLOGICAL SYSTEMS THEORY

Bronfenbrenner's ecological systems theory is a framework for understanding how the environment influences human development. The theory identifies five levels of the environment: microsystem, mesosystem, exosystem, macrosystem, and chronosystem:

- **Microsystem:** The immediate environment in which a person lives, such as their family, home, and school (Bronfenbrenner, 1977:514).
- **Mesosystem:** The interaction between the different microsystems in a person's life, such as the relationship between their family and school (Bronfenbrenner, 1977:515).
- **Exosystem:** The environment influencing the microsystem, such as the workplace, community, mass media and government (Bronfenbrenner, 1977:515).
- **Macrosystem:** The cultural and social norms and values that influence the other systems (Bronfenbrenner, 1977:515).
- **Chronosystem:** The progression and transformation of external systems over time, with the models in this framework capable of encompassing both short-term and long-term temporal dynamics (Bronfenbrenner, 1994:40).

Figure 1 is a visual representation of Bronfenbrenner's ecological systems theory and how the systems influence each other.

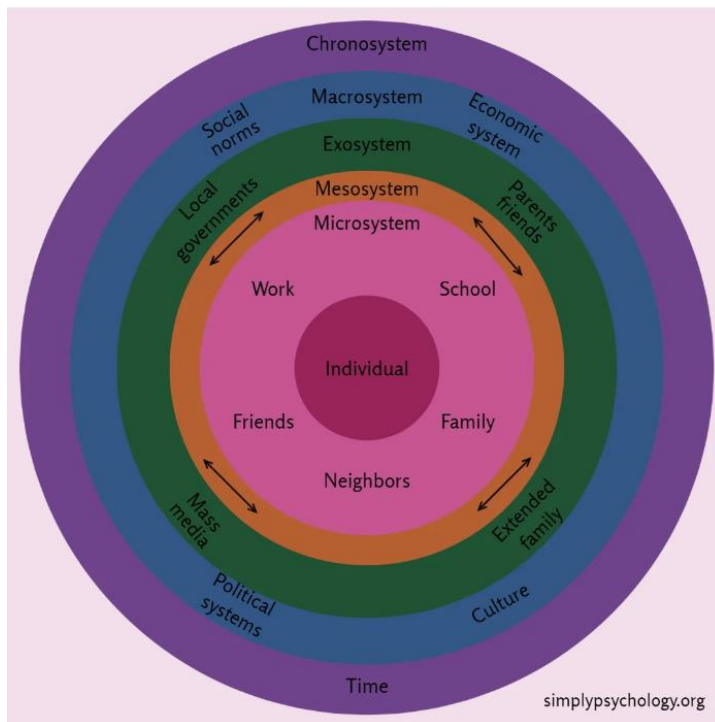


Figure 1: Bronfenbrenner's Ecological Systems Theory (Guy-Evans, 2023)

Bronfenbrenner's ecological systems theory can be used to explain the impact of Social Determinants of Health (SDoH) on healthcare costs. The theory posits that human development is influenced by a series of interconnected systems, from the individual to the community to society (Bronfenbrenner, 1977:514).

2.2.1 Impact of Social Determinants of Health on healthcare costs

The World Health Organization (2023) and Centers for Disease Control and Prevention (2023) define the SDoH as the conditions in which people are born, grow, live, work and age. These non-medical factors like socio-economic status, education, neighbourhood, physical environment, employment, social support networks, and access to healthcare all influence health outcomes and thus have a significant impact on healthcare costs.

People with lower socio-economic status, less education, and living in disadvantaged neighbourhoods are likely to have poorer health and more chronic diseases. They are also more likely to use healthcare services but less likely to have access to high-quality care. The WHO (2023) states that wealthier populations' life expectancy can be up to 18 years longer than those in low-income countries.

Unemployed people are 1.7 to 1.8 times more inclined to delay or forgo essential medical treatment due to financial constraints than those employed full-time (Singh *et al.*, 2017: 158). This delay in seeking medical care could lead to increased medical expenses as their health conditions may deteriorate.

All these factors can contribute to higher healthcare costs. For example, a person living in a neighbourhood with high crime rates may be more likely to experience mental health problems (Baranyi *et al.*, 2021:14) and injuries due to violent acts (WHO, 2021). This person may also be less likely to have access to healthy food options and opportunities for physical activity. As a result, they may be more likely to use healthcare services and have higher healthcare costs (Vilar-Compte, 2021:16).

Lax *et al.* (2017:3) reiterate that SDoH like inadequate insurance coverage, homelessness, language barriers, parent discomfort with discharge, and lack of social support were contributing factors to unplanned readmission. Figure 2 provides other factors influencing the readmission of patients, especially in children. Higher costs for the public healthcare system are a consequence of readmissions, which are caused by SDoH factors (Gupta & Fonarow, 2018:1170)

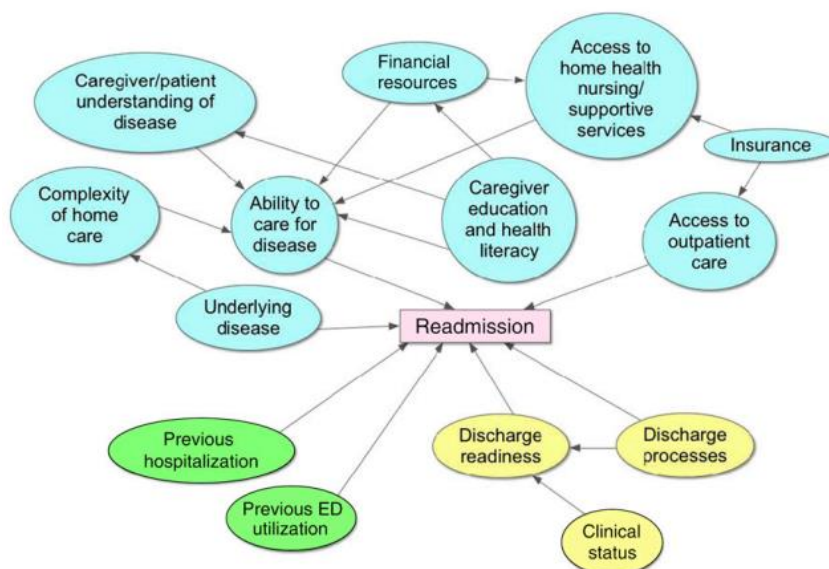


Figure 2: Factors influencing readmissions (Auger, 2015:169)

Furthermore, transportation costs and rural areas add to the healthcare cost burden as people struggling with this are less likely to visit a healthcare provider in time. In the study of Dassah *et al.* (2018:6), they identified 36 papers reporting on the issue of transportation costs and rural cities. They reviewed papers focused on the role of geography in determining healthcare access, with two primary sub-themes emerging: "Distance and transportation to a facility" and "Terrain and climate." The proximity of healthcare facilities and the urban concentration of such facilities were noted as significant concerns, requiring clients to travel long distances, often on poorly maintained roads in rural areas. Various modes of transportation were described in efforts to reach healthcare facilities, including walking long distances and using wheelchairs. Access to public transportation was highlighted as crucial, yet limited availability hindered some clients. Additionally, the challenging terrain, especially during adverse weather conditions like heavy rains, was a substantial obstacle, with participants in some areas having to navigate mud, gravel, rivers, forests, mountains, and valleys, which sometimes resulted in tragic incidents, including drownings. Kelly *et al.* (2016:1) further mention that patients living further away from healthcare facilities are more likely not to attend follow-up appointments, have longer stays in hospital and have lower survival rates.

According to Militao *et al.* (2022:5082), food insecurity can be defined in one of two ways: a shortage of nutritionally sufficient and safe food or a restricted ability to obtain food through socially acceptable means. Berkowitz *et al.* (2018:399) and Tarasuk *et al.* (2015:E429) state that food insecurity is linked to increased healthcare utilisation and costs as there is a higher incidence of emergency department visits, hospitalisations and extended hospital stays. In food-insecure households, adults are more likely to experience poor health and mental health problems (Brucker, 2017), higher Body Mass Index (BMI) (Martinez *et al.*, 2019:1419), and chronic diseases (Naicker *et al.*, 2015:268).

2.3 INTRODUCTION TO PUBLIC HOSPITALS AND THE IMPORTANCE OF PUBLIC HEALTHCARE

Public hospitals are vital in providing healthcare to those who cannot afford private healthcare. In many countries, public hospitals are the only option for impoverished or uninsured people. Public hospitals offer a wide range of healthcare services, including

emergency care, primary care, and speciality care. The mission of the South African DoH is to enhance public health by preventing ailments and encouraging wellness, with a continuous commitment to enhancing the healthcare system. This mission focuses on improving accessibility, fairness, efficiency, quality, and long-term viability in healthcare delivery (South Africa Government, 2023).

2.3.1 Overview of healthcare expenditure and the importance of managing it efficiently

Healthcare expenditure is a major component of national budgets and household incomes. It is essential because it affects the quality and accessibility of healthcare services, as well as the overall health and well-being of a population.

According to the WHO and the World Bank Group (WBG) (2023:23), in the two decades leading up to the COVID-19 pandemic, there was a concerning increase in catastrophic health spending, with a significant portion of the global population living in extreme poverty due to out-of-pocket health expenses. While financial hardship was more prevalent among lower-income households, it was primarily attributed to impoverishing health spending rather than catastrophic costs. Evidence from 29 low- and lower-middle-income countries showed that, before the pandemic, financial barriers led to 18.5% of foregone healthcare. Unfortunately, post-COVID-19 data on financial hardship is limited, but early indicators suggest worsening trends in catastrophic and impoverishing health spending and an increase in foregone care. This issue could have been alleviated with better healthcare coverage, especially outpatient medicines, and exemptions from user charges for low-income individuals.

2.4 LANDSCAPE OF PUBLIC HOSPITALS IN SOUTH AFRICA

2.4.1 Overview of the healthcare system in South Africa

South Africa's healthcare system is characterised by a two-tiered structure, resulting in significant disparities in healthcare access. The public sector, funded by the state, provides healthcare services to between 71% and 83% of the population (Rensburg, 2021; PWC, 2022; Ngobeni *et al.*, 2020), making it the primary source of healthcare for the majority of South Africans. In contrast, the private sector, largely supported by individual contributions to medical aid schemes, caters to approximately 20% (PWC,

2022) to 27% (Rensburg, 2021) of the population. This divide underscores the country's stark healthcare inequality, with the public sector often facing financial constraints and struggling to meet the healthcare needs of its extensive patient base. Meanwhile, the private sector remains beyond the reach of many South Africans due to the high costs associated with private healthcare services. This dichotomy in healthcare provision highlights the challenges of ensuring equitable access to quality healthcare in South Africa. To further stress the point of inequality in the healthcare system, the OECD (2020:195) states that only 43% of expenditure on healthcare is government-funded but needs to serve the majority of the population.

Rensburg (2021) identified three problems that expose South Africa's healthcare system: South Africa grapples with a substantial issue as the demand for healthcare services consistently outstrips the available capacity to meet these pressing needs. Additionally, a significant portion of the population faces delayed access to care due to a lack of awareness about their health status. This lack of knowledge hinders early intervention and timely treatment. Moreover, the country's healthcare financing system further deepens the problem by perpetuating existing disparities, contributing to an unequal distribution of resources and access to quality healthcare. This multi-faceted challenge underscores the complexities of providing equitable healthcare access in South Africa.

2.4.2 Levels of healthcare services provided in South Africa:

Hospitals in South Africa can be classified into five levels, each providing a different degree of medical services.

District hospitals

District hospitals serve the specific population in health districts and provide 24/7 primary and emergency care through general practitioners and nurse practitioners. They offer in-patient and ambulatory services and, when possible, provide training for healthcare professionals (Department of Health, 2012:4).

Regional hospitals

Regional hospitals, operating 24/7, offer crucial medical services, including internal medicine, paediatrics, obstetrics, gynaecology, general surgery, and at least one speciality like orthopaedics or psychiatry. They provide trauma- and emergency care and short-term ventilation in critical care units. Furthermore, they serve a regional population, often across provincial boundaries, while accepting referrals from district hospitals. These hospitals also contribute to healthcare provider training when possible, making them essential hubs for comprehensive healthcare services in their regions (Department of Health, 2012:4-5).

Tertiary hospitals

A tertiary hospital is a critical healthcare institution that offers specialised medical services beyond what regional hospitals provide. It delivers specialist services and sub-specialities related to the fields offered at the regional level. These hospitals are equipped to provide intensive care services under the watchful eye of a specialist. Additionally, they may play a role in healthcare provider training. Tertiary hospitals operate on a broader scale, receiving referrals not confined to provincial boundaries from regional hospitals. Typically, they have a bed capacity ranging from 400 to 800 (Department of Health, 2012:5).

Central hospitals

A central hospital plays a pivotal role in the healthcare system by offering both tertiary hospital services and central referral services, with the potential to provide national referral services. These hospitals are essential hubs for healthcare provider training and conducting medical research. They receive patients referred from multiple provinces, showcasing their broad reach, and are typically affiliated with a medical school, serving as a primary teaching platform. Central hospitals, while highly specialised, have a maximum of 1200 beds. Central referral services, which are part of these hospitals, involve specialised units requiring unique, highly skilled personnel and are limited to a small number of sites nationwide. National referral services represent super-specialised, expensive healthcare services, including procedures like

heart and lung transplants, bone marrow transplants, liver transplants, and cochlear implants (Department of Health, 2012:5).

Specialised hospitals

Specialised hospitals are dedicated healthcare facilities that offer specific medical services such as psychiatric care, tuberculosis treatment, infectious disease management, and rehabilitation services. These hospitals are designed to address particular healthcare needs and typically have a maximum capacity of 600 beds (Department of Health, 2012:6).

2.4.3 Overview of global expenditure on healthcare

According to OECD (2021:30), countries that allocate more financial resources to healthcare and possess a greater number of healthcare professionals and related assets tend to exhibit improved health outcomes, healthcare quality, and accessibility. Nevertheless, it's important to note that the sheer quantity of resources invested doesn't serve as a flawless predictor of enhanced results. Other factors, including health-related risk factors and broader social determinants of health, play a pivotal role, as does the effective and efficient utilisation of healthcare resources. Raghupathi and Raghupathi (2020:169) state that there exists a favourable correlation between healthcare expenditure and economic markers such as labour productivity, individual income, per capita Gross Domestic Product (GDP), and additional expenditures.

In Figure 3, it can be seen that countries spend between 16.8% to as little as 2.9% of their GDP on healthcare.

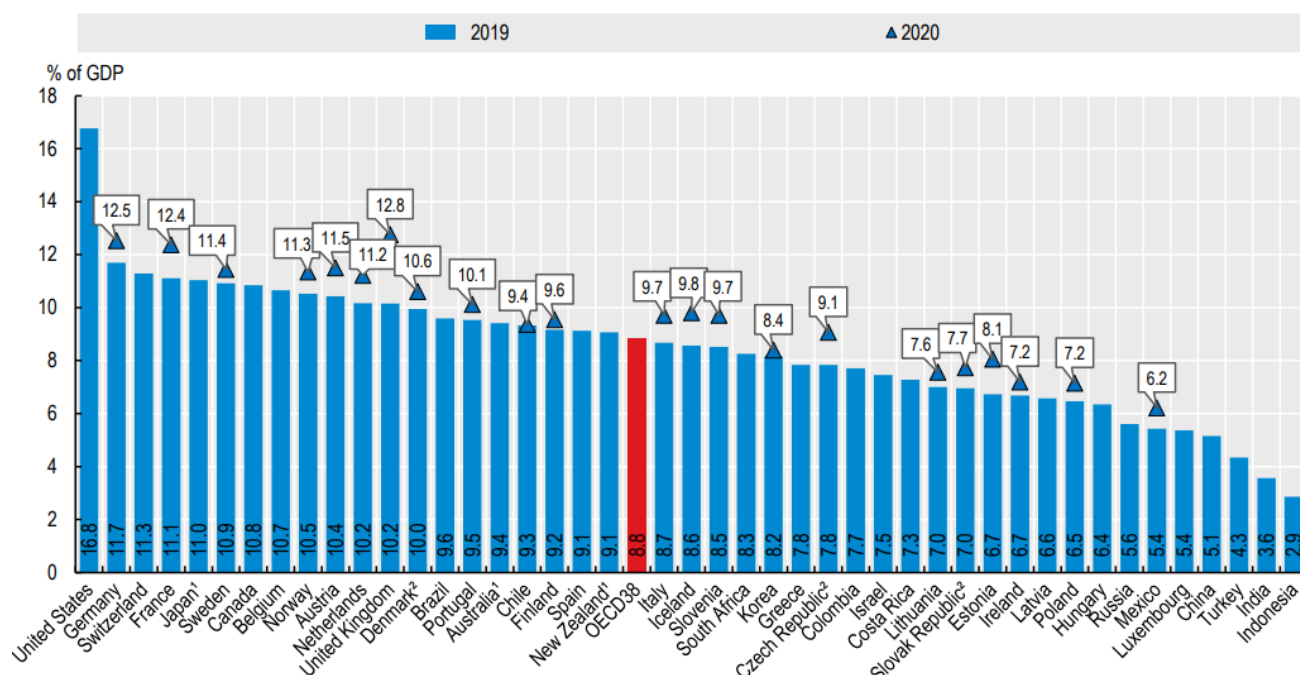


Figure 3: Health expenditure as a share of GDP, 2019 and 2020 (OECD, 2021:189)

Figure 4 provides a global overall view of how government-to-private expenditures are distributed. It further explains that South Africa doesn't have compulsory health insurance, and the government only pays 43% of the medical expenditure in South Africa but provides health care services to the majority of the population.

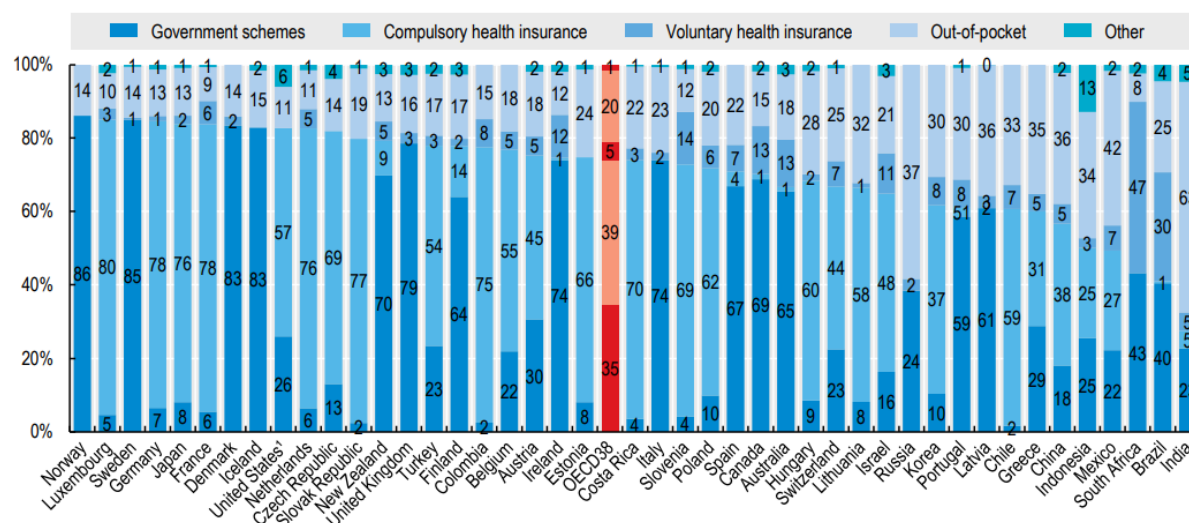


Figure 4: Health expenditure by type of financing, 2019 (OECD, 2021:195)

2.4.4 Budget allocation for healthcare in South Africa and the associated challenges

South Africa allocates a significant portion of its budget to healthcare. The budget allocation for the National Department of Health in the 2023/2024 fiscal year reflects a notable decrease, with a reduction of R4.4 billion from the previous year, decreasing from R64.5 billion in 2022/2023 to R60.1 billion in 2023/2024. This decrease can be primarily attributed to the discontinuation of conditional grants that were initially allocated for the fight against COVID-19, including vaccination efforts. However, it's essential to note that this budget does not even account for inflation adjustments, and further reductions are evident in allocations to existing programmes (South African Government, 2023).

The National Treasury has acknowledged the underfunding of the health sector, estimating a shortfall of at least R11 billion. They believe that, when considering various factors, the cumulative underfunding may be even higher. A significant portion, approximately 89.2% of the budget, is transferred to provinces, with current budget transfers and subsidies to provinces amounting to R56.2 billion of the R60.1 billion budget. In addition, an allocation of R10 million per year over the next two years has been designated for a no-fault scheme aimed at covering adverse events following COVID-19 vaccination (South African Government, 2023).

2.4.5 Challenges associated with public hospitals in South Africa

Record keeping and information system

As stated by Mutshatshi *et al.* (2018:1), healthcare professionals in hospitals face difficulties with record-keeping. These challenges arise from factors including the time-consuming nature of the task, shortages of recording materials such as stationery and printing paper, and the increased workload resulting from a higher number of patient admissions. From the research of Marutha and Ngoepe (2017:4), the inadequate record-keeping and management system are caused by various reasons such as poor infrastructure, no designated staff or skilled staff, limited budget, use of manual records and no proper filing system in place.

In accordance with Marutha and Ngoepe (2017:7), Maphumulo and Bhengu (2019:3) and Mathioudakis *et al.* (2016:372), insufficient clinical records can significantly affect the efficiency of healthcare systems, potentially resulting in various negative outcomes. These consequences may include the misleading of healthcare professionals and patients, increased medico-legal risks, unnecessary repetitions of tests or investigations, extended hospital admissions or unnecessary delays for patients, compromised patient care, and a heightened risk of serious incidents. Such impacts highlight the importance of maintaining accurate and comprehensive clinical records in healthcare settings.

Load-shedding

According to the Department of Statistics South Africa (2023), for the first six months of 2023, South Africa only experienced one day within the period without load-shedding. Not all hospitals in South Africa are exempted from load-shedding, and the diesel costs of running generators as a backup system for the hospital are costly (Business Day, 2022).

Gehringer *et al.* (2018:1) identified a 10% surge in hospital admissions on days when load-shedding occurred either on the same day or within the previous two days, compared to days with no load-shedding during that time frame. Moreover, specific medical conditions, such as respiratory system-related issues, experienced a substantial 14% increase in hospital admissions. The average treatment effect was estimated at 6.50, indicating that approximately six additional daily admissions could be attributed to load-shedding. During load-shedding, there is an increase in emergency department visits and hospital admissions (Lahe *et al.*, 2019:899).

Lahe *et al.* (2019), state that there is a negative correlation between the extent of foodborne diseases and hygiene and control. Furthermore, the safety and efficacy of various medications, vaccines and blood products are compromised during load-shedding as the cold chain is impacted. According to Malange (2023:52), the error rate, post-operative complications and untimely deaths (due to urgent, vital procedures such as scans that cannot be performed) are higher during load-shedding. Moreover, the morale of medical personnel is lower because of load-shedding.

Burden of diseases

South Africa carries a substantial burden of disease, which has significant implications for its healthcare system and public health. According to Achoki *et al.* (2022:471) and Biney (2020:1), in the past three decades, South Africa has grappled with a convergence of four significant health challenges, often referred to as "colliding epidemics". These encompass the intersecting issues of HIV and tuberculosis, chronic diseases and mental health, injuries and violence, and maternal, neonatal, and child mortality. The impact of these concurrent challenges has been considerable, significantly affecting the overall health, quality of care and welfare of the population (Maphumulo, & Bhengu, 2019:3).

Shortage of linen

In South African public hospitals, linen shortages have become a prominent concern, with far-reaching implications for patient care. Notably, these shortages have led to a range of adverse outcomes for patients, as highlighted by Moyo *et al.* (2021:84). Patients in these healthcare settings have been exposed to increased risks of nosocomial infections, which are infections acquired during their stay in the hospital. Additionally, the scarcity of linen has contributed to the development of bedsores, a painful condition that can significantly impact patient well-being and recovery (Jiyane & Khunou, 2023:180).

What makes this situation even more concerning is that healthcare personnel have been compelled to make unusual requests to patients in response to these linen shortages. In some cases, patients have been asked to bring their own linen when seeking treatment at these hospitals. Such requests are a stark indication of the gravity of the linen supply issue and the lengths to which healthcare providers must go to mitigate its impact (Masweneng, 2023).

Furthermore, these shortages have broader implications for hospital operations. The scarcity of linen has contributed to a backlog in theatre operations, potentially delaying critical surgeries and procedures (Masweneng, 2023).

2.5 NORTH WEST PROVINCE HEALTHCARE LANDSCAPE

2.5.1 The healthcare system in the North West Province

The North West Province healthcare system is divided into four districts: Bojanala Platinum District Municipality, Dr Kenneth Kaunda District Municipality, Ngaka Modiri Molema District Municipality, and Dr Ruth Segomotsi Mompati District Municipality with a population size of approximately 3 800 000 (Municipalities of South Africa, 2023; City population, 2022).

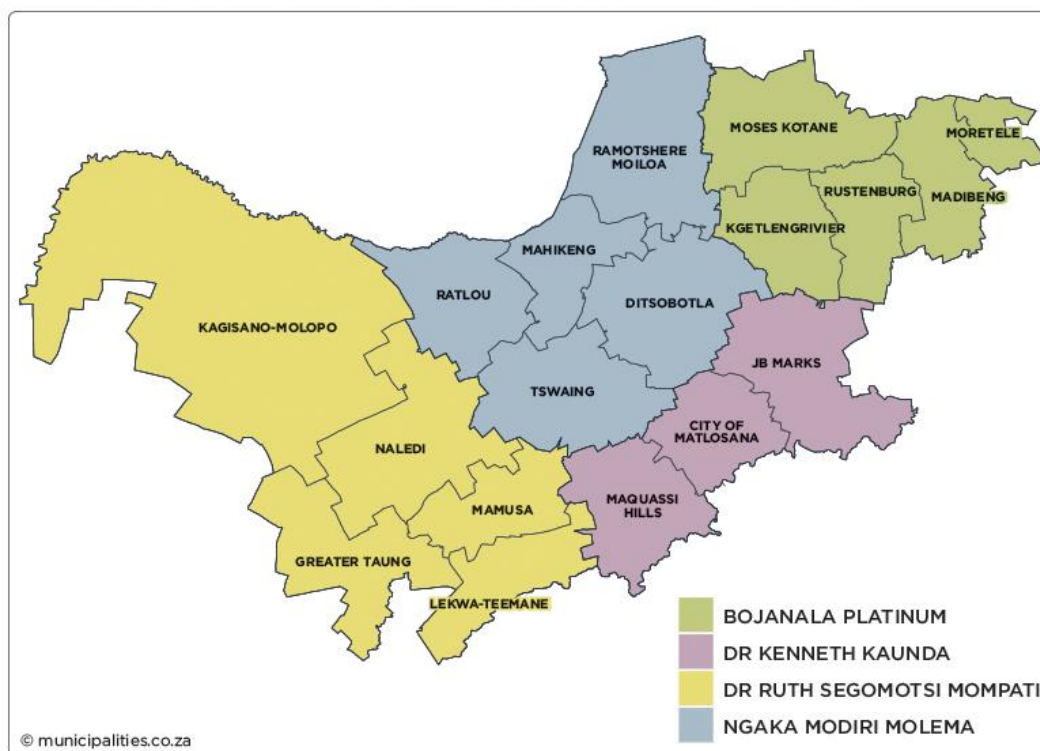


Figure 5: North West Province's districts (Municipalities of South Africa, 2023)

The North West Province healthcare system faces numerous challenges, such as unemployment, education, corruption, the burden of diseases, load-shedding and shortage of staff.

Unemployment

Unemployment, as per the expanded definition, encompasses individuals who are available for work but discouraged and not actively seeking employment (Naidoo, 2021:15). According to the Department of Statistics (2023:8), the official unemployment rate in the North West Province has climbed to 36.8%, a year-on-year

increase of 4.6%, with an expanded unemployment rate of 53.5%. The Department of Economic Development, Environment, Conservation and Tourism (2023:1) confirms the expanded unemployment rate of 52.2% for the North West Province. While not the highest unemployment rate in the country (official unemployment rate for the Eastern Cape is 39.7%), the rapid rise has significant implications for public health. Figure 6 provides a holistic view of South Africa's unemployment rate.

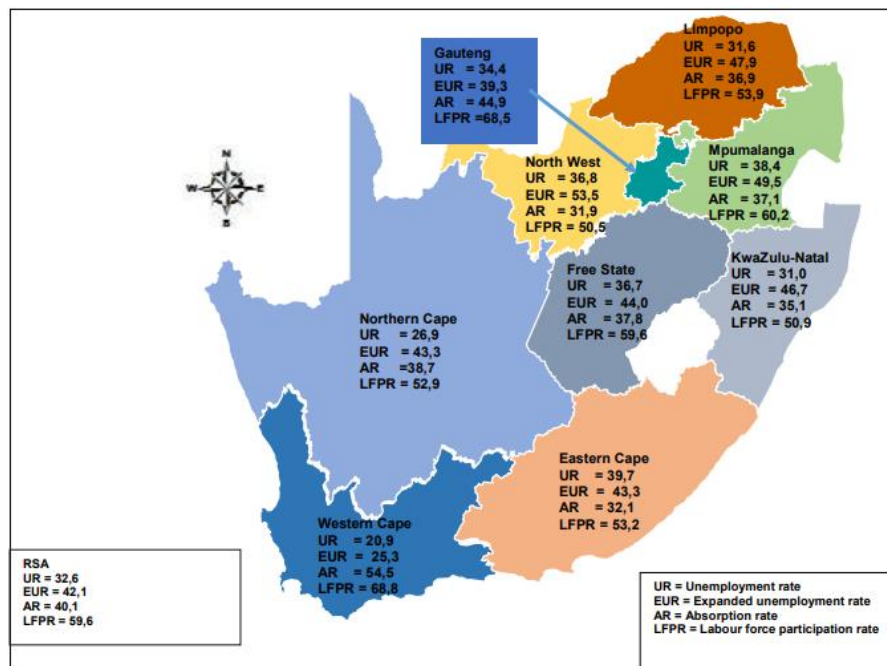


Figure 6: Labour market in South Africa for Quarter 2:2023 (Department of Statistics, 2023:10)

Education

The North West Province has a relatively young population, with over 53.6% of the population under the age of 30 (City Population,2022). However, there are still some challenges facing education in the North West Province. One challenge is that the province has a low matric pass rate and a low functional literacy. In 2022, the province's pass rate for matric learners was only 79,8%. Furthermore, the functional literacy for people over 20 was only 82% in 2020. Another challenge is that the quality of education in the province varies widely. Some schools have excellent facilities and resources, while others are poorly equipped and overcrowded (Department of Education North West Province, 2023:6,20,72).

Corruption

Corruption and tender fraud represent pressing issues within the North West Province of South Africa, significantly impacting the quality of healthcare services delivered within its hospitals. Transparency International defines corruption as “the abuse of entrusted power for private gain”. Corruption, essentially the exploitation of authority for personal gain, manifests in multi-faceted forms such as bribery, extortion, abuse of discretion and embezzlement (Philp, 2006:10-12). According to Rustiarini *et al.* (2019), public procurement fraud is a multi-faceted issue that can manifest at various stages within the process of procuring a product or service. Furthermore, procurement fraud frequently entails the participation of internal procurement personnel, which may include a single employee or a group of employees. These employees collaborate with external suppliers to defraud their employer, all while seeking personal gains such as kickbacks, bribes, gifts, or other incentives (Tan, 2013:31).

In recent years, there have been several high-profile cases of corruption and tender fraud in the NWDoH. For example, the former North West Director General, Dr Lydia Sebegu, Vuyo Mbulawa, the chief director at the NWDoH and Lotwane Mabe, a service provider, were arrested on charges of corruption and tender fraud related to the awarding of a contract to build two hospitals (Moses Kotane Hospital and Joe Morolong Hospital) in the province. The contract was allegedly awarded to a company that was not qualified, and R86 million was lost in the process (IOL, 2023; Medical Brief, 2023).

Another high-profile case is that of the Gupta-linked company Mediosa, which was awarded a contract to supply mobile clinics to the NWDoH in 2017. Mediosa faced criticism following revelations that the NWDoH had initially disbursed R30 million and subsequently paid an additional R180 million to acquire a single mobile clinic. At the same time, several other service providers who had provided services to the provincial department were informed that their payments would be deferred until the onset of the new fiscal year (Online Tenders, 2023; IOL, 2023).

Corruption has led to the wastage of money that could have been used to improve the quality of healthcare in the province. Furthermore, the research of Achim *et al.* (2020:195) states the extent of corruption has a substantial impact on physical well-

being, as demonstrated through indicators like life expectancy and mortality rates, as well as on mental health, as gauged by happiness.

Shortage of staff

A critical issue afflicting the North West public health sector is the severe staff shortage, significantly compromising the quality of healthcare accessible to the province's population. According to the Ritshidze (2023:6-20), an overwhelming 94% of facility managers participating in the survey expressed a dire need for additional personnel. Furthermore, the report disclosed that 71% of public healthcare users attributed their extended wait times to the evident staff shortages.

Several factors contribute to the staffing shortfall in North West public hospitals. According to Mere *et al.* (2023:5), key factors contributing to job dissatisfaction are workplace conditions, workload, compensation, prospects for career advancement, quality of care standards, and job stability. Furthermore, demographic variables, including age, job classification, and years of service, were identified as influential factors shaping the level of job satisfaction among the participants.

The ramifications of this staff shortage are far-reaching and deeply concerning (Glette *et al.*, 2017:1387). Prolonged waiting times for patients have become commonplace, forcing individuals to endure hours or even days before receiving much-needed medical attention, putting those in urgent need of care at risk (McIntyre & Chow, 2020:13). Additionally, the scarcity of staff, especially nurses, has led to a discernible decline in healthcare service quality, as overburdened and understaffed healthcare professionals are more prone to errors, resulting in significant health complications for patients and higher costs endured (Maphumulo & Bhengu, 2019:1-4). Most alarmingly, this deficiency in staffing has contributed to an increase in patient mortality rates. According to Assaye *et al.* (2021), reduced nurse-to-patient ratios and increased nurse workloads have been associated with in-hospital mortality, hospital-acquired infections, and patient medication errors. In low- and middle-income countries, these conditions have also been linked to higher levels of nurse burnout, needlestick and sharps injuries, increased absenteeism, and a higher intention among nurses to leave their jobs.

2.6 EXPENDITURE PER PATIENT DAY EQUIVALENT

A Patient Day Equivalent (PDE) is a calculated metric that factors in in-patient days, day patient headcounts, Out-patient Department (OPD) visits, and emergency casualty headcounts to create a utilisation measure that approximates the resource needs of one in-patient day. ExpPDE is a metric to measure the efficiency in resource utilisation and can be used to compare or benchmark different healthcare facilities with each other (Massyn *et al.*, 2020:169).

Table 2: ExpPDE formula (Massyn *et al.* 2020:169; Steyn and Gebremariam, 2019:4)

Indicator	Numerator	Denominator
ExpPDE	Total hospital expenditure = all fixed and variable costs.	$PDE = (In\text{-}patients + \frac{1}{2} \text{ day patients} + \frac{1}{3} \text{ out-patients headcount} + \frac{1}{3} \text{ emergency headcount})$

Chikobvu (2016:20) stated that the ExpPDE is a calculated metric obtained by dividing the total hospital expenditure by the patient day equivalent. PDE represents the equivalent number of patients, assuming a continuous 24-hour stay, attended to by a hospital. To illustrate, if eight patients each received three hours of treatment in the hospital, those eight patients together would constitute a single PDE. This calculation method allows for the inclusion of day patients in the PDE, thus contributing to the overall ExpPDE calculation. Expenditure and the number of patients being treated are interconnected. For instance, when more patients are treated, the denominator increases, which leads to a lower ExpPDE if the overall expenditure remains constant.

ExpPDE serves as a valuable tool for evaluating how effectively a hospital deploys its financial resources to provide healthcare services. A lower ExpPDE signifies efficient resource management, indicating that the hospital delivers healthcare services cost-effectively. This metric is crucial for cost control, enabling healthcare administrators to identify areas where cost containment and savings can be achieved. By reducing expenditure per PDE, hospitals can optimise the utilisation of funds, leading to better financial sustainability (Ramjee, 2013:15).

ExpPDE also supports benchmarking efforts. Hospitals can use it to assess their performance relative to industry standards or similar facilities. This benchmarking

helps hospitals identify their standing within the healthcare landscape and implement improvements where necessary (Burn & Shongwe, 2003:32). Moreover, ExpPDE informs decisions about resource allocation. Hospitals can pinpoint areas where financial resources can be reallocated to enhance efficiency and improve patient care. Whether it's optimising staff allocation, reorganising services, or upgrading equipment, understanding the financial efficiency of healthcare delivery is crucial. Wu (2023:1) states that the growth in healthcare costs has led to a decrease in the profitability of health insurance. Thus, hospitals need to become more efficient in order to operate profitably.

In addition, a lower ExpPDE often translates to higher-quality care. Efficient resource allocation typically results in better patient experiences, shorter waiting times, and improved clinical outcomes. Furthermore, it aids in capacity planning. By understanding how resources are used per patient day, hospitals can make informed decisions about capacity, ensuring they have the appropriate number of beds, staffing, and equipment to meet patient demand effectively. Lastly, ExpPDE provides quantitative data for data-driven decision-making, allowing hospital administrators to make informed choices regarding budgeting, cost management, and service expansion. When hospitals are more efficient, they are better equipped to turn inputs into outputs, and this will lead to a broader range of people being able to afford healthcare without an unbearable financial burden being placed on them (Kourtis *et al.*, 2021:1027).

2.7 CONCLUSION:

Chapter 2 delves into a comprehensive literature study that focuses on the significant influence of social determinants of health on overall health outcomes. The chapter specifically explores the intricate relationship between SDoH and their impact on health, discussing how these factors shape the health landscape of South Africa and the North West Province. Additionally, it delves into the multi-faceted elements contributing to the challenges public hospitals face, shedding light on the various factors that play a role in the complexities experienced within these healthcare institutions.

CHAPTER 3: REALISATION OF DATA COLLECTION AND ANALYSIS AND PRESENTING THE RESEARCH RESULTS

3.1 INTRODUCTION

Chapter 2 provided a foundational exploration into the influence of SDoH on health outcomes, the health landscape of South Africa and the North West Province, and factors contributing to challenges faced by public hospitals. Transitioning into Chapter 3, we shift the focus to data collection and analysis with Atlas.Ti employed as the analytical tool for insights. This chapter not only concludes with actionable recommendations but also sets the stage for the proposed framework in Chapter 4.

3.2 DATA COLLECTION

The data collection process for this research began after obtaining ethical clearance, scientific clearance, securing gatekeeper permission, and registering on the North West Province's research website. These initial steps were crucial to ensure that the research was conducted ethically and responsibly, in compliance with relevant guidelines and regulations.

After the interviews were conducted, the interviews were transcribed and subsequently imported into Atlas.Ti for analysis. During the analysis process, codes were meticulously identified and applied to segments of the transcribed data. These codes were then linked to relevant categories, and through a systematic process, these categories were further connected to overarching themes (Frieze *et al.*, 2018:11). This approach allowed for a structured and organised examination of the data, facilitating a deeper understanding of the information gathered during the interviews and enabling them to draw meaningful conclusions from the collected data.

3.3 DATA ANALYSIS

The data analysis approach used in this study adhered to Creswell's methodology (2014:247-249). The interviews were conducted through the Microsoft Teams platform and transcribed using the built-in function. Subsequent verification and correction processes were conducted by cross-referencing the transcriptions with the original

recorded interviews to ensure accuracy and fidelity to the participants' responses. The interviews were then imported into the Atlas.Ti software for the coding phase.

Each transcribed interview was thoroughly read, with codes systematically applied to capture nuanced and insightful data. These codes were then organised into meaningful groups, and these groups were further categorised into overarching themes, ensuring a comprehensive understanding of the data (Frieese *et al.*, 2018:11).

The utility of Atlas.Ti extended beyond coding, allowing for the creation of networks to represent data connections visually. These visualisations, integrated into the results and discussion section, provide a deeper understanding of the intricate relationships within the data. This robust data analysis process, incorporating both qualitative and visual elements, contributes to the richness and depth of the study's findings (Creswell, 2014:247-249).

Furthermore, a Forcefield diagram was utilised to visually illustrate the results, providing a dynamic representation of influential factors and dynamics. This strategic visualisation tool adds depth to the analysis, offering nuanced insights into the complexities observed in the study. The Forcefield diagram serves as an additional visual aid, enhancing the presentation of the study's findings.

3.4 PARTICIPANT PROFILES

While gathering information for this study, interviews were conducted with representatives from three noteworthy hospitals in the North West Province. However, the names of the participants have been deliberately excluded to safeguard the anonymity of the participants and institutions involved. Additionally, to maintain confidentiality, the order and selection of participants were randomly altered within the interview schedules. This approach was adopted to elicit open and candid responses, creating an environment where participants felt secure sharing insights without fear of exposure to sensitive information. The analysis focused on the combined perspectives gathered from these diverse hospital representatives, ensuring a comprehensive and impartial examination of the data.

Initially, the plan was to use the snowball method to gather participants for the study. However, this method proved challenging, especially when engaging higher levels of

management. In the case of Hospital Complex A, only one person expressed willingness to participate. This individual also indicated that they would provide contacts for other potential participants. However, they did not follow through on this commitment, and no additional participants were obtained from this source.

For Hospital Complex B, the CEO delegated the task of recruiting participants to a manager, who then approached potential participants. Eight individuals from this hospital were willing to participate in the research.

Three interviews were initially arranged with prospective participants for the hospital complex B. Unfortunately, due to issues related to unavailability and poor internet service connections, only two interviews were conducted.

The data collected from these interviews is summarised in Table 3, which provides an overview of the interviews conducted with the participants.

Table 3: Participant details (Researcher's own compilation.)

Participant	Hospital	Length of interview
Participant 1	Hospital complex A	53 min
Participant 2	Hospital complex B	30 min
Participants 3 and 4	Hospital complex B	67 min
Participant 5	Hospital complex B	60 min
Participant 6	Hospital complex B	67 min
Participant 7	Hospital complex B	57 min
Participant 8	Hospital complex B	37 min
Participant 9	Hospital complex B	34 min
Participant 10	Hospital complex C	67 min
Participant 11	Hospital complex C	27 min

3.5 THE CODING PROCESS

The researcher conducted interviews with the participants and transcribed them to ensure a comprehensive understanding of the data. Handwritten notes were also taken during the interviews to aid the coding process and guarantee coherence between the notes and transcribed information. The coding process is visually represented in Figure 7.

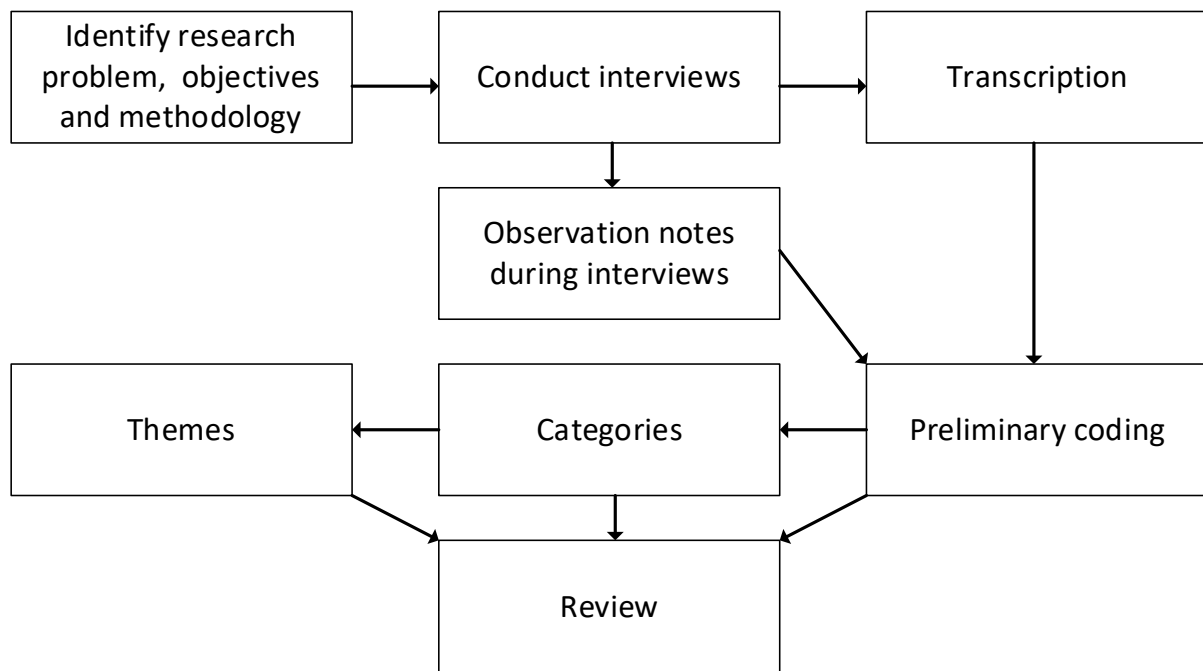


Figure 7: Coding process (Researcher's own compilation.)

The codes were grouped into categories and then subdivided into themes. Seven themes were identified. Table 4 provides a simplified overview, while the interconnections among different codes and themes will be detailed in the text and visually represented using network views in Atlas.Ti.

Table 4: The categories and themes identified during coding (Researcher's own compilation.)

Theme	Categories	Code
Social determinants of health	-	Education Expansion of Townships Homelessness Limited access to food and water Low-income patients Patients with Low Income Unemployment
Medical services and challenges	Infrastructure challenges	No maintenance on infrastructure Old infrastructure
Medical services and challenges	Healthcare challenges	Patient behaviour High burden of diseases
Medical services and challenges	High headcount	High volume facility Long waiting time Non-referral patients

		Overcrowding
Operational management	Data management	Centralized internet system Handling or misplacement of files Lacking information system
Operational management	Prolonged Hospital Stays	Patients experiencing complications Poor infection control Procurement challenges Shortage of cleaning materials Shortage of equipment Shortage of staff Theatre challenges
Operational management	Operational challenges	Long waiting times Maintenance Operational management Service delivery
Operational management	Shortage of resources	Shortage of beds Shortage of cleaning materials Shortage of equipment Shortage of linen Shortage of pharmaceuticals Shortage of staff
Readmissions	-	Staff not providing holistic care Health literacy
Supply chain management	Shortage of resources	Shortage of beds Shortage of cleaning materials Shortage of equipment Shortage of linen Shortage of pharmaceuticals
Supply chain management	Wasteful expenditure	Tender process Tender irregularities Corruption
Financial management	Budget strains	Accruals Income stream Insufficient budget
Financial management	Expenditure	Food Hiring of equipment Loadshedding Maintenance costs Medical scans and tests Staff remuneration Utilities Consultant remuneration

		Expansion of hospital Expensive specialized equipment
Financial management	Expenditure inefficiencies	Tender process Tender irregularities Corruption Expenditure due to inaccurate record keeping Expenditure due to negligence

3.6 RESULTS AND DISCUSSION

The results and discussion section uncovers seven key themes, each comprising categories and corresponding codes. The codes represent the identified factors that impact the high EXPDE in public hospitals in the North West Province.

3.6.1 Theme 1: Social Determinants of Health

SDoH encompass a wide array of social, economic, and environmental factors that significantly influence individuals' health outcomes and well-being, extending beyond the scope of medical care. These determinants play a crucial role in shaping health disparities and impacting the functionality of public hospitals (Centers for Disease Control and Prevention, 2023). Due to socio-economic circumstances, patients are admitted to the hospital without medical necessity, solely because they lack a place to reside or seek shelter.

“...they will just come for socio-economic reasons, not really needing to be admitted in your hospital.” – Participant 5

The participants identified various elements influencing SDoH affecting hospitals, including the financial and operational functions within the hospitals. In subsequent themes, there will be additional exploration of SDOH to underscore this overarching theme's complexity and interconnected nature. Figure 8 illustrates the factors impacting SDoH.

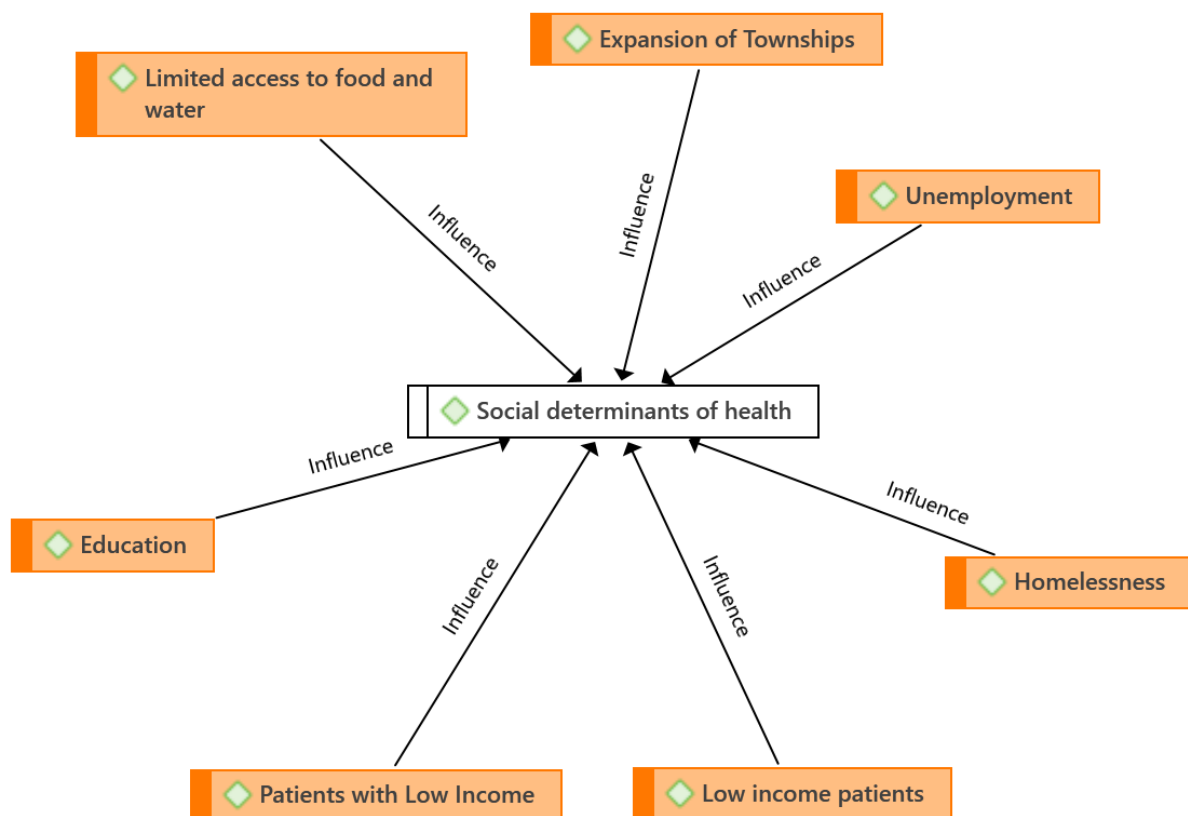


Figure 8: Visual representation of theme 1 (Researcher's own compilation.)

Expansion of Townships:

The rapid expansion of townships surrounding the hospital has outpaced the hospital's ability to expand its facilities and staff, leading to overcrowding and longer wait times for patients.

“The expansion of the townships, when the hospital was built, the hospital was so small, but now the townships has multiplied 5 to 6 times.” – Participants 3 and 4

Patients with Low Income:

The participants mentioned that the patients seeking treatment at the hospital represent the most economically disadvantaged individuals, described as the “*poorest of the poor.*” – Participant 2.

Limited Access to Food and Water:

The community's inadequate access to healthy food and clean water posed significant health challenges. Participants expressed concerns regarding the unavailability of nutritious food sources and the absence of clean drinking water, adversely affecting residents' overall health. Furthermore, these challenges were highlighted as factors complicating patients' ability to adhere to treatment regimens at home. Insufficient access to upgraded sanitation facilities exposes individuals to various diseases, such as dysentery, cholera, and typhoid (Collaborative for Health & Environment, 2023).

Education:

The lack of adequate education within the community emerged as a significant factor impacting health outcomes. As Rural Health Information Hub (2022) noted, limited education can hinder individuals' understanding of preventive healthcare measures and their ability to navigate the healthcare system effectively. This lack of health literacy can lead to delayed diagnoses, non-adherence to treatment plans, and an increased risk of developing chronic health conditions (Miller, 2016:2; Liu *et al.*, 2020:14). According to Rasu *et al.* (2015:747), health literacy demonstrates an inverse relationship with both healthcare usage and spending. People possessing below basic or basic health literacy levels tend to utilise healthcare services more frequently and incur higher expenses, particularly on prescriptions, in comparison to those individuals with higher health literacy levels.

Unemployment and Homelessness:

High levels of unemployment and subsequent homelessness were identified as pressing issues affecting the community. Unemployment rates, coupled with a lack of stable housing, created additional barriers to accessing healthcare, contributing to increased stress on hospital resources.

3.6.2 Theme 2: Medical services and challenges

Theme 2 involves four categories, each with its designated codes. This theme encapsulates a comprehensive overview of the hospitals' extensive patient throughput and the diverse set of challenges encountered within the hospitals. Figure 9 visually

illustrates the interconnectedness and linkage of these categories with Theme 2, providing a detailed depiction of the intricate relationship between the challenges faced and the medical services rendered due to the high influx of patients in hospital settings.



Figure 9: Visual representation of theme 2 (Researcher's own compilation.)

3.6.2.1 Headcount

The hospitals experience a substantial influx of patients or admissions. The headcount per month at Hospital Complex A is estimated to be "*roughly about 15,000, give or take.*" Similarly, Hospital Complex B is a "*high-volume facility*" with approximately "300

to 400 patients a day". The hospitals face overcrowding because of a significant influx of non-referral patients from lower-tier healthcare facilities like clinics. Conversely, clinics themselves experience excessive congestion as people attending the clinic endure extended wait times, contributing to their overcrowded conditions. The hospital implements a three-hour waiting policy, aiming to ensure patients are attended to by a doctor within this timeframe. However, this timeframe often "*exceeds this because of high influx of non-referral patients.*" – Participant 3

3.6.2.2 Healthcare Services

Services provided:

The hospitals provide a diverse spectrum of healthcare services catering to various medical needs. Three participants noted the expansion of Hospital Complex B, particularly in the area of nuclear medicine, and this has led to additional medical services.

"But also there's an expansion within the hospital, where we are adding different clinical wards OPDs clinics. Like currently we have started with a nuclear medicine which is a new department which therefore requests some of their moneys to be redirected to ensuring that they are operational, as well as, theaters were being renovated and all those things." – Participant 2

Specialised services:

Each of the three hospitals operates as a tertiary healthcare facility, delivering specialised services necessitating specific equipment. Participant 5 noted that the hospitals allocate "*70 to 100% for specialised services.*"

"So, yes so we are having a lot of specialised surgicals . because of the specialised services so all these items you know, so they are cost drivers." – Participant 5

Referral centre:

All three hospitals operate as referral centres, receiving patients referred from lower levels of medical care providers where the required services are unavailable.

Consequently, these hospitals are required to offer a wide range of specialised services, leading to a notable surge in-patient admissions.

“It is a referral centre for the province, neh, all the other hospitals, they are at the lower level as compared to the current level, which is tertiary for Hospital complex B. So, the additional services, specialised services, which are rendered here, they demand high numbers of staffing versus the services. So currently the staffing levels are not enough for the number of services which are rendered the specialised services. So, they impact the cost on overtime for the staff.” – Participant 4

Curative approach:

Participant 1 highlighted that the Department of Health tends to adopt a more curative approach rather than emphasising preventive measures. According to Wendimagegn (2018), when medical resources are limited, allocating more funds to preventive health measures can reduce the availability of funds for curative treatments. This trade-off can negatively impact public health and slow down economic growth.

3.6.2.3 Healthcare Challenges

High Burden of Diseases:

Participant 1 said, “*So we see a whole lot of burden of disease in an area where I'm sitting, particularly in the area of Hospital complex A*”. The healthcare institutions are located within underserved communities grappling with a significant burden of diseases. This places considerable strain on these facilities, given the heightened healthcare demands within these areas. In the literature review, the magnitude of the burden of disease becomes evident.

Patient behaviour:

Admission rates can be influenced by patient behaviours. A notable factor contributing to this trend is rooted in the patients' adherence to traditions and belief systems. For instance, many patients may hold traditional beliefs that deem medication unnecessary, drawing from the influence of their grandparents' practices. This cultural

adherence often impacts their willingness to comply with prescribed medical treatments, potentially leading to admissions.

3.6.2.4 Infrastructure challenges

Infrastructure creating an unsuitable environment:

The hospitals' ageing infrastructure has suffered from neglect in maintenance. As a result, the buildings exhibit signs of dilapidation, rendering them unsuitable for hosting and facilitating the services they aim to provide.

3.6.3 Theme 3: Operational management

Operations management is crucial in business organisations, overseeing goods, services, and personnel effectively. In healthcare, ensuring timely and proper health delivery with necessary resources (Exceed College, 2023).

Operational management is delineated into three categories. Within this theme, the discussion delves into the detrimental effects caused by resource shortages and inadequate maintenance on operational management, consequently impeding the provision of high-quality healthcare services. Figure 10 visually illustrates the intricate connections and interdependencies among these components, emphasising the complex relationship between resource scarcity, maintenance deficits, and their impact on the effective management of healthcare operations.

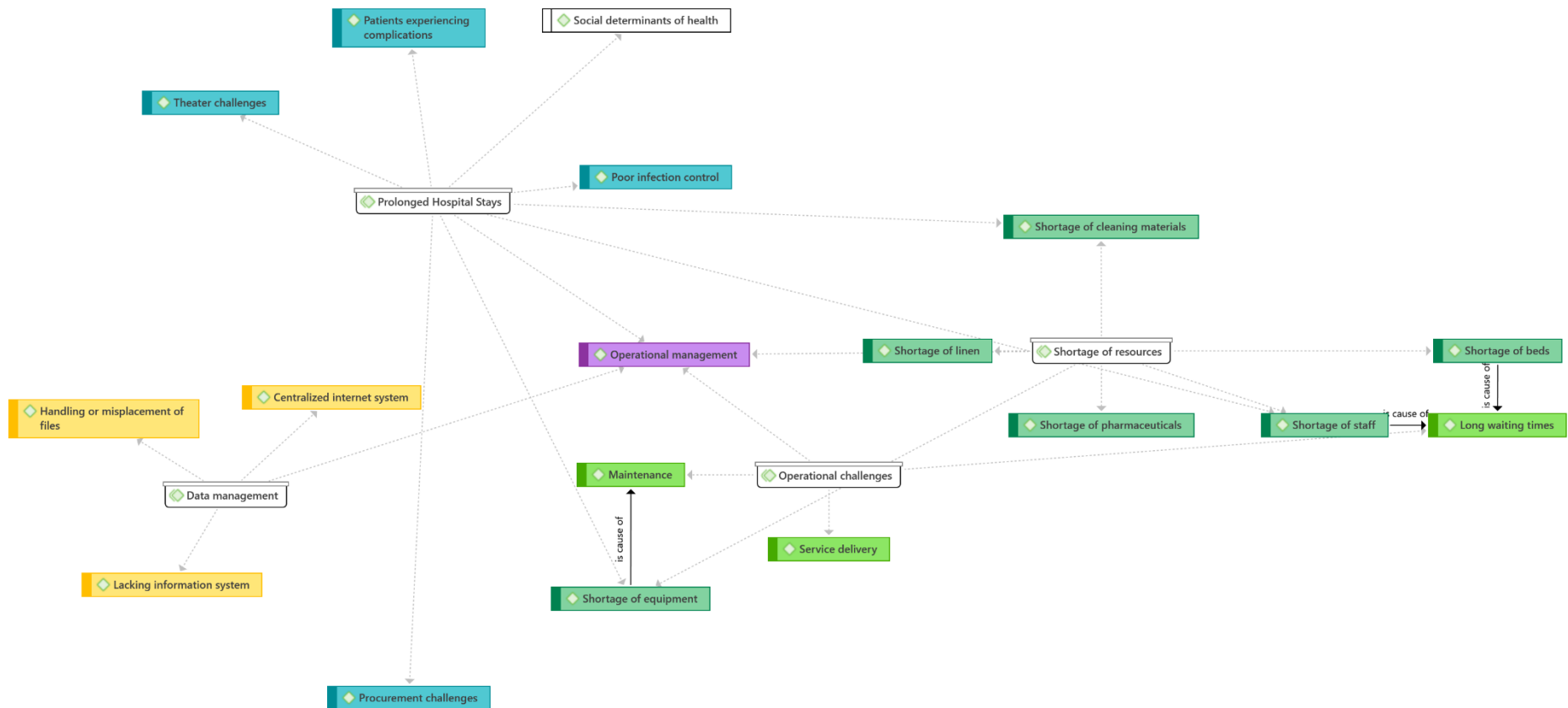


Figure 10: Visual representation of theme 3 (Researcher's own compilation.)

3.6.3.1 Data management

Efficient data management poses a significant challenge for hospitals, impacting crucial operations. The accurate collection, organisation, and utilisation of data are paramount for informed decision-making, reducing health costs, resource optimisation, and improved personalised patient care (Mancini, 2014:23; Janssen *et al.*, 2017:2).

Centralised internet system:

At a hospital, a participant mentioned a centralised internet system located at the premier's office, complicating the hospital's network. This setup results in the hospitals lacking fast and stable internet, leading to implications such as delayed payments and sluggish retrieval of data for prompt and accurate decision-making. Participant 1 recommended the installation of a backup internet system *"to pay our service providers on time and be able to realise the real-time expenditure as we provide the services."*

Lacking information system:

Currently, the hospitals lack an adequate information system, hindering efficient data capture and retrieval, posing significant challenges for staff and affecting patient care. The majority of participants expressed difficulties with the filing system and locating patient files for returning admissions. When staff encounter difficulties locating the existing file, they often resort to opening a new file. Participants highlighted that the delay or inability to locate files leads to test and procedure repetition, waste of time, increased expenses in file creation, inaccurate statistical records, and instances where patients aren't billed when required.

“...we have serious challenges in capturing all these patients that come for services.... And of course, this this is not because they are deliberate. This is because our filing system is causing a lot of problems.” – Participant 1

“But on admission, if the admission officers cannot find the file of the patient, then they need to open a new one, because that patient needs to be seen.” – Participant

Handling or misplacement of files:

Patients must open or possess a file before receiving medical attention from medical professionals. As reported by participants, healthcare staff strictly adhere to this protocol, refusing to attend to patients without the requisite file. However, challenges arise as patients are observed either taking, stealing, or retaining their files. Additionally, instances of staff misplacing files or disregarding the established file system further exacerbate this issue. A participant indicated that administrative personnel may inadvertently misfile documents, leading to difficulties in relocating them when needed.

“..then patients end up now either keeping the files or stealing the files or the clinicians keeping the files.” – Participant 1

3.6.3.2 Operational challenges

Long waiting times:

The hospitals are facing operational bottlenecks, causing prolonged patient waiting times. Additionally, patients' complaints directed towards the staff are adding further stress to the personnel.

“They come straight to the hospital and say that they wait forever at the clinic, or the clinic now doesn't have power, or the clinic doesn't have medication. Then they stream to the hospital, and then they crowd the casualty departments, whereby then they are complaining again of waiting times.” – Participant 3

Service delivery:

Operational challenges are affecting the provision of services. According to Participant 6, arranging an ambulance for a patient becomes problematic due to difficulties in communication. They often encounter unanswered calls and must seek the manager's assistance, resulting in significant time wastage.

“...the hospital must have a fleet of cars so that you don't struggle. You see, but now you'll be struggling calling EMR... you will have to engage now the clinical manager to assist you...” – Participant 6

Maintenance:

Two participants stated maintenance issues pose significant challenges for the hospital, especially considering the age of the buildings. The process for initiating maintenance is notably sluggish. For instance, Participant 6 explained in situations where a window breaks, staff members are compelled to *“just use some plastic just to cover it”* promptly to prevent patients from feeling cold, illustrating the slow response to maintenance needs. Moreover, the shortage of linen further exacerbates these challenges, as there are instances when there are *“not enough blankets”* available to keep patients warm.

3.6.3.3 Shortage of resources

Shortage of linen:

The hospitals face a shortage of linen and management thereof, with participants noting that the available linen is only sufficient for one shift, running out by the night shift. Hospital Complex B previously functioned as the provincial laundry but faced challenges retrieving linen sent to other hospitals, intensifying the scarcity. This challenge has amplified the linen shortage. Additionally, patients are requested to bring their own linen, creating infection control issues that cascade into other areas, causing delayed surgeries, prolonged hospital stays, and increased financial costs. Furthermore, concerns were raised about outdated laundry equipment; according to Participant 4, some of the equipment, for example, *“big ironing machines has been procured in 1962”*. Maintenance of these aged machines is both challenging and costly, compounding the laundry-related problems in the hospitals.

“The machines were procured from Switzerland, Sweden, those places, Germany and it is very expensive and very good. It was functioning very well in the beginning, but now the parts are, you know, it is wear and tear. So now the parts have been ordered, it's not manufactured in South Africa. It is ordered from overseas. Now we have to order, then it goes to the process to procure, then we have to wait for it to come from overseas.” – Participant 4

Shortage of beds:

The scarcity of beds creates a bottleneck in hospital operations, leading to the inability to admit patients due to the unavailability of beds.

“So we cannot accommodate these people especially in casualty in the wards, because there are no beds.” – Participant 4

Shortage of equipment:

The hospitals face shortages in both medical and non-medical equipment crucial for delivering quality care. Participants mentioned instances where they personally purchased printers as the hospital lacked functioning ones.

“...there's shortage of staff, shortage of medication and shortage of equipment.” – Participant 2

“We have to struggle to get things to do our work. I mean not even linen, stationary items, then staples that we now procure ourselves.” – Participant 3

“Printers is not working. It's not being procured. So, I have my own printer here, paying out of my own pocket for services to continue.” – Participant 4

Shortage of pharmaceuticals:

Participant 5 highlighted that sometimes there is a deficiency of pharmaceutical supplies within the hospitals. Shortages of pharmaceuticals have a detrimental effect on both the quality and efficiency of patient care. Additionally, this scarcity contributes to escalating treatment costs and amplifies the workload of healthcare providers (Bochenek *et al.*, 2018:2).

“So, the other issue is unavailability of other pharmaceuticals...” – Participant 5

Shortage of cleaning materials:

At times, the hospitals face shortages of cleaning materials and supplies. Boyce (2016:1) indicates that the prevalence of healthcare-associated infections decreases with the implementation of proper cleaning protocols within hospitals.

3.6.3.4 Prolonged Hospital Stays

Procurement challenges:

Extended hospital stays are often a consequence of procurement issues that impede the hospital's capacity to efficiently treat patients within an appropriate timeframe. Medication is unavailable when needed, contributing to prolonged hospital stays for patients.

Theatre challenges:

All hospitals encountered challenges with their theatre operations. These difficulties arise from various factors such as load-shedding, staff shortages, and delayed theatre readiness due to insufficient cleaning personnel. Consequently, patients are compelled to stay longer in hospitals due to delayed surgeries caused by ineffective theatre management.

“So, you find that patients are not being operated or the turnaround for patients is really slow. Patients end up staying a bit long and it increases the cost a bit for the hospital.” – Participant 1

Patients experiencing complications:

Patients' hospital stays lengthen when unexpected complications arise. As exemplified by a participant, a patient requiring surgery cannot undergo anaesthesia due to the development of a severe infection, which necessitates treatment before proceeding with the surgery.

“So, a patient needs to be operated, have surgery, the patient comes and then found not to be suitable for anaesthesia because the patient now has a lung infection, bronchitis or upper respiratory tract infection. Sometimes, the doctor treats the patient and then we'll delay theatre maybe for 2-3 days.” – Participant 3

Shortage of equipment:

The hospitals lack adequate and properly maintained equipment, leading to situations where patients are unable to undergo scans or receive proper treatment, prolonging hospital stays.

“...the patient has to undergo the investigations and the machines are not functioning there or sometimes they don't have enough staff versus the number of patients being assessed.” – Participant 5

Social determinants of Health

Theme 1 delved into discussions surrounding SDoH. However, this section explores the correlation between SDoH and prolonged hospital stays within the intricate and interlinked healthcare system.

SDoH contribute to patients' extended hospital stays beyond what is necessary. The lack of transportation and absence of family support – to assist in returning home – results in prolonged stays. Often initially brought to the hospital by ambulance, these patients remain longer due to the unavailability of transportation upon discharge. Moreover, when patients lack food at home, it hinders their ability to take medication, which leads to extended hospital stays.

“Sometimes, we struggle to get the transport back to their respective hospitals. This has happened several times whereby now we have to, especially when the patient is done or must go back with their ambulance, we are struggling with our ambulance services. Meaning now, when the patients stay longer here, now we are going to spend more on that patient.” – Participant 7

Poor infection control:

Because hospitals occasionally experience shortages of cleaning materials and face a critical shortage of cleaners, patients endure longer stays due to inadequate infection control within the healthcare facilities.

Shortage of staff:

Staff shortages lead to extended patient stays in the hospital, affecting all processes and procedures. This scarcity results in slow turnaround times for theatres and an increased workload, making it challenging to maintain a comprehensive view and increasing the likelihood of overlooking crucial details due to insufficient staff to manage the workload effectively.

3.6.4 Theme 4: Readmissions

The hospitals grapple with a recurring pattern of readmissions. As explained by Participant 1, a substantial portion of these rehospitalisations involves patients with chronic illnesses who fail to adhere to their prescribed treatments at home. This cycle leads to multiple readmissions, with certain patients seeking treatment "5 to 6 times in a space of two months." Furthermore, the low adherence to treatment leads to complications of the situation. In Figure 11, the categories and codes can be seen.

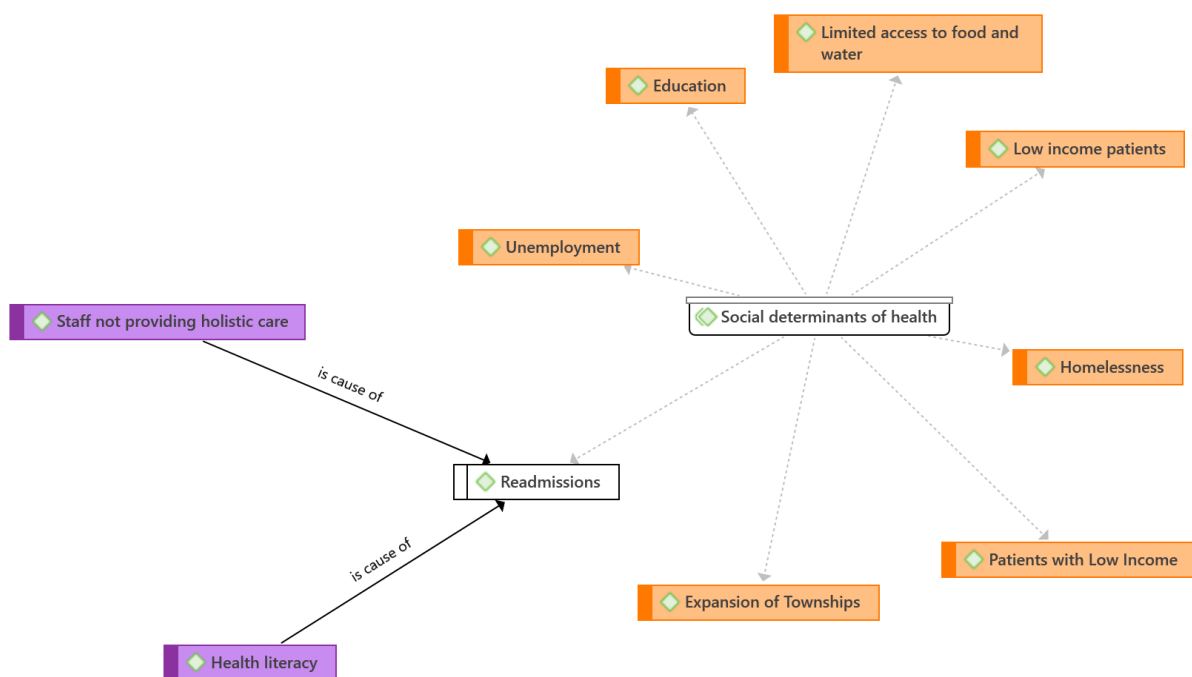


Figure 11: Visual representation of theme 4 (Researcher's own compilation.)

3.6.4.1 Causation of readmissions

Social determinants of health:

Expanding the interlinked system, the SDoH outlined in Theme 1 contribute significantly to patient readmissions. According to one participant's insight, patients are required to take their prescribed medication after having a meal, yet these patients often lack consistent access to food.

“... difficult to prevent the readmissions. Because some of the people are unemployed, that is point number one, and then other people don't have a place to stay. The other reason is that there are not enough nurses to educate these people from the point of entry till the patient is discharged. So that they can understand the reason for admission.” – Participant 6

Health literacy:

According to four participants, hospitals observe more readmissions due to the population not being *"health conscious or well educated in terms of taking care of themselves"*. – Participant 1.

Staff not providing holistic care:

Insufficient provision of holistic care by healthcare staff, especially among younger professionals, has been identified as an issue. An illustrative example was shared by a participant. In a scenario where a patient was involved in a car accident, clinicians primarily focused on examining and treating the patient's physical injuries. However, weeks later, the patient returned, exhibiting symptoms of post-traumatic stress disorder (PTSD), indicating that the initial care lacked attention to the patient's psychological well-being and broader mental health concerns arising from the traumatic incident.

“Then of course, down the line that patient in a month or two weeks or a week later is having PTSD, having this post traumatic stress disorders and is having nightmares. And now comes back to the hospital either being diagnosed with a mental disorder because we didn't do our part.” – Participant 1

3.6.5 Theme 5: Human resource management

Human Resource Management (HRM) is vital to healthcare's success, especially in hospitals where human input remains irreplaceable. It covers diverse functions, including legal and ethical aspects, safety, recruitment, training, and strategy. Essentially, HRM optimises human potential, devising efficient systems to meet organisational goals (Gund, 2020:324). Hospitals encounter considerable staff turnover due to various challenges. The current HRM structures make recruiting and

maintaining adequate staffing a persistent struggle. Figure 12 delineates the complexities of HRM, segmented into three distinct categories.

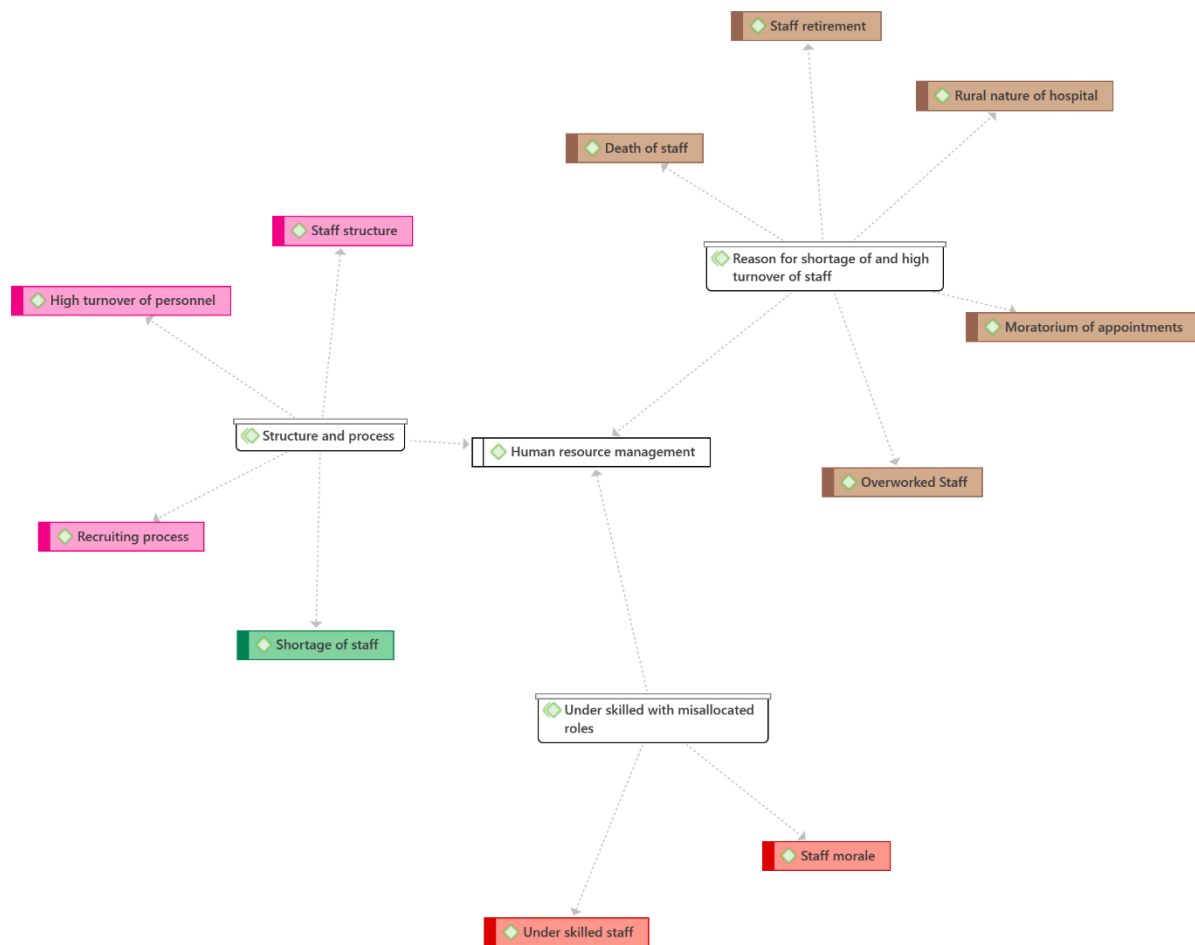


Figure 12: Visual representation of theme 5 (Researcher's own compilation.)

3.6.5.1 Structure and processes

Shortage of staff:

All of the hospitals experience a staff shortage, with the scarcity most pronounced among nurses and cleaners. Participant 3 highlighted that the staffing numbers have not grown proportionately to the increasing patient load and expanding services. Factors contributing to this strain include inadequate staffing in lower levels of healthcare, a rise in non-referral patients, expanded services, and township growth, significantly augmenting workloads. This places excessive strain on nurses who are burnt out due to other crucial positions remaining unfilled or being inadequately staffed. Participant 5 pointed out a concerning scenario where eight theatres are

serviced by just one cleaner, resulting in increased infection rates and transferring the burden of theatre cleanliness onto nurses. The shortage of staff leads to extended work hours, causing fatigue, errors, compromised quality of care, and unnecessary expenditure for hospitals.

“...we need 10 nurses, they will give you maybe 5 or 4 nothing, not 10.” – Participant 3

“Casualty and OPD with minimal staff and most of the staff of OPD casualty and OPD, they work together again, most of them are chronic nurses who are tired” – Participant 3

“... main is the staff shortage issue, which is negatively impacting on cleaning. For an example, currently I'm running eight theatres. There are days whereby you will find out that there is only one cleaner which is not acceptable.” – Participant 5

High turnover of personnel:

Certain participants elaborated on the high turnover rate among staff members and highlighted the challenge associated with retaining them.

“We have a high turnover of staff” – Participant 3

Staff structure and recruiting process:

The human resource structure is outdated, as indicated by Participant 3, who referenced the 2007 structure. Lengthy recruitment processes contribute to issues like understaffing, extended periods of staff serving in interim roles, or unfilled vacancies. Moreover, changing such a structure might take up to five years to accomplish, according to their comments.

“...old structure that I told you about the 2007 human structure” – Participant 4

“...we find ourselves that we don't have an adequate structure in terms of the staff structure...” – Participant 1

3.6.5.2 Underskilled with misallocated roles

Underskilled staff:

Five participants observed that certain staff members lack the qualifications or expertise required for their current roles. Originally hired as cleaners, these individuals have been reassigned to other positions, like administrative clerks and messengers, due to staffing shortages. Some of these staff members don't possess a matric qualification and are reluctant to revert to their initial roles. Additionally, one participant highlighted concerns about the skill disparity among doctors from Cuba, suggesting potential impacts on the hospital due to differing qualification standards compared to South African doctors.

“Some of them have a skill. Some of them did not have a skill, did not have qualification as a clerk, did not have a matric certificate as a clerk. Hence, they refused to go back to cleaning.” – Participant 3

Staff morale:

The hospitals are experiencing significantly low morale due to the staff being overworked and burnt out. Conflicting opinions have arisen among participants: while some affirm the staff's dedication and desire to enhance the situation, others suggest that younger-generation clinicians might lack a patient-oriented approach or show diminished commitment levels.

“So meaning the the work is more and the morale is low.” – Participant 3

3.6.5.3 Reason for shortage and high turnover of staff

The following quotes establish the underlying reasons for staff resignations, ultimately leading to staffing shortages.

“The issue here we are working within the aged population in terms of public service.” – Participant 1

“They go on pension; then there are no replacements. They resign, no replacements. They die, no replacements” – Participant 3

Staff retirement:

Participants 1, 3, and 4 highlighted that the lack of replacement for retiring staff members leads to a shortage in staff. Additionally, when staff retire and are not replaced with younger personnel, it creates a gap which further exacerbates the staffing shortage.

Death of staff:

Instances have occurred where staff members passed away, and their positions were left vacant without replacements.

Moratorium of appointments:

Participant 1 noted that the moratorium imposed on healthcare professionals resulted in issues, creating a gap when older staff leave their positions and younger staff are not recruited. As per Furlong (2015), the Department of Health enforced a moratorium on healthcare job openings. There were uncertainties regarding which positions were deemed critical; for instance, whether a cleaner was considered an essential worker. Consequently, when staff vacated their positions, even these roles couldn't be filled, resulting in enduring repercussions.

Rural nature of the hospital:

The hospital's rural location might influence staff members, particularly younger generations, to be less inclined to stay for extended periods.

“...we do also have high turnover because of the rural nature of the province...” –
Participant 1

Overworked Staff:

The staff are experiencing excessive workloads, leading to resignations from individuals feeling fatigued and burnt out.

“They are tired because they're stretching more than they supposed to stretch” –
Participant 6

3.6.6 Theme 6: Supply chain management

The Healthcare Supply Chain comprises a sequence of operations involving various teams and the transportation of medicines, surgical tools, and essential products essential for healthcare professionals. An efficient supply chain offers several benefits, including streamlined processes, optimal resource utilisation, contented employees, effective treatments, and satisfied patients (Arora & Gigras, 2018:101). Figure 13 introduces three categories to clarify the connections within supply chain management.

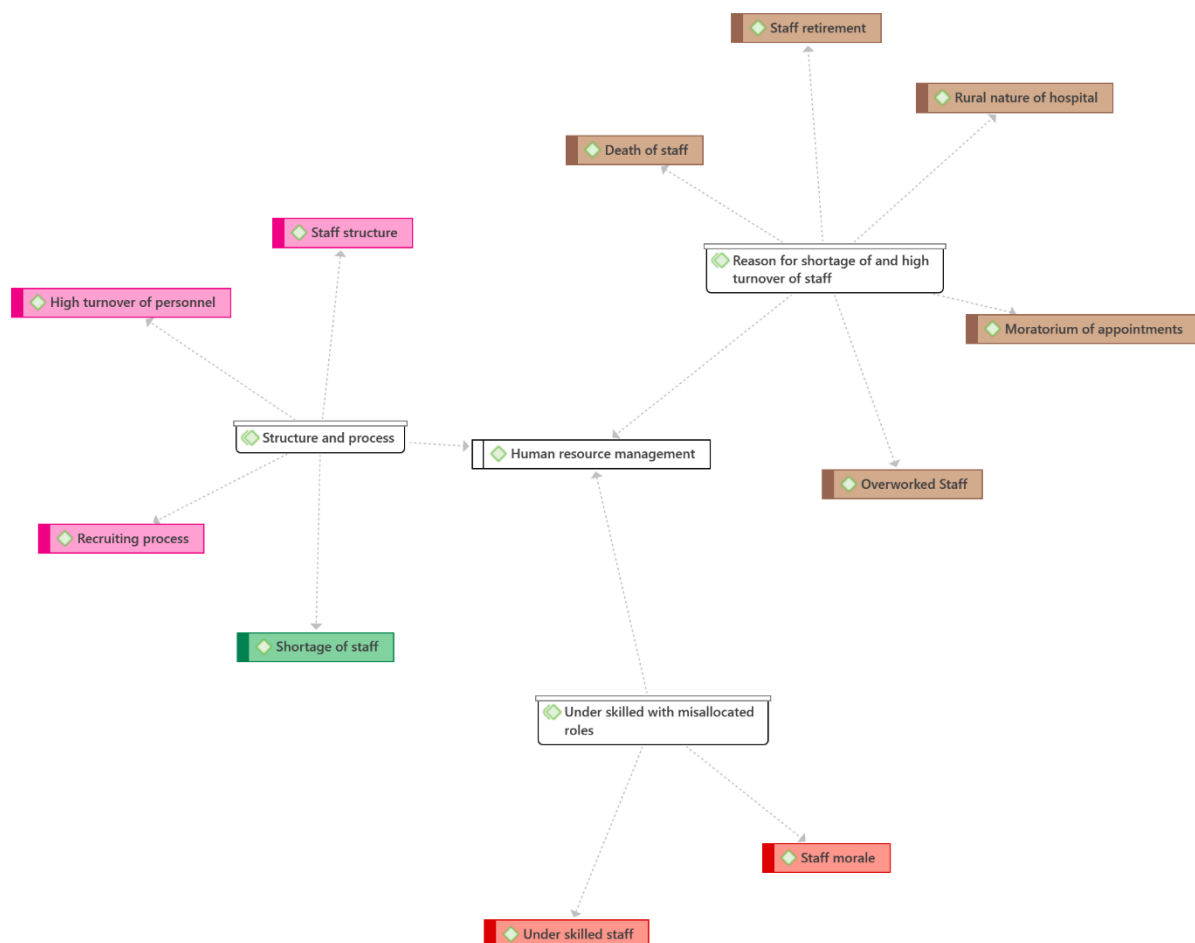


Figure 13: Visual representation of theme 6 (Researcher's own compilation.)

3.6.6.1 Shortage of resources

Within the operational management theme, the discussion focused on the category of resource scarcity. The ramifications of inadequate supply chain management significantly affect operational efficacy. According to Anesi and Kerlin (2021),

insufficient stock directly impacts patient care, as the unavailability of essential supplies hinders timely and effective treatment. This interdependence between supply chain management and operational efficiency underscores the critical role of a well-managed supply chain in ensuring seamless healthcare delivery. When resources are lacking, patients' access to necessary treatments becomes compromised, emphasising the integral connection between an efficient supply chain and optimal operational management within healthcare (Yap & Tan, 2012:219).

3.6.6.2 Wasteful expenditure

Tender process:

According to participants 3 and 4, the tender process recently underwent changes, and participants expressed a preference for the previous approach. In the new system, tenders need to be placed on a monthly basis compared to the previous annual arrangements. An example was provided wherein the personnel required gloves, but there was an error in the quote, and the correction process was prolonged, causing delays in receiving the necessary gloves. This delay impeded their ability to carry out their duties effectively.

“We have now a new tender system whereby it is month by month” – Participant 3

Tender irregularities and corruption:

Three participants acknowledged the presence of corruption and tender fraud within the hospitals. Corruption significantly inflates the high ExPDE, with contracts highlighted by participants being "*three to four*" times higher than their appropriate value. Furthermore, irregularities in procurement processes not only inflate costs but also contribute to stock shortages, consequently leading to extended patient stays beyond the initially projected duration. While corruption and tender fraud are complex issues that warrant further research, they fall outside the scope of this study. However, they emerged as codes.

“...there's a lot of irregularities due to tenders.” – Participant 3

3.6.7 Theme 7: Financial management

The fundamental objective of financial management is to strategise, obtain, and deploy funds or capital in order to optimise the efficiency and worth of the organisation. In essence, financial management encompasses various essential activities, such as assessing and strategising, making long-term investment choices, determining financing strategies, managing working capital, overseeing contracts, and mitigating financial risks. (Gapenski & Pink, 2015:6-7; Cleverley *et al.*, 2023:4)

Figure 14 visually represents the various identified factors that influence financial management within public hospitals. Each of the seven additional themes directly impacts expenditure, with three supplementary categories identified. Moreover, it provides an insight into the current ExpDE. Hospitals encounter budgetary constraints and escalating expenses, leading to accumulative financial strains.

3.6.7.1 Expenditure per Patient Day Equivalent

Each participant was well-informed and familiar with the concept of ExpDE. They clarified that this cost encompassed all hospital expenditures, including expenses related to utilities such as water and electricity, salaries, and pharmaceuticals. Participant 1 stated that the ExpDE for regional hospitals ranges from R3500 to R4500. Additionally, the hospital's expenditure falls within the range of R3400 to R3700 and hasn't surpassed R4500 recently.

“...between R3500 to R4500, that is our target for a Regional Hospitals” – Participant 1

“We have not gone above R4500 per month as an indicator. But we are hovering around the 3.5, 3.7 and 3.4 somewhere just around there.” – Participant 1

3.6.7.2 Budget strains

Insufficient budget:

Several participants expressed concerns that they perceive the budget to be inadequate. They believe that with additional funding, the hospital could enhance the quality of services offered.

“... the services are there, but the budget also is not enough.” – Participant 1

Accruals:

Five participants highlighted that hospitals consistently lag behind on payments. At the commencement of the new financial year, the preceding year's expenses take precedence, depleting the budget by September/October and perpetuating a cycle where hospitals continually fall behind on payments. Moreover, this affects the actual ExpDE value, as certain service providers either receive partial payment or are left unpaid, consequently reflecting a lower ExpDE.

Income stream:

The revenue generated from patients is minimal, and in some cases, patients are exempt from paying any fees due to their lack of income.

3.6.7.3 Expenditure

Staff remuneration:

Participant 10 highlighted that *"60% of the entire budget, it goes to the salaries"*, leaving only 40% for the essential funds required to serve the people. Staff remuneration is elevated because of consistent overtime worked by the staff. According to Participant 1, in the month when staff members resign or retire, the remuneration rises due to payouts for leave and pension funds. Subsequently, in the following months, the expenditure is expected to decrease.

“...we are understaffed, you need to pay them their 30% of their salary every month for extra time...” – Participant 6

Consultant remuneration:

Participant 4 noted that external consultants are occasionally engaged for their specialised expertise even before the unit or equipment is fully established.

Expansion of hospital:

According to Participants 2,3, and 4, the hospital's expansion contributes to the overall expenditure, notably impacting the ExpDE, especially in the months leading up to patient treatments within these newly expanded units.

Expensive specialised equipment:

According to multiple participants, the equipment required to deliver specialised services is extremely expensive, leading to an increase in the ExpDE.

“...procuring of the equipment this where the high expenditure is.” – Participant 3

Maintenance cost:

Maintenance is essential, particularly due to the aged infrastructure of the buildings and the extensive utilisation of equipment. The maintenance costs are consistently high, constituting recurring expenses. The hospital has service-level agreements with companies to ensure the ongoing maintenance of the equipment. Additionally, the hospital is then required to purchase consumables for the machine separately from them. Furthermore, there are associated costs incurred when emergency repairs need to be carried out.

“...we know that we don't have the responsibility of maintaining and taking care of the machine. We are only buying consumables as a part of their agreement, per service level agreement.” – Participant 1

“...we are having emergency repairs. The emergency repairs is before the period of maintenance or service.” – Participant 5

Load-shedding:

As indicated in the literature study, load-shedding is a significant issue affecting hospitals in South Africa, a concern reiterated by most participants. The associated costs are considerable, as surgery delays due to load-shedding contribute to prolonged patient stays. The expenses for diesel used in generators during these instances are notably high, as the generators must be activated during load-shedding. Furthermore, acquiring appropriately sized generators incurs substantial procurement costs. These ongoing expenses significantly contribute to the increased ExpDE.

“.. load shedding, really it's a problem because some of the things cannot kick up... we've got generators but remember, they are not everywhere, it's only for critical points.” – Participant 6

Food:

When patients require prolonged hospital stays beyond the anticipated duration, the ExpDE rises due to the continued provision of food services. Hospitals often face difficulties in providing regular meals for patients, underscoring the challenges they encounter in meeting fundamental patient needs.

“If there's no food aid for today, for example, my nurses needs to dish out food for the patients.” – Participant 6

The hiring of equipment:

Participant 5 clarified that certain equipment is leased from various companies, leading to ongoing and repetitive expenses.

“...but some of the bigger items are hired from different companies” – Participant 5

Utilities:

Hospitals are not exempted from paying utilities; these expenses remain an essential part of their operations.

Medical scans and tests:

Medical examinations and procedures performed on patients incur substantial expenses, encompassing X-rays, blood tests, medications, and CT scans.

“I think like on medications and your X-rays and there are some test that are more expensive than the others that needs to be done.” – Participant 2

3.6.7.4 Expenditure inefficiencies

Expenditure on resources due to negligence:

Participant 2 noted that hospitals frequently repurchase the same items due to the lack of sustainability of resources, resulting in higher-than-necessary expenditures.

“Regularly you have to buy the same things over and over because they are not being sustained in the hospital.” – Participant 2

Expenditure due to inaccurate record keeping:

Due to poor data management and record-keeping practices, costs escalate due to redundant tests and time wastage. This inefficiency complicates accurate ExpDE calculations, as not all patients are properly documented. Additionally, missing records lead to a situation where not all expenditures are accounted for, further exacerbating the challenge.

Increased length of patient stays:

The various factors and inefficiencies leading to prolonged patient stays in hospitals result in escalated total patient expenditure, as ongoing necessities such as meals and regular check-ups by doctors and nurses persist. A more streamlined process could have facilitated the treatment of other patients promptly. Furthermore, secondary factors like patients' deteriorating health due to extended waiting times incur additional costs for hospitals, demanding increased medication and tests for these patients.

3.6.8 Force field analysis

Lewin's force field analysis is a strategic planning and decision-making technique to visually identify and analyse the driving and restraining forces that influence a situation

or change process within an organisation or system. It involves mapping out these forces, which may include factors supporting or hindering a particular change or objective, to understand the dynamics better and make informed decisions about how to proceed. The analysis helps assess the balance between the forces in favour of change and those resisting it, aiding in devising strategies to enhance driving forces or mitigate restraining forces to achieve the desired outcome (Burnes & Cooke, 2012: 416-417). The hospitals function as a system. A force field analysis was applied to demonstrate the system and the identified changes to improve its effectiveness.

Figure 15 illustrates the current status of high ExpDE in comparison to other provinces in the middle of the force field analysis. On the left side, there are forces exerting pressure to improve the current state, while on the right side, there are forces contributing to a deterioration of the current situation.

The factors supporting change are aimed at improving efficiency, enhancing the quality of care, and reducing the total expenditure within the healthcare system. Conversely, resisting factors act as challenges impeding the improvement of hospital conditions and practices. This analytical approach provides an understanding of the forces affecting the healthcare environment, evaluating the driving forces advocating change against the restraining forces hindering progress. Thereby enabling a comprehensive assessment of the potential for change and the hurdles to overcome within the healthcare sector.

The strong forces exerting a significant impact on expenditure, as revealed in the study, are predominantly linked to staff remuneration, primarily due to the necessity for constant overtime resulting from staff shortages. Moreover, the study also underscores the adverse influence of corruption and irregularities in tender processes, contributing substantially to the expenditure challenges.

Operational management faces its own set of formidable forces, notably the scarcity of essential resources, specifically the shortage of linen and inadequacy in staff numbers. These shortages directly impede the smooth functioning of operations, creating hurdles in delivering optimal services and meeting the required standards of

care.

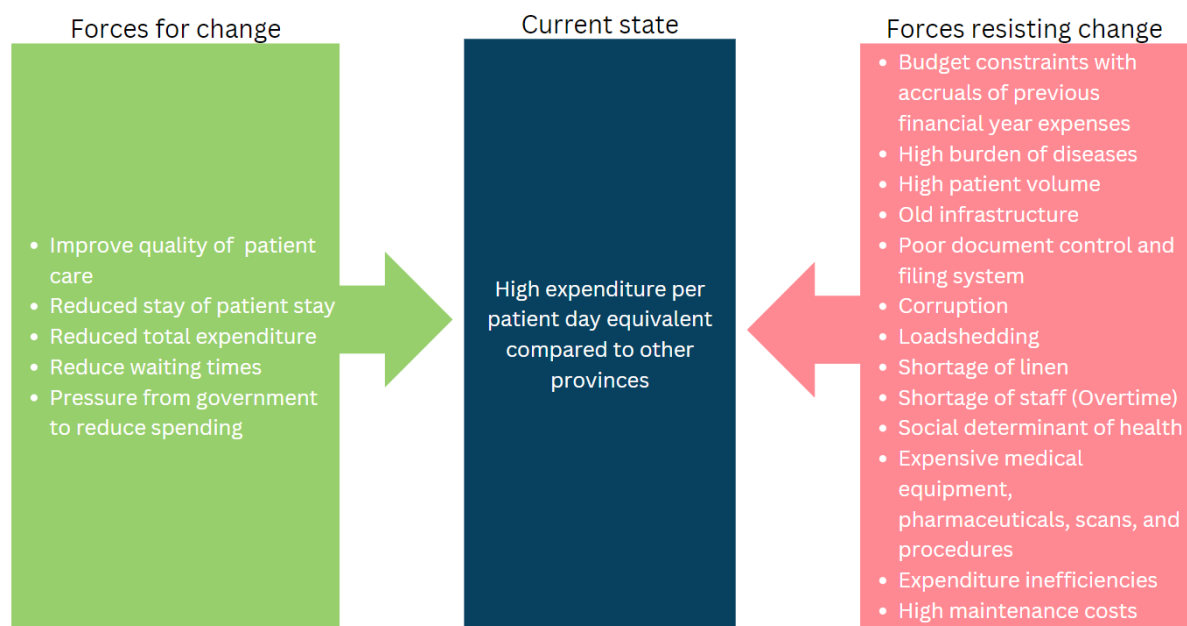


Figure 15: Force field analysis (Researcher's own compilation.)

3.7 SUMMARY

In the data analysis section, an in-depth exploration was conducted utilising Atlas.Ti for coding to unravel the intricate factors contributing to the high ExpDE within the healthcare context. Through rigorous examination and categorisation of themes, categories, and codes, a comprehensive understanding emerged regarding the complexities influencing elevated healthcare costs. The results, also presented through a force field analysis, shed light on various determinants impacting patient stays, resource utilisation, procurement practices, and financial management.

The findings from the data analysis hold substantial significance for the healthcare landscape within the North West Province. The identified factors influencing ExpDE in public hospitals underscore the critical need for strategic interventions and policy reforms. The study reveals that shortages of essential resources such as linen, staff, and equipment significantly impact operational efficiency and patient care quality.

The accrued expenses due to high operational costs, coupled with inadequate financial management, exacerbate the strain on the healthcare budget. Prolonged hospital stays resulting from these shortages not only escalate healthcare costs but also contribute to the strain on an already burdened healthcare system.

Furthermore, the study highlights the influence of social determinants of health on healthcare expenditure, emphasising the need for holistic approaches to address patient needs beyond clinical care. The financial implications of extended patient stays, driven by factors such as lack of transportation or inadequate home support, are substantial and call for targeted interventions to mitigate these challenges.

Ultimately, the findings from the data analysis underscore the urgency for proactive measures and targeted interventions to optimise resource allocation, streamline operations, and enhance financial management within public hospitals. Addressing these identified challenges can lead to improved cost efficiencies, better patient outcomes, and a more sustainable healthcare system in the North West Province.

CHAPTER 4: CONCLUSION, POLICY BRIEF, LIMITATIONS AND RECOMMENDATIONS

4.1 INTRODUCTION

This chapter discusses the study's overall conclusion and proposes a policy brief for the Department of Health in the North West Province towards more efficient cost management. The study's limitations are discussed with recommendations for future studies on ExpPDE for public hospitals in the North West Province.

4.2 SUSTAINABLE DEVELOPMENT GOALS

The Sustainable Development Goals (SDGs), established by the United Nations in 2015, are 17 interconnected goals designed to address global challenges and create a more sustainable and equitable world by 2030 (United Nations, 2023). The SDGs and SDoH are interconnected, forming a crucial relationship in achieving global development objectives. SDoH operates as a system wherein each component interacts and influences the others. For instance, environmental factors can have implications for both physical and mental health, affecting overall well-being (Compton & Shim, 2015:420).

Goal 1: No poverty and Goal 4: Quality education

SDoH, such as unequal access to education and healthcare, significantly influence poverty levels. Limited access to quality education and healthcare services often perpetuates cycles of poverty, making it challenging for individuals and communities to improve their socio-economic status (Pohlan, 2019:274; American Psychological Association, 2017).

Goal 2: Zero hunger, Goal 3: Good health and well-being and Goal 6: Clean water and sanitation

SDoH plays a crucial role in shaping health outcomes. Access to healthcare services, education, safe housing, clean water, sanitation facilities, and nutritious food significantly influences overall health and well-being. Disparities in these areas can

lead to inequities in health outcomes among different populations (Whitman *et al.*, 2022:2).

4.3 EVALUATION

This section conducts a comprehensive evaluation of the study's aim and objectives, research methodology and analysis. The research question guiding this evaluation is: "How can the factors influencing ExpDE for public hospitals in the North West Province be managed towards better efficiency?"

4.3.1 Evaluation of the aim and objectives

The aim of the study was to provide insight into the optimal management of the dominant factors influencing the ExpDE in the public hospitals of the North West Province with three objectives:

Objective 1: To explore the concepts and current contextual factors that influence the ExpDE for public hospitals in the North West Province.

Outcome: Through the examination, seven themes emerged, each comprising specific categories and codes. These themes provided a structured framework to comprehend the intricate dynamics contributing to the higher ExpDE. By categorising and coding these factors, a comprehensive understanding was established, offering valuable insights into the multifaceted elements driving the increased expenditure within the context of public healthcare facilities in the North West Province.

Objective 2: To explore the social determinants of health that influence the ExpDE in the public hospitals in the North West Province.

Outcome: Among the identified themes, one specifically addressed the role of social determinants. This theme highlighted the significant impact of factors like socio-economic status, education, living conditions, and resource accessibility on healthcare expenditure. This analysis offered crucial insights into how social determinants contribute to the costs associated with patient care in the region's public healthcare facilities.

Objective 3: To develop a policy brief for the Department of Health in the North West Province towards more efficient cost management.

Outcome: Within Chapter 4, a dedicated section was allocated to articulate this policy brief. The document aimed to provide strategic recommendations and actionable insights specifically tailored to enhance cost management practices within the healthcare sector.

4.3.2 Evaluation of the research methodology

The qualitative interview approach offered valuable, detailed insights into ExpDE factors within North West Province hospitals. While providing rich and firsthand perspectives, this method carries the risk of participant bias and limited generalisability (Rahman, 2016: 104-105). Nonetheless, it enabled a comprehensive understanding of the intricacies surrounding healthcare expenditure, although caution was required when interpreting subjective responses.

4.3.3 Evaluation of the analysis

The data analysis in this study explored the factors impacting ExpDE. Through thematic coding of interview data, the analysis offered insightful interpretations, unveiling the complexities surrounding healthcare expenditure. It provided a structured examination of influential elements, highlighting connections between staffing shortages, resource limitations, prolonged patient stays, and financial management. However, the potential for subjective interpretations and the study's confined scope limits the generalisability of findings. Despite these constraints, the analysis substantially enriched our understanding of healthcare expenditure dynamics, warranting careful consideration within the study's contextual boundaries.

4.4 PROPOSED POLICY BRIEF

Title: Policy Brief on Enhancing Cost Management in North West Province's Healthcare.

Introduction:

Healthcare expenditure management is vital for sustaining quality services. The Expenditure per Patient Day Equivalent serves as a crucial efficiency metric, enabling comparisons among healthcare facilities. This policy brief outlines strategies for the Department of Health in the North West Province to enhance cost efficiency in healthcare services.

Current scenario:

- **Expenditure Analysis:** Upon reviewing the current Expenditure per Patient Day Equivalent for hospitals in the North West Province, it was observed that this figure was higher compared to hospitals in other provinces.
- **Challenges:** Identified primary challenges contributing to the high Expenditure per Patient Day Equivalent include staff shortages, insufficiency of resources, for example, linen, irregularities in procurement practices, and challenges related to data management.

In order to address the high expenditure and identified challenges, several strategies and policies are proposed.

Proposed strategies:

- **Staffing Solutions:** Implement strategies for recruitment, retention, and adequate skill utilisation to address staff shortages and prevent unnecessary overtime costs.
- **Resource Management:** Implement inventory management systems to track stock levels and optimise resource allocation.
- **Procurement and Supply Chain Management:** Address tender irregularities, enhance procurement procedures, and negotiate cost-effective contracts to reduce unnecessary expenses.

- **Data Management:** Initiate implementing a comprehensive filing system alongside tailored training programmes for administrative clerks. Moreover, consider digital transformation initiatives to streamline operations, enhance efficiency, and facilitate informed decision-making. Implementing robust data management systems will aid in minimising redundant procedures and tests, thus curbing unnecessary costs.
- **Financial management:** Establish expenditure tracking systems to encourage personnel to monitor resource usage effectively and comprehend the consequences of resource misuse.

Policy recommendations:

- **Staffing Optimisation Policy:** Update the current human resource management framework to align with the current demands of the community. Furthermore, develop and implement a comprehensive staffing strategy that optimises workforce distribution and skill utilisation. Additionally, within this framework, it is crucial to delineate the requisite skills and training programs essential prior to altering roles within the hospital.
- **Resource Management Policy:** Implement a data management policy facilitating the transition to technology to monitor stock levels in real-time to minimise wastage, prevent shortages, and ensure adequate availability of essential resources.
- **Anti-Corruption and Procurement Integrity Policy:** Update and enforce a robust anti-corruption policy emphasising transparency, accountability, and regular audits in procurement processes to combat irregularities. Moreover, conduct regular audits of procurement practices and financial management to identify and address irregularities.
- **Data Management and Technology Policy:** Implement a data management policy facilitating the transition to electronic health records and providing guidelines for data security, staff training, and IT infrastructure upgrades. The information systems must streamline data sharing and management.

- **Promote financial awareness:** Ensuring staff awareness of the financial implications is vital in fostering a culture of cost-consciousness within the healthcare system. Implementing spending tracking systems enables personnel to actively monitor their expenditures, promoting accountability and informed decision-making. This transparency empowers staff members to contribute proactively to cost management efforts while remaining mindful of the financial impact of their actions within the healthcare setting.

Conclusion:

Efficient cost management in public hospitals is crucial for ensuring quality healthcare services. Implementing these strategies and policies can effectively mitigate challenges related to staffing, resource management, corruption in procurement, and inefficient data management. These policy recommendations are intended to enhance operational efficiency, ensure responsible resource utilisation, and ultimately improve patient care outcomes within the North West Province's healthcare system.

4.5 CONCLUSION

The ExpPDE for public hospitals in the North West Province is notably higher compared to other provinces, prompting the NWDoH to commission this study. Through comprehensive analysis and examination, this study aimed to understand the determinants contributing to this elevated ExpPDE and propose potential avenues for improvement.

The findings of this study have unveiled a multitude of factors that significantly impact the ExpPDE within the North West Province's public healthcare facilities. The identified themes encompass various aspects, including resource utilisation, procurement irregularities, patient stays, financial management, and technological integration. These factors collectively contribute to the increased healthcare expenditure observed within the province.

Inadequate financial management practices, such as budget constraints and procurement irregularities, heightened the financial strain on healthcare facilities. Prolonged stays in hospitals impose substantial strain on an already stretched budget. The extended durations of patient stays, influenced by various factors including resource scarcity, social determinants of health, lack of transportation, limited familial support for discharge and inefficiencies in discharge planning, exacerbate the financial burden on healthcare facilities. These extended stays not only elevate direct medical costs but also necessitate additional resources, including increased utilisation of hospital beds, medications, and ancillary services. As a result, this further strains the limited financial resources allocated to healthcare, intensifying the challenges faced in managing the healthcare budget within the North West Province's public hospitals.

Moreover, one of the critical issues highlighted in this study was the shortage of essential resources, particularly the inadequacy of hospital linen and staff. The limited availability of linen not only impacted patient comfort but also contributed to challenges in maintaining infection control practices within hospitals. Additionally, the shortage of staff, particularly nurses and cleaners, posed significant obstacles to delivering efficient care and maintaining the necessary standards of hygiene within the healthcare facilities.

The findings of this study underscore the intricate web of factors contributing to the high ExpDE in public hospitals within the North West Province. Addressing these challenges and implementing targeted strategies could pave the way for a more sustainable, cost-effective, and efficient healthcare system, ultimately benefiting both patients and the healthcare infrastructure in the province.

4.6 LIMITATIONS

The study faced limitations related to interview arrangements, resulting in a smaller sample size at two of the three hospitals. Interviews were exclusively conducted with participants from three hospitals, impacting the diversity of perspectives. The participants struggled with internet connection during the interviews, sometimes resulting in the rescheduling the interviews.

For a more representative study, research should be conducted on more public hospitals, not limited to the North West Province. Each hospital faces different situations that can cause the factors to differ. A broader sample would provide a more comprehensive understanding of the factors influencing ExpDE.

4.7 RECOMMENDATIONS

Future research can be done on the following topics:

- **Comparative Analysis:** Conduct comparative studies across different provinces or regions to gauge variations in healthcare expenditure patterns and identify best practices for cost management.
- **In-depth Cost Analysis:** Conduct detailed cost analyses focusing on specific elements, such as medical supplies, infrastructure maintenance, or staffing, to identify areas for targeted cost-saving measures.
- **Patient-Centric Studies:** Explore patient perspectives and experiences regarding healthcare services, focusing on the impact of prolonged hospital stays on their well-being and financial burdens.
- **Qualitative Investigations:** Expand qualitative inquiries to include diverse stakeholders such as policymakers, administrators, and community

representatives to gain comprehensive insights into healthcare expenditure dynamics.

- **Policy Evaluation:** Assess the effectiveness of existing policies implemented to manage healthcare expenditure. Evaluate their impact and identify areas requiring further policy refinement or development.
- **Technological Innovations:** Investigate the integration of innovative technologies like telemedicine, digital health records, or AI-driven healthcare management systems to optimise resource utilisation and improve efficiency.

4.8 SUMMARY

This section closes the study, proposing a policy brief for the North West Province's Department of Health to enhance cost management. It identifies key drivers of elevated healthcare expenditure, such as financial constraints, prolonged patient stays, resource scarcity, and staffing shortages. The brief suggests actionable strategies, including staffing optimisation, resource management, procurement integrity, data enhancement, and staff financial awareness. While evaluating the study, limitations involving sample size constraints and interview technical issues were acknowledged. Recommendations emphasise future research on comparative analyses, cost studies, patient experiences, policy evaluations, and technological innovations, aiming to address healthcare expenditure challenges succinctly.

4.9 PERSONAL REFLECTION

Undertaking this study has been an insightful and enriching journey. The research process has expanded my understanding of the subject matter and provided me with valuable insights into the complexities of the public healthcare system.

Transitioning from a quantitative-based industry to qualitative research was a substantial shift. Adapting to this new methodology was a steep learning curve, yet it broadened my perspective and deepened my understanding of research methods.

Moreover, interviewing required more than just listening; it demanded comprehension and adept follow-up questioning, unlike my usual approach of deciphering information

later. This process taught me the significance of active listening and swift understanding during interactions.

Facing various challenges during this process was a significant hurdle. Acquiring participants was a struggle initially, but I secured interviews through persistent follow-ups and perseverance. Time constraints added further difficulty, requiring significant sacrifices to accomplish my objectives.

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APPENDIX A: INTERVIEW SCHEDULE

Phase of Interview	What is included	Approximate Time
Introduction	Introduce the interviewer and explain the purpose of the interview. The purpose is determine the factors contributing to the high expenditure per PDE.	5 -10 min
Question 1	How are district hospitals in the North West Province managing the cost of healthcare, including their role in cost management, current cost management strategies, their impact on the quality of care, and the effectiveness of implemented cost management strategies?	10-20min
Question 2	What are the main challenges that district hospitals in the North West Province face in managing costs, and how have they been addressed?	10-20min
Question 3	How can the cost management of district hospitals in the North West Province be improved, given the impact of the current economic climate, and what recommendations do hospital staff have in this regard?	10-20min
Conclusion	To conclude the interview and opportunity for the participant to add additional information.	5 -10 min

APPENDIX B: WORKING RELATIONSHIP BETWEEN NWDOH AND NWU

REQUEST TO APPROVE COLLABORATION BETWEEN NORTH WEST UNIVERSITY AND NORTH WEST
DEPARTMENT OF HEALTH ON MONITORING AND EVALUATION RESEARCH AND TRAINING



health

Department of
Health
North West Province
REPUBLIC OF SOUTH AFRICA

Dr F. R. M. Reichel
Cnr. Sekame & 1st street
Mafikeng, 2745
Private Bag X2068
MMABATHO, 2735

Tel: 018 391 4556
Fax: 086 634 7982
Email: Freichel@nwpg.gov.za
www.nwhealth.gov.za



CHIEF DIRECTORATE STRATEGY AND SYSTEMS

**THE ADMINISTRATOR
NORTH WEST DEPARTMENT OF HEALTH**

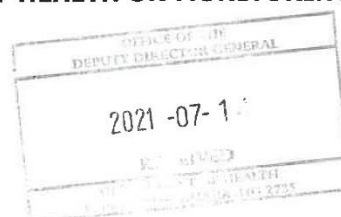
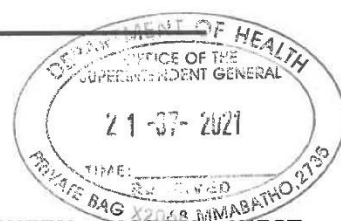
**REQUEST TO APPROVE COLLABORATION BETWEEN NORTH WEST
UNIVERSITY AND NORTH WEST DEPARTMENT OF HEALTH ON MONITORING
AND EVALUATION RESEARCH AND TRAINING**

PURPOSE

1. To request the Administrator to:
 - 1.1. Approve the collaboration between the North West University (NWU) and the North West Department of Health (NWDoH) on monitoring and evaluation and research and training.

BACKGROUND

2. In relation to the guidance of research and evaluation in the department the following needs to be mentioned:
 - 2.1. Research in the department is guided by the National Health Act, (61 of 2003), which is responsible for the appointment of all structures regulating research, that is, National Health Research Committee (NHRC) and the National Health Research Ethics Committee (NHREC).
 - 2.2. National Evaluation Policy Framework (NEPF) was first approved in November 2011. It sets out the minimum standards for the National Evaluation System in South



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Africa. The proposed NEPF 2019-2024 emphasises the institutionalisation of evaluations and set out the criteria for the strategic selection of evaluations. Alignment of evaluations to government's planning and budget cycle, the mandatory implementation of improvement plans and the implementation of evaluation results in decision making are key elements of the revised NEPF 2019-2024.

SUMMARY OF CURRENT ISSUE

3. The current situation in the department in relation to research and evaluation:

3.1. The Research unit with the current mandate of conducting research, was established in April 2020, so it is relatively new and lacks resources, human and financial. There is currently only one permanent official, the Deputy Director, together with an intern student/admin clerk. There is dire need to capacitate the unit so that it can be functional. The unit has further submitted research topics to the Office of the Premier.

3.2. The Evaluation unit:

3.2.1. Developed the departmental evaluation guideline.

3.2.2. Established the departmental evaluation committee.

3.2.3. Submitted evaluation topics to Office of the Premier.

3.2.4. Managed to call for evaluation projects in 2019, and the Directorate received one project from the Health Programmes Chief Directorate, and in 2021 the Directorate received two projects (one from Programme 3 [EMRS] and one from Programme 5 [Tertiary Hospitals].)

3.2.5. All the projects were reviewed by Directorate Research, Monitoring and Evaluation.

3.2.6. So far the actual work for evaluation has not yet started due to lack of human and financial resources, as well as Covid-19, which contributed in ineffectiveness of the evaluation committee, because there is a need to interact with people of which it cannot happen due to minimising meetings and adherence to Covid-19 protocols.

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EW

STRATEGIC FOCUS IN TERMS OF THE STRATEGIC PLAN AND THE APP OF THE NWDOH

4. The approval of the collaboration between the NWU and the NWDoH will ensure that the North West Department of Health will maintain its strategic focus in relation to the attainment of targets in the Annual Performance Plan (APP) and the Strategic Plan through informed decisions based upon the outcomes of the research and evaluation studies undertaken.

RELEVANCE TO NATIONAL DEVELOPMENT PLAN

5. Through this collaboration agreement and the outcomes and decisions taken as a result thereof, the Department will be guided towards the attainment of the National Development Plan.

ORGANISATIONAL AND PERSONNEL IMPLICATIONS

6. There will be no additional organisational and personnel implications as the officials already appointed in the research and evaluation units salaries are already catered for in the Compensation of Employees budget.

LEGAL IMPLICATIONS

7. The only legal implication might be that once a formal memorandum of agreement is drawn up, the legal unit should peruse it in order to ensure that it is legally sound.

COMMUNICATION IMPLICATIONS

8. The approval of this collaboration between the NWU and the NWDoH in terms of research and evaluation should be communicated within the department to avoid unnecessary surprises and conflict when research and evaluation studies are undertaken.

FINANCIAL IMPLICATIONS

9. When considering financial implications, these can be catered for as the research and evaluation topics already identified and submitted to the Office of the Premier are located

**REQUEST TO APPROVE COLLABORATION BETWEEN NORTH WEST UNIVERSITY AND NORTH WEST
DEPARTMENT OF HEALTH ON MONITORING AND EVALUATION RESEARCH AND TRAINING**

within the Health Branch. As such a formal submission can be made to the health branch to include one research and one evaluation topic in the conditional grants currently located in the health branch. This will "ring fence" the budget for these important projects.

RECOMMENDATIONS

10. It is recommended that the Administrator approves the collaboration between the North West University (NWU) and the North West Department of Health (NWDoh) on monitoring, evaluation and research and training *as summarised in the letter of intent from the NWU attached as Annexure A.*

Mr J. N. de Beer Chief Director: Strategy and Systems <i>[Signature]</i> DATE: 14/07/2021 <u>Recommend</u> / Not Recommended / Amended	Ms N. N. R. T. Mojanaga Acting DDG: Health Services <i>[Signature]</i> DATE: 15th July 2021 Recommend / Not Recommended / Amended
Ms S. Motlhamme Acting CFO: North West Department of Health <i>[Signature]</i> DATE: 20/10/2020 Recommended / not recommended / amended	Mr O. E. Mongale HoD: North West Department of Health <i>[Signature]</i> Legal Services with peruse the MOA once its drafted. DATE: 22/07/2021 <u>Recommended</u> / not recommended / amended
Ms J. R. Hunter Administrator: North West Department of Health <i>[Signature]</i> DATE: 22/7/2021 <u>Approved</u> / Not approved / Amended	

22/7/2021
Mr De Beer to explain
the purpose and nature
of this agreement to me.
Also see HoD's comment.

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REQUEST TO APPROVE COLLABORATION BETWEEN NORTH WEST UNIVERSITY AND NORTH WEST
DEPARTMENT OF HEALTH ON MONITORING AND EVALUATION RESEARCH AND TRAINING

ANNEXURE A

LETTER OF INTENT: NWU

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REQUEST TO APPROVE COLLABORATION BETWEEN NORTH WEST UNIVERSITY AND NORTH WEST
DEPARTMENT OF HEALTH ON MONITORING AND EVALUATION RESEARCH AND TRAINING



Private Bag X6001, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222

Web: <http://www.nwu.ac.za>

Faculty of Health Sciences - AUTHeR

Tel: 018 2992094

Email: petra.bester@nwu.ac.za

To Dr Frikkie Reichel
Director Monitoring and Evaluation
Strategy and Systems Chief Directorate
North West Department of Health
Health Office Park – 1st Floor
Corner 1st and Sekame St
Mmabatho, 2735

8 July 2021

Dear Dr Reichel

**LETTER OF INTENT: COLLABORATION BETWEEN NORTH-WEST
UNIVERSITY AND NORTH WEST DEPARTMENT OF HEALTH ON
MONITORING AND EVALUATION RESEARCH AND TRAINING**

Thank you for the significant discussion at the meeting held on 7 July 2021 at 10:00. This meeting aimed to discuss assistance with evaluation and research studies between the North-West University and your office at the North West Provincial Department of Health. The delegates included from the North West Provincial Department of Health: yourself, Mr J de Beer, Ms N Mangonyane, Ms P Tshihwanambi and Ms K Shogwe; and from the North-West University: me, Prof A Robinson and Dr C Niesing (three colleagues from the Africa Unit for Transdisciplinary Health Research [AUTHeR], a research entity within the Faculty of Health Sciences at the North-West University).

The objective of the meeting was to discuss how can the two organisations work together to conduct focused research based on the Department's research priority list of topics, evaluation studies and training on monitoring and evaluation. The needs from your Department were listed as follows:

- Clinical and health research within the province's health system based on research topic of interest.
- Evaluation studies within the province's health system.
- Support in evaluation training.

In response, colleagues from AUTHeR indicated potential areas of collaboration as:

- Activating the services of a biostatistician to assist with the analysis and translation of existing data into meaningful information.
- Supervision and co-supervision of postgraduate students on research topics proposed by the Department of Health.
- Evaluation studies done by MSc-students in their practical course.
- Sharing of existing monitoring and evaluation infrastructure used by AUTHeR.
- Adding the Department as a role-player in the development of the current health research ethics management system developed by the Faculty of Health Sciences.
- Support in formal and informal training on monitoring and evaluation.

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**REQUEST TO APPROVE COLLABORATION BETWEEN NORTH WEST UNIVERSITY AND NORTH WEST
DEPARTMENT OF HEALTH ON MONITORING AND EVALUATION RESEARCH AND TRAINING**

Both teams present were in full agreement that this collaboration will carry a reciprocal benefit to both organisations.

The meeting concluded with a proposed action list as impetus to this collaboration, proposed as follows:

1. **Biostatistics expert:** AUTHeR's biostatistician to visit the North West Provincial Department of Health around October 2021 to assess available datasets and reporting needs and propose a work system framework whereby data from the Department can be analysed to inform clinical monitoring and evaluation indicators. The recommendation of the Health Information Study conducted previously by AUTHeR, although not discussed at the meeting, should also be considered to enhance the quality of data collection into these data sets.
2. **Postgraduate students do research on Department of Health research themes:** This can be obtained through multiple avenues. Masters and doctoral students can do research that aligns with the Department's research needs based on a priority of 1-3 topics communicated to AUTHeR by August. Postgraduate students can be co-supervised between AUTHeR researchers and qualified colleagues from the Department. Staff members from within the Department to enrol for postgraduate studies themselves and focus on research topics within their work environment.
3. **Evaluation studies by masters' students as part of their programmes:** Every year the students enrolled for the degree master's in health sciences in Transdisciplinary Health Promotion, must conduct a practical group project and this can be based on the evaluation needs of the Department.
4. **Commissioned research funded by the conditional grant in Programme 2:** Noting that the Auditor General's findings regarding Monitoring and Evaluation are in Program 2, the possibility of embedding this project's research, monitoring and evaluation into the Program's Conditional Grant, and even other relevant conditional grants if appropriate, to secure necessary funding to realise the projects aims and objectives. This will need to be done within the Conditional Grant timeframes. A freelance researcher with an extraordinary appointment with the NWU is available to complete such an application and execute a research project in collaboration with the Department of Health.
5. **Workshop to refine the collaboration's roles, responsibilities and its potential etc.:** Conduct a one-day workshop around September 2021 to establish reciprocal needs and assets.
6. **Evaluation training:** for immediate support informal in-service training on evaluation is possible and for long-term training a higher certificate or diploma or accredited short learning programme in health systems monitoring and evaluation can be co-developed and co-presented.
7. **Establish a learning and research culture:** Support a learning and research culture by a collaborative research and evaluation framework and a memorandum of understanding (MOU). The MOU's shared by Dr Engelbrecht, past HOD of the Western Cape Department of Health, and the Current HOD Dr K Cloete, between the three (3) Western Cape Universities and the Western Cape Department of Health, can serve as a guide for the correct governance of this collaboration.
8. **Collaborative development of the health research ethics management system:** AUTHeR is mandated to develop a digital research ethics management system for the Faculty of Health Sciences and a business case can be developed to include ethics-related role-players within the Department of Health, at both Provincial and facility or District level, to extend the system for their operational use.

REQUEST TO APPROVE COLLABORATION BETWEEN NORTH WEST UNIVERSITY AND NORTH WEST
DEPARTMENT OF HEALTH ON MONITORING AND EVALUATION RESEARCH AND TRAINING

To progress with this collaboration, we request your favoured support to the initiative.

Yours faithfully,



Prof Petra Bester
Director: Africa Unit for Transdisciplinary Health Promotion (AUPHeR)

Date: 8 July 2021

cc: Prof AKL Robinson, Mr J de Beer.

Original details: (11311738) C:\Users\24905380\Desktop\1 NWU Letterhead.docm
23 March 2021



health

Department of
Health
North West Province
REPUBLIC OF SOUTH AFRICA

2nd Floor New office Park
Private Bag X2068
MMABATHO
2735

Dr. M. Tlhogane
Tel: (018) 391 4182
mtlhogane@nwds.gov.za



OFFICE OF THE MEC

**TO : MS. SEIPONE MOTLHAMME
CHIEF DIRECTOR: FINANCIAL MANAGEMENT SERVICES**

**FROM : MR. MADODA SAMBATHA
HON. MEC
NORTH WEST DEPARTMENT OF HEALTH**

DATE : 08 MAY 2020

**SUBJECT : APPOINTMENT AS ACTING CHIEF FINANCIAL OFFICER:
YOURSELF**

This serves to inform you that you have been appointed as the **Acting Chief Financial Officer** of the North West Department of Health with effect from the **08 May 2020 until further notice**. The appointment comes with full responsibilities and delegations associated with the post and it is therefore, important that you familiarise yourself with the roles and responsibilities, delegations, regulations and all prescripts as well as the conditions associated with the post.

I wish you all the best in the new responsibilities.

Kind regards,

**Mr. Madoda Sambatha
Hon. MEC
North West Department of Health**

DATE: 08/05/2020

Accepted / Not Accepted:

**Ms. Seipone Motlhamme
Chief Director: Financial Management Services**

Date: 2020-05-08

APPENDIX C: ETHICAL PROCESS



Private Bag X6001, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Web: <http://www.nwu.ac.za>

Faculty of Health Sciences - AUTHeR
Tel: 018 2992098
Email: christi.niesing@nwu.ac.za

NWU Business School
Ethics Committee

13 October 2022

PROCESS OF ETHICS FOR MBA STUDENTS INVOLVED IN NORTH-WEST UNIVERSITY AND NORTH WEST DEPARTMENT OF HEALTH RESEARCH

Attached to this letter, please find:

1. The email confirmation of the research topics identified by the North West Department of Health



Email Research &
Evaluation topics fo

2. The working relationship between AUTHeR and the NWDoH



Approval - Working
Relationship betwee

The research process for these students is:

1. Proposal approval by the Business School Scientific Committee
2. Ethics approval by the Business School Ethics Committee
3. Registration of study on NWDoH website with the ethics number http://nhrd.hst.org.za
4. Approval for the study to proceed from the NWDoH
5. The NWDoH will provide access to the participants through the gatekeepers
6. Data collection can commence
7. Data analysis, completion of the dissertation
8. Feedback to the NWDoH

To progress with this collaboration, we request your favoured support for the students to follow this process.

Yours faithfully

Dr Christi Niesing
Africa Unit for Transdisciplinary Health Promotion (AUTHeR)

APPENDIX D: ETHICAL CLEARANCE



Private Bag X1290, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Fax: 018 299-4910
Web: <http://www.nwu.ac.za>

Senate Committee for Research Ethics
Tel: 018 299-484
Feziwe.Mseleni@nwu.ac.za

31 March 2023

ETHICS APPROVAL LETTER OF STUDY

Based on approval by the **Economic and Management Sciences Research Ethics Committee (EMS-REC)** on 31/03/2023, the Economic and Management Sciences Research Ethics Committee hereby **approves** your study as indicated below. This implies that the North-West University Senate Committee for Research Ethics (NWU-REC) grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: An investigation into the expenditure per patient day equivalent for public hospitals in North West Province, South Africa.

Study Leader/Supervisor (Principal Investigator)/Researcher: Dr Christl Niesing – MBA
Student: Cilliers N (25906755)

N	W	U	-	0	0	5	9	1	-	2	3	-	A	4
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Institution Study Number Year Status
Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation

Application Type:

Commencement date: 1/4/2023

Risk: Low

Expiry date: 1/5/2024

Approval of the study is initially provided for a year, after which continuation of the study is dependent on receipt and review of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation.

Special in process conditions of the research for approval (if applicable):

•

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, the following general terms and conditions will apply:

- The study leader/supervisor (principle investigator)/researcher must report in the prescribed format to the EMS-REC:
 - annually (or as otherwise requested) on the monitoring of the study, whereby a letter of continuation will be provided, and upon completion of the study; and
 - without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.
- The approval applies strictly to the proposal as stipulated in the application form. Should any amendments to the proposal be deemed necessary during the course of the study, the study leader/researcher must apply for approval of these amendments at the EMS-REC, prior to implementation. Should there be any deviations from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.

- *Annually a number of studies may be randomly selected for an external audit.*
 - *The date of approval indicates the first date that the study may be started.*
- In the interest of ethical responsibility, the NWU-SCRE and EMS-REC reserves the right to:*
- *request access to any information or data at any time during the course or after completion of the study;*
 - *to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process;*
 - *withdraw or postpone approval if:*
 - *any unethical principles or practices of the study are revealed or suspected;*
 - *it becomes apparent that any relevant information was withheld from the EMS-REC or that information has been false or misrepresented;*
 - *submission of the annual (or otherwise stipulated) monitoring report, the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and / or*
 - *new institutional rules, national legislation or international conventions deem it necessary.*

The EMS-REC would like to remain at your service as scientist and researcher, and wishes you well with your study. Please do not hesitate to contact the EMS-REC or the NWU-SCRE for any further enquiries or requests for assistance.

Yours sincerely,

**Mark
Rathbone**

Digitally signed by Mark
Rathbone
DN: cn=Mark Rathbone, o=North-
West University, ou=Business
management,
email=mark.rathbone@nwu.ac.za,
c=ZA
Date: 2023.04.25 16:02:53 +02'00'

Prof Mark Rathbone

Chairperson: NWU Economic and Management Sciences Research Ethics Committee

APPENDIX E: CONSENT FORM



Private Bag X1290, Potchefstroom
South Africa 2520
Tel: +2718 299-1111/2222
Fax: +2718 299-4910
Web: <http://www.nwu.ac.za>

INFORMED CONSENT DOCUMENTATION

TITLE OF THE RESEARCH STUDY: An investigation into the expenditure per patient day equivalent for public hospitals in the North West Province, South Africa

ETHICS REFERENCE NUMBERS: NWU-00591-23-A4

PRINCIPAL INVESTIGATOR: Dr Christ Niesing

POST GRADUATE STUDENT: Natasha Cilliers

ADDRESS: North-West University

CONTACT NUMBER: 083 268 5341

You are being invited to take part in a **research study** that forms part of our Masters in Business Administration. Please take some time to read the information presented here, which will explain the details of this study. Please ask the researcher or person explaining the research to you any questions about any part of this study that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you might be involved. Also, your participation is **entirely voluntary** and you are free to say no to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part now.

This study has been approved by the **NWU-Health Research Ethics Committee of the Faculty of Health Sciences of the North-West University (NWU-00591-23-A4)** and will be conducted according to the ethical guidelines and principles of Ethics in Health Research: Principles, Processes and Structures (DoH, 2015) and other international ethical guidelines applicable to this study. It might be necessary for the research ethics committee members or other relevant people to inspect the research records.

What is this research study all about?

- *We plan to determine the factors contributing to the high expenditure per patient day equivalent for public hospitals in the North West Province*
- *This study will be conducted through interviews via Microsoft Teams and will be done by experienced researchers.*

Why have you been invited to participate?

- *You have been invited to be part of this research because you have experience and knowledge in the calculation of the expenditure per patient day equivalent for public hospitals.*
- *You will unfortunately not be able to take part in this research if you don't have experience and knowledge in the calculation of the expenditure per patient day equivalent for public hospitals.*

What will be expected of you?

- *You will be expected to take part in a semi-structured interview with three main questions. The interview will be no longer than 2 hours. The interview will be scheduled for a time suited to you.*

Will you gain anything from taking part in this research?

- *There will be no direct gains for you in the study.*

Are there risks involved in you taking part in this research, and what will be done to prevent them?

- *The risks to you in this study are bias, data protection, confidentiality but will be limited by following the guidelines of AUTHeR and the NWU MBA*

What will happen with the findings or samples?

- *The findings of this study will only be used for this study and to write a policy brief for the NWDoH.*

Will you be paid to take part in this study and are there any costs for you?

No, you will not be paid to take part in the study because the NWDoH requested the study.

Is there anything else that you should know or do?

- You can contact Natasha at natasha1cilliers@gmail.com if you have any further questions or have any problems.
- You will receive a copy of this information and consent form for your own purposes.

Declaration by participant

By signing below, I agree to take part in the research study titled:.....

I declare that:

- I have read this information/it was explained to me by a trusted person in a language with which I am fluent and comfortable.
- The research was clearly explained to me.
- I have had a chance to ask questions to both the person getting the consent from me, as well as the researcher and all my questions have been answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be handled in a negative way if I do so.
- I may be asked to leave the study before it has finished, if the researcher feels it is in the best interest, or if I do not follow the study plan, as agreed to.

Signed at (*place*) on (*date*) 20....

.....
Signature of participant

.....
Signature of witness

Declaration by person obtaining consent

I (name) declare that:

- I clearly and in detail explained the information in this document to
.....
- I did/did not use an interpreter.
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research,
as discussed above
- I gave him/her time to discuss it with others if he/she wished to do so.

Signed at (place) on (date) 20....

.....
Signature of person obtaining consent

Declaration by researcher

I (name) declare that:

- I explained the information in this document to or
I had it explained by who I trained for this
purpose.
- I did/did not use an interpreter
- I encouraged him/her to ask questions and took adequate time to answer them
or I was available should he/she want to ask any further questions.
- The informed consent was obtained by an independent person.
- I am satisfied that he/she adequately understands all aspects of the research,
as described above.
- I am satisfied that he/she had time to discuss it with others if he/she wished to
do so.

Signed at (place) on (date) 20....

.....
Signature of researcher

APPENDIX F: LANGUAGE EDITOR



Certificate of Editing

This serves to confirm that copy-editing and proofreading services were rendered to

Natasha Cilliers

for

An investigation into the expenditure per patient day equivalent for public hospitals in North West Province, South Africa

on 24 November 2023

I am a member of the Professional Editors' Guild (member number MYB001; receipt IN106492 for the current financial year) and commit to the following codes of practice (among others):

- I have completed the work independently and did not sub-contract it out
- I kept to the agreed deadlines and/or communicated changes within reasonable time frames
- I treated all work as confidential and maintained objectivity in editing
- I did not accept work that could be considered unlawful, dishonest or contrary to public interest

The author requested language editing, which included the following:

- proofreading for mechanical errors such as spelling, punctuation, and grammar
- copy-editing that included commenting on, but not correcting, structure, organisation and logical flow of content and returning the document with track changes for the author to accept
- checking citation style is correct, punctuating as needed and flagging missing or incorrect references
- returning the document with track changes for the author to accept.

The author requested that the following should NOT be included in the copy-editing process:

- Format editing

I confirm that I have edited and proofread this dissertation. As the language editor, I am not accountable for any changes made to this document by the author or any other party after my edit. The content of the work edited remains that of the author.

A handwritten signature in black ink, appearing to read 'Charné Myburgh'.

Charné Myburgh



APPENDIX G: TURNITIN CERTIFICATES

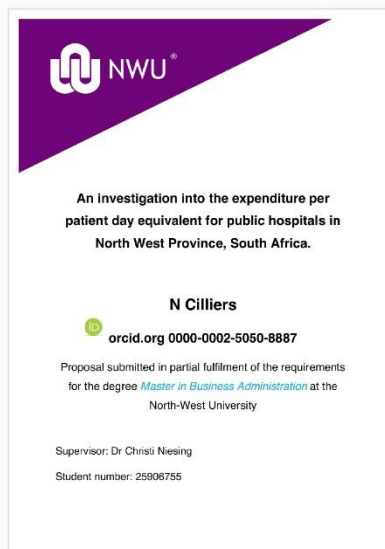


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CHAPTER 2: AN OVERVIEW OF EXPENDITURE PER PATIENT DAY EQUIVALENT AND THE SOCIAL DETERMINANTS OF SOUTH AFRICA

1.1 Introduction

Following the first chapter's establishment of the research foundation, including its background, aim, research problem, and methodology, Chapter 2 focuses on the literature surrounding expenditure per Patient Day Equivalent in public hospitals. This chapter provides an in-depth review of relevant literature, theories, and empirical studies, specifically emphasising the North West Province in South Africa. Examining the factors influencing PDE expenditure sets the stage for understanding resource allocation challenges in public healthcare institutions. This literature review informs our central research question: How can the factors influencing expenditure per PDE in North West Province public hospitals be managed more efficiently?

1.2 Social Determinants of Health

The World Health Organisation (WHO) defined health in 1946 as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". It is considered a fundamental right for all individuals, irrespective of race, religion, political beliefs, or socio-economic status, to enjoy the highest achievable standard of health. The health of all populations is not only vital for peace and security but also relies on the collaboration of both individuals and governments. The progress made by any nation in promoting and safeguarding health is beneficial to all, given the common risks posed by uneven development and the spread of diseases, particularly communicable ones. Recognising the significance of healthy child development and the dissemination of medical and psychological knowledge to all is crucial for overall health. Informed public engagement and cooperation are essential for enhancing the health of communities, and governments have a duty to provide adequate health and social measures to fulfil this responsibility.

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