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Postnatal Care Service Perceptions and Utilisation: Association with “Wheel of Life Saving Practices” Interpersonal Communication Tool in Dowa District, Malawi

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UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

FACULTY OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

POSTNATAL CARE SERVICE PERCEPTIONS AND UTILISATION: ASSOCIATION WITH "WHEEL OF LIFE SAVING PRACTICES" INTERPERSONAL COMMUNICATION TOOL IN DOWA DISTRICT, MALAWI

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IN PARTIAL FULFILMENT FOR THE AWARD OF

MASTER OF PUBLIC HEALTH

DATE: 19 June 2025

DECLARATION

I, Kondwani Peter Abrahams Makwenda, declare that this research report to being my own work, is being submitted for the degree of Master of Public Health (SBCC field) at the University of the Witwatersrand, Johannesburg. This research has never been submitted for any examination or degree at the University of the Witwatersrand or other Universities.



Date: 19 June 2025

DEDICATION

The research is dedicated to Precious Junior and Harmony Makwenda. I am optimistic that my work will motivate and inspire my son and my daughter for hard work in school.

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ABSTRACT

Background

The Wheel of Life-saving Practices (a.k.a. "Wheel") is an integrated Social and Behaviour Change Communication (SBCC) tool that was designed for interpersonal communication (IPC) campaign at health facility, community, and household levels in Malawi. The IPC was used to promote 22 different priority health behaviours/actions, including attending scheduled postnatal care (PNC) visits among others, targeting period from pregnancy to caregiver's life stage (first 1000 days of a child's life). Despite the campaign, no studies had evaluated the Wheel's effectiveness in influencing PNC visit perceptions nor measured the association of PNC visit perceptions with actual PNC visits in Malawi. The study was conducted to assess if exposure to the Wheel was associated with a more positive PNC visit perceptions and PNC visits among newborn caregivers in Dowa district, Malawi from May 2022 to May 2024.

Methods

The research employed a cross-sectional survey, conducted in Dowa from 19 to 25 May 2024. A sample of 255 adults (18 years and older) were interviewed from two rural Traditional Authorities (TAs) of Chakhaza and Dzoole, which used a multi-stage sampling technique. Collected data were cleaned using Microsoft Excel and analysed using STATA.

The study sample, PNC perceptions, Wheel exposure and PNC visit behaviours were characterised by descriptive statistics. Tests of association were used to test associations between Wheel exposure and PNC visit perceptions and PNC visit perceptions and PNC visit behaviours.

Pearson Chi-square tests were used for categorical variables, while Fisher's Exact Chi-squared and Chi-squared trending tests were used for ordered variable categories.

Results

Overall, 90% of the sampled population reported positive PNC visit perceptions. Socio-demographic variables associated with PNC visit perception were occupation (p-value = 0.001), income (p-value = 0.003) and PNC knowledge levels (p-value=0.003). Exposure to the Wheel was generally high, with 62% of the respondents reporting high exposure. with significant differences by education level (p-value=0.007), occupation (p-value=0.033) and income (p-value=0.045). Gender differences were also suggestive, with 58.56% of female caregivers exposed to the Wheel compared with 71.62 % of males, though not statistically significant (p=0.05).

The results indicated no association of Wheel exposure with PNC perceptions, while significant association of positive PNC visit perceptions with PNC visit behaviour (p-value=0.001).

Conclusion

The study found an adequate IPC campaign reach in Dowa, and a very strong and positive relationship of PNC visit perceptions with adoption of PNC visit behaviours as hypothesized by the IPC campaign. However, against expectations, exposure to the Wheel was not associated with PNC perceptions. This suggests the need for critical look at the campaign's theory of change that may need to be reviewed by the campaign designers. In the end, the study contributes health promotion campaigns and risk communication knowledge and scholarship as it has shown factors associated with IPC campaign reach and with PNC visit perceptions in Malawi, where such literature is scant.

Table of Contents

DECLARATION i
DEDICATION ii
ACKNOWLEDGEMENTS iii
ABSTRACT iv
Definition of terms ix
Abbreviations x
Figures xi
Tables xii
1.0 CHAPTER 1: INTRODUCTION 1
1.1. Chapter introduction 1
1.2. Background to the study 1
1.3. Statement of the problem 4
1.4. Justification of the study 4
1.5. The Research question 4
1.6. Study aim 4
1.7. Study objectives 5
1.8. LITERATURE REVIEW 5
1.8.1 Factors affecting utilisation of PNC 5
1.8.2 Postnatal care perceptions and utilisation 6
1.8.3 Post natal care services in Malawi 7
1.8.4 Evidence of Wheel as an interpersonal communication tool and PNC visits 7
1.9 Conclusion of the chapter 8
2.0 CHAPTER 2: METHODOLOGY 9
2.1. Introduction to the chapter 9
2.2. Design of the Study 9
2.3. Study Setting 9
2.4. Population of the study 10
2.5. Size of the sample size and sampling technique 10
2.6. The tool used for Data collection 11
2.7. Pilot testing 13
2.8. Collection of Data 13

2.9. Management of Data 13
2.10. Statistical analysis 14
2.11. Ethical Considerations 15
2.12. Conclusion of the chapter 17
3.0 CHAPTER 3: RESULTS 17
3.1. Introduction to the chapter 17
3.2. Study participants' socio-demographic characteristics 18
3.3 Caregiver's PNC visit perceptions based on Socio-demographic characteristics 19
3.3.1. Caregivers Knowledge of PNC and related services/outcomes 22
3.4. Exposure to the Wheel 22
3.5. Association between Wheel exposure and PNC visit perceptions and behaviour 24
3.6. Association between PNC visit perceptions and PNC visit behaviour 24
3.7. Chapter conclusion 25
4.0 CHAPTER 4: DISCUSSION 26
4.1. Introduction to the chapter 26
4.2. PNC visit perceptions 26
4.3. Wheel of Life-saving practices exposure and sociodemographic factors 29
4.4. Wheel exposure and PNC visit perceptions 30
4.5. PNC visit perception and PNC visit behaviour association 31
4.6. Study limitations 32
4.7. Conclusion of the chapter 34
5.0 CHAPTER 5: CONCLUSION AND RECOMMENDATIONS 35
5.1. Introduction to the chapter 35
5.2. Study Conclusion 35
5.3 Recommendations from the study 36
5.3.1. Policy recommendations 36
5.3.2. Programming recommendations 36
5.3.2. Research recommendations 38
References 40
APPENDIX 1: TURNITIN REPORT SIGNED BY THE SUPERVISOR 55
APPENDIX 2: DECLARATION OF PLAGIARISM 56
APPENDIX 3: STUDY QUESTIONNARE 57
APPENDIX 4: INFORMATION SHEET (ENGLISH) 66

APPENDIX 5: INFORMATION SHEET (CHICHEWA)..... 69
APPENDIX 6: INFORMED CONSENT SHEET (ENGLISH)..... 73
APPENDIX 7: INFORMED CONSENT SHEET (CHICHEWA) 76
APPENDIX 8: MALAWI'S NHRC ETHICS CERTIFICATE 79
APPENDIX 9: HREC- MEDICAL ETHICS CERTIFICATE..... 80
80

Definition of terms

First 1000 days: The period beginning from pregnancy to two years of age of a child.(1)

Interpersonal communication (IPC): The social interaction between people. using non-verbal dissertation and verbal actions, including written dissertation, for a variety of influential and communication goals that include informing, persuasion in this case to achieve behaviour change.(2)

Postnatal period: The first six weeks period post childbirth.(2,3)

Postnatal care visit: presence of a mother who has given birth and her child (if available together with a spouse) at a health facility, within 24 hours and at six weeks post-delivery, for the purpose of being assessed by a skilled health worker.(3)

Postnatal care services: Assessments and preventive care practices targeting mothers and their newborns in the first six weeks after birth intended to identify and manage maternal and newborn complications to ensure optimum health.(3,4)

The Wheel of Life-saving Practices (a.k.a. "Wheel"): An integrated Social and Behaviour Change Communication (SBCC) tool with 22 priority health behaviours critical for the period from pregnancy to caregiver's life stage (the first 1000 days), used at a health facility, community, and household levels to enable Interpersonal Communication, and conduct follow-up support to the first 1000 days targeted audiences.(5)

Abbreviations

ANC	Antenatal Care
DHO	District Health Office
ID	Identification
IPC	Interpersonal Communication
LBW	Low Birth Weight
MD	Maternal Death
MDHS	Malawi Demographic Health Survey
MMR	Maternal Mortality Rate
MCH	Maternal and Child Health
MK	Malawian Kwacha (currency)
MNCH	Maternal and Neonatal Child Health
NHSRC	National Health Sciences Research Committee
NND	Neonatal Death
NNMR	Neonatal Mortality rate
PNC	Postnatal Care
PNFP	Postnatal Family Planning
SBCC	Social and Behaviour Change Communication
SDGs	Sustainable Development Goals
TA	Traditional Authority (group of villages)
WHO	World Health Organization
ZAR	South African Rand (currency)

Figures

Figure 1: The Wheel of life-saving practices……. Page 2

Figure 2: IPC session during home visit - inside the house……..... Page 3

Figure 3: One of the IPC cards - used during home visits…….…. Page 3

Figure 4: Bar graph showing overall PNC visit perception……... Page 19

Figure 5: Exposure to the Wheel of Life-saving practices…….……... Page 22

Figure 6: PNC visit perception vs PNC visit behaviour…… Page 24

Tables

Table 1: Scales and sub-scales used to measure different areas of the study……. Page 11

Table 2: Statistical analysis conducted for each study objective……..……...Page 15

Table 3: Sample socio-demographic characteristics and PNC knowledge ….…...… Page 19

Table 4: Caregiver's PNC visit perceptions based on Socio-demographic characteristics and PNC visit knowledge……..... Page 21

Table 5: Caregiver's exposure to the wheel based on Socio-demographic characteristic……. Page 23

1.0 CHAPTER 1: INTRODUCTION

1.1. Chapter introduction

In this chapter the study background, the Wheel of Life-saving practices and postnatal care in Malawi will be presented. The problem statement and study justification are also presented, followed by the aim, specific objectives and the research question, that guided the study. Literature review discourses literature relevant on postnatal care perceptions and utilisation and their associated factors, Wheel use and evidence of its significance in interpersonal communication.

1.2. Background to the study

The World Health Organization (WHO) recommends Postnatal Care (PNC) to alleviate maternal and neonatal deaths.(6–8) Poor or non-utilisation of PNC leads to failure to recognize complications and danger signs, leading to morbidity and mortality. Yearly, about 1.16 million babies in Africa die in the first month of life – and 850,000 of them die before their first birthday.(9–11) After the first week of life, thirty-eight per cent of babies in sub-Saharan Africa die of infections.(12). Poor and non-utilisation of PNC lead to poor or non-utilisation of child health services, as the child grows, usually at six weeks for subsequent growth monitoring and first immunization, which can lead to morbidity and mortality. This can further, negatively influence other Maternal, Neonatal and Child Health (MNCH) programs as the continuum of care progresses. For example, the inadequate healthy home behaviours support, such as breastfeeding, can affect ongoing effects on the child nutrition.(13)

In the Malawi context, PNC comprises preventive care practices and assessments conducted by health professionals, intended to identify and manage maternal and newborn complications during the first six weeks after birth to ensure optimum health for the mother and her

infant.(3,14) PNC utilisation in Malawi is low at 48.4%, despite high (96%) PNC coverage as reported by the Malawi Demographic Health Survey (MDHS) 2015/2016.(15,16) The 2015-2016 MDHS reported that the Maternal Mortality Rate (MMR) was at 634/100,000 live births, which was much higher than the average of 546 of the sub-Saharan region in the same years. Twenty-two deaths/1000 live births were the reported Neonatal Mortality Rate (NNMR), which was slightly lower than a sub-Saharan average of 29. The MMR and NNR in Malawi are much higher than the Sustainable Development Goal number 3 (SDG 3) target of less than 70 MMR and less than 12 NNMR by 2030 respectively.(17–20)

The "Wheel of Life-saving practices" (herein referred to as the Wheel) is an Interpersonal Communication (IPC) tool that was developed by Malawi Ministry of Health implementing partners to support front-line community workers to promote desired health behaviours on Maternal, Neonatal and Child Health (MNCH), including attending PNC visits.(21) The tool has been in use since 2019 to date in 16 out of the 24 districts of Malawi.(21) As shown in Figure 1, The Wheel has three sections, namely: 1) Pregnancy (that focuses on pregnancy period from ANC to delivery of the child), 2) The first two years of the child's life (that focuses on period from birth to two years

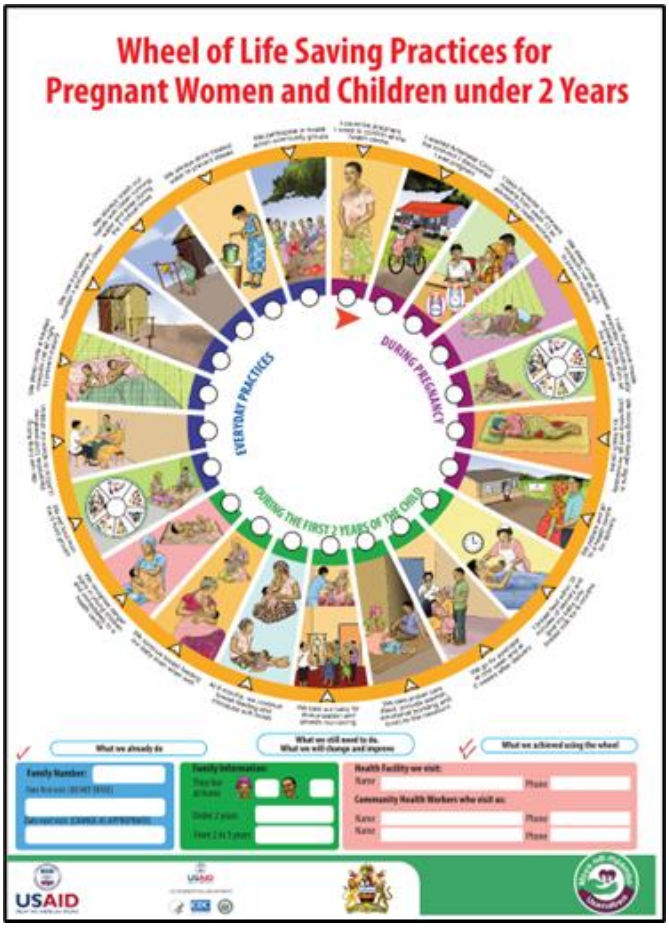


Figure 1: The Wheel of life-saving practices

of age) and 3) Everyday practices (that focuses on period from pregnancy to two years age of the child with target on everyday practices). Each section includes seven key behaviours related to maternal and infant nutrition, malaria prevention and treatment, antenatal and postnatal care, immunization, recognizing and acting on danger signs related to infant illnesses, hygiene practices and family planning. Of particular interest to this study was the second section, which includes messages about attending PNC visits according to schedule.

As seen in Figure 2, the frontline community worker gives the family a durable vinyl Wheel Poster with 22 practices (small doable actions) (printed in A1 size to enhance legibility) that can be hung on the wall, during(22) The community workers also use IPC cards to guide their conversations, such as shown in Figure 3.



Figure 2: IPC session during home visit - inside the house

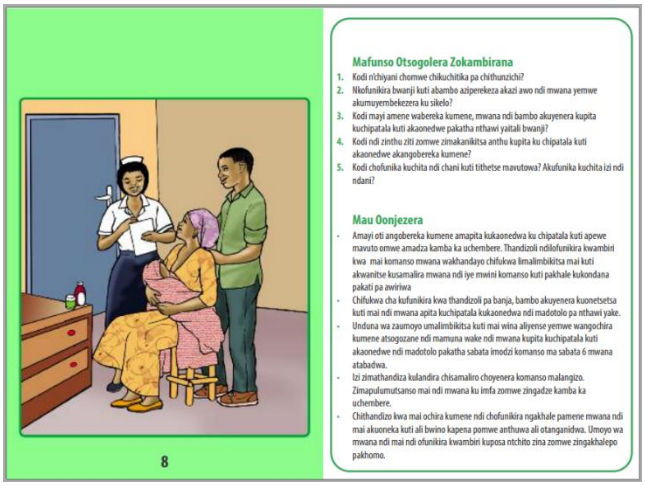


Figure 3: One of the IPC cards used during IPC session

1.3. Statement of the problem

Enhancing postnatal care services by improving acceptability, quality, accessibility, affordability and coverage has been identified to address Malawi's high maternal and neonatal mortality rates, as detailed earlier. The 2015-2016 MDHS reported that while 96% of rural women lived in a place within 10km to health facilities offering PNC services, only 48.4% utilized the services, compared to 64% in the urban settings.(23)This is of concern, because majority (80%) of men and women live in rural areas in Malawi and PNC utilisation remains low in rural areas compared to urban areas.(24)

1.4. Justification of the study

This study proposed to focus on a rural area, Dowa, where PNC utilisation was extremely low (13.7%) for mothers assessed within 48 days of birth.(25) While various studies have investigated at issues associated with the uptake of PNC services in Malawi (26–29), none had been done in Dowa when this study was conceived. This district was also of interest, because the Wheel had been implemented in Dowa. There had been no study that assessed PNC visits in association with exposure to the Wheel.

1.5. The Research question

The study's key research question was: "What effect does the Wheel have on newborn caregiver PNC visit perceptions and behaviours in Dowa district, Malawi, in 2024?" with a secondary question: "Are PNC visit perceptions associated with PNC visit behaviours?"

1.6. Study aim

The overall aim of the study was to assess if exposure to the Wheel was associated with a more positive PNC visit perceptions associated to those unexposed to the Wheel among newborn caregivers in Dowa district, Malawi from May 2022 to May 2024.

1.7. Study objectives

The study was guided by the following specific objectives:

1. To describe newborn caregiver perceptions of PNC visits using socio-demographic characteristics, in Dowa district, Malawi from May 2022 to May 2024.
2. To describe newborn caregiver exposure to the Wheel by socio-demographic characteristics, in Dowa District, Malawi from May 2022 to May 2024.
3. To examine the association between newborn caregiver exposure to the Wheel and PNC visit perceptions, in Dowa district, Malawi from May 2022 to May 2024.
4. To examine the association between PNC visit perceptions and PNC visits among caregivers of newborns in Dowa district, Malawi from May 2022 to May 2024.

1.8. LITERATURE REVIEW

This chapter section discourses literature relevant to the study and gaps that exist. The section discusses PNC, its perceptions and associated factors; Evidence on use of the Wheel in interpersonal communication and associated factors on PNC; and PNC visit behaviours and their association with PNC visit perceptions.

1.8.1 Factors affecting utilisation of PNC

Different factors affect utilization of PNC at different levels of the world. The section presents factors affecting utilization at global, regional, local including community and household levels

1.8.1.1 Factors at Global level

Globally, more than three in 10 women and their babies currently, do not receive postnatal care as scheduled after birth.(3,30) The factors affecting PNC utilisation vary according to location and country, globally. According to an integrated review of literature from developing countries, determinants of high utilisation include postnatal maternal and neonatal complications and low

education levels, while low utilisation is associated with working-class occupations and women participation with their husbands (male involvement) in PNC.(31)

1.8.1.2 Factors at Regional – Africa level

Different factors have been found to influence PNC utilisation in African contexts, including the Sub-Saharan region. According to literature review of studies conducted in Sub-Saharan region, that used different designs such as exploratory study design using interviews, the factors include residing in urban areas, being older, having a higher education level, occupation, exposed to media, access to health care, attending antenatal care (ANC) visits, facility (vs. home) delivery, a higher monthly household income, having a live birth outcome (versus still birth), and wanted pregnancy.(12,32,33)

1.8.1.3 Factors at community and household level

Different socioeconomic factors affect the utilization of PNC services at community and household level. According to integrated review of studies, some of which used an electronic database to search behavioural factors, others used survey interviews, others secondary data reviews, found accessibility; knowledge and awareness, socioeconomic status, empowerment of women, cultural and traditional beliefs and practices, affecting PNC service utilization.(4,34–37)

1.8.2 Postnatal care perceptions and utilisation

Globally, mothers generally have positive perceptions towards postnatal care.(38) Studies in different countries on PNC perception,(6,39–41) indicate that mothers have positive PNC provided by health care workers at a health facility.(6,39–41) Positive perceptions are associated with quality(6,42), where interpersonal relations and IPC between health care workers and newborns caregivers, room conditions, and general nursing care, encourage PNC utilisation.(43)

Unsurprisingly, low exposure to health messages on the benefit and timing of PNC are associated

with negative perceptions/attitudes.(36,38,44) Negative perceptions are associated with additional barriers such as PNC supply-side dynamics **(**geographic accessibility, long waiting times, health services availability, affordability, including opportunity costs) and service acceptability (assertiveness and self-esteem of women, cultural and community norms).(45) Despite the barriers, studies indicate that positive motherhood (wanted pregnancies that lead to positive attitudes towards the pregnancy and its outcomes) that includes autonomy, self-esteem and self-reliance, is a predictor for postnatal care service utilisation.(40,41). Additionally, gaining health and wellbeing for the mother-infant pair, good family relationship and intimacy are important in this period.(46)

1.8.3 Post natal care services in Malawi

Much like the research coming from the region, in Malawi, generally there is high utilisation of PNC services among older, literate women, those who have a perceived high risk of a wound from their caesarean sections and those who efficiently utilize ANC services.(47) PNC in Malawi is also associated with being employed, living in urban area and receiving recommended number of tetanus vaccines.(24) However, quality of care is a crucial predictor of PNC services utilisation and has a bearing on patient satisfaction with such services.(48)

1.8.4 Evidence of Wheel as an interpersonal communication tool and PNC visits

The Wheel enables negotiated counselling in places where it has been used successfully, such as Guatemala and Uganda. It has increased the uptake of crucial health behaviours, including PNC utilisation.(22) Similar evidence does not yet exist for Malawi. Packaged with a set of cue cards, the Wheel assists and enables community mobilizers and community health workers to probe and ask questions while allowing priority audiences to identify solutions on their own. As the family moves through pregnancy and the first two years of a child's life, at the household level community mobilizers conduct scheduled home visits to encourage implementation of health

behaviours using the Wheel. The Wheel provides systematic IPC for PNC which offers the needed relationship between health care workers and the caregivers.(21) The community health worker discusses the family's progress in the subsequent visits and marks the achieved desired behaviours and agree on further practices the family is willing to try to advance or adapt.(21,49)

1.9 Conclusion of the chapter

This chapter outlined the study background, statement of the problem, the research question, aim and specific objectives, and discussed relevant literature to the study. It highlighted how exposure to the Wheel relates with PNC visit perceptions as established in previous studies.

Further, the chapter discussed people's PNC visit perception as being important g on their level of adherence to all the PNC scheduled visits for the mother their newborn to monitor and improve their health. Literatures also highlighted, that PNC visit has other important factors associated with it that impact on adherence to all the scheduled visits.

2.0 CHAPTER 2: METHODOLOGY

2.1. Introduction to the chapter

In this chapter presents the methods that were used to answer the study's aim and specific objectives will be presented. Further, the chapter discusses the study population, study design, data collection, sample size and sampling methods, scales used to measure variables and the analyses that was used to analyse the results.

2.2. Design of the Study

The study used a cross-sectional survey design. A cross-sectional study design can measure the exposure-health outcome relationship by generating a one-time scenario snapshot in each population at a specified time.(50,51) Further, this design is relatively cheaper than case control designs but can measure several outcomes and exposures from a one study and be able to test the hypotheses.

2.3. Study Setting

As mentioned in Chapter 1, Dowa district had a PNC utilisation prevalence of 13.5%, as at the end of 2020, as reported in 2020 through DHO program reports.(25) Dowa district located 38 kilometres away from Lilongwe, Malawi's capital city, has coverage of 3,041 km² with a population of 883,273 with 435,724 males (49%) and 447,548 females.(51%).(52) The people's economy depends on agriculture on tobacco and groundnuts farming with maize and sweet potatoes as the main food crops.(53)

The study was conducted in two Traditional Authorities (TAs), Chakhaza and Dzoole, as these were the only TAs in the district where the Wheel had been implemented, according to the HC4L project. The Wheel had been in use since 2019.(50,51)

2.4. Population of the study

The study drew all caregivers of infants born from 2022 till May 2024 (when the study took place), including both those exposed and non-exposed to the Wheel. The caregivers had to be 18 years or older. Caregivers with infants born before 2022 in both TAs were excluded, as they were older than 2 years (the target age of the children in the study).

2.5. Size of the sample size and sampling technique

The study used a targeted STATA calculated sample size, under the assumption that 60% of those exposed would have a more positive PNC utilisation perception compared to 40% in the unexposed group. Further, the calculation employed the power of 0.8 and alpha of 0.05, as mostly and widely used and accepted.(54,55) The sample size tabulated by STATA was 214, which accounted for a 10% estimated refusal rate, adjusted to 235 participants, as a desired sample size.(56–58)

Two-staged sampling was applied. Firstly, purposeful sampling was applied to identify households with children born in 2022 in the two TAs with an estimated frame of 235 households.(59) This was done by getting the village register from the Health Surveillance Assistant (HSA) or asking the chief about households with a child born from 2022. Challenges of incomplete registers was a limitation with the routinely collected data and was dealt with by cross-checking with the village leaders/chief.

Secondly, the study used systematic sampling to select every third household from all the villages in the two TAs. Any eligible caregiver (mother and/or a father) from the systematically sampled households was/were enumerated to participate. When both caregivers were at the household during the data collection, each of them was enumerated for the survey interview. When the randomly sampled respondent was not home during the study time and not reachable, the next eligible household was selected.

2.6. The tool used for Data collection

Data was collected using an administered structured questionnaire (see Appendix 3). The study objectives and study methodology informed the development of the questionnaire. The questionnaire was designed specifically for this study and had five sections. The first section inquired about the social and demographic characteristics; the second section asked about the respondents' exposure to the Wheel. On exposure, the questionnaire further sought to understand how often the respondents were exposed to the Wheel, from what sources and which source was trusted and why; the third section inquired about the respondents' knowledge of PNC and other related PNC outcomes such as Immunization, Growth Monitoring and Postpartum Family Planning (PPFP); the fourth section sought to understand the respondents' PNC visit perceptions; and the last section asked respondents about their PNC visit behaviour. Socio-demographic variables included were sex, marital status residential location, religion, highest education and wealth status (earning less or equal to K5000(ZAR 52) per day). All these were categorical variables, except for age.

Table 1: Scales used to measure different areas of the study

Scale	Measurement areas			
	Number of items	**Response items and their scores**	**Categorization for analysis of scales (using the scores)**	
EXPOSURE	One (1)	No (0), Yes (1)	Not exposed (0)	Exposed (1)
LEVEL OF EXPOSURE TO THE WHEEL	Ten (10)	Never (1), Not very often (2), Once monthly (3), Twice monthly (4), More than twice monthly (5)	Low exposure (10 -25 scores)	High exposure (26 -50 score)
PNC VISIT PERCEPTIONS	Four (4)	Very negative (1), Negative (2), Moderate (3), Positive (4) Very Positive (5)	Low (Negative) (4-15)	High (Positive) (16-20)
PNC VISIT BEHAVIOUR	Five (5)	Yes (1) No (0)	Occasional PNC visit behaviour (2 or less visits)	Frequent PNC visit behaviour (3 – 5 visits)
KNOWLEDGE OF PNC & RELATED SERVICES	Eight (8)	False (0), True (1), Don't know (0)	Low to Medium knowledge (Zero to 4 **Yes** responses)	High (More than 5 **Yes** responses)

The study used several scales to measure key concepts, including exposure to the Wheel and level of exposure, PNC visit perception, PNC visit behaviour, and knowledge of PNC other related services such as Immunization, Growth Monitoring and PNFP; and PNC visit behaviours.(60,61) Table 1 shows how these were used to measure the different study variables.

Exposure to the Wheel was measured in two ways. Firstly, it was measured as any exposure (Yes/No). Secondly, level of Exposure was measured along a spectrum using a ten-item scale. Total scores for Level of Exposure were from 10 to 50. Scores totalling below 25 were categorized as Low while scores between 26 to 50 were categorized as High Exposure.

A five-item scale was used to measure PNC Visit Perception, whose responses documented with a five-point Likert scale (1= very negative, 5= very positive). This scale was adapted from a validated Chinese scale.(62) The PNC Visit Perception scores were from 5 to 20. The score was categorized as Positive for total score of 16 -20 and Negative for total score of 15 and below, for each respondent.

PNC Behaviour was assessed using five questions on the different scheduled PNC visits. Attendance was assessed through "Yes" or "No" responses related to the five different scheduled PNC visits/services: 1. one week after delivery, 2. six weeks after delivery, 3. attending immunization and Growth monitoring at 6 weeks age of the baby and thereafter, 4. Receiving Family Planning counselling, and 5. Started using a modern contraceptive of choice). The highest score was 5 (all 5 PNC visits) and the lowest was 1 (any PNC visit). Responses were categorized into Occasional PNC visit behaviour (2 or less PNC visits) and Frequent PNC visits (3 to 5 PNC visits).

Knowledge of PNC and other related outcomes such as Immunization, Growth Monitoring and PNFP was measured using an eight-item scale; based on items developed and validated by

Tesfahun et al.(63), with response options of “True”, “False” or “I don’t know” assigning one point for correct question (otherwise 0). Total knowledge was reported as Low (Zero to 2 **Yes** responses) to medium knowledge (3 to 4 **Yes** responses) and High knowledge (more than 5 Yes responses).

2.7. Pilot testing

The questionnaire was pilot tested to check the sampling technique practicality the in the study and to assess above-mentioned scales’ reliability. Sampling for the pilot test applied the sampling frame described earlier, with individual participants randomly selected from each Traditional Authority. It was found that the sampling frame and sampling techniques were found to be feasible. A total of 24 people were sampled. The alpha coefficient for PNC visit knowledge scale was 0.75, for Wheel exposure was 0.74, for PNC behaviour was 0.75 and for PNC visit perception was 0.69. The data from the pilot study were included in the main study.

2.8. Collection of Data

Four trained data research assistants collected data using structured questionnaires which they administered from 19 to 25 May 2024. The principal investigator trained the research assistants on the tool and the protocol. One lead Research Assistant had a degree in Statistics, another a degree in Social Science majoring in Gender and Development studies while the other two had diplomas in Journalism and Communication respectively and were trained for one week. They comprised two males and two females. Data was collected using tablets directly into Research Electronic Data Capture (REDCap). REDCap is a research electronic data capturing tool highly secure and intuitive and secure used in taking data and creating databases and projects.

2.9. Management of Data

Data security, safety, and privacy of the data was ensured by training of the research assistants entering data directly into REDCap. The primary study investigator had daily meetings with

the research assistants at the end of the day, during the data collection period, to verify the data quality and deal with any missing data. Missing information due to respondents' voluntary withdraw or voluntary withholding of information, was replaced by ensuring that research assistants set another time to meet the respondent and re-administer the missing sections. After completion of data collection, data cleaning was done in REDCap and exported to Microsoft Excel. Basic post-coding was done in Excel by the primary study investigator and one research assistants. Data was then imported into STATA and analysed. However, most post coding and recoding of scales, was done in STATA.

After data coding, tests of normality were done to establish which type of statistical tests to use. Data that was cleaned and recoded in STATA was exported to Microsoft Excel. After data analysis was completed, data was then stored in Google Drive for safekeeping.

2.10. Statistical analysis

Different independent and dependent variables were used to answer the study objectives. Data analyses was conducted using STATA 18.0. The analysis used statistical significance of $p<0.05$. The summary of analyses for each objective done is presented in table2.

Descriptive statistics was used for objective 1 and 2 and were summarized as proportions for categorical variables and continuous variables used range median, and interquartile range. Tests of association for objective 3 and 4 used bi-variate tests using Pearson Chi-square test for categorical variables, depending upon expected cell counts and whether the variable categories were ordered, Pearson's chi-square, Fisher's exact chi-squared and Chi-squared trending test were used.

Pearson Chi-square test for objective 3, to measure association between PNC visit perceptions and Wheel exposure. The same with objective 4, Pearson Chi-square test was used to measure association between PNC visit perceptions and PNC visit behaviour. The association between

the two scales of PNC visit behaviours and PNC visit perceptions also used Pearson Chi-square test.

Table 2: Statistical analysis conducted for each study objective

Objective	Dependent variable(s)	Independent variables	Descriptive and Analytic tests
1. To describe newborn caregiver perceptions of PNC visits using socio-demographic characteristics in Dowa district, Malawi.	• PNC visit perceptions	Socio demographic variables (e.g., Gender, Religion, Education, Marital status, Wealth, Occupation, Residential location) and Knowledge	○ Descriptive analysis (frequency tables and percentages) ○ Chi-square test
2. To describe newborn caregiver exposure to the Wheel by socio-demographic characteristics, in Dowa District, Malawi	• Exposure to the Wheel (Yes or No)	Socio demographic variables (e.g., Gender, Religion, Education, Marital status, Wealth, Occupation, Residential location) and Knowledge	○ Descriptive analysis (frequency tables and percentages) ○ Chi-square test
3. To examine the association between newborn caregiver exposure to the Wheel and PNC visit perceptions, in Dowa district, Malawi	• Exposure to the Wheel	PNC visit perception	○ Chi-square test of association (Pearson, Fishers and Chi-square Trending tests)
4. To examine the association between PNC visit perceptions and PNC visits among caregivers of newborns in Dowa district, Malawi	• PNC visit behaviour	• PNC visit perception	○ Chi-square test of association (Pearson, Fishers and Chi-square Trending tests)

2.11. Ethical Considerations

All respondents were given Chichewa information and consent forms, translated from the English version (Appendices 4 - 7), because Chichewa is the local language understood by all in the study area. The information sheets invited them to participate in the study and provided

information on the purpose of the study, nature and processes, and the approximate duration to complete administering the questionnaire. The information sheet informed the respondents that participation was voluntary, and that there would be not any penalty or loss of benefits if they chose not to participate. The questionnaire was administered by well-trained research assistants. Information about the nature, title and purpose of the study including processes involved was provided to those that decided to participate, through the consent forms.

Contact details of the principal investigator, his supervisors and chairpersons for University of Witwatersrand's Human Research Ethics Committee (Medical) and Malawi's National Health Science Research Committee were provided on both forms. The approval of the study by two human research ethics committee was communicated to the respondents, to enable them to contact the ethics committees if they needed further information or were concerned about any aspect of the study.

Information that participants' personal information would be treated in the strictest confidence, and that would only be available to this researcher and supervisors, with only rare exceptions where it is required by law or by research ethics committee to respond to formal complaints to do with the study, was shared with the participants. As such, the informed consent included the confidentiality agreement done before data collection.

Finally, respondents were informed that there were no direct benefits for their participation in the study. However, they were informed of a possibility of more effective health promotion campaigns for effective communication about PNC complications and enhancing adherence scheduled PNC visits, as the longer-term objective of the study.

The study was ethically cleared by the University of the Witwatersrand's Human Research Committee-Medical (Certificate No.M220507, Appendix 8) and Malawi's National Health

Sciences Research Committee (Certificate No. 24/01/4321, Appendix 9) before data collection.

2.12. Conclusion of the chapter

Methods used to answer the four specific study objectives were discussed in the chapter. The study design, desired sample size, study population, sampling methods, data collection, including variables scales and the analysis types were also presented in the chapter. The study used Pearson's Chi-square tests to test independent factors associated with dependent variables of interest in the study.

3.0 CHAPTER 3: RESULTS

3.1. Introduction to the chapter

Results of the study are presented in this chapter. It starts by providing socio-demographic characteristics of the study sample and then results on each of the four study objectives: To describe newborn caregiver perceptions of PNC visits using socio-demographic characteristics; To describe newborn caregiver exposure to the Wheel by socio-demographic characteristics; To examine the association between newborn caregiver exposure to the Wheel

and PNC visit perceptions and To examine the association between PNC visit perceptions and PNC visits among caregivers of newborns in Dowa district, Malawi.

3.2. Study participants' socio-demographic characteristics

Table 3 presents the overall socio-demographic characteristics of the Dowa, TAs Chakhaza and Dzoole residents in the sample population (n=255). The sample comprised of caregivers aged between 18 and 68, with an average age of 29.

Most caregivers were from the Traditional Authority (TA) Chakhaza (73.73%). Most caregivers in the sample were females (70.98%), married (79.22%), with the majority (76.08%), attaining primary education or below. The vast majority were Christians (94.90%). The most common employment was farming (67.45%), and the majority (80.00%) earned less or equal to K5000 (ZAR 52) per day. The majority (60%) had high PNC knowledge compared with (40%) with low to medium PNC knowledge.

Table 3: Sample socio-demographic characteristics and PNC knowledge

Characteristic variable		Sample size (n) (%)
Gender	**Male**	74 (29.02)
	Female	181 (70.98)
Residential area	**Chakhaza**	188 (73.73)
	Dzoole	67 (26.27)
Education level	**Secondary-and above**	61 (23.92)
	Primary-and below	194 (76.08)
Marital status	**Married**	202 (79.22)
	Single	12 (4.71)

	Widowed	11 (4.31)
	Divorced	30 (11.76)
Religion	**Christianity**	242 (94.90)
	Muslim/other	13 (5.10)
Occupation	**Farmer**	172 (67.45)
	Laborer	44 (17.25)
	Other	39 (15.29)
Income	**<=K5000 (ZAR 52)**	204 (80.00%)
	>K5000 (ZAR 52)	51 (20.00%)
Knowledge levels	**Low knowledge**	12 (4.71)
	Medium Knowledge	90 (35.29)
	High Knowledge	**153 (60.00)**

3.3 Caregiver's PNC visit perceptions based on Socio-demographic characteristics

In response to Objective 1, most caregivers in the study sample had positive perceptions about PNC visits and services, with 90.20% reporting positive perceptions about the importance of PNC (see Figure 4).

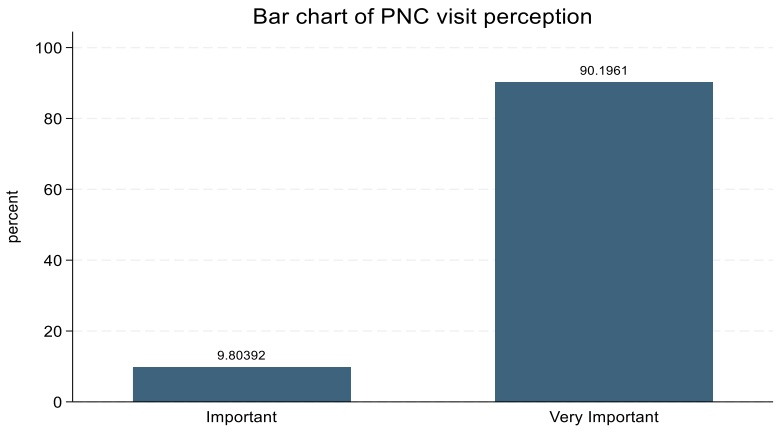


Figure 4: Bar graph showing overall PNC visit perception

Less than 2% of participants reported that PNC is not important at all. Table 4 shows that PNC visit perceptions did not differ significantly by age, gender, religion, marital status, education and wealth with differences in PNC visit perception.

The table generally shows that overall, caregivers had extremely positive perceptions of PNC visit, where in most cases positive perceptions were 80% or higher, except for 'other' types of occupation, which still fell at nearly 75%. To delve deeper into nuances, differences in overall

positive perceptions were explored by socio-demographic characteristics, as presented in Table 4. The characteristic variables which are significantly associated with the PNC visit perception were Occupation (p-value = 0.001), Knowledge levels (p-value=0.003) and Income (p-value = 0.003) and more specifically, those with an occupation 'Other' than farmer or labourer were less positive than their counterparts. Similarly, those with a higher income (>K5000) and those with low to medium knowledge were less positive.

Table 4: Caregiver's PNC visit perceptions based on Socio-demographic characteristics and PNC visit knowledge

Characteristic variable		Sample size (n)	PNC visit perception (PNC importance)		P-value
			Important	*Very Important*	-
			n (%)	*n (%)*	
			25 (9.80)	*230 (90.20)*	
Gender	**Male**	74	10 (13.51)	64 (86.49)	0.203
	Female	181	15 (8.29)	166 (91.71)	
Residential area	**Chakhaza**	188	20 (10.64)	168 (89.36)	0.453
	Dzoole	67	5 (7.46)	62 (92.54)	
Education level	**Secondary-and above**	61	9 (14.75)	52 (85.25)	0.136
	Primary-and below	194	16 (8.25)	178 (91.75)	
Marital status	**Married**	202	19 (9.41)	183 (90.59)	0.376
	Single	12	0 (0.00)	12 (100.00)	
	Widowed	11	1 (9.09)	10 (90.91)	
	Divorced	30	5 (16.67)	25 (83.33)	
Religion	**Christianity**	242	24 (9.92)	218 (90.08)	0.629
	Muslim/other	13	1 (7.69)	12 (92.31)	
Occupation	**Farmer**	172	12 (6.98)	160 (93.02)	0.004
	Labourer	44	3 (6.82)	41 (93.18)	
	Other	39	10 (25.64)	29 (74.36)	
Income	**<=K5000**	204	13 (6.37)	191 (93.63)	**<0.001**
	>K5000	51	12 (23.53)	39 (76.47)	
Knowledge levels	**Low Knowledge**	12	3 (25.00)	9 (75.00)	**0.002**
	Medium knowledge	90	14 (15.56)	76 (84.44)	
	High Knowledge	153	8 (5.28)	145 (94.77)	
PNC visit behaviour	**Infrequent**	21	7 (33.33)	14 (66.67)	**0.024**
	Occasional	113	8 (7.08)	105 (92.92)	
	Frequent	121	10 (8.26)	121 (91.74)	

Note: used Pearson's chi-square, Fisher's exact chi-squared and Chi-squared trending test depending on expected cell counts and whether the variable categories were ordered

3.3.1. Caregivers Knowledge of PNC and related services/outcomes

Caregivers' knowledge about PNC and other related services/outcomes such as immunization and growth monitoring were measured using a scale, Table 1 also includes specifics about individual items. From Table 3 and 4 results show high (60.00%) knowledge about PNC, the visits and the related services/outcomes such as immunization, growth monitoring for the child and Family Planning (FP) for the mother. These results are suggesting a relatively clear consensus among respondents, with most agreeing with individual statements. From this we conclude that most of the caregivers have knowledge about PNC and other related services/outcomes.

3.4. Exposure to the Wheel

Objective 2 looked at caregiver exposure to the Wheel based on the socio-demographic characteristics. Overall, most study participants (62.35%) were exposed to the Wheel, compared to 37.65% who had never heard of the Wheel, as shown in Figure 5.

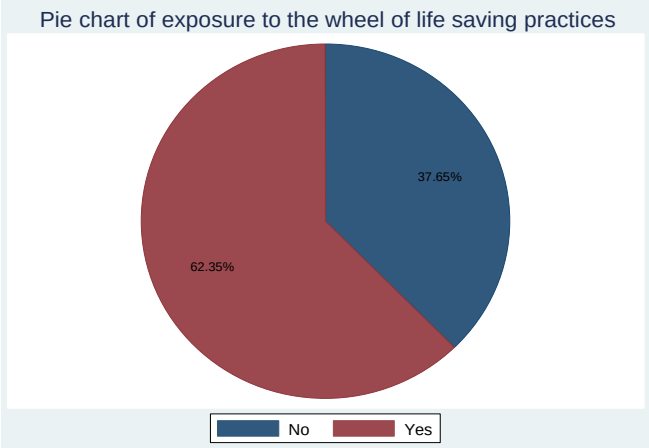


Figure 5: Exposure to the Wheel of Life-saving practices.

Sub-analysis of exposure by socio-demographic characteristics, as shown in Table 5 identified significant differences by education level, income level and occupation. Specifically, those with a higher education (77.05%) were more likely (p=0.007) to be exposed than those with lower educational attainment (57.73%). So too, those with higher income (74.51%) were more likely (p=0.045) to be exposed than those with low income (59.31%). So too, those with other better occupation (79.49%) were more likely (p=0.033) to be exposed than farmers (57.56%).

Gender differences were also suggestive, with 58.56% of female caregivers exposed to the Wheel compared with 71.62% of males, though not statistically significant (p=0.05), where significance was set at <0.05.

Table 5: Caregiver's exposure to the wheel based on Social-demographic characteristics

Characteristic variable		Sample size (n)	Wheel Exposure		p-value
			Yes	***No***	
			n (%)	***n (%)***	
			159	**96**	
Gender	**Male**	74	53 (71.62)	21 (28.38)	0.051
	Female	181	106 (58.56)	75 (41.44)	
Residential area	**Chakhaza**	188	123 (65.43)	65 (34.57)	0.090
	Dzoole	67	36 (53.73)	31 (46.27)	
Education level	**Secondary-and above**	61	47 (77.05)	14 (22.95)	**0.007**
	Primary-and below	194	112 (57.73)	82 (42.27)	
Marital status	**Married**	202	123 (60.89)	79 (39.11)	0.222
	Single	12	10 (83.33)	2 (16.67)	
	Widowed	11	5 (45.45)	6 (54.55)	
	Divorced	30	21 (70.00)	9 (30.00)	
Religion	**Christianity**	242	150 (61.98)	92 (38.02)	0.772
	Muslim/other	13	9 (69.23)	4 (30.77)	
Occupation	**Farmer**	172	99 (57.56)	73 (42.44)	**0.033**
	Labourer	44	29 (65.91)	15 (34.09)	
	Other[1]	39	31 (79.49)	8 (20.51)	
Income	**<=K5000**	204	121 (59.31)	83 (40.69)	**0.045**
	>5000	51	38 (74.51)	13 (25.49)	
Knowledge levels	**Low**	12	3 (25.00)	9 (75.00)	0.003
	Medium	90	65 (72.22)	25 (27.78)	
	High	153	91 (59.48)	62 (40.52)	
PNC-visit perception	**Important**	25	18 (72.00)	7 (28.00)	0.295
	Very Important	230	141 (61.30)	89 (38.70)	

Note: used Pearson's chi-square, Fisher's exact chi-squared and Chi-squared trending test depending on expected cell counts and whether the variable categories were ordered

[1] The other occupations included, those doing businesses, employed as professionals, casual workers

The results show that more males (71.62%) compared to females (58.56%) caregivers, mostly from TA Chakhaza (65.43%) and mostly educated up to primary level (57.73%) were exposed to the Wheel. The results also show that the exposed were mostly married caregivers (60.89%), mostly farmers (57.56%). Majority (71.19%) who earned more than K5,000 (ZAR 52) per day were exposed. In terms of PNC behaviour intentions, many (63.83%), with high intention were exposed to the wheel and majority (61.30%) with very positive PNC visit, were exposed.

3.5. Association between Wheel exposure and PNC visit perceptions and behaviour

The third study objective assessed whether exposure to the Wheel was associated with differences in PNC visit perceptions. Here is it important to note that we had expected greater variation in PNC visit perceptions at the study onset, whereas what we found as perceptions were all positive). Table shows that there was no significant association between exposure to the Wheel and PNC visit perceptions (p-value 0.295).

3.6. Association between PNC visit perceptions and PNC visit behaviour

For the fourth objective, there was a significant association between the PNC visit perceptions and PNC visit behaviour (p-value = 0.024), see table 4.

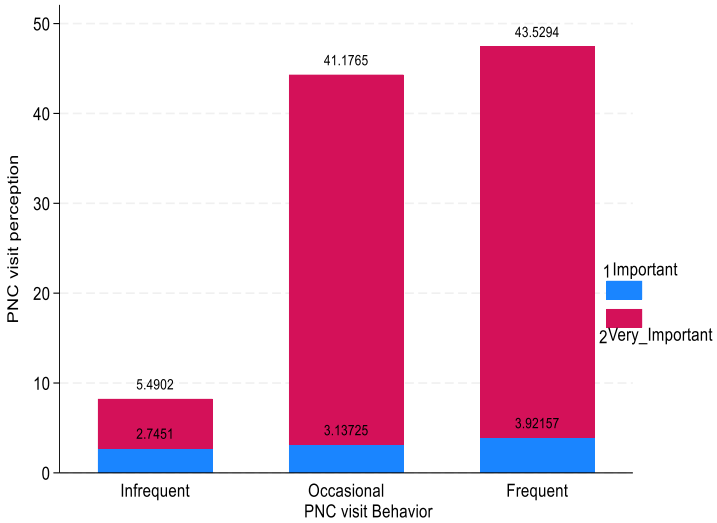


Figure 6: PNC visit perception vs PNC visit behaviour

Figure 6 demonstrations that as the proportion of participants who considered PNC visits to be 'very important' was aligned with PNC visit frequency levels (from infrequent to occasional and from occasional to frequent). This simply means that a caregiver visited the PNC services more when he or she had perceived PNC to be important /very important

3.7. Chapter conclusion

After presenting the characteristics of the sample, the chapter presented findings on the four study objectives. We found 60% exposure to the IPC using the Wheel among respondents, with differences by income, education level, occupation and knowledge level being significant. In the next chapter, the results are discussed.

4.0 CHAPTER 4: DISCUSSION

4.1. Introduction to the chapter

In this chapter the study results and limitations are discusses. The chapter starts with discussing the results of the study by each objective of the study and how their relationship with existing literature and, the importance and the study implications.

4.2. PNC visit perceptions

The first objective was to describe PNC visit perception among Dowa, T/A Chakhaza and Dzoole residents.

The finding that PNC is important/very important in the study is consistent with separate studies conducted in Mulanje, Malawi (64) with 91% of respondents perceiving PNC to be important and countries such as Iran (65) with 89% and Ethiopia.(41) with 94.4% respondents perceiving PNC to be important respectively. The Malawian study agree with our study results that most caregivers in Malawi perceive PNC being important for the mother and the baby, despite that others need awareness about the timing and benefits. The studies in Iran and Ethiopia showed that mothers had positive attitude (perception) and knowledge of PNC services, despite attending one-week postnatal care visit while the follow-up PNC visits were underutilized.(41,65)This implies that generally PNC visit perception is likely to be perceived important among mothers for the assurance of their health and that of their baby. Perceiving PNC to be important/very important can influence behaviour to use services, but alone is not enough to ensure full utilization by the mother and the spouse to attend all the scheduled PNC visits in this case. Other interventions such as awareness and knowledge on one hand, influences the perception, it also plays a role in influencing utilisation. Our study engaged male caregivers as well, which signifies the fact above.

Our study explored differences in overall perception of PNC being important by socio-demographic characteristics, as presented in Table 5, and found that Occupation and Income were significantly associated with the PNC visit perception. More specifically, those with an occupation 'Other' than farmer or labourer were less likely to perceive PNC to be important than their counterparts. Similarly, and those with a higher income (>K5000) were less likely to perceive PNC to be important. Like our study, a study conducted in Mangochi established that PNC services perceptions were influenced by occupation and household income. The study found that occupations other than farming and higher household income influenced PNC perception of caregivers to perceive PNC being important.(66) That study also found that education level was important, in that those with higher education perceived PNC to be important/very important. This finding was not which was not replicated in our study.

The other factor that may explain the high PNC perceptions, apart from high PNC knowledge, through different means, across different studies are the different sociodemographic factors such as caregiver education levels, age and marital status.(37) The studies also included male caregivers. Our study found similar results to the Ghana study which reported that mothers aged 25–39 years were seven times likely to use PNC compared to those less than 25 years old; highly educated mothers were four times more likely to use PNC compared to formally educated and married mothers were 10 times likely to use PNC compared to single mothers. On age, our study found that majority (93%) of the caregivers who were young 18 – 43 years old, and majority (92%) of these perceived PNC to be very important, while only 65% of the older age (44 – 68-year-olds) perceived PNC to be important. Similarly on education, majority (92%) of those with primary education, perceived PNC visits as very important. Among the married caregivers, 91 % perceived PNC to be important.

Our study also reported that knowledge of caregivers about PNC and other related services such as immunization, growth monitoring for the child and family planning for the mother was high and significant. Our study found that most (60.00%) respondents who had positive PNC perceptions also had high knowledge of PNC and that this association was significant. This agrees with a study on determinants of PNC perception conducted in Malawi that showed that among others, knowledge of PNC is one determinant.(27) Another study conducted in Ghana also found that knowledge of PNC was a determinant of PNC altitude and utilisation.(37) The study agrees with what was found on knowledge of PNC in our study. This therefore may imply that knowledge in the PNC related services is needed by caregivers to influence perception and even behaviour. Further, just like our study, the Malawi study established that PNC services perception was influenced by knowledge.(27)

Knowledge about PNC services can come from different sources, one of which can be the Wheel. Our study showed that most caregivers were exposed to the Wheel once in a month, mostly from health workers. Exposure to knowledge about PNC through the Wheel may explain the high PNC perception, though it is not the only explanation. A study conducted in Zambia, to assess knowledge of PNC indicated that PNC knowledge was only significantly associated with education level of the respondent, although Information, Education and Communication (IEC) given by health care workers was done prior to postnatal clinic.(67) This can be attributed to caregivers' low education level making it difficult or unable to interpret compared to with highly education women. In our study about 70% of the sample had completed primary education, which could explain the the overall high levels of PNC knowledge.

Our study found that most caregivers (91%) have high levels of trust with the health workers to give them knowledge about PNC. This is significant because for programming purposes, because the health workers need to be capacitated to introduce the Wheel to impart knowledge and awareness on PNC services and other related services.

4.3. Wheel of Life-saving practices exposure and sociodemographic factors

Our findings showed that exposure to the Wheel was generally high at 60%. Just as the sample had more females (71%). This is similar with gender roles in Malawi, where the role of care giving especially childcare is left to the females in this case mothers.(26,68–71). This implies that childcare health promotion programs in Malawi, need to focus on females more because they are the ones that give care to the children.(26,68,71)Gender differences were also suggestive, with 58.56% of female caregivers exposed to the Wheel compared with 71.62% of males, though not statistically significant (p=0.05), where significance was set at <0.05. Although this is not in line with gender norms in Malawi, male involvement initiatives in MNCH, might have influenced the increase in males exposed to the Wheel. The studies portray a mindset change in the Malawian cultural norm of caregiving, where male involvement is stressed for MNCH for better outcomes. The literature highlights the three delays in MNCH namely, delay in deciding to seek care: delay in reaching a healthcare facility and delay in receiving care at the health care facility. The first two delays have a bearing on the male (spouse in the rural areas) if decision-making; sociocultural factors; financial and opportunity costs are considered in the rural settings.
(72–76)

Our study found that there were significant differences in Wheel exposure by education level, income level and occupation. Specifically, those with a higher education were likely to be

exposed than those with lower educational attainment. So too, those with higher income were more likely to be exposed than those with low income. So too, those with other occupation were more likely to be exposed than farmers. Similarly, a study in Eritrea, found similar sociodemographic characteristic of education level significant with exposure to information on PNC services, specifically that being a junior or below in educational level, a mother is likely to be less exposed to PNC information. Additionally, though not found significant in our study was age, living in rural areas, and being single, would make a mother less exposed to PNC information.(77)

Studies have highted the significance of branding in determining behaviour by establishing consumer relationships. (78,79) It is believed that despite a high exposure of 60%, among the 40% that reported not exposed to the wheel, were those who could not recall the name Wheel (Chichewa translated “Chiwongolero”) used in the IPC sessions in the study area, meaning that exposure could have been even higher.

4.4. Wheel exposure and PNC visit perceptions

The study found no significant association between Wheel exposure and PNC visit perception (p-value=0.530).

There are several reasons that may explain why the Wheel is not necessarily associated with the high PNC visit perception. One of the reasons might be ineffective designing of the campaign, in line with being informed by inappropriate empirical evidence and behaviour change theory. Studies have established that theoretically and empirically evident planned health promotions campaign are more effective.(80,81) A study which argued that a behaviour change theory is required for an intervention to change behaviour, echoed the need for behaviour change theory and evidence.(82) While literature is convincing in stressing the importance of the use of appropriate theory to inform a health promotion campaign, we failed

to substantiate evidence which the Wheel campaign was informed by. This unearths a possibility that PNC visit perceptions were not adequately addressed in the campaign as other important constructs may have been missed.

The other reason that may lessen the effectiveness of a campaign in addressing PNC visit perceptions could be poor IPC messaging, when IPC is not informed by a behaviour change theory. While the quality of messaging was not specifically evaluated in this paper, researchers agree on the need for proper messaging in ensuring effective health promotion campaigns.(83) Message framing which is defined as message tailoring technique which shows structuring and organizing a message without changing content meaning, is said to be significant in desired behaviour induction.(84) The common message framing is focussed on gain (positives, which reinforces the behaviours through highlighting its advantages or benefits) or loss (negatives, which highlights the disadvantages or danger of not adopting the behaviours), both of which have implications on promoting persuasion.(83,84) Message frames for disease, fear appeals that send shock and stimulation through threat or warning expression are said to be dominant.(85) However, other studies have argued persuasion appeals of gain-framing or loss-framing are complicated, and that the efficacy of each appeal depends upon the characteristics of the targeted audience. (84) Scholars have, therefore, encouraged that a campaign should incorporate different frames, and tailor messages to groups. The fact that the Wheel might not have been closely linked to PNC visit perception among our study respondents might imply some defects in messaging and message frames that were used.

4.5. PNC visit perception and PNC visit behaviour association

Unlike exposure to the Wheel, we found a significant association between the PNC visit perception and PNC visit behaviour (p-value = 0.001).

The significant association of PNC perception with overall PNC visit behaviour in this study, agrees with several studies that showed that high PNC visit perceptions are associated with PNC visit behaviour (41,86–88) According to the integrated review of the studies, with an average of 90% respondents perceiving PNC to be important, average 90% of the same respondents reported to have ever utilised PNC services. The present study, further, found that the proportion of participants who considered PNC visits to be 'very important' was aligned with PNC visit frequency levels (from infrequent to occasional and from occasional to frequent). This implies that the more a caregiver visited the PNC services the more he or she was likely to have a very positive perception about PNC.

Despite the association, however, our study suggests that positive perceptions alone cannot explain lower than optimal utilisation of PNC services in Dowa (89) Other determinants such as awareness and knowledge, accessibility (long distances, travel costs), client dissatisfaction, unacceptable (quality) PNC services would have played a role in the lower PNC utilisation in Dowa, despite the high positive PNC visit perception. Additionally, study conducted in Nigeria, emphasized the importance of IEC as the promoting factors to utilisation of postnatal care services.(90)

4.6. Study limitations

The study results need to be understood within the context of some limitations. The most relevant limitation was being a cross-sectional study which has limited means of causal relationships between independent and dependent factors in the study. There was therefore no establishment of causal relationship between the IPC using the Wheel and the PNC visit perception as was predicted.

Another limitation is that the analysis of the study was only limited to tests of association, with no regression tests to strictly answer the study objectives. Despite testing the association with Pearson Chi-square tests of association and being able to establish the association between PNC visit perception with exposure to the Wheel and PNC visit perception and PNC visit behaviour, regression tests would have further established the relationship strength between variables for modelling the future relationships between them. If this is prepared for publication, these tests will be conducted.

The use routine data was another limitation in the study, where the village registers were used to identify households or women who had under-2 children in the villages where the study took place. Incompleteness of the registers was a limitation. Nevertheless, the study used information from the village leaders/chiefs to find missing information.

The results might have also met information and social desirability biases, given the recalling about the Wheel and self-reporting of behaviours. Social desirability may have happened if some respondents manipulated their responses deliberately to be viewed favourably by research assistants during questionnaires administration.

Additionally, because the study was conducted at a time the project had winded its implementation in the district, with only the MOH coordinating and supervising without hands-on implementation and monitoring, the findings may not indicate a situation when the actual implementation (the campaign) was at its peak. Therefore, there could have been recall challenges by the caregivers.

Furthermore, while IPC for PNC using the Wheel was conducted in other districts, the study only assessed the campaign in Dowa. The findings could have been different if the study were extended to more districts. Nevertheless, Dowa was chosen because of it being one of the early districts where the Wheel was used in Malawi and being rural where home visits by community health workers work well, but study findings may still not be generalized beyond the locality.

The initial categorization of PNC visit behavior had three categories of no, occasional and frequent. The same is true with Wheel exposure, which had low, medium and high. However, due to collapsing of the results for better presentation, we reported 2 categories in each. This is another limitation we had in the study of presenting two categories instead of three categories

Despite these limitations, the study provides initial evidence that while Wheel exposure alone may not have influenced PNC visit perceptions and behaviour, other key variables were identified that may inform future use of the Wheel. This includes targeted expansion of its reach to target the main caregivers and intensify IPC sessions within the households.

4.7. Conclusion of the chapter

The chapter discussed the study results. The chapter used existing literature to deliberate findings on each objective and showed new knowledge that the study conveys. Study limitations were also highlighted. The study recommendations and conclusions are presented in the next chapter.

5.0 CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1. Introduction to the chapter

The chapter highlights major results for the study and highlights the knowledge coming from this study and shows how the knowledge can assist in informing the design and implementation of IPC health promotion campaigns. The chapter also offers policy, programming and implementation recommendations for health promotion campaigns and future studies.

5.2. Study Conclusion

The study has established that the Wheel, which was implemented partly to promote PNC visit behaviour among caregivers of under-fives, had relatively high exposure (reach) among Dowa, T/AChakhaza and Dzoole residents. The fact that 62.35 % of respondents were able to report being exposed to the Wheel, implied some effectiveness in branding. Contrary to expectation that most caregivers are females, high Wheel exposure was registered in the males compared to females. However, there was no association between exposure to the Wheel and PNC visit perception. Rather, high knowledge of PNC and its related services such as immunization and growth monitoring for the child and Post Partum Family Planning for the mother, was significantly associated with very positive PNC visit perceptions and actual PNC visit behaviour.

The study has contributed to growth of scholarship on health promotion campaigns and IPC by measuring factors associated with the reach of an IPC campaign and with PNC visit perceptions in a developing country, where such literature is scant. This study established that the relationship between PNC visit perceptions and PNC visit behaviour is positive and strong, as was hypothesized by the campaign. This study has also found that socio-economic characteristics such as income level, education level, and occupation as well as knowledge may have contributed to both people's PNC visit perception and PNC visit visits.

5.3 Recommendations from the study

The section summaries recommendations made by the study based on the results and findings. The recommendations are categorized into programming, policy, and research.

5.3.1. Policy recommendations

1. Authorities should work on developing an integrated IPC framework that will guide and strengthen all community IPC campaigns that promote health. The framework can incorporate the Wheel approach. Disparities in the reach of IPC campaign approach can be attributed to the lack of integrated community framework.(91,92) The integrated community IPC framework could have provided stakeholders with coordination and flow of communication in the IPC for MNCH thereby ensuring caregivers are strategically targeted.

2. Policymakers should expand the use of community frontline health work structures and cadres to enhance capacity for MNCH health promotion at community level. Malawi i one of the countries in the SADC region and sub-Saharan Africa with high maternal and neonatal mortality rates. However, the experience has been that there is sometimes duplication of efforts coupled with low health worker skills and inadequate resources.(93)

5.3.2. Programming recommendations

1. To enhance campaign effectiveness, campaign programmers ought to use relevant behaviour change theory and empirical literature to inform the design or fidelity of the program. As has been discussed in the study, behaviour change is a complex process, and there is evidence that a social and behaviour change intervention that is informed by theory with constructs that touch on all important aspects of the behaviour change process

is effectives (84). Programmers should, therefore, pay attention to constructs that have empirical evidence of being effective. The use of theory in the initial planning of the program can also help to inform programmers of any barriers that should be anticipated during implementation. To address risk perceptions, programmers could, for example, use the Health Belief Model which has constructs that are relevant to understanding the type of risks, benefits for taking the healthy behaviour and barriers to desirable action. The Theory of Planned Behaviour could help to inform constructs that are linked to behaviour intention, in this case, the adoption of protective behaviours(94). If the program wanted to address various factors operating at different levels, the Socioecological Model could help capture the factors at intra, interpersonal, community and national level. (95,96)

2. Building brand equity is a strategic process in health promotion campaign programming, which is establishes message recall. Effective branding might solve the problem of recalling any IPC campaign by ensuring that behaviours are more compelling personally and relevant to the intended audience. Consistent message campaign branding can ensure this.

3. Campaign messaging is important for making or breaking the health campaign success. Message frames, as discussed in the study, improves persuasiveness of messages. Therefore, programmers need to use different types of message frames to appeal to the needs and altitudes of targeted audiences that keeps changing. The literature is strong in citing persuasion appeals of gain-framing or loss-framing as being complicated, and that use formative research and stakeholders' collaboration is important during planning stage

to determine the frames to be used for messages that establish persuasion of the campaign messages.

4. The programmers need plan to for formative systematic research at the initial campaign development stages to inform and evaluate IPC campaign activities. Both qualitative and quantitative research results can be triangulated by programmers to ensure all aspects are used for the campaign. (93) Monitoring and evaluation of the can help establish program efficiency and effectiveness that ensures that any other challenge or difficulties in fidelity are identified earlier and managed within in good time.

5.3.2. Research recommendations

1. Campaign implementation process was not part of this study. Another study needs, therefore, to evaluation of the campaign. This kind of a study can help unpack the challenges and quality of implementation of the campaign which were not the focus in this study.

2. Another study can assess factors influencing adoption of PNC visit behaviours in Malawi. This is something the study discussed using existing literature in the sub-Saharan region, but we did not independently investigate reasons for adopting or not adopting various behaviours, relying instead of self-reported behaviours.

3. The study did not examine message frames used in the IPC campaign, and their effectiveness. Another study can therefore evaluate this aspect and help establish the relevant message frames that were linked to with higher PNC visit perceptions.

4. The directionality of perceptions and visits in the study was left ambiguous, as one's actual experience of attending visits may influence perceptions (in either direction) whereas it is

also possible that those with prior positive perceptions would be more likely to attend, leading our study with the assertion that attending PNC leads to a perception of the importance of PNC. Despite this, it isa known fact that a bi-directional relationship could be hypothesized, with additional research. We therefore recommend further research (Qualitative and/or a design) that accounts for temporality to better understand the relationship.

References

1. EFCNI Factsheet. Why the first 1000 days of life matter During. 2018 [cited 2021 Oct 20];(1):1–3. Available from: www.efcni.org
2. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. Lancet. 2006 Apr 1;367(9516):1066–74.
3. WHO G. WHO recommendations on postnatal care of the mother and newborn. WHO [Internet]. 2020 [cited 2021 May 10]; Available from: http://www.who.int/maternal_child_adolescent/documents/postnatal-care-recommendations/en/
4. Tiruneh GT, Worku A, Berhane Y, Betemariam W, Demissie M. Determinants of postnatal care utilization in Ethiopia: A multilevel analysis. BMC Pregnancy Childbirth. 2020 Sep 21;20(1).
5. MALAWI U. Fiscal Year 2019 Quarter Four and Annual Activity Report Health-SBCC/Health Communication for Life (HC4L) Project A member of Mayera Radio Listening Club conducting a dialogue session with a lactating mother using the Wheel of Lifesaving Practices in Trad. 2018.
6. Sacks E, Langlois É V. Postnatal care: Increasing coverage, equity, and quality [Internet]. Vol. 4, The Lancet Global Health. Elsevier Ltd; 2016 [cited 2021 May 10]. p. e442–3. Available from: https://pubmed.ncbi.nlm.nih.gov/27185467/
7. WHO | Opportunities for Africa's newborns: Practical data, policy and programmatic support for newborn care in Africa. WHO. 2010;
8. Warren C, Daly P, Toure L, Mongi P, Lawn J, Kerber K. Opportunities for Africa's newborns: Practical data, policy and programmatic support for newborn care in Africa. 1st ed. Partnership for Maternal, Newborn and Child Health: Cape Town; 2008: p11-12. - Fufuzani ndi Google [Internet]. [cited 2021 Apr 19]. Available from:

https://www.google.com/search?q=Warren+C%2C+Daly+P%2C+Toure+L%2C+Mongi+P%2C+Lawn+J%2C+Kerber+K.+Opportunities+for+Africa%E2%80%99s+newborns%3A+Practical+data%2C+policy+and+programmatic+support+for+newborn+care+in+Africa.+1st+ed.+Partnership+for+Maternal%2C+Newborn+and+Child+Health%3A+Cape+Town%3B+2008%3A+p11-12.

9. Warren C, Daly P, Toure L, Mongi P. Postnatal care.

10. Greco G, Daviaud E, Owen H, Ligowe R, Chimbalanga E, Guenther T, et al. Malawi three district evaluation: Community-based maternal and newborn care economic analysis. Health Policy Plan [Internet]. 2017 Oct 1 [cited 2021 May 8];32(suppl_1):i64–74. Available from: https://academic.oup.com/heapol/article/32/suppl_1/i64/4283074

11. Lawn JE, Cousens S, Zupan J. 4 Million neonatal deaths: When? Where? Why? Vol. 365, Lancet. Elsevier Limited; 2005. p. 891–900.

12. Tessema ZT, Yazachew L, Tesema GA, Teshale AB. Determinants of postnatal care utilization in sub-Saharan Africa: a meta and multilevel analysis of data from 36 sub-Saharan countries. Ital J Pediatr [Internet]. 2020 Dec 1 [cited 2021 May 10];46(1). Available from: https://pubmed.ncbi.nlm.nih.gov/33246475/

13. Opportunities for Africa ’ s Newborns.

14. WHO | Malawi. WHO [Internet]. 2020 [cited 2020 Sep 20]; Available from: http://www.who.int/countries/mwi/en/

15. Nations U. 2019; UN care. O. No Title. 2019. - Fufuzani ndi Google [Internet]. [cited 2021 May 11]. Available from: https://www.google.com/search?q=2019%3B+UN+care.+O.+No+Title.+2019.

16. NSO. Malawi Demographic and Health Survey 2015-16. National Statistics Office The DHS Program. 2017;1–658.

17. Nations. U. Sustainable Development Goals - 17 goals to transform our world: United Nations; 2015. - Fufuzani ndi Google [Internet]. [cited 2021 Apr 19]. Available from: https://www.google.com/search?q=United+Nations.+Sustainable+Development+Goals+-+17+goals+to+transform+our+world%3A+United+Nations%3B+2015.
18. Bongaarts J. WHO, UNICEF, UNFPA, World Bank Group, and United Nations Population Division Trends in Maternal Mortality: 1990 to 2015 Geneva: World Health Organization, 2015. Popul Dev Rev. 2016 Dec;42(4):726–726.
19. National Statistical Office. Malawi: demographic and health survey 2015-2016. Malawi: demographic and health survey 2015-2016. 2017.
20. NSO. Malawi Demographic and Health Survey 2015-16. National Statistics Office The DHS Program [Internet]. 2017;1–658. Available from: http://dhsprogram.com/pubs/pdf/FR319/FR319.pdf
21. MALAWI U. Fiscal Year 2019 Quarter Four and Annual Activity Report Health-SBCC/Health Communication for Life (HC4L) Project A member of Mayera Radio Listening Club conducting a dialogue session with a lactating mother using the Wheel of Lifesaving Practices in Trad. 2018.
22. Malawi U. Health-SBCC/Health Communication for Life (HC4L) Project.
23. (NSO) NSO. Malawi Demographic and Health Survey 2015-16. - Fufuzani ndi Google [Internet]. [cited 2021 Apr 19]. Available from: https://www.google.com/search?q=National+Statistical+Office+%28NSO%29+%5BMalawi%5D+and+ICF.+Malawi+Demographic+and+Health+Survey+2015-16.
24. Kumbani LC, Chirwa E, Malata A, Odland JØ, Bjune G. Do Malawian women critically assess the quality of care? A qualitative study on women's perceptions of perinatal care at a district hospital in Malawi. Reprod Health. 2012;9(1).

25. Malawi U. ONSE HEALTH ACTIVITY MALAWI QUARTERLY ACTIVITY REPORT.

26. Khaki JJ, Sithole L. Factors associated with the utilization of postnatal care services among malawian women. Malawi Medical Journal [Internet]. 2019 [cited 2021 May 10];31(1):2–11. Available from: https://pubmed.ncbi.nlm.nih.gov/31143390/

27. Zamawe CF, Masache GC, Dube AN. The role of the parents' perception of the postpartum period and knowledge of maternal mortality in uptake of postnatal care: a qualitative exploration in Malawi. Int J Womens Health [Internet]. 2015 Jun 9 [cited 2021 Oct 23];7:587. Available from: /pmc/articles/PMC4468996/

28. Kambala C, Lohmann J, Mazalale J, Brenner S, De Allegri M, Muula AS, et al. How do Malawian women rate the quality of maternal and newborn care? Experiences and perceptions of women in the central and southern regions. BMC Pregnancy Childbirth [Internet]. 2015 Aug 15 [cited 2021 May 10];15(1). Available from: https://pubmed.ncbi.nlm.nih.gov/26275999/

29. Hughes CS, Kamanga M, Jenny A, Zieman B, Warren C, Walker D, et al. Perceptions and predictors of respectful maternity care in Malawi: A quantitative cross-sectional analysis. Midwifery. 2022 Sep 1;112:103403.

30. WHO urges quality care for women and newborns in critical first weeks after childbirth [Internet]. [cited 2025 Mar 5]. Available from: https://www.who.int/news/item/30-03-2022-who-urges-quality-care-for-women-and-newborns-in-critical-first-weeks-after-childbirth

31. Adams YJ, Smith BA. Integrative Review of Factors That Affect the Use of Postpartum Care Services in Developing Countries. J Obstet Gynecol Neonatal Nurs [Internet]. 2018 May 1 [cited 2025 Mar 6];47(3):371–84. Available from: https://pubmed.ncbi.nlm.nih.gov/29524378/

32. Mamuye SA. Magnitude and Determinants of Postnatal Care Service Utilization Among Women Who Gave Birth in the Last 12 Months in Northern Ethiopia: A Cross-Sectional Study. Int J Womens Health [Internet]. 2020 [cited 2024 Nov 30];12:1057–64. Available from: https://pubmed.ncbi.nlm.nih.gov/33223856/

33. Amouzou A, Mehra V, Carvajal-Aguirre L, Khan SM, Sitrin D, Vaz L. Measuring postnatal care contacts for mothers and newborns: An analysis of data from the MICS and DHS surveys. J Glob Health. 2017 Dec 20;7(2).

34. Mukonka PS, Mukwato PK, Kwaleyela CN, Mweemba O, Maimbolwa M. Household factors associated with use of postnatal care services. https://doi.org/1012968/ajmw2018124189 [Internet]. 2018 Nov 14 [cited 2025 Mar 12];12(4):189–93. Available from: https://www.magonlinelibrary.com/doi/10.12968/ajmw.2018.12.4.189

35. Khaki JJ, Sithole L. Factors associated with the utilization of postnatal care services among malawian women. Malawi Medical Journal. 2019;31(1):2–11.

36. Shrestha J, Yadav DK. Barriers to Utilization of Postnatal Care Services: Mothers and Health Providers Perspective. J Nepal Health Res Counc [Internet]. 2021 Sep 6 [cited 2025 Mar 13];19(2):311–5. Available from: https://pubmed.ncbi.nlm.nih.gov/34601522/

37. Asumah MN, Abubakari A, Abdulai AM, Nukpezah RN, Adomako-Boateng F, Faridu AW, et al. Sociodemographic and Maternal Determinants of Postnatal Care Utilization: A Cross-Sectional Study. SAGE Open Nurs [Internet]. 2023 Jan 1 [cited 2024 Nov 28];9. Available from: https://journals.sagepub.com/doi/10.1177/23779608231206759

38. Ahmadinezhad M, Vizeshfar F, Pakniat A. Mothers' Perceptions of the Quality of Postnatal Care Provided in Health Centers and the Associated Factors: A Cross-

Sectional Study. Int J Community Based Nurs Midwifery [Internet]. 2022 Mar 1 [cited 2025 Mar 13];10(2):110–9. Available from: https://smallpdf.com/pdf-summarizer

39. Rezaei N, Azadi A, Zargousi R, Sadoughi Z, Tavalaee Z, Rezayati M. Maternal Health-Related Quality of Life and Its Predicting Factors in the Postpartum Period in Iran. Scientifica (Cairo). 2016;2016.

40. Brodribb W, Zadoroznyj M, Dane A. The views of mothers and GPs about postpartum care in Australian general practice. BMC Fam Pract. 2013;14.

41. Tesfahun F, Worku W, Mazengiya F, Kifle M. Knowledge, Perception and Utilization of Postnatal Care of Mothers in Gondar Zuria District, Ethiopia: A Cross-Sectional Study. Matern Child Health J [Internet]. 2014 Nov 5 [cited 2024 Nov 28];18(10):2341. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC4220106/

42. Kearns AD, Caglia JM, Ten Hoope-Bender P, Langer A. Antenatal and postnatal care: A review of innovative models for improving availability, accessibility, acceptability and quality of services in low-resource settings. Vol. 123, BJOG: An International Journal of Obstetrics and Gynaecology. Blackwell Publishing Ltd; 2016. p. 540–8.

43. Kambala C, Lohmann J, Mazalale J, Brenner S, De Allegri M, Muula AS, et al. How do Malawian women rate the quality of maternal and newborn care? Experiences and perceptions of women in the central and southern regions. BMC Pregnancy Childbirth. 2015 Aug 15;15(1).

44. Tesfahun F, Worku W, Mazengiya F, Kifle M. Knowledge, Perception and Utilization of Postnatal Care of Mothers in Gondar Zuria District, Ethiopia: A Cross-Sectional Study. Matern Child Health J [Internet]. 2014 Nov 5 [cited 2025 Mar 13];18(10):2341. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC4220106/

45. Zamawe CF, Masache GC, Dube AN. The role of the parents' perception of the postpartum period and knowledge of maternal mortality in uptake of postnatal care: a qualitative exploration in Malawi. Int J Womens Health. 2015 Jun 9;7:587.

46. Finlayson K, Crossland N, Bonet M, Downe S. What matters to women in the postnatal period: A meta-synthesis of qualitative studies. PLoS One. 2020 Apr 1;15(4).

47. Khaki JJ, Sithole L. Factors associated with the utilization of postnatal care services among malawian women. Malawi Medical Journal. 2019;31(1):2–11.

48. Creanga AA, Gullo S, Kuhlmann AKS, Msiska TW, Galavotti C. Is quality of care a key predictor of perinatal health care utilization and patient satisfaction in Malawi? BMC Pregnancy Childbirth. 2017 May 22;17(1).

49. CRECCOM. CRECCOM - Magret Majiga benefits from CRECCOM's Health Communication for Life (HC4L) project through its Wheel of Life Saving Practices in Mulanje District. HC4L project is funded by USAID Malawi through FHI360 #CRECCOM #USAID #FHI360 #HealthCommunication [Internet]. [cited 2021 May 8]. Available from: https://m.facebook.com/Creccom/photos/a.1586166048122568/3537540052985148/?type=3&source=57

50. Finlayson K, Crossland N, Bonet M, Downe S. What matters to women in the postnatal period: A meta-synthesis of qualitative studies. PLoS One. 2020 Apr 1;15(4).

51. CRECCOM. CRECCOM - Magret Majiga benefits from CRECCOM's Health Communication for Life (HC4L) project through its Wheel of Life Saving Practices in Mulanje District. HC4L project is funded by USAID Malawi through FHI360 #CRECCOM #USAID #FHI360 #HealthCommunication [Internet]. [cited 2021 May 8]. Available from:

https://m.facebook.com/Creccom/photos/a.1586166048122568/3537540052985148/?type=3&source=57

52. Archangel E, Mpezulo P. Health-SBCC/Health Communication for Life (HC4L) Project. 2016.

53. Dowa District, Malawi — statistics 2022 [Internet]. [cited 2021 Oct 24]. Available from: https://zhujiworld.com/mw/513861-dowa-district/

54. McCrum-Gardner E. Sample size and power calculations made simple. https://doi.org/1012968/ijtr201017145988 [Internet]. 2013 Sep 29 [cited 2025 Jan 23];17(1):10–4. Available from: https://www.magonlinelibrary.com/doi/10.12968/ijtr.2010.17.1.45988

55. Bujang MA, Omar ED, Baharum NA. A Review on Sample Size Determination for Cronbach's Alpha Test: A Simple Guide for Researchers. Malays J Med Sci [Internet]. 2018 [cited 2025 Jan 23];25(6):85. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC6422571/

56. Lan L, Lian Z. Application of statistical power analysis – How to determine the right sample size in human health, comfort and productivity research. Build Environ. 2010 May 1;45(5):1202–13.

57. Peterson SJ, Foley S. Clinician's Guide to Understanding Effect Size, Alpha Level, Power, and Sample Size. Nutrition in Clinical Practice [Internet]. 2021 Jun 1 [cited 2024 Nov 29];36(3):598–605. Available from: https://onlinelibrary.wiley.com/doi/full/10.1002/ncp.10674

58. Mamuye SA. Magnitude and Determinants of Postnatal Care Service Utilization Among Women Who Gave Birth in the Last 12 Months in Northern Ethiopia: A Cross-Sectional Study. Int J Womens Health [Internet]. 2020 [cited 2021 May 9];12:1057–64. Available from: http://www.ncbi.nlm.nih.gov/pubmed/33223856

59. Mamuye SA. Magnitude and Determinants of Postnatal Care Service Utilization Among Women Who Gave Birth in the Last 12 Months in Northern Ethiopia: A Cross-Sectional Study. Int J Womens Health. 2020;12:1057–64.

60. Mumu J, Tanujaya B, Charitas R, Prahmana I. Likert Scale in Social Sciences Research: Problems and Difficulties. FWU Journal of Social Sciences. 2022;16(4):89–101.

61. Falk M, Anderson CD. Measuring sun exposure habits and sun protection behaviour using a comprehensive scoring instrument – An illustration of a possible model based on Likert scale scorings and on estimation of readiness to increase sun protection. Cancer Epidemiol. 2012 Aug 1;36(4):e265–9.

62. Burns WJ, Slovic P. Risk perception and behaviors: anticipating and responding to crises. Risk Analysis. 2012 Apr;32(4):579–82.

63. Tesfahun F, Worku W, Mazengiya F, Kifle M. Knowledge, Perception and Utilization of Postnatal Care of Mothers in Gondar Zuria District, Ethiopia: A Cross-Sectional Study. Matern Child Health J [Internet]. 2014 Nov 5 [cited 2024 Nov 5];18(10):2341. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC4220106/

64. Sisya JC. Mothers perceptions of one-week and six-weeks postnatal care at Mulanje Mission Hospital, Southern Malawi [Internet]. 2017 [cited 2024 Nov 27]. Available from: http://nkhokwe.kuhes.ac.mw:8080/handle/20.500.12845/278

65. Ahmadinezhad M, Vizeshfar F, Pakniat A. Mothers' Perceptions of the Quality of Postnatal Care Provided in Health Centers and the Associated Factors: A Cross-Sectional Study. Int J Community Based Nurs Midwifery [Internet]. 2022 Mar 1 [cited 2024 Nov 27];10(2):110. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC8957657/

66. Sagawa J, Kabagenyi A, Turyasingura G, Mwale SE. Determinants of postnatal care service utilization among mothers of Mangochi district, Malawi: a community-based cross-sectional study. BMC Pregnancy Childbirth [Internet]. 2021 Dec 1 [cited 2024 Nov 28];21(1). Available from: https://pubmed.ncbi.nlm.nih.gov/34461844/

67. Chembe BC, Siziya S. Health Press Zambia Bull. Vol. 1. 2017.

68. Mathiassen A, Eliasi R, Mahowe M, Chunga D. Gender assessment for Malawi. 2007 [cited 2024 Nov 27]; Available from: https://ssb.brage.unit.no/ssb-xmlui/bitstream/handle/11250/3090319/rapp_200725_en.pdf?sequence=1

69. gender ratio of caregivers in Malawi - Fufuzani ndi Google [Internet]. [cited 2024 Nov 27]. Available from: https://www.google.com/search?q=gender+ratio+of+caregivers+in+Malawi&oq=gender+ratio+of+caregivers+in+Malawi&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIHCAEQIRigATIHCAIQIRigAdIBCjI3MDk0ajBqMTWoAgCwAgA&sourceid=chrome&ie=UTF-8

70. Government of Malawi. 2017. Malawi Population-based HIV Impact Assessment (MPHIA) 2015-16: First Report. Lilongwe, Malawi - Fufuzani ndi Google [Internet]. [cited 2020 Sep 20]. Available from: https://www.google.com/search?q=Government+of+Malawi.+2017.+Malawi+Population-based+HIV+Impact+Assessment+%28MPHIA%29+2015-16%3A+First+Report.+Lilongwe%2C+Malawi

71. Original Research: Factors associated with the utilization of postnatal care services among Malawian women – MALAWI MEDICAL JOURNAL [Internet]. [cited 2025 Mar 13]. Available from: https://www.mmj.mw/?p=11614

72. Kululanga LI, Sundby J, Malata A, Chirwa E. Male involvement in maternity health care in Malawi/La Participation des hommes au soin de sante maternelle au Malawi.

Afr J Reprod Health [Internet]. 2012 Mar 1 [cited 2025 Mar 24];16(1):145–58. Available from: https://go.gale.com/ps/i.do?p=AONE&sw=w&issn=11184841&v=2.1&it=r&id=GALE%7CA349608058&sid=googleScholar&linkaccess=fulltext

73. Mkandawire E, Hendriks SL. A qualitative analysis of men's involvement in maternal and child health as a policy intervention in rural Central Malawi. BMC Pregnancy Childbirth [Internet]. 2018 Jan 19 [cited 2025 Mar 24];18(1):1–12. Available from: https://link.springer.com/articles/10.1186/s12884-018-1669-5

74. Manda-Taylor L, Mwale D, Phiri T, Walsh A, Matthews A, Brugha R, et al. Changing times? Gender roles and relationships in maternal, newborn and child health in Malawi. BMC Pregnancy Childbirth [Internet]. 2017 Sep 25 [cited 2025 Mar 24];17(1):1–13. Available from: https://link.springer.com/articles/10.1186/s12884-017-1523-1

75. Male involvement in maternity health care in Malawi : original research article | African Journal of Reproductive Health [Internet]. [cited 2025 Mar 24]. Available from: https://journals.co.za/doi/abs/10.10520/EJC120916

76. Male involvement in maternity health care in Malawi - Document - Gale Academic OneFile [Internet]. [cited 2025 Mar 24]. Available from: https://go.gale.com/ps/i.do?id=GALE%7CA349608058&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=11184841&p=AONE&sw=w&userGroupName=anon%7Eb9be2616&aty=open-web-entry

77. Beraki GG, Tesfamariam EH, Gebremichael A, Yohannes B, Haile K, Tewelde S, et al. Knowledge on postnatal care among postpartum mothers during discharge in maternity hospitals in Asmara: A cross-sectional study. BMC Pregnancy Childbirth [Internet]. 2020 Jan 6 [cited 2025 Mar 24];20(1):1–10. Available from:

https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-019-2694-8

78. Basu A, Wang J. The role of branding in public health campaigns. Journal of Communication Management [Internet]. 2009 Feb 13 [cited 2024 Nov 27];13(1):77–91. Available from: https://www.researchgate.net/publication/242336847_The_Role_of_Branding_in_Public_Health_Campaigns

79. Evans WD, Blitstein J, Vallone D, Post S, Nielsen W. Systematic review of health branding: growth of a promising practice. Transl Behav Med [Internet]. 2015 Mar 1 [cited 2024 Nov 27];5(1):24–36. Available from: https://pubmed.ncbi.nlm.nih.gov/25729450/

80. Khani Jeihooni A, Layeghiasl M, Yari A, Rakhshani T. The effect of educational intervention based on the theory of planned behavior on improving physical and nutrition status of obese and overweight women. BMC Womens Health [Internet]. 2022 Dec 1 [cited 2024 Nov 29];22(1). Available from: https://pubmed.ncbi.nlm.nih.gov/35033045/

81. Fernandez ME, ten Hoor GA, van Lieshout S, Rodriguez SA, Beidas RS, Parcel G, et al. Implementation Mapping: Using Intervention Mapping to Develop Implementation Strategies. Front Public Health [Internet]. 2019 [cited 2024 Nov 29];7(JUN). Available from: https://pubmed.ncbi.nlm.nih.gov/31275915/

82. Alrige M, Bitar H, Meccawy M. Promoting precautionary behavior during the COVID-19 pandemic: Development and validation of a behavior-change messaging campaign. J Infect Public Health [Internet]. 2021 Nov 1 [cited 2024 Nov 29];14(11):1727–32. Available from: https://pubmed.ncbi.nlm.nih.gov/34710783/

83. Fish JA, Peters MDJ, Ramsey I, Sharplin G, Corsini N, Eckert M. Effectiveness of public health messaging and communication channels during smoke events: A rapid systematic review. J Environ Manage [Internet]. 2017 May 15 [cited 2024 Nov 29];193:247–56. Available from: https://pubmed.ncbi.nlm.nih.gov/28226261/

84. Gao R, Guo H, Li F, Liu Y, Shen M, Xu L, et al. The effects of health behaviours and beliefs based on message framing among patients with chronic diseases: a systematic review. BMJ Open [Internet]. 2022 Jan 6 [cited 2024 Nov 29];12(1). Available from: https://pubmed.ncbi.nlm.nih.gov/34992117/

85. Choi WJ, Hong JS. Strategic exploration of the COVID-19 prevention campaign message: based on South Koreans' perception type. BMC Public Health [Internet]. 2022 Dec 1 [cited 2024 Nov 29];22(1). Available from: https://pubmed.ncbi.nlm.nih.gov/35761315/

86. Sakala B. Knowledge, views and practices of mothers regarding postnatal care at Zomba Central Hospital, Malawi. Afr J Midwifery Womens Health [Internet]. 2013 Jul [cited 2024 Nov 27];7(3):134–42. Available from: https://www.researchgate.net/publication/272332933_Knowledge_views_and_practices_of_mothers_regarding_postnatal_care_at_Zomba_Central_Hospital_Malawi

87. (PDF) Knowledge, views and practices of mothers regarding postnatal care at Zomba Central Hospital, Malawi [Internet]. [cited 2024 Nov 27]. Available from: https://www.researchgate.net/publication/272332933_Knowledge_views_and_practices_of_mothers_regarding_postnatal_care_at_Zomba_Central_Hospital_Malawi

88. Vogels-Broeke M, Daemers D, Budé L, de Vries R, Nieuwenhuijze M. Sources of information used by women during pregnancy and the perceived quality. BMC Pregnancy Childbirth [Internet]. 2022 Dec 1 [cited 2024 Nov 28];22(1):1–12. Available from:

https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-022-04422-7

89. Dowa District, Malawi — statistics 2022 [Internet]. [cited 2021 Oct 24]. Available from: https://zhujiworld.com/mw/513861-dowa-district/

90. C. Nwajagu J, Ameh N, Oguntayo A. Awareness and utilisation of postnatal care services among antenatal clinic attendees at ahmadu bello university teaching hospital Zaria. Nigerian Journal of Medicine. 2017;26(2):112.

91. Wagemakers A, Vaandrager L, Koelen MA, Saan H, Leeuwis C. Community health promotion: A framework to facilitate and evaluate supportive social environments for health. Eval Program Plann [Internet]. 2010 Nov [cited 2025 Mar 24];33(4):428–35. Available from: https://www.researchgate.net/publication/41165539_Community_health_promotion_A_framework_to_facilitate_and_evaluate_supportive_social_environments_for_health

92. Thiam Y, Allaire JF, Morin P, Hyppolite SR, Doré C, Zomahoun HTV, et al. A Conceptual Framework for Integrated Community Care. Int J Integr Care [Internet]. 2021 [cited 2025 Mar 24];21(1):5. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC7880006/

93. Gondwe MJ, Mndala L, Kondoni C, Khumalo AK, Maseko B, Munthali L, et al. Ending preventable maternal deaths in Malawi: the stakeholders consensus approach to identify maternal health needs priorities. BMC Health Serv Res [Internet]. 2025 Dec 1 [cited 2025 Mar 24];25(1). Available from: https://smallpdf.com/pdf-summarizer

94. BRIEF ON THE SOCIAL ECOLOGICAL MODEL.

95. Kilanowski JF. Breadth of the Socio-Ecological Model. J Agromedicine. 2017 Oct 2;22(4):295–7.

96. Reyes AT, Serafica R, Kawi J, Fudolig M, Sy F, Leyva EWA, et al. Using the Socioecological Model to Explore Barriers to Health Care Provision in Underserved Communities in the Philippines: Qualitative Study. Asian Pac Isl Nurs J [Internet]. 2023 Aug 22 [cited 2025 Jun 19];7:e45669. Available from: http://www.ncbi.nlm.nih.gov/pubmed/37606966

APPENDIX 1: TURNITIN REPORT SIGNED BY THE SUPERVISOR



Note: I have reviewed the full report and found that there is not plagiarism. The system seems to be picking up references as well as an earlier version of the student's work. I am satisfied that this is his own work.

APPENDIX 2: DECLARATION OF PLAGIARISM

I, Kondwani Peter Abrahams Makwenda, an MPH postgraduate student at the University of the Witwatersrand declare the following:

- I am aware that plagiarism is the use of someone else's work without their permission and or without acknowledging the original source.
- I am aware plagiarism is wrong.
- I confirm that this written work is my own work except where I have stated otherwise.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or if I have failed to acknowledge the ideas or writing of others.

Signature: 

Date: 19/06/2025

APPENDIX 3: STUDY QUESTIONNARE

PEXPOSURE TO WHEEL AND PNC VISIT PERCEPTION AND BEHAVIOUR INTENTIONS QUESTIONNAIRE

This questionnaire seeks data on your exposure to Wheel of life-saving practices, PNC visit perception, and behavioural intentions. The questionnaire is not, in any way, a test; we are simply interested in your level of exposure to the said intervention and the perceived PNC visit perception and behavioural intentions. All your responses to the survey will be treated with the utmost level of confidentiality; therefore, answer the questions as **honestly** as you can. It should take you a maximum of 10 minutes to complete the survey.

Part A: Social demographic information

1. Age of caregiver, Specify: _____ (Years)
2. Age of youngest child, Specify: _____ (days)
3. Gender
    - Male
    - Female
4. Residential location, Specify: _____ (TA)
5. The attained highest level of education
    - College and university
    - Secondary school
    - Primary school
    - None
6. Marital status
    - Married

- Single
- Widowed
- Divorced

7. Religion
    - Catholic
    - Protestant
    - Pentecostal
    - Muslim
    - African Traditional Religion
    - Other, specify: _____
    - None
8. Occupation
    - Trained professional
    - Farmer
    - Student
    - Laborer
    - Other, specify: _____
9. Wealth (Income/day)
    - K0 – K500/day
    - K600 – K1000/day
    - K1100 – K5000/day

Household effects, we have:

A radio

- Yes
- No

A television

- Yes
- No

A mobile phone

- Yes
- No

Non-mobile telephone

- Yes
- No

A computer

- Yes
- No

PART B: EXPOSURE TO THE WHEEL OF LIFE-SAVING PRACTICES

1. Have you ever heard of Wheel of life-saving practices?
   - Yes
   - No
2. Research Assistant reads each item carefully, and records response using the scale provided. Circle appropriate level of exposure to the Wheel

   Rate each exposure on the following scale

Never	Not very often	Once in a month	Twice in a month	More than twice in a month
1	2	3	4	5

In the **last six months**, how much do you agree with the following statements?

No	Statement
1	I heard/read of the "Wheel of life saving practices for the mother and child for the first 1000 days" from community mobilization such as through the Radio Listening club, Community Theatre Group and other gatherings and volunteers

2	I heard/read about life-saving practices for the mother and child for the first 1000 days from community mobilization from a source that was not using the Wheel
3	I read of “Wheel of life saving practices for the mother and child” from the social media
4	I read about life-saving practices for the mother and child for the first 1000 days on social media from a source that was not using the Wheel
5	I heard of “Wheel of life saving practices" through trained people who were conducting a door-to-door campaign
6	I heard of life-saving practices for the mother and child through a door-to-door campaign that was not using the Wheel
7	I saw posters of “Wheel of life saving practices for the mother and child for the first 1000 days."
8	I saw posters or stickers about life-saving practices for the mother and child that were not connected to the Wheel
9	I heard about “Wheel of life saving practices for the mother and child for the first 1000 days” through Health workers at the clinic
10	I heard about life-saving practices for the mother and child through Health workers at the clinic that was using the Wheel

3. What were your primary sources of life-saving PNC practices for the mother and child for the first 1000 days of information in the past year (tick all options that apply)?
    - o Radio
    - o Television
    - o Newspapers
    - o Social media and the Internet
    - o Healthcare workers
    - o Friends and Family
    - o Politicians
    - o Religious leaders
    - o Local NGOs
    - o Chiefs and traditional leaders
    - o Others, specify: _____

4. Which source do you trust the most about life-saving PNC practices for the mother and child for the first 1000 days?
    - Radio
    - Television
    - Newspapers
    - Social media and the Internet
    - Healthcare workers
    - Friends and Family
    - Politicians
    - Religious leaders
    - Local NGOs
    - Chiefs and traditional leaders
    - Others, specify: _____

5. Why do you trust the source in 4 above the most? _____
6. Which source do you NOT trust the most regarding life-saving PNC practices for the mother and child for the first 1000 days?
    - Healthcare workers
    - Journalists
    - Politicians
    - Family and friends
    - Religious leaders
    - NGO officials
    - Academicians

- Chiefs and traditional leaders
- Others, specify

7. Why do you NOT trust this source? _____

SECTION C: KNOWLEDGE OF PNC AND OTHER RELATED PNC OUTCOMES SUCH AS IMMUNIZATION, GROWTH MONITORING AND PNFP

Research Assistant reads each item carefully, and records responses using the scale provided. Circles appropriate response to each structured question on what you know about PNC and other related PNC outcomes.

Put your responses using the following scale

No, it is incorrect (False)	Yes, it is correct (True)	Don't know
0	1	2

Do you agree with each of the following statements?

Item	Question	Scale		
		False	True	Don't know
1	Every woman who has given birth together with or without her male partner and the newborn must go to the health center for postnatal care one week after delivery.	0	1	0
2	Every woman who has given birth together with or without her male partner and the newborn must go to the health center for postnatal care six weeks after delivery.	0	1	0
3	Postnatal care is necessary even if the mother and baby	0	1	0

	are well. The lives and well-being of the mother and baby are more important than other activities in the home.			
4	The lives and well-being of the mother and baby are more important than other activities in the home. Other home activities can wait	0	1	0
5	Immunization is a proven and tested way of protecting your baby from diseases.	0	1	0
6	To ensure a baby is fully immunized, there is a need to complete the entire course of immunizations, which includes six visits to the Under-five clinic from one week of age to 15 months	0	1	0
7	Because PNC is essential to the well-being of the family, it should involve the father of the newborn.	0	1	0
8	At the postnatal care clinic, a couple can access Family Planning counseling and modern contraceptive methods of choice	0	1	0

SECTION D: PNC VISIT PERCEPTIONS AND BEHAVIOUR INTENTIONS

PNC VISIT PERCEPTIONS

1. What is the likelihood that you will attend PNC visits at the clinic? (For infants less than 6 weeks only)
   - Very low
   - Low
   - Moderate

- High
- Very high

2. If you miss scheduled PNC visits, how would you rate the possibility of your baby developing any complications?
   - Very low
   - Low
   - Moderate
   - High
   - Very high
3. If you miss scheduled PNC visit, how would you rate the possibility of the mother developing any complications?
   - Very low
   - Low
   - Moderate
   - High
   - Very high
4. How important is it to attend all scheduled PNC visits?
   - Not important at all
   - Somehow important
   - Moderate important
   - Highly important
   - Very important

SECTION E: PNC VISIT BEHAVIOUR

1. Research Assistant reads each item carefully, and records responses using the scale

provided. Circles the appropriate level of exposure to the campaign

Rate each exposure on the following scale

Since the birth of your child in 2022, which of the following did you do?

Item	Question	Scale	
1	Went to postnatal care visit one week after delivery	Yes	No
2	Went to postnatal care visit at six weeks after delivery (or, if infant <6 weeks) *Intend to go to the 6-week postnatal care visit*	Yes	No
3	Took baby for immunization and growth monitoring within 6 weeks after delivery and at six weeks of age	Yes	No
4	Received counseling on Family Planning	Yes	No
5	Mother of infant started using a modern contraceptive method of choice	Yes	No

2. Have you ever attended PNC visits before with the other older children?
    - I have EVER attended PNC before
    - I have NEVER attended PNC before

APPENDIX 4: INFORMATION SHEET (ENGLISH)



STUDY INFORMATION DOCUMENT

STUDY TITLE: POSTNATAL CARE SERVICE PERCEPTIONS AND UTILISATION: ASSOCIATION WITH "WHEEL OF LIFE SAVING PRACTICES" INTERPERSONAL COMMUNICATION TOOL, IN DOWA, MALAWI

Greeting: Good day

Introduction:

As part of my postgraduate studies, I, Kondwani Makwenda, am doing research on how the "Wheel of Life Saving Practices" tool addressed how people think about or use Postnatal Care (PNC) services in Dowa, Malawi. Research is a process used in seeking new knowledge. In this study I want to learn whether the "Wheel" influenced PNC perceptions and use. The study will inform how future tools should be designed and implemented to help improve PNC and related health services.

Invitation to Participate: I am inviting you to take part in a research study

Features involved in the study:

1. This study will use a questionnaire that will be administered by interviewers, to request information needed to answer the research question of this study;
2. The information will strictly be used for academic purposes, and you will not be identified

   anywhere in the study
3. The interview will take approximately 10 minutes to complete.

4. The questionnaire contains structured questions on your social-demographic characteristics, exposure to the "Wheel of Life Saving Practices", and your perceptions about and use of PNC services. There are also open-ended questions aimed at getting thorough understanding of some of the responses.

Risks of being involved in the study: This study does not have any risks associated with participation. The study only asks questions aimed at understanding the association between PNC Service perceptions and use with the "Wheel of Life Saving Practices".

Benefits of being in the study: There are no direct benefits for study participants. However, the information we gather will inform the future design and implementation of health promotion materials for PNC services and other related health services**Participation is voluntary**: Refusal to participate will not result in any penalty or loss of benefits to which you are otherwise entitled. There is no requirement to provide a reason for withdrawing. We will destroy any data collected about you if you withdraw, unless you specifically consent to its retention.

Confidentiality: Your personal information will be treated in the strictest confidence and will only be available to the Principal Investigator (PI) and his supervisors. The only exceptions - and all of them are rare - would normally be:

1. Personal information may be disclosed if required by law, or
2. the Human Research Ethics Committees of the University may exceptionally require personal data to respond to a formal complaint, or for a compliance audit

Contact details:

Kondwani Makwenda, Principal Investigator, telephone no. +265-999-237-759, or by e-mail at 2209117@students.wits.ac.za or makwendakondwani@gmail.com,

Dr Sara Jewett Nieuwoudt, Supervisor, telephone no. +27-11-717-2173 or +27-83-428-4392 or email at:Sara.Nieuwoudt@wits.ac.za

Dr Juliet Nyasulu, Supervisor, telephone no. +27-73-973-5487, or email at: jnyasulu@sun.ac.za or julietnyasulu@gmail.com

Outputs

The results of the study will be submitted to Wits University in the form of a report in partial fulfilment of the PI's postgraduate degree. It may also be shared with you after the study is completed, upon request.

Contact details of HREC administrator and chair

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Thank you for reading this Study Information Sheet.

Date: February, 2024

APPENDIX 5: INFORMATION SHEET (CHICHEWA)

ZOFUNIKA KUDZIWA ZOKHUDZA KAFUKUFUKU

DZINA LA KAFUKUFUKU: "MAGANIZO A ANTHU PA KUFUNIKA KWA "CHIWONGOLERO CHA MOYO WA THANZI LA MAYI NDI MWANA KOMASO SIKELO YA AMAYI AMENE ABEREKA KUMENE NDI ANA AWO" KU DOWA, MALAWI.

Moni: Muli bwanji

Mawu Oyamba

Ngati mbali imodzi ya maphunziro a ukachenjede komaso pofuna kukwaniritsa ndondomeko yotengera degree ya ukachenjede, ku sukulu ya Witwatersrand ku Joberg ku South Africa, ine Kondwani Makwenda, ndikupanga kafukufuku ofuna kudziwa maganizo a anthu pa kufunika kwa "chiwongolero cha moyo wa thanzi la mayi ndi mwana komaso sikelo ya amayi amene abereka kumene ndi ana awo" kuno ku Dowa**.** Kafukufuku ndi njira imodzi yofuna kupeza maphunziro atsopano opangira zinthu zokhudza miyoyo ya anthu. Mu kafukufukuyu tikufuna kudziwa ngati "chiongolero" chinapangitsa kusintha maganizo a anthu pa kufunika kwa sikelo ya amayi amene abereka kumene ndi ana awo. Kafukufukuyu athandizanso kuti kodi zipangizo zofalitsira mauthenga a za umoyo zizikonzedwa komaso kugwiritsidwa ntchito bwanji pofalitsa uthenga ndicholinga cholimbikitsa anthu kupita ku sikelo ya

amayi amene abereka kumene pamodzi ndi ana awo ndi zithandizo zina za kuchipatala

Kumemedwa kutengapo mbali: Ndikukumemani kuti mutengepo mbali pa kafukufukuyu

Zoyenera kudziwa zokhudza kafukufukuyu:

5. Kafukufuyu agwiritsa ntchito mafuso amene afusidwe ndi ineyo monga wakafukufuku, kuti tipeze mayankho a zimene kafukufukuyu akufuna
6. Zotsatira za kafukufukuyu zidzagwiritsidwa ntchito poonjezera ukatswiri wa maphunziro a ukachenjede ndipo dzina lanu silidzagwiritsidwa ntchito pena palipose.
7. Mafunso ndi kucheza kwathu kutenga mphindi 10, ndipo tipangira pakhomo pompano. Mafuso onse ali mu fon imene ndili nayoyi ndipo ndizikufusani ndipo mayankho anu ndizilemba momwemu.
8. Mafusowa ndi okhudza mbiri yanu kuti tikudziweni bwinobwino, okhudza za “chiongolero cha moyo wa thanzi la mayi ndi mwana mu masiku 1000 oyambilira a moyo wa mwana”, ngati munamvapo olo kuchigwiritsa ntchito, komaso maganizo anu pa kufunikwa kwa sikero ya amayi amene abereka kumene ndi ana awo komaso ngati munapitako ku sikelo imeneyi. Mafunso ena atithandiza kumvetsetsa pa nkhani zokhudza kafukufukuyu.

Zovuta zimene mungayembekezere potengapo mbali mu kafukufukuyu: Palibe zovuta zilizonse zimene mungakumane nazo potengapo gawo mu kafukufukuyu. Mafunso onse ndi ofuna kudziwa ngati pali mgwirizano uliwonse pakati pa chiongolerochi ndi maganizo anu pa kufunikwa kwa sikelo ya amayi amene abereka kumene ndi ana awo komaso ndi kupita ku sikelo imeneyi.

Phindu limene mungalipeze potengapo mbali: Palibe phindu loonekeratu mukatengapo mbali. Koma zotsatira za kafukufukuyu, zidzathandiza kuti kodi zipangizo zofalitsira mauthenga zizikonzedwa komaso kugwiritsidwa ntchito bwanji pofalitsa uthenga ndicholinga cholimbikitsa anthu kupita ku sikelo ya amayi amene abereka kumene pamodzi ndi ana awo ndi zithandizo zina za kuchipatala

Simuli okakamizidwa kutengapo mbali pa kafukufukuyu: Mutakana kutengapo mbali, sipangakhale chilango china chilichose kapena kusalandira phindu lililonse. Simukulimbikitsidwa kupereka chifukwa chokanila kutengapo mbali. Mayankho a mafuso omwe mwayankha kale osamalizitsa adzafufutidwa, pokhapokhapo mutatiuza kuti tiwagwiritse ntchito ngati mbali ya zotsatira za kafukufukuyu.

Kusunga chinsisi: Mbiri yanu yonse idzasungidwa mwa chinsisi ndipo idzakhala ndi mwini wake kafukufukuyu ndi omuyang'anira. Pokhapokhapo, ngakhale sizimachitikachitika:

3. Ngati mbiriyo idzafunika ndi a malamulo, olo
4. Ngati a ku sukulu ya ukanjede imene imaona maufulu a anthu amene atengapo mbali mu akafukufuku adzaifune panthawi yofuna kuyankha madandaulo ena mwina, kapena kufuna kuona kuti ndondomeko zonse zinatsatidwa.

Eni ake a kafukufukuyu:

Kondwani Makwenda, Principal Investigator, telephone no. +265-999-237-759, or by e-mail at 2209117@students.wits.ac.za or makwendakondwani@gmail.com,

Dr Sara Jewett Nieuwoudt, Supervisor, telephone no. +27-11-717-2173 or +27-83-428-4392 or email at:Sara.Nieuwoudt@wits.ac.za

Dr Juliet Nyasulu, Supervisor, telephone no. +27-73-973-5487, or email at: jnyasulu@sun.ac.za or julietnyasulu@gmail.com

Zotsatira

Lipoti la zotsatira za kafukufukuyu zidzaperekedwa ku sukulu ya ukachenjede ya Witwatersrand pofuna kukwaniritsa ndondomeko yotengera degree ya ukachnjede. Lipoti likhonza kudzakupezani zones zikadzamalizidwa mutalifuna.

Contact details of HREC administrator and chair

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Paul Ruff, who may be contacted via any one member of the secretariat. The telephone numbers for the Committee secretariat are 011 717 2700/1234/2656/1252 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za, Rhulani.Mukansi@wits.ac.za, Mapula.Ramaila@wits.ac.za and Iain.Burns@wits.ac.za

Thank you for reading this Study Information Sheet.

Date: March, 2024

APPENDIX 6: INFORMED CONSENT SHEET (ENGLISH)



PARTICIPANT CONSENT SHEET

STUDY TITLE: POSTNATAL CARE SERVICE PERCEPTIONS AND UTILISATION: ASSOCIATION WITH "WHEEL OF LIFE SAVING PRACTICES" INTERPERSONAL COMMUNICATION TOOL, IN DOWA, MALAWI

1. I have been given a Participant Information Sheet which explains the nature and processes involved in this study, which is attached hereto;
2. I was given time to read it, or had it read to me, in the language I best understand;
3. I was given time to ask any questions I wanted to and found any answers given to me to be reasonable and satisfactory;
4. I believe I fully understand why the study is being conducted and what the intended outcomes will be;
5. I understand that there will be no immediate benefit to me, should I agree to participate, nor will I receive any payment; conversely, participation will not cost me anything but my time;
6. I understand that, even if I initially consent to take part in the study, I may subsequently withdraw at any time and would not be required to give any reasons; if that happened, any data collected about me for the purposes of the

study would immediately be destroyed, unless I give consent for it to be retained

7. I have been given a range of contact details, listed below. If I require further information or become concerned about any aspect of this study, I am free to speak to any of these contacts.

Contact details:

Kondwani Makwenda, Principal Investigator, telephone no. +265-999-237-759, or by e-mail at 2209117@students.wits.ac.za or makwendakondwani@gmail.com,

Dr Sara Jewett Nieuwoudt, Supervisor, telephone no. +27-11-717-2173 or +27-83-428-4392 or email at:Sara.Nieuwoudt@wits.ac.za

Dr Juliet Nyasulu, Supervisor, telephone no. +27-73-973-5487, or email at: jnyasulu@sun.ac.za or julietnyasulu@gmail.com

Contact details of HREC administrator, chair and NHSRC chair

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Paul Ruff, who may

be contacted via any one member of the secretariat. The telephone numbers for the Committee secretariat are 011 717 2700/1234/2656/1252 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za, Rhulani.Mukansi@wits.ac.za, Mapula.Ramaila@wits.ac.za and Iain.Burns@wits.ac.za

The chairperson, National Health Sciences Research Committee, Ministry of Health, P.O. Box 30377, Lilongwe 3, Malawi, Cell: 0999397913 Email: mohdoccenter@gmail.com

Name of Participant: _____

Date: _____

Place: _____

Signature or mark _____

Witnessed by:

Name of Witness: _____

Signature: _____

Date: _____

APPENDIX 7: INFORMED CONSENT SHEET (CHICHEWA)



CHIKALATA CHA CHILOLEZO

STUDY TITLE: POSTNATAL CARE SERVICE PERCEPTIONS AND UTILISATION: ASSOCIATION WITH "WHEEL OF LIFE SAVING PRACTICES" INTERPERSONAL COMMUNICATION TOOL, IN DOWA, MALAWI

1. Andifotokozera za kutenga nawo gawo mbali mu kafukufuku ameneyu ndipo ndalandira chikalata chofotokozera m'mene kafukufukuyi achitikire;
2. Ndawerenga (kapena andiwerengera) chikalata cha uthenga wa kafukufukuyi;
3. Ndamvetsa uthenga umenewu ndipo ndinali ndi mwayi ofunsa mafunso kuti ndiunikiridwe;
4. Ndamvetsa cholinga chakafukufukuyi ndi cholinga cha zosatira zake;
5. Ndamvetsa kuti kutenga mbali kwake ndi kodzipereka ndipo palibe phindu lomwe ndingapeze pa nthawi yakafukufukuyi. Ndamvetsaso kuti kusatenga gawo mu kafukufukuyi sikundiyika mu vuto lili lonse
6. Ndamvetsa kuti ndili ndi ufulu wotuluka mukafukufukuyi nthawi ili yotse ngakhale nditavomereza kutengapo gawo mukafukufukuyi popanda kupereka chifukwa pa kusintha maganizo kwanga.
7. Ndapatsidwa ma nambala omwe ndingathe kuyimbira ngati nditafuna kumvetsa bwino gawo lina lililonse lakafukufukuyi.

Contact details:

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Dr Sara Jewett Nieuwoudt, Supervisor, telephone no. +27-11-717-2173 or +27-83-428-4392 or email at:Sara.Nieuwoudt@wits.ac.za

Dr Juliet Nyasulu, Supervisor, telephone no. +27-73-973-5487, or email at: jnyasulu@sun.ac.za or julietnyasulu@gmail.com

Contact details of HREC administrator, chair and NHSRC chair

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Paul Ruff, who may be contacted via any one member of the secretariat. The telephone numbers for the Committee secretariat are 011 717 2700/1234/2656/1252 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za, Rhulani.Mukansi@wits.ac.za, Mapula.Ramaila@wits.ac.za and Iain.Burns@wits.ac.za

The chairperson, National Health Sciences Research Committee, Ministry of Health, P.O. Box 30377, Lilongwe 3, Malawi, Cell: 0999397913 Email: mohdoccenter@gmail.com

Name of Participant: _____

Date: _____

Place: _____

Signature or mark _____

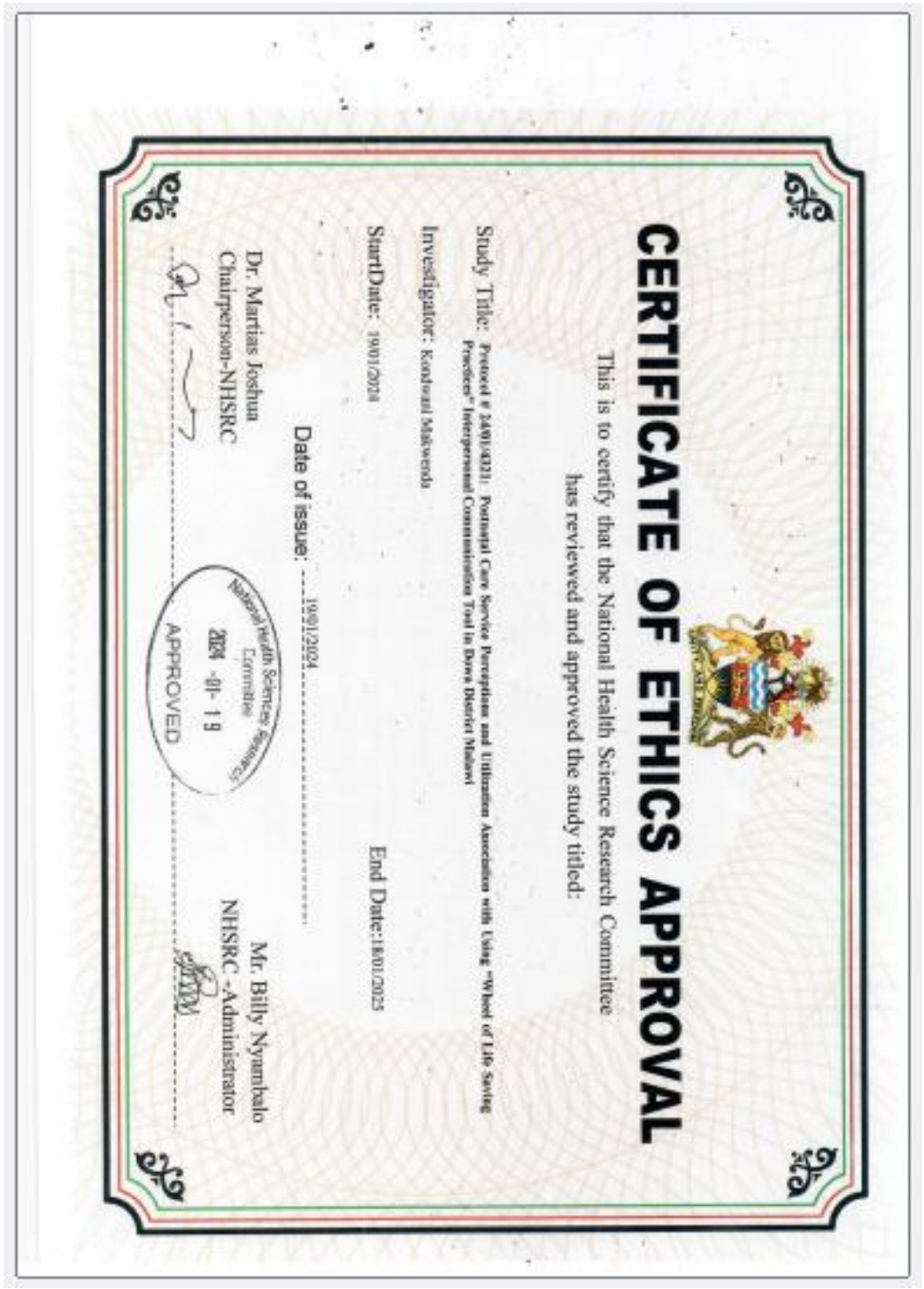
Witnessed by:

Name of Witness: _____

Signature: _____

Date: _____

APPENDIX 8: MALAWI'S NHRC ETHICS CERTIFICATE



CERTIFICATE OF ETHICS APPROVAL

This is to certify that the National Health Science Research Committee has reviewed and approved the study titled:

Study Title: Protocol # 2401/432I: Postnatal Care Service Perceptions and Utilization Association with Using "Wheel of Life Saving Practices" Interpersonal Communication Tool in Dowa District Malawi

Investigator: Kondwani Makwenda

StartDate: 19/01/2024 End Date:18/01/2025

Date of issue: ----19/01/2024----

Dr. Martias Joshua
Chairperson-NHSRC

National Health Sciences Research Committee
2024 -01- 19
APPROVED

Mr. Billy Nyambalo
NHSRC -Administrator

APPENDIX 9: HREC- MEDICAL ETHICS CERTIFICATE

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG	HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research and Innovation)

TO:	Mr K Makwenda School of Public Health Medical School
	E-mail: 2209117@students.wits.ac.za
CC:	Supervisor: Dra J Nyasulu and S Jewett Sara.Nieuwoudt@wits.ac.za and <HREC-Medical Research Office@wits.ac.za>
FROM:	Mr Iain Burns Human Research Ethics Committee (Medical) Tel: 011 717 1252
	E-mail: Iain.Burns@wits.ac.za
DATE:	15 May 2024
REF:	R14/49
PROTOCOL NO:	**M220507** (This is your ethics application reference number. Please quote it in all enquiries, oral or written, relating to this study.)
PROJECT TITLE:	*Postnatal care service perceptions and utilization: association with "Wheel of Life Saving Practices" Interpersonal Communication Tool in Dowa District, Malawi*

Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to Government funding of the University.

MSWorks2000\lain\2007\Clearcer.wps

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

R49 Mr K Makwenda

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M220507

NAME: (Principal Investigator)	Mr K Makwenda	**DEGREE:** MPH
DEPARTMENT:	School of Public Health Medical School	
TITLE:	*Postnatal care service perceptions and utilization: association with "Wheel of Life Saving Practices" Interpersonal Communication Tool in Dowa District, Malawi*	
DATE CONSIDERED:	27 May 2022	
DECISION:	Approved unconditionally	
CONDITIONS:		
NOTE:	If contact information regarding student study participants is required, please contact the Registrar's office <Nicoleen.Potgieter@wits.ac.za>	
SUPERVISOR:	Drs J Nyasulu and S Jewett	
APPROVED BY:	Professor P Ruff, Chairperson, HREC (Medical)	

DATE OF APPROVAL: 15 May 2024 **EXPIRY DATE:** 14 May 2029

This Clearance Certificate is valid for 5 years from the date of approval. An extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office secretariat on the 3rd floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated from the research protocol as approved, I/we undertake to submit details to the Committee. I agree to submit a yearly progress report in the format available at https://wits.ac.za/research/researcher-support/research-ethics/ethics-committees/. This report is due annually, for the duration of the Clearance Certificate, beginning on the first anniversary of Date of Approval above. Unreported changes to the study may invalidate the clearance given by the HREC (Medical).

Signature of Principal Investigator Date