FACTORS INFLUENCING UPTAKE OF MEASLES BOOSTER VACCINE AMONG UNDER-FIVE CHILDREN AT SELECTED CLINICS IN LUSAKA, ZAMBIA

By

Daisy C. Mulenga Syakantu (BScN, RM, RN)

A Dissertation submitted to the University of Zambia in partial fulfilment of the requirements for the degree of master of science in midwifery and women's health

The University of Zambia

Lusaka

November, 2017

DECLARATION

I Daisy Mulenga Syakantu declare that this Dissertation is my own work and that all the sources I have quoted have been indicated and acknowledged using complete references. I further declare that this Dissertation has not been previously submitted for a diploma, a degree or for any other qualifications at this or any other university. It has been written according to the guidelines for Master of Science in Nursing Degree dissertations of the University of Zambia.

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I, Dr Catherine M. Ngoma, having supervised and read through this Dissertation, am satisfied that this is the original work of the author under whose name it is presented. I also confirm that the work has been completed satisfactorily and approve this Dissertation for final submission.

Supervisor's
Name…….……..…….….

Supervisor's
Signature…….……Date…….……..

HEAD OF DEPARTMENT

Department of Midwifery and women's Health, School of Nursing Sciences,
University of Zambia.

Name…….…….

Signature……Date…….…

CERTIFICATE OF APPROVAL

The University of Zambia approves this Dissertation on Factors influencing the Uptake of Measles Booster vaccine among under-five children at selected clinics in Lusaka district in partial fulfilment of the requirements for the award of a Master of Science in Midwifery and Women's Health Degree.

Examiner I

Name…….

Signature……Date……

Examiner II

Name……..

Signature……Date……

Examiner III

Name…….

Signature……Date……

DEDICATION

To all the medical personnel who are involved in immunisation activities.

To mothers who are willing to take their children to the health facilities for immunisation and growth monitoring.

To fathers and other caretakers who heed the call to have their children vaccinated with the measles booster vaccine at the right time.

To my late parents who were role models to us their children.

To my brothers and sisters named Agnes, Barnabas, Andrew, Florence, Anna, Phillip, Sampa, Theresa and Mukuka. I am aware that you are proud of me.

ACKNOWLEDGEMENT

It is with honour and pride to place on record my sincere thanks and deep sense of gratitude to my Lord almighty who guided me, saw me through hard times, and gave me the strength to conduct the research.

It is my bounden duty to express my heartiest gratitude to Dr. C. Ngoma, Mr Y. Banda, Mr F. Chapima and all the Lecturers at the School of Nursing Sciences who tirelessly and patiently guided me throughout the research process.

I wish to express my appreciation to the Ministry of Health, for sponsoring my studies.

I also take this opportunity to thank Chibesa Ndawa the statistician for assisting and guiding me in statistics.

I would also like to express my deep debt of gratitude to the members of staff at District Health Office (DHO) for allowing me to collect data in their district.

Many thanks go to the In- Charges at Chawama clinic, Kabwata clinic, Mtendere clinic and Kalingalinga clinic for allowing me to collect data in their facilities.

It is with the greatest pleasure that I wish to thank Mr Gift Milombo, for editing my work.

I wish to express my deep and sincere appreciation to my friends and classmates Mercy Kapembwa, Naomi Bweupe, Wanga Zulu, Rabson Lungu, Keston Lyambai and Linda Libingi who encouraged me and gave me the moral support which I needed.

Lastly but not the least, my heartfelt gratitude go to my husband Dr G. Syakantu and children Chikopa and Chakale, for their continued support, understanding and encouragement throughout my period of study. Indeed I owe them my love.

ABSTRACT

Measles is one of the leading causes of death among young children even though a safe and cost-effective vaccine is available. In 2014, there were 114,900 measles deaths globally which is about 314 deaths every day or 13 deaths every hour. In Zambia, vaccination coverage among children aged 12 to 23 months has not changed from 72% since 2007. There is a clear decline in the measles booster uptake which is a serious public health concern posing a risk of measles outbreaks in the communities.

The main objective of the study was to determine factors that influence uptake of measles booster vaccine among under five children in Lusaka district.

This study was a cross sectional study conducted in Lusaka urban district. Simple random sampling method was used to select 383 respondents who participated in the study. Following ethical approval from University of Zambia Biomedical Research Ethics Committee (UNZABREC), data were collected from caretakers with children aged between 18 months and 59 months using a semi structured interview schedules. Data was analysed using Statistical Package for Social Sciences (SPSS) version 22. Chi-square test was used to test for associations between the dependent and independent variables with a confidence interval set at 95%, and significant level of 0.05. Logistic regression analysis was also performed. The findings showed a low uptake of vaccines (70%). Most respondents (75.5%) had medium knowledge levels and 69.7% had negative attitudes towards uptake of vaccines. There was an association found between the uptake of vaccines and the respondents' level of education (p value < 0.001), and between uptake of vaccine and service quality (p value < 0.001).

The uptake of the MBV in Lusaka District is low. This is attributed to inadequate knowledge on the importance of MBV among mothers and caretakers, negative attitude of caretakers towards immunisation MBV. The study also revealed that there was an association between uptake of MBV and the education level of mothers/caretakers. In addition the uptake of MBV was significantly associated with the quality of service.

It is therefore important to conduct similar studies in other settings to enable us generalise the findings and also it would be important to conduct qualitative studies on mothers/caretakers with a good uptake of MBV to assist in establishing the motivating factors that helped them adopt a positive attitude towards immunisations and MBV.

Keywords: Booster vaccine, Factors, Measles, Under-five children, Uptake.

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ACRONYMS

AAFP	America Academy of Family physicians
ACIP	Advisory Committee on Immunisation Practices
CDC	Centers for Disease Control and Prevention
CRS	Congenital Rubella Syndrome
CSO	Central Statistical Office
DHMT	District Health Management Team
DHO	District Health Office
EPI	Expanded Program on Immunisation
HBM	Health Belief Model
HC	Health Center
HMIS	Health Management Information Systems
MBV	Measles Booster Vaccine
MCD MCH	Ministry of Community Development Mother and Child Health
MCH	Maternal and Child Health
MCV	Measles Containing Vaccine
MDG	Millennium Development Goals
MMR	Measles-Mumps-Rubella
MMRV	Measles-Mumps-Rubella and Varicella
MNCH	Maternal, Newborn and Child Health
MoH	Ministry of Health
MR	Measles and Rubella
RCV	Rubella Containing Vaccine
SAGE	Strategic Advisory Group of Experts on immunisation
SDA	Seventh Day Adventist
SIA	Supplementary Immunisation Activities

TDHS	Tanzania Demographic Health Survey
UCZ	United Church in Zambia
UNICEF	United Nations Children's Fund
UNZABREC	University of Zambia Biomedical Research Ethics Committee
UTH	University Teaching Hospital
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Chapter one provides an overview of the research study. It gives background information to the research problem and the statement of the problem is provided. The Theoretical Framework that guided the study, study justification, research objectives (general and specific) and research hypothesis are discussed. The chapter also provides the Conceptual and Operational definition of terms used in the study, the study variables and their cut off points.

1.2 Background Information

Immunisation is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine (World Health Organisation, 2016). Vaccines stimulate the body's immune system to protect the person against subsequent infection or disease. According to the World Health Organisation (WHO), immunisation is a proven tool for controlling and eliminating life threatening infectious diseases and is estimated to avert between 2 and 3 million deaths each year (WHO, 2016). It is one of the most cost-effective ways to save lives, improve health and ensure long-term prosperity (Gavi, 2016). Immunisation has clearly defined target groups.

Measles, also known as morbilli, rubeola, or red measles, is a highly contagious infection caused by the measles virus (Caserta, 2014). It remains an important cause of death among young children globally, despite the availability of a safe and effective vaccine (WHO, 2014). The measles vaccine has been in use for over 50 years (Goodson, 2015). According to the Centers for Disease Control and prevention (CDC), it was first introduced in the United States (U.S) in 1963 (CDC, 2015).

About 85% of children globally had received the measles vaccine as of 2013 (WHO, 2015). In 2008 at least 192 countries offered two doses of measles vaccine (WHO, 2009). It is on the WHO Model List of Essential Medicines and the most important medication

needed in a basic health system (WHO, 2013). The vaccine is not expensive with a cost of about 0.70 USD per dose as of 2014 (WHO, 2015).

Before the widespread use of the measles vaccine, measles incidence was so high with about 95% coverage that infection with the disease was felt to be as inevitable as death and taxes (Babbott et al., 1954). Increasing uptake of the vaccine following outbreaks in 1971 and 1977 brought this down to thousands of cases per year in the 1980s (CDC, 2007). A sharp decline followed introduction of the vaccine in 1963, with fewer than 25,000 cases reported in 1968 (CDC, 1994). In the U.S, cases were stable at a few thousand per year until an outbreak of 28,000 cases in 1990, which led to a renewed push for vaccination and the addition of a second vaccine to the recommended schedule (CDC, 1998). Cases declined from a few hundred per year in the early 1990s to a few dozens in the 2000s. Fewer than 200 cases were reported each year from 1997 to 2013, and the disease was believed to be no longer endemic in the U.S. (CDC, 2009). In 2014, 610 cases were reported and roughly 30 cases were diagnosed in January 2015, likely originating from exposure near Anaheim, California in late December 2014 (WHO, 2009). In the U.S, ongoing measles transmission was declared eliminated in 2000 (CDC, 2012). Cases are still imported, however, via travellers from foreign countries. According to the CDC, about 50% of imported measles cases in the U.S are in residents coming back from other countries. United States residents traveling outside the country are encouraged to verify that they are immune to measles, either via previous infection or vaccination, before travelling (CDC, 2008).

The benefit of measles vaccination in preventing illness, disability, and death has been well documented. The first 20 years of licensed measles vaccination in the U.S. prevented an estimated 52 million cases of the disease, 17,400 cases of mental retardation, and 5,200 deaths (CDC, 2006). Between 1999 and 2004, a strategy led by the WHO and United Nations Children's Fund (UNICEF) led to improvements in measles vaccination coverage that averted an estimated 1.4 million measles deaths worldwide (CDC, 2006). The vaccine for measles has led to the near-complete elimination of the disease in the U.S and other developed countries. In 2000, endemic measles was declared eliminated from the U.S.

(Katz et al., 2004). The U.S measles elimination meant an interruption of year-round endemic measles transmission (CDC, 2011).

The measles virus was first isolated on 8th February, 1954 by Thomas Peebles, a Medical Doctor at Boston children's hospital using a blood sample from 13-year-old student David Edmonton which was used to create a series of vaccines (CDC, 2015). Dr. Enders was able to use the cultivated virus to develop a measles vaccine in 1963 based on the material isolated by Peebles. Dr. Enders became known as "The Father of Modern vaccines"(CDC, 2015). The first ever trials of measles vaccine were undertaken by David Morley on his own children at the Wesley Guild Hospital in Ilesha, Nigeria (Pritchard, 1997).

Dr. Maurice Hilleman at Merck & Co., a pioneer in the development of vaccinations, developed the Measles, Mumps and Rubella (MMR) vaccine in 1971 (CDC, 2015). The vaccination treats measles, mumps and rubella in a single shot followed by a booster (Huntley, 2010). In the same year the U.S government licensed the MMR vaccine.

The vaccine is safe, effective and inexpensive, costing approximately one U.S dollar to immunise a child against measles. WHO recommends immunisation for all susceptible children and adults for whom measles vaccination is not contraindicated. Measles is still common in many developing countries – particularly in parts of Africa and Asia. The overwhelming majority (more than 95%) of measles deaths occur in countries with low per capita incomes and weak health infrastructures (WHO, 2015). In 2011, countries in the African region took on the goal to eliminate measles by 2020, and in 2010 the South-East Asia Region adopted a resolution urging countries to mobilize resources to support the elimination of measles. A recent economic analysis demonstrated the cost-effectiveness of measles reduction goals and identified measles eradication as the most cost-effective strategy considered (Levin et al., 2011). For example, introducing a second measles dose in supplementary immunisation activities (SIA) in Zambia appears cost and life-saving compared to a single dose of measles vaccine through routine immunisation (Dayan et al., 2004).

At approximately US$1 per dose, measles vaccination is a highly cost-effective intervention. Adding rubella to measles vaccine increases the cost only slightly, and

allows for shared delivery and administration costs. High coverage with two doses of Measles Containing Vaccine (MCV) serves as the foundation required to ensure high population immunity against measles. For measles, vaccination coverage will need to reach and remain at or exceed 95% with each of the two doses of MCV for countries yet to introduce rubella-containing vaccine (RCV), measles and rubella (MR) or MMR vaccines at the district and national levels. Strengthening routine immunisation is a critical component of the strategy to control and eliminate measles, as it is the foundation to achieving and sustaining high levels of immunity to measles in the community. Even high coverage with one dose of MCV still leaves people unprotected and does not prevent large outbreaks. Thus a second dose given through SIAs or routine services, is required. Unvaccinated young children are at highest risk of measles and its complications, including death. Unvaccinated pregnant women are also at risk. Any non-immune person (Not vaccinated or was vaccinated but did not develop immunity) can become infected (WHO, 2014). Measles vaccine is a vaccine that is very effective at preventing measles (CDC, 2012). After one dose 85% of children who are nine months of age, and 95% over twelve months of age are immune (WHO, 2015). Nearly all of those who do not develop immunity after a single dose develop it after a second dose. When rates of vaccination within a population are greater than 93% outbreaks of measles typically no longer occur. However, they may occur again if rates of vaccination decrease. The vaccine's effectiveness lasts many years. The vaccine may also protect against the disease if given within a couple of days of being exposed (CDC, 2012). The measles vaccine is often incorporated with rubella and/or mumps vaccines in countries where these illnesses are a problem. Vaccinations are some of the most important tools available for preventing disease. They do not only protect children from developing a potentially serious disease but also protect the community by reducing the spread of infectious diseases (UNICEF, 2012). Routine measles vaccination for children, combined with mass immunisation campaigns in countries with high case and death rates, are key public health strategies to reduce global measles deaths.

Severe complications from measles can be avoided through supportive care that ensures good nutrition, adequate fluid intake and treatment of dehydration with WHO-recommended oral rehydration solution (WHO, 2014). This solution replaces fluids and

other essential elements that are lost through diarrhoea or vomiting. Antibiotics should be prescribed to treat eye and ear infections, and pneumonia (WHO, 2015).

All children in developing countries diagnosed with measles should receive two doses of vitamin A supplements, given 24 hours apart. This treatment restores low vitamin A levels during measles that occur even in well-nourished children, and can help prevent eye damage and blindness. Vitamin A supplements have been shown to reduce the number of deaths from measles by 50% (WHO, 2015). Infected people should be isolated for four days after they develop a rash. Healthcare providers should follow respiratory etiquette and airborne precautions in health care settings. Regardless of presumptive immunity status, all healthcare staff entering the room should use respiratory protection consistent with airborne infection control precautions (CDC, 2015).

It is equally effective in a single or combined form. Measles is caused by a virus, morbillivirus, that's spread primarily via coughing and sneezing, and is recognizable by its well-known rash, which spreads to cover most of the body. The virus is extremely contagious: on average, 90% of those exposed to someone with the measles will get the disease themselves unless they have been vaccinated, or have had measles before. Patients who survive a case of the measles retain immunity to it for life (CDC, 2014).

Zambia has adopted the WHO guidelines for vaccinating children through the Expanded Programme on Immunisation (EPI). Children are considered fully immunized if they receive a vaccination against tuberculosis – Bacillus Calmette Guerin (BCG), and three doses of each of the following: diphtheria; pertussis; tetanus/hepatitis B/haemophilus influenza type b (DPT-HepB-Hib), pneumococcal and rotavirus. Additionally, they must be vaccinated against polio and measles, within the first 12 months from birth. The last measles outbreak in Zambia was in July, 2010 and a massive vaccination campaign in response to resurgence of measles was conducted country wide (UNICEF, 2010). The campaign ran from 19th July to 24th July, 2010. It was promoted by a mass media campaign designed to inform as many people as possible of the need for immunisation. Zambia's measles immunisation efforts were targeting children between nine months and four years of age. However, in Lusaka due to a high number of cases, the age was extended, and children from six months to five years were being vaccinated (UNICEF,

2010). The risk factors mentioned in a Ministerial statement to Parliament concerning the outbreak, included the accumulation of susceptible or vulnerable children since the last measles campaign conducted in 2007, missed opportunities during routine immunisation, and the proportion of about 15% children that do not get protection even after being vaccinated (UNICEF, 2010). Child health week is an activity targeted to reach all children below 5 years with life-saving interventions including immunisations, deworming and Vitamin A that are provided free at all government health facilities in Zambia. Special emphasis now is to reach every child, particularly in hard to reach areas, and ensure all children are fully immunised at the appropriate age (UNICEF, 2010). Despite having in place the immunisation schedule and conducting child health week campaigns, there are still a number of children who do not receive the measles booster vaccine (WHO/UNICEF, 2011). This study seeks to determine factors that influence uptake of measles booster vaccine in order to improve the uptake and consequently eradicate measles in Zambia.

1.3 Statement of the Problem

Measles is one of the leading causes of death among young children even though a safe and cost-effective vaccine is available (WHO, 2016). In 2014, there were 114,900 measles deaths globally – about 314 deaths every day or 13 deaths every hour (Gavi, 2016). Measles vaccination resulted in a 79% drop in measles deaths between 2000 and 2014 worldwide (WHO, 2016). In 2014, about 85% of the world's children received one dose of measles vaccine by their first birthday through routine health services – up from 73% in 2000 (WHO, 2015). Between 2000 and 2014, measles vaccination prevented an estimated 17.1 million deaths, making measles vaccine one of the best buys in public health (WHO, 2016).

In 1989, outbreaks of measles among vaccinated school-aged children prompted the Advisory Committee on Immunisation Practices (ACIP), the American Academy of Paediatrics (AAP), and the American Academy of Family Physicians (AAFP) to recommend a second dose of MMR vaccine for all children. Following widespread implementation of this recommendation and improvements in first-dose MMR vaccine

coverage, reported measles cases declined even more. Zambia has adopted the WHO policy to have all the children vaccinated with the measles vaccine at the age of nine months and eighteen months respectively.

Launched in 2001, the Measles and Rubella (MR) initiative is a global partnership led by the American Red Cross, United Nations Foundation, CDC, UNICEF and WHO. The MR initiative is committed to ensuring that no child dies from measles or is born with congenital rubella syndrome, reducing measles deaths by 95% by 2015, and achieving measles and rubella elimination in at least five WHO regions by 2020 (WHO, 2017). All WHO Regions have now established goals to eliminate this preventable killer disease by 2020 (WHO, 2017).

Zambia experienced a major outbreak in 2003 when cases went to more than 30, 000. These cases were reduced following the WHO recommended strategy to conduct follow up measles vaccination campaigns every 3-4 year. However, in 2010, before the next campaign could be done, Zambia recorded 2,832 cases of measles and 78 deaths countrywide. According to the Ministry of Health (MoH), Lusaka district alone recorded 2,453 cases which were 76% of all cases (MoH, 2010).

The Zambia Demographic Health Survey ZDHS of 2013 – 2014 also shows that vaccination coverage among children aged 12 to 23 months has not changed from 72% since 2007 and there is no apparent trend in vaccination coverage in the last five surveys (Central Statistical Office, 2014). Overall, 85% of children aged 12 to 23 months were vaccinated against measles. Statistics from Lusaka District Health Office (LDHO) in Tables 1, 2, 3, 4 and 5 below show a clear decline in the measles booster uptake, which is a serious public health concern posing a risk of measles outbreaks in the communities.

Table 1: Lusaka urban district measles booster immunisation record 2012 – 2015

Year	Nine Months Vaccine	Eighteen Months Vaccine
2013	63,210	8,393

2014	65,019	29,309
2015	83,466	46,359
Total	**211,695**	**84,061**

Source – Lusaka District Health Office (HIMS) 2016

Table 2: Kalingalinga clinic measles vaccine coverage – 2015

Month	Initial Measles Vaccine	Booster Vaccine
January	262	230
February	479	229
March	238	216
April	241	128
May	349	151
June	379	203
July	235	59
August	223	158
September	195	179
October	176	83
November	79	38
December	348	285

Source – Lusaka District Health Office (HIMS) 2016

The table above shows a decline in the uptake of measles booster vaccine, a trend that should be improved to prevent and eradicate measles.

Table 3: Uptake of booster vaccine after the initial vaccine among under five children at Kalingalinga clinic 2014- 2015

Children given initial measles vaccine - 2014	Children given booster vaccine - 2015	Uptake percentage
June - 217	March - 216	99.5 %
July – 146	April – 128	87.6 %
August – 174	May – 151	86.8 %
September – 183	June – 203	111 %

October – 308	July – 59	19.1 %
November – 845	August – 158	18.7 %
December – 298	September – 179	60 %
Total - 2,171	**Total**- 1,094	50 %

Source – Lusaka District Health Office (HIMS) 2016

Table 3 shows the difference in the uptake of the measles booster vaccine compared with the initial measles vaccine at Kalingalinga clinic and the gap is significant. This scenario needs to be improved to promote the health of our children and attain measles eradication.

Table 4: Mtendere clinic measles vaccine coverage – 2015

Month	**Initial Measles Vaccine**	**Booster Vaccine**
January	248	22
February	450	305
March	350	125
April	348	103
May	320	72
June	648	366
July	266	86
August	349	128
September	348	177
October	336	145
November	268	62
December	501	349

Source – Lusaka District Health Office (HIMS) 2016

The table above shows a decline in the uptake of measles booster vaccine, a trend that should be improved to prevent and eradicate measles.

Table 5: Uptake of booster vaccine after the initial vaccine among under five children at Mtendere Clinic -2014-2015

Children Given Initial Measles Vaccine-2014	Children Given Booster Vaccine- 2015	Uptake Percentage
June – 295	March – 125	42 %
July – 270	April – 103	38 %
August – 303	May – 72	24 %
September – 267	June – 366	137%
October – 286	July -86	30 %
November – 758	August – 128	16.8 %
December – 260	September – 177	68 %
Total – 2,439	**Total –** 1057	**43.3%**

Source – Lusaka District Health Office (HIMS) 2016

Table 5 shows the difference in the uptake of the measles booster vaccine compared with the initial measles vaccine at Mtendere clinic and the gap is very significant. This scenario needs to be improved to promote the health of our children and attain measles eradication.

The ideal is that all the caretakers should be taking their children for vaccination but from the statistics in the tables 1-5, it is evident that caretakers are not fully utilising the available services. This can lead to severe outbreaks of measles in the Nation, and Zambia may not achieve the target of measles eradication by the year 2020. It is therefore important to determine the factors that are associated with the uptake of the measles booster vaccine.

1.4 Theoretical Framework – The Health Belief Model

The Theoretical Framework that guided this study was the Health Belief Model (HBM). The HBM is a psychosocial Model proposed by Rosenstock (1966) in Stanhope and Lancaster for studying and promoting the uptake of health services like screening and immunisation. The Model explains why some people take specific actions to avoid illness while others fail. Therefore, it addresses the relationship between a person's belief and behaviour.

The Model assumes that belief and attitudes of people are critical determinants of their health-related actions. It holds that when cues to actions are present, the variations in uptake behaviour can be accounted for by beliefs concerning four sets of variables. These include:

The individual's view of own vulnerability to illness. If an individual does not see him or herself as being at risk of any problem, he or she will not seek care.

Belief about severity of the illness. The associated problem could be seen as little, therefore little attention will be required.

The person's perception of the benefits associated with action to reduce the level of threat or vulnerability.

The individual's evaluation of the potential barrier associated with the proposed action which could be physical, psychological, financial or social.

The Model predicts the likelihood of a person taking the recommended preventive health actions and to understand a person's motivation and decision making about a health service. It states that health seeking behaviour is influenced by a person's perception of a threat posed by a health problem and the value associated with actions aimed at reducing the threat. This Model addresses the relationship between a person's belief and behaviours.

According to Boskey (2010), the Theory has six main constructs that influence peoples' decisions. These include;

a) Perceived susceptibility

Refers to a person's perception that a health problem is personally relevant and he/she believes that he /she is at risk. This means that people will not change their health behaviours unless they believe they are at risk.

b) Perceived severity

Even when one recognizes that he/she is susceptible to the health problem, action will not occur unless the individual perceives the severity to be high enough to have serious complications. The person believes that the risk is serious and the consequences of developing the conditions are eminent.

c) Perceived benefits.

Refers to a person's belief that the risk will be reduced by a specific behavioural change. It is difficult to convince people to change behaviour if there is no benefit for them in it.

d) Perceived barriers

Refers to the complexity, duration and accessibility of the treatment if a person believes that the cost of taking the action is beneficial. Then that person will participate in the program. However, if the cost of action outweighs the benefit then he/she will not participate in the program,

e) Cues to taking actions

A cue to action is something that helps move someone from wanting to make a health change to actually making the change. People are exposed to factors that prompt action, for example a television advert, reminder from ones' physician or posters.

f) Self efficacy

This means that people are confident in their ability to successfully perform a health action. The HBM states that if people do not see health care behaviour as risky and threatening, there will be no stimulus to act. Individuals must have the expectation that the new behaviour will be beneficial, that the barriers to change do not outweigh the benefits, and that they can realistically accomplish the needed changes in behaviour.

1.5 Application of the Model

Knowing what aspects of the HBM caretakers accept or reject will help design appropriate interventions. For example, if caretakers are unaware of the risks, which can occur in their children if they do not receive the MBV (perceived susceptibility), then health education will be given so as to sensitize the caretakers about the problems which can occur. Furthermore, if caretakers are aware of the risks and health problems which can ensue in their children as they grow, then barriers should be identified and eliminated so as to help in the uptake of the MBV. Constant reminders (cue to taking action) should be done during programs such as child health weeks, announcements in churches and many more similar avenues, citing reasons as to why MBV plays a major role in the child's health.

When applying the HBM in this study, the researcher was able to understand how caretakers felt their children's susceptibility to the problem (for example a child suffering from measles due to lack of immunisation), and whether the caretakers believed that MBV can reduce chances of the child suffering from measles. This could lead to self-efficacy and motivation to freely utilize vaccination services.

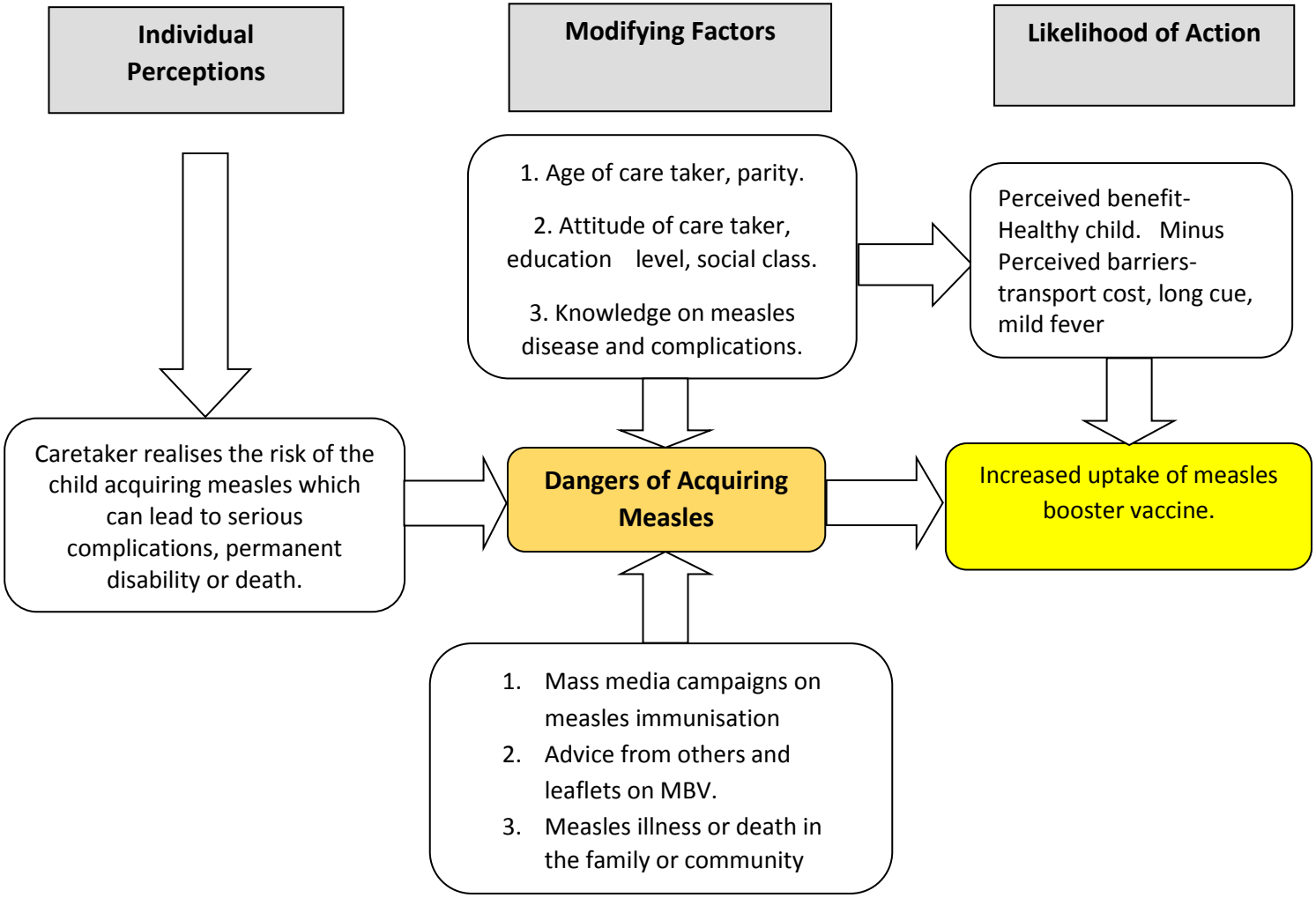


Figure 1: Diagram of modified H.B.M theoretical framework

1.6 Justification of the Study

Evidence shows that effective immunisation coverage could prevent infectious childhood illnesses (John, 2005). Measles is the greatest vaccine-preventable killer of children in the world today and the eighth leading cause of death among persons of all ages worldwide (Orestein et.al., 2004). In the developing world, persistent transmission of measles virus and high infant morbidity and mortality have led to the recommendation that infants be vaccinated at nine months of age, even though maternal antibody may interfere with seroconversion. Seroconversion rates at nine months of age average 85% (Knobler et al., 2002). Thus, this policy sacrifices maximum seroconversion in an attempt to protect infants at a younger age. A single dose is clearly inadequate to reach a 95% immunity level. However, if a second dose is given during the second year of life, immunity levels can be increased substantially; at 85% coverage for two independent doses, immunity levels reach 95%. Measles is no longer endemic in the U.S (CDC, 2017). The U.S eliminated measles because it has a highly effective measles vaccine, a strong vaccination program that achieves high vaccine coverage in children, and a strong public health system for detecting and responding to measles cases and outbreaks (CDC, 2017). Indeed, all countries attempting to eliminate measles transmission have used some form of two-dose strategy (Knobler et al., 2002).

The emergency responses were costly and logistically difficult to implement and required major diversions of resources toward outbreak control from other immunisation and public health priorities (CDC, 2011). The current immunisation coverage for Zambia estimated at 72% since 2007 (CSO, 2013-2014) is still low to achieve the targeted reduction of under-five mortality from the current level 119 per 1,000 live births to 63 per 1,000 live births by 2016 (Ministry of Community Development Mother and Child Health / MoH, 2013). According to Ministry of Community Development Mother and Child Health (MCDMCH) under-five deaths were attributed to lack of coverage of high impact interventions, like immunisations (MCDMCH / MOH, 2013). The plan was to implement the accelerated high impact interventions from 2013 to 2016 towards efforts to improve Maternal, Newborn and Child Health (MNCH) outcomes for universal coverage in order to attain the set Millennium Development Goals (MDGs). Ideally all under-five children should receive the measles booster vaccine at 18 months. However, the current coverage and

uptake from available statistics indicate a gap in the utilisation of immunisation services.

This study aims at identifying the factors that influence the uptake of MBV among under-five children and therefore, it is a valuable addition to the existing literature on immunisation. It gives an opportunity for Scholars to understand immunisation activities and some of the factors influencing it in the Zambian context. This will prompt further questions and research on the topic and inevitably add more to the body of knowledge in general and child health studies in particular. It is also important to note that since the introduction of the measles booster vaccine in 2012, no studies have been done to look at the gaps in the uptake, which is generally low compared to the initial measles vaccine given at nine months.

The body of knowledge this study has generated is intended to bring to the attention of policy makers the need to appreciate utilization of immunisation services as a relevant topic, and to recognize caretakers as individuals in need of concerted and well-planned attention and intervention. Furthermore, using data and information from this study will assist in promoting policies and programs commensurate with specific needs of under-five children.

1.7 Objectives

1.7.1 General Objective

To determine factors that influence uptake of measles booster vaccine among under five children in Lusaka district.

1.7.2 Specific Objectives

I. To evaluate the knowledge of mothers and caretakers regarding child immunisation and measles booster vaccine.

II. To evaluate attitudes of mothers and caretakers regarding child immunisation and measles booster vaccine.

III. To determine related factors that impact the uptake of measles booster vaccine.

1.8 Research Question

What are the factors that influence the uptake of the measles booster vaccine?

1.9 Hypothesis

There is no association between caretakers' uptake of measles booster vaccine and the following factors:

- Knowledge of caretakers
- Caretakers' traditional beliefs
- Marital status of caretakers
- Attitude of caretakers
- Quality of service
- Educational level of caretakers.

1.10 Conceptual Definition

1. Caretaker

   Someone responsible for looking after another person for example a person who is disabled, ill or very young (Collins dictionary, 2009).

2. Knowledge

   Information and understanding about a subject which a person/people have (Collins, 2009).

3. Attitude

   A feeling or opinion about something or someone or a way of behaving that is caused by this (Cambridge advanced learners dictionary, 2010).

4. Immunisation

   A vaccination that works by stimulating the immune system of the body to fight disease (Shield & Stoppler, 2008).

5. Under-five child

Children who are less than five years especially those who are not in full time education. (Oxford dictionary, 2014).

6. Utilization:

   Means making use or turning into practical use something for a particular purpose (Collins dictionary, 2009).

7. Booster

   A dose of a vaccine that increases or renews the effect of an earlier one (Pocket Oxford English Dictionary, 2005).

8. Uptake

   The action of taking up or making use of something.

9. Utilization: it is a way of using something for a specific purpose (Pocket Oxford English Dictionary, 2005).

1.11 Operational Definition of Terms

1. Uptake: The act of providing the vaccine to the child. In this study uptake of vaccines was measured by checking the immunisation cards and noting the number of children who received the measles booster vaccine at the recommended age (18 months).
2. Knowledge: This refers to information needed and required by caretakers in relation to under-five growth monitoring program that's acquired through health education and socialization. The respondents' knowledge levels on the immunisation schedule and completion of immunisations were measured by asking the respondents 8 knowledge questions. The knowledge levels were categorised as high, medium and low. High knowledge levels denote a scores of 7 correct answers and above while Medium was rated between 4 and 6 correct answers and Low knowledge levels denote a score below 4.
3. Attitude: in this study, attitudes mean the way caretakers view and think about measles immunisation services in a negative or positive way. This was assessed

by asking the participants about the safety of the MBV, also if they thought the staff at the clinic they visited were helpful and their ability to utilise the health care facilities for other services e.g delivering and utilising postnatal services. The attitude scale had three statements likert scale comprising five points e.g strongly agree, agree, disagree and strongly disagree. Any scores from 7 to 3 were regarded as having negative attitude and scores of 15 to 11 were regarded as having positive attitude.

4. Traditional beliefs: Refers to practices that individuals learn and adopt by virtue of belonging to a particular tribe or cultural group. This was measured by asking each participant to mention one traditional belief in their culture that can influence the uptake of the measles booster vaccine and responses analysed as being either good if they supported the use of MBV or bad if they did not.

5. Quality of service**:** Quality of service means provision of all necessary services. This was measures by 14 items on the questionnaire and was categorised as very good, good and poor service quality. The total score for the item was 16. Scores of 16 to 14 were considered as very good service delivery, scores of 13 to 8 were considered as good service delivery and scores of 7 and below were considered as poor service delivery.

6. Caretaker: Refers to the person looking after the child. This study considered the individual bringing the child for immunisations at the health facility who met the requirements stipulated in the inclusion criteria.

1.12 Variables and Cut - Off Points

1.12.1 Independent variable

The independent variables for this study were:

- Quality of service, religious beliefs, knowledge, attitudes, traditional beliefs and caretaker's education level.

1.12.2 Dependent variables

The dependent variable for this study was "uptake of measles booster vaccine".

Table 6: Variables and cut-off points

Variables	Indicators	Cut Off Point	Questions Numbers
Independent Variables			
Traditional beliefs	Good	If the belief supports the use of immunisations.	19
	Bad	If the belief does not support the use of immunisations.	
Knowledge	High	Respondent is able to provide 14-18 answers on types of vaccines, measles vaccine schedule and benefits.	11, 12, 15, 14, 15, 16, 17, 18.
	Medium	Respondents answering 8-13 questions appropriately	
	Low	Respondents answering up to 7 questions correctly.	
Attitude	Positive	Scores of 9-15 on the likert scale.	20, 21, 22, 23
	Negative	Scores of 1-8 on the likert scale.	
Quality of service	Very good	Scores of 14-16 on quality of service questions.	24, 25, 26, 27, 28, 29, 30, 31. 32, 33, 35.
	Good	Scores of 8-13 on quality of service questions.	
	poor	Scores of 7 and below on quality of service questions.	
Educational level	High	Respondents who attended junior secondary and above.	7
	Low	Respondents who did not attend school or went up to primary level.	
Dependent Variables			
Uptake of measles booster vaccine.	High	Respondents with children who received MBV at 18 months.	34
	Low	Respondents with children who received MBV after 18 months.	

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focused on studies that have been done by other researchers in relation to the uptake of measles booster vaccine. This was in order to bring an in-depth knowledge of the study topics which may assist in finding solutions to the current situation, through identification of gaps. Previous study findings form the basis for comparison when interpreting current study findings. Literature search was done using WHO, CDC and UNICEF documents, text books and research articles accessed through Hinari, PubMed, and Medline using internet. Analysing various documents and publications gave a broader perspective on the topic and the study variables were utilised in discussing the global, regional and national perspectives.

2.2 Chapter Overview

There has been a steady increase in routine measles coverage from 71% to 82% globally between 2000 and 2009, and from 56% to 73% in the 47 countries with the greatest burden of measles deaths (Rutachunzibwa, 2010). Vaccines are the most successful and cost-effective public health interventions available to avert vaccine-preventable diseases and deaths. Despite progress in the field of child health, many children in Africa still get measles and die from vaccine-preventable diseases due to lack of vaccination (Leila et al., 2014). Parents, adolescents and teachers are key players with regard to implementation of childhood vaccines and vaccination policies. Therefore, understanding their knowledge, attitudes and practices is of vital importance (Leila et al., 2014).

2.3 Knowledge of Immunisations by Mothers/ Caretakers

In a longitudinal study conducted in a Brazilian city by Logullo and colleagues (2008), it was revealed that about 20% of the caretakers they interviewed did not completely know what measles was, and 69.9% simply knew it as a disease, and a good

percentage of 89% knew that measles could kill. From this study, it was evident that despite using many different communication channels during the year to inform people about vaccination, the information, education, communication (IEC) was not sufficient as it failed to convince the masses on the immunisations.

Similarly, a cross-sectional survey conducted in Temeke district of Tanzania by Lyimbo (2012) revealed that 81.3% of the study participants knew the types of vaccines given to an infant from birth, with 78.9% having full knowledge of the purpose for vaccination, while only 54.2% had knowledge on the correct age at which measles vaccine is given. An additional 67.9% knew that measles was a vaccine preventable disease. Lyimbo (2012), further found out that a child whose mother had completed primary education or had not attended school was three times more likely to have a low uptake than a child whose caretaker had completed secondary school. These findings were similar to the findings of the Tanzania Demographic Health Survey (TDHS, 2010) where the percent of children 12-23 months who were fully immunized depended on mother's education also. Mothers who had no education had coverage of 63%, while mothers with education had coverage of 88% (TDHS, 2010). Studies done in Mozambique, Malawi, Ethiopia and India also found out that maternal education was an important determinant of childhood immunisation (Thomson, 2008 and Kirosa, 2004).

Wessi et al., (2009) highlights the influence of media and information on the results of mass campaigns. Following a mass campaign in Pakistan, unvaccinated children were more likely to live in homes or have a caretaker who reported not being informed at least one day in advance of the campaign, have a caretaker who did not watch television and reported limited number of sources of information. The study also concluded that the knowledge of caretakers appeared to be of great influence, on who is and who is not vaccinated during mass campaigns. It was further noted that being unaware of the campaigns was the most frequently cited reason given by caretakers as the reason why their children were not vaccinated.

A study by Awadh et al., (2014) assessed whether educational interventions improve parents' knowledge about immunisation according to an experience from Malaysia. To conduct the assessment on the knowledge levels of the caretakers, pre-test and post-test questionnaires were administered. The pre-test questionnaire was administered

before health education and the post-test came after exposure to the health education. The number of caretakers answering correctly increased on all the ten items with significant increase for seven items. The part on the statement that healthy children do not need immunisation was 78% against 94.5% in the post-test. Vaccination is for all ages scored 52.1% against 79.5% in the post-test. The statement on whether the vaccine should not be given in some health situations was rated at 58.9% compared to 82.2% in the post-test and the caretakers' knowledge on possibility of vaccines being given in combination was initially at 67.1% and 93% after the post-test (Awadh et al., 2014).

The parents' overall pre-test and post-test scores were compared on the number of questions answered correctly. The pre-assessment and post-assessment tests were completed by all the 73 caretakers. It was concluded that prior to the health education, caretakers had inadequate information as noticed in the pre-test. This can be supported by the findings from the study by Wessi (2009) were caretakers who had incorrect or insufficient knowledge about vaccines or mass campaigns were less likely to have their children vaccinated during a mass campaign. On the other hand, caretakers may have mistaken knowledge about the timing, number of doses needed, immunity or side effects.

Flavin el al., (2012) asserts that it has been found that children of mothers who have knowledge about immunisation and its importance had much greater immunisation uptake. Naem, (2012), further added that caretakers who vaccinated their children on time had higher vaccine related knowledge than those who delayed. Furthermore, Kawakatsu and Honda (2012) concluded that caretakers' knowledge about vaccine schedules was a predicting factor for children's immunisation status. A study by Tumuhairwe (2016) in Uganda reported that 90% of their respondents were aware of the immunisable diseases.

Zambia's Mubotu (2011) stated that the measles vaccine, according to the vaccination schedule is the last vaccine a child should receive. The responses revealed that 23 percent of mothers/caretakers either did not know when their baby should finish receiving vaccines or gave wrong ages. This could account for those whose children defaulted or delayed in getting their doses.

2.4 Traditional Beliefs Influencing Uptake of Immunisations

Divergent cultural perspectives and opinions towards vaccination, including libertarian and religious objections, as well as vaccine suspicions signal the need for continued communication and collaboration between medical and public health officials, and the public regarding acceptable and effective immunisation policies (WHO/ UNICEF, 2016). Religious objections by Muslim fundamentalists have driven suspicion about the vaccinations in three different countries in which these preventable diseases are still endemic: Pakistan, Afghanistan and Nigeria and most of these people call these vaccines an American ploy to sterilise Muslim populations and an attempt to avert Allah's will (Warrarch, 2009). Restriction on vaccinations have even resulted into violent beatings and kidnapping (Jogede, 2007 and Warrach, 2009).

Public trust is essential in promoting public health. In 2003, religious leaders in three different Nigerian states claimed that vaccine agents (despite tests confirming the vaccine safety), were contaminated with the virus that caused Acquired Immune-Deficiency Syndrome (AIDS), sterilization and cancer. In 2005, measles vaccine suspicions led to decreased vaccination rates and increased measles infections in Nigeria (Clements et al., 2006). Internationally in parts of Asia and Africa, mistrust of vaccines is often tied to Western plot theories which suggest that vaccines are ploys to sterilise or infect non-Western communities (WHO, 2009). Suspicions have existed for different infections and vaccines over the past 20 years (Savalsberg et al., 2000). A suspicion is best understood in a social and historical context of inequality and mistrust. For example, several studies have found that the legacy of racism in medicine and the Tuskegee Syphilis study; a clinical trial conducted on African Americans who were denied appropriate treatment opportunities, are key factors underlying African Americans' distrust of medical and public health interventions, including vaccinations (Moutsiakis et al., 2007). One of the most striking vaccine suspicions that raised suspicion in Africa was associated with the polio vaccine in 1999. It was also observed in another publication by a British journalist Hooper who wrote 'The River': A journey to the source of HIV/ AIDS (Hopper, 2011).

2.5 Attitude of Mothers / Caretakers Towards Immunisations

Weissi et al., (2009) in their study in India discovered that unvaccinated children in a mass campaign were more likely to have caretakers who stated concerns about side effects of vaccinations. A similar study in Ukraine found that the unvaccinated were more likely to think that the vaccine was ineffective or unsafe or that a booster dose was not needed (Weissi, 2009). In addition, studies in Uganda found that caretakers of unvaccinated children thought that a previous national immunisation day had caused an epidemic of malaria that killed a large number of children (Nuwaha, 2000). In Cameroon a rumour that a vaccination campaign was being used by public health workers to sterilise women led to some of the women running away from vaccination teams, and eventually led to cancellation of the campaign (Savelsberg et al., 2000).

In a related study, Burgess et al., (2006) concluded that since vaccination of children protect against unseen threats and the benefits are not immediately apparent, there is very little motivation for caretakers to prioritise vaccination services amidst competing demand for time. On the other hand, a study in Saudi Arabia reported parents' positive attitudes towards immunisations (Yousif et al., 2013). It is therefore very important to provide factual information to caretakers to assist them in adopting a positive attitude towards immunisations.

2.6 Service Related Factors Influencing Immunisation Uptake

According to WHO (2012), a programme can be seriously damaged by the poor interaction between staff and clients. In some cases, staff have been observed to be rude. Even when correct information was provided, the manner in which it was delivered was not conducive to parents returning to complete immunisation for their children. This kind of situation is undesirable but the reason for such behaviour may be complex and not always directly within the control of the health worker and require considerable effort to correct.

Apart from barriers and "missed opportunities" for vaccination, current researchers focus on vaccine hesitancy, which is influenced by factors that include complacency, convenience and confidence (Naus, 2015). It has also been stated that the phenomenon

is not new. Some of its drivers include, an increasingly crowded immunisation schedule, heightened societal concerns about risk over benefits, and a rise in health consumerism. A retrospective cohort study in Sydney revealed that there was an improvement in the attendance among those who received personalised calendars for reminders compared to those who did not (Abbott et al., 2013). In another study by WHO (2009), it was concluded that the link of antenatal care with a child's vaccination status is noteworthy. Therefore, increasing access to the health care system during pregnancy could improve prenatal care as well as provide opportunities for promotion of child preventive services including vaccination.

2.7 Marital Status

Cheelo (2011) in a study conducted in Sesheke district of Zambia reported that 83% of the respondents were married while 10% were not married and 7% were divorced. There were no women who reported being widowed or separated. This shows that most of the women interviewed who brought children for immunisation were in a relationship and the fact that most of them were married may be considered beneficial because it may be regarded supportive in caring for and taking children to under five clinics.

2.8 Uptake of Measles Booster Vaccine Among Under-Five Children

A cross-sectional study done in Birmingham by Pareek and Patson (2000), revealed that there was no significant difference between the responders and non- responders in group I or group II in terms of immunisation coverage. According to South Birmingham child surveillance unit data, 89.5% of the children of group I and 95.3% of the children of group II had received their complete course and primary vaccination by the age of 6 months. Of the group II children 91.5% had received their first MMR vaccine by age 21 of months. The mothers who did not have their children vaccinated with the first MMR vaccine all sighted fear as their reason for not taking them. Despite this study showing evidently how good mothers were in terms of knowledge about the side effects of the vaccine, 100% sited malaise as the most common side effects.

Immunisation is considered timely when received within 30 days of the recommended age (Abbott et al., 2013).

In a cross-sectional study on equity and vaccine uptake done in Pakistan, it was revealed that despite a high proportion of mothers having appropriate knowledge of, and positive attitudes to vaccination, only half of the children aged 10–59 months accessed vaccination (Mitchell et al., 2009). It was further noted that in urban areas, having an educated mother, discussing vaccination, having correct knowledge about vaccinations and living within 5km of the health facility were associated with vaccination uptake. Another related study in Mozambique revealed that 25.7% of children had experienced a missed opportunity for vaccination and 14.9% were incorrectly vaccinated (Jani et al., 2008). Reasons for incomplete vaccination were associated with accessibility to the vaccination sites. A study in Kathmandu, Pakistan at Kanti Children's hospital reported immunisation uptake of 69% (Matsuda, 2002).

A similar survey in China reported that the coverage rates were 76.9% for the initial MCV and 44.7% for the second dose in average (Li et al., 2013). Only 47.5% were timely vaccinated. The reasons for the delay included lack of awareness of the necessity for vaccination, schedule, and misunderstanding of vaccine side-effects. The current two dose schedule will achieve virtually 100% protection only if there is uniform coverage of 95% of both vaccines (WHO, 2013). Ngoma and others (2007) sited by Mubotu (2010) presented a conference paper that looked at the effect of special campaigns and routine immunisation on Zambia's immunisation coverage in their prospective and retrospective study. The results indicate that the health workers' practices were professional, however, there were challenges of inaccurate CSO statistics on population, as well as non- payment of outreach allowances. However, campaigns had benefits such as infrastructure improvement, refresher courses, strengthened partnerships and social mobilization. Their conclusion was that complex health system challenges affected immunisation coverage and some required immediate attention such as bridging the gap between clients and health providers through effective communication.

2.9 Conclusion

From the various literature reviewed in this chapter, it is evident that there are numerous factors that have been identified to interfere with immunisation uptake. They range from simple to complex, as human beings have a lot of factors that influence their behaviour in particular situations. Gaps were identified in the knowledge of the caretakers, their attitude towards immunisation, their education level, as well as in the quality of service provided.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the study design, study setting, study population, sample selection methods and sample size. The data collection technique, data collection tool as well as its validity and reliability and ethical and cultural consideration for the study are also discussed in this chapter.

3.2 Research Design

This study was a descriptive cross sectional study and data was collected from the study participants at one point in time. This design was chosen because it involves the systematic collection and presentation of data to give a clear picture of the situation. Furthermore, the study was conducted in a natural setting without manipulating the environment and phenomena were observed as they occurred.

3.3 Research Setting

The research was conducted in four urban clinics of Lusaka district in Lusaka province of Zambia. These clinics were Chawama, Kabwata, Kalingalinga and Mtendere. The clinics were chosen because they had a Maternal and Child Health (MCH) departments where vaccinations of under-five children were done, as well as an out-patient departments (OPD) where under-five children who were sick were screened from. They are all situated in high density areas where myths and misconceptions on vaccinations are believed to be held strongly.

3.4 Study Population

In this study the study population included all mothers and caretakers with children aged between 18 and 59 months. These children had under-five cards on which all vaccines administered were documented, hence it was easy to trace those who had and

who had not received vaccinations, note the age at which the vaccine was administered.

The accessible population were the mothers and caretakers from the four urban clinics who had children between the ages 18 and 59 months, and were available and willing to take part in the study. According to Lusaka district health management team (DHMT), the populations of children aged between 12 months and 60 months calculated at 16% from the catchment population figures for the four clinics were as follows; Mtendere 17,523, Kalingalinga 15,540, Chawama 23,116, and Kabwata – 18,642 (Lusaka DHMT, 2016).

3.5 Sample Selection

Simple random sampling method was used in which mothers and caretakers with children aged between 18 and 59 months who were available at the clinic at the time of data collection was used to select participants for the study. These women also satisfied the specifications spelt out in the inclusion criteria**.** Elements were selected from the sampling frame which comprised of clients from the four health centres in Lusaka District. Mothers and caretakers with children aged between 18 and 59 months were identified and allocated serial numbers. The investigator also had all the numbers on cards in a separate bowl and took out a card randomly after shaking the bowl. The first card picked became the first participant for the day unless they decline even after meeting the inclusion criteria. The card once removed was not replaced and the process continued until the required number is picked.

3.5.1 Inclusion Criteria

All mothers and caretakers who resided in the selected catchment areas with children aged between 18 and 59 months, and attending under-five clinics or OPD during the period of data collection were eligible to be included in the study. The participants were above the age of 18 years and were willing to give consent to participate in the study.

3.5.2 Exclusion Criteria

Mothers and caretakers who were not Lusaka residents, those who had very sick children were excluded from taking part in the study. Young mothers, below the age of

18 years who were willing to participate in the study but whose parents or guardians were unavailable to grant them permission to participate in the study were also excluded from the study. The caretakers who declined to participate even after meeting the inclusion criteria were also excluded.

3.6 Sample Size

The sample size was calculated from the population of children who did not receive the measles booster vaccine using the proportion/prevalence formula.

Mtendere 56.7

Kalingalinga +50.0

106.7

106.7 ÷ 2 =53.4

P = 53.4, 1- P= 0.466

= 0.534

$$n = \frac{Z^2 P (1-P)}{d^2}$$

P = the proportion of children who did not receive the booster vaccine on average using two health centres of Lusaka.

1 –P =1 – 0.534 = 0.466

Z = 1.96 is the standard normal variate at 95 % confidence level.

D = ± 5% = ± 0.05 is the precision.

Therefore $n = \frac{1.96^2 \times 0.534 \times 0.466}{0.05^2}$

= 382.38

= 383.

Therefore, the sample size was 383.

The total number of children from the four facilities was 74,821 and this was used to calculate the number of caretakers to pick from each of the selected facilities. After the calculation 90 participants were selected from Mtendere, 80 participants were picked from Kalingalinga, 118 participants came from Chawama and 95 participants were selected from Kabwata.

3.7 Data Collection Tool

Data was collected using a pretested semi structured interview schedule. It was collected from mothers and caretakers with children aged between 18 months and 59 months. The tool was adapted from a previous study by Negussi and colleagues on factors associated with incomplete childhood immunisation in Arbegona, Ethiopia. It had open ended questions to allow the respondents to provide their opinions freely, and closed ended questions. It was written in simple language so as to ease understanding of the information. The closed-ended questions allowed quick recording of responses and helped save on time. Advantages were that the tool could be used on both the literate and illiterate participants, non-verbal behaviour and mannerisms could be observed, questions could be clarified if they were misunderstood, and in-depth responses were obtained.

The data collection tool consisted of five (5) sections. Each section elicited a specific type of data to be collected, which was relevant to the study. Section I consisted of questions on socio-demographic characteristics. Section II captured knowledge regarding child immunisation and completion of vaccine schedules, while section III explored the traditional beliefs that could influence the uptake of the measles booster vaccine. Section IV looked at participants' attitudes regarding child immunisation, and section V explored factors related to immunisation service delivery.

3.7.1 Validity

To ensure validity, extensive literature review on MBV was conducted. Experts in immunisations, paediatrics and research supervisors were consulted as well, to ensure content validity of the tool. They also examined the questions, in terms of content and

structure, to determine whether they would elicit desired responses on the variables to be measured. Furthermore, the questions were constructed in a simple, clear and precise way in order to give respondents chance to give clear and precise answers. The validity of the instrument used in this study was maintained by ensuring that all aspects of variables pertained to women above 18 years. In addition, the WHO guidelines on MBV were included in the interview schedule.

3.7.2 Reliabiltiy

Reliability was ensured by adapting the developed data collecting tool to the already existing standardised WHO guidelines on MBV. A pilot study was conducted at Chipata clinic. The centre had almost the same settings in terms of geo location, population, social, physical, and economic determinant of health with the other Lusaka urban district clinics included in the main study. During the pre-test, respondents were asked if there were any questions they did not understand. This was in order to allow for alteration of questions on the interview schedule where necessary. The questions were simple, concise and brief.

3.8 Data Collection Technique / Process

The respondents were interviewed by the researcher. An introductory letter from Lusaka DHMT and a letter of ethical approval was obtained as proof of permission granted to proceed with data collection. The interview schedule was translated into one (1) local Language (Nyanja) which is commonly used in the area. Data was collected in 45 days, from 15th May, 2017 to 30th June, 2017. The interviews were conducted face to face. The process of data collection proceeded in the following way; the researcher introduced herself in a language that was understood by the respondent in order to make them at ease. An explanation of the purpose of the study was done in simple terms to enable the respondents to take part in the research fully informed. Each respondent was interviewed 20-30 minutes in a private room in order to maintain confidentiality for and participants were assured that the information was to be used for the research purpose only. Names would be not entered on the questionnaire. The collected data was locked in a confidential place and it was not exposed to other people. The respondents were informed that participation was voluntary and they

could withdraw from the study if they so wished and this would not affect their obtaining health care in any way.

Thereafter, consent was sought from those willing to participate in the study by signing the consent form. Once the consent was obtained, the researcher then proceeded to ask questions using the structured interview schedule. All respondents were asked the same questions in the same order. Open-ended questions were asked and participants were allowed to respond in their own words. The researcher wrote down the responses. Closed-ended questions were asked and participants allowed to respond by choosing one option from the available options provided. The researcher circled or ticked the letter against the response given. The respondents were thanked after the interview for having taken part in the study.

3.9 Pilot Study

A pilot study was used to determine whether data collection tools actually measured what they were supposed to measure. It was applied on subjects who met the inclusion criterion for the study sample. The pilot study was conducted at Chipata clinic. The centre was chosen because it had similar characteristics to the research settings. The pilot study constituted 10% of the sample size, which came to a total of 39 respondents. It helped to correct any errors within the structured interview schedule before commencement of the main study. The corrections made include the removal of Nyanja. It replaced by Ngoni and Nsenga. Among the religions, there was need to add United Church of Zambia (UCZ) and Muslim, as there were respondents from these groups. The question on occupational status required the addition of those that were self-employed as they were not captured in the initial tool. The question that addressed the education level indicated as elementary was replaced by primary which is a more familiar term in our setting.

3.10 Ethical and Cultural Consideration

Ethics clearance was obtained from the University of Zambia Biomedical Research Ethics Committee (UNZABREC). Written permission to conduct the study were obtained from Lusaka DHO. The purpose and nature of the study was explained to the

study participants and those who declined to participate were reassured that no privileges would be denied to them. Those who agreed to take part in the study were asked to sign a consent form and the illiterate women were asked to thumb stamp the consent which was written in Nyanja, or English.

Those who participated in the study were not remunerated in any way. The respondents were not exposed to any physical and emotional danger or harm. Confidentiality and anonymity was maintained in that no names appeared on the interview schedule sheets. Respondents were interviewed one at a time in a room to ensure privacy. After each interview session, the investigator kept all questionnaires under lock and key and no persons other than the researcher was allowed to access the collected data.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

Chapter four (4) provides information on data analysis and presentation of findings. Data were collected from 383 randomly selected respondents at four selected clinics in Lusaka, which included Mtendere, Kalingalinga, Chawama and Kabwata. Data were collected using a semi structured interview schedules. Prior to the main study, a pilot study was conducted at Chipata clinic, one of the clinics in Lusaka after which the main study was undertaken.

4.2 Data Analysis

After data collection, used questionnaires were counted and checked for completeness, legibility, accuracy and consistency. Answers from closed ended questions were coded and entered on the computer using SPSS version 22. Answers from open ended questions were read through, and those that belonged together were grouped through a process known as categorization Numerical codes (1, 2, 3 and so on) were then assigned to each group and the data was entered on the computer using SPSS version 22. Chi-square and linear regression was used to test for associations between dependent (uptake of measles) and independent variables (caretakers' knowledge, traditional beliefs, educational level, attitude towards immunisation and quality of service).

4.3 Data Presentation

Research findings have been presented according to the sections of the interview schedules. Some data have been grouped together to give an overall picture. To communicate research findings easily, data have been presented using frequency tables, pie charts, and cross-tabulations because they are easy to understand and can be used for all types of data. Charts were used to avoid monotony in data presentation, while cross-tabulations were used to show relationships between variables. Tables and

pie charts in section A communicates the demographic characteristics of respondents; the tables and pie charts in section B represent respondents' knowledge regarding child immunisation and completion of vaccine schedules. Section C presents information on attitude regarding child immunisation and completion of vaccine schedules, while section D looks at factors related to immunisation service delivery. Section E looks at the uptake of the measles booster vaccine and the cross-tabulations represent the relationship between variables.

4.3.1 Section A: Demographic Characteristics of Respondents

Table 7 presents the respondents background information which includes caretaker, age, marital status, tribe, religious denomination, occupation, education, child's age and sex.

Table 7: Demographic characteristics of the respondents

Variable		Frequency	Percent
Caretaker	Mother	275	71.8
	Father	46	12.0
	Sister	22	5.7
	Relatives	35	9.1
	Other	5	1.3
	Total	**383**	**100.0**
Age	Less than 20 years	33	8.6
	20 - 30 years	199	52.0
	31 - 40 years	129	33.7
	More than 40 years	22	5.7
	Total	**383**	**100.0**
Marital Status	Married	255	66.6
	Single	76	19.8
	Widowed	25	6.5
	Divorced	10	2.6
	Separated	17	4.4
	Total	**383**	**100.0**
Tribe	Nsenga	73	19.1
	Bemba	92	24.0
	Tonga	54	14.1
	Lunda	23	6.0
	Luvale	26	6.8
	Kaonde	31	8.1
	Lozi	41	10.7
	Ngoni	36	9.4
	Other	7	1.8
	Total	**383**	**100.0**
Denomination	Catholic	99	25.8
	SDA	66	17.2
	UCZ	56	14.6
	Pentecostal	59	15.4
	Anglican	41	10.7
	Moslem	45	11.7
	Other	17	4.4
	Total	**383**	**100.0**
Occupation	Employed	97	25.3
	Unemployed	182	47.5
	Self-employed	104	27.2
	Total	**383**	**100.0**
Educational Level	None	20	5.2
	Primary school	96	25.1
	Junior secondary school	118	30.8
	Senior secondary	102	26.6
	College and above	47	12.3
	Total	**383**	**100.0**
Age of child	1.5 - 2.5 years	158	41.3
	2.5 - 3.5 years	157	41.0
	3.5 - 4.5 years	38	9.9
	4.5 - 5 years	30	7.8
	Total	**383**	**100.0**
Sex of child	Male	187	48.8
	Female	196	51.2
	Total	**383**	**100.0**

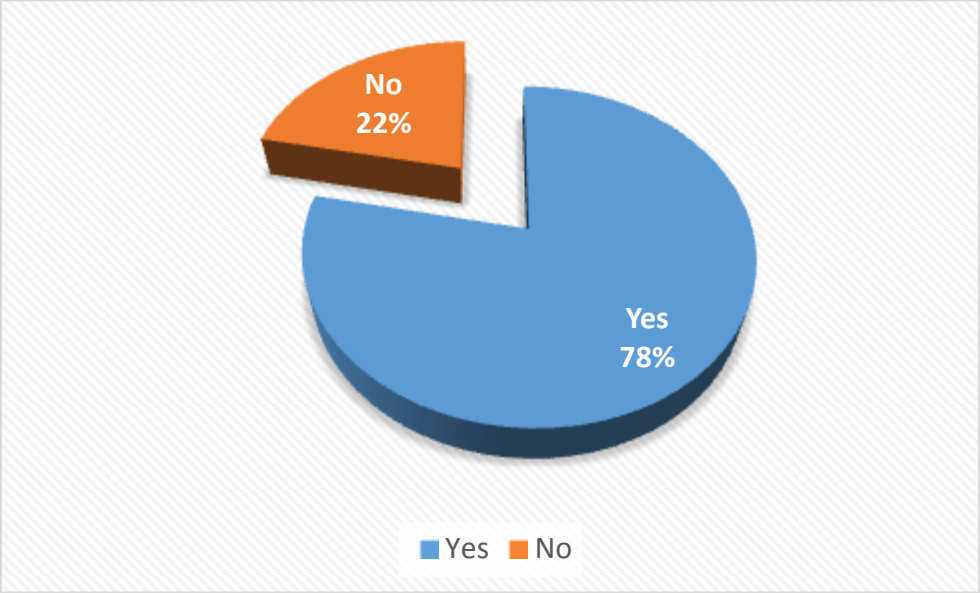
Table 7 shows that most respondents (71.8%) indicated mothers as the immediate caretakers of the children, 12% indicated fathers, 9.1% indicated relatives, 5.7% indicated sisters, while 1.3% indicated other caretakers. On the age of the immediate caretakers, the majority (52%) were aged between 20 and 30 years, 33.7% were aged between 31 and 40 years, 8.6% were aged below 20 years, while 5.7% were aged above 40 years. The tribes of the caretakers were distributed as follows; 24% were Bemba, 19.1% were Nsenga, 14.1% were Tonga, 10.7% were Lozi, 9.4% were Ngoni, 8.1% were Kaonde, 6.8% were Luvale, 6% were Lunda and 1.8% belonged to other tribes. Concerning religious denominations of caretakers, 25.8% were Catholics, 17.2% were Seventh Day Adventists (SDA), 15.4% were Pentecostals, 14.6% belonged to the United Church in Zambia (UCZ), 11.7% were Moslems and 10.7% were Anglicans, while 4.4% belonged to other religious denominations.

In terms of occupation, 47.5% of the caretakers were unemployed, 27.2% were self-employed and 25.3% were formally employed. In terms of levels of education attained, 30.8% of the respondents had attained junior secondary education, 26.6% had attained senior secondary education, 25.1% had attained primary education, 12.3% had attained college education and above, while 5.2% had not attained any level of formal education. Most children under investigation (82.2%) were aged between 1½ and 3½ years with 41.3% being aged between 1½ and 2½ years. 41% was aged between 2½ and 3½ years, while 9.9% were aged between 3½ and 4½ years and 7.8% were aged between 4½ and 5 years. The majority (51.2%) of the children under investigation were females while 48.8% were males.

4.3.2 Section B: Knowledge Regarding Child Immunisation and Measles Booster Vaccine

In this section, the respondents' knowledge on the immunisation schedule, diseases prevented by vaccines, initial measles immunisation age, measles booster immunisation age**,** how to tell whether or not the child has completed the immunisation schedule, benefits of immunisations, and immunisation side effects.

Figure 2: Respondents knowledge on the immunisation schedule



(n=383)

Most of the respondents (78.3%) knew their children's immunisation schedules while 21.7% did not.

Table 8: Respondents responses on diseases prevented by vaccines

Disease	Frequency	Percent
Diarrhoea	203	53.6%
Tuberculosis	303	79.9%
Polio	305	80.5%
Diphtheria	36	9.5%
Pertussis	16	4.2%
Tetanus	112	29.6%
Measles	296	78.1%
Hepatitis B	75	19.8%
Haemophilus influenza B	33	8.7%
Pneumonia	175	46.2%
Total	**379**	**100.0%**

On the question of diseases that could be prevented by vaccines, 80.5% of the respondents mentioned polio, 79.9% mentioned tuberculosis, 78.1% mentioned measles, 53.6% mentioned diarrhoea, 46.2% mentioned pneumonia, 29.6% mentioned tetanus, 19.8% mentioned hepatitis B, 9.5% mentioned diphtheria, 8.7% mentioned haemophilus influenza, while 4.2% of the respondents mentioned pertussis. Of the

total responses, polio constituted 19.6%, tuberculosis constituted 19.5%, measles constituted 19%, diarrhoea constituted 13.1%, pneumonia constituted 11.3%, tetanus constituted 7.2%, hepatitis B constituted 4.8%, diphtheria constituted 2.3%, haemophilus influenza constituted 2.1%, while pertussis constituted 1%.

Table 9: Respondents' Responses on Measles Immunisation Age

Initial Immunisation Age	Frequency	Percent
Wrong	89	23.2
Correct	294	76.8
Total	383	100
Booster Immunisation Age	**Frequency**	**Percent**
Wrong	193	50.4
Correct	190	49.6
Total	383	100

On when the initial measles vaccine is administered, most respondents (76.8%) gave the correct answer (9 months) while 23.2% gave wrong answers. On when the measles booster vaccine is administered, most respondents (50.4%) gave wrong answers while 49.6% gave the correct answer (18 months).

Table 10: Respondents' responses on how to tell if the child has completed the vaccines (n=383)

Response	Frequency	Percent
I refer to immunisation card	275	71.8
I follow health professional's/HEW's instructions	67	17.5
I refer to child's age	8	2.1
If child looks healthy	10	2.6
After measles vaccine	11	2.9
I don't know	9	2.3
Other	3	.8
Total	**383**	**100.0**

When asked on how they knew whether or not their children had completed the immunisation schedules, the majority (71.8%) of the respondents said they referred to the immunisation cards, 17.5% said they followed health professionals' instructions, 2.9% said they knew after the measles vaccine, 2.6% said they knew when their

children looked healthy 2.1% said they referred to their children's age, 2.3% did not know, while 0.8% said they knew through other means.

Table 11: Respondents' responses on whether vaccination benefits children (n=383)

Vaccine Beneficial	**Frequency**	**Percent**
Yes	357	93.2
No	26	6.8
Total	**383**	**100.0**
Benefits of Immunisations		
Immunity for the child	108	31.6%
Prevent diseases	283	82.7%
Control epidemic	41	12.0%
Total	**342**	**100.0%**

To the question whether vaccination had benefits for their children, 93.2% of the respondent answered in the affirmative while 6.8% answered in the negative. On the benefits of immunisations, most respondents (82.7%) cited prevention of diseases, 31.6% cited immunity for the child as a while 12% cited control of epidemics. Out of the total responses, prevention of diseases constituted 65.5%, immunity for the child constituted 25% while control of epidemics constituted 9.5%. There were 342 respondents who gave at least one response.

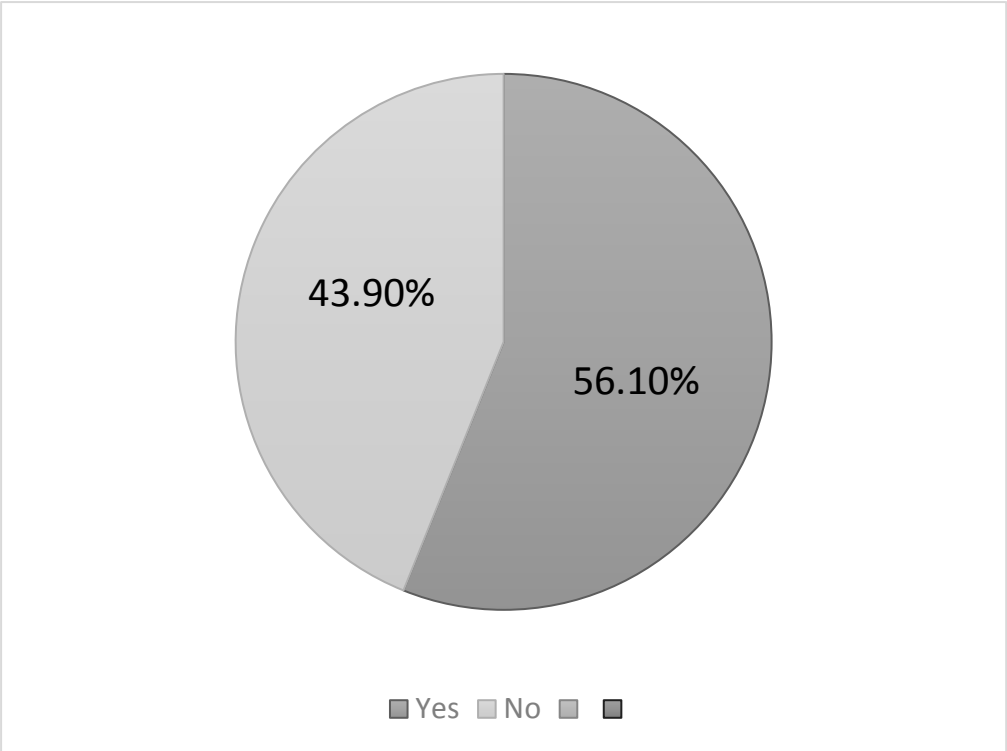


Figure 3: Respondents' responses on immunisation side effects

When asked whether measles immunisation had side reactions the majority (56.1%) of the respondents said yes while 43.9% said no.

Table 12: Respondents' responses on immunisation side effects

Side Effect	Frequency	Percent
Fever	141	90.4%
Shivering	29	18.6%
Painful swelling at injection site	29	18.6%
Vomiting	9	5.8%
Total	**156**	**100.0%**

On the side effects of immunisation for respondents, most respondents (90.4%) mentioned fever, 18.6% mentioned shivering, and another 18.6% mentioned painful swelling at injection site, while 5.8% mentioned vomiting. Out of the total responses, fever constituted 67.8%, shivering constituted 13.9%, painful swelling at injection site constituted 13.9%, while vomiting constituted 4.3%. There were 156 respondents who gave at least one response.

Table 13: Knowledge of caretakers regarding immunisation and completion of vaccine schedules

Knowledge Level	Frequency	Percent
Low	66	17.2
Medium	289	75.5
High	28	7.3
Total	**383**	**100.0**

In terms of knowledge levels, 75.5% of the respondents had medium knowledge levels while 17.2% had low knowledge levels and 7.3% had high knowledge levels.

4.3.3 Section C: Attitude Regarding Child Immunisation and Measles Booster Vaccine

In section C, the attitudes of caretakers regarding child immunisations and measles booster vaccine are presented. Responses to statements such as measles immunisation shots not safe, clinic staff where the child was immunised were helpful and waiting hours during clinic attendance are presented.

Table 14: Respondents' responses on whether measles immunisation shots were not safe (n=383)

Vaccine Not Safe	Frequency	Percent
Strongly disagree	164	42.8
Disagree	190	49.6
Neutral	21	5.5
Agree	6	1.6
Strongly agree	2	.5
Total	**383**	**100.0**

To the statement that immunisation shots were not safe for children, 92.4% of the respondents were in disagreed, out of whom 49.6% merely disagreed and 42.8% strongly disagreed, while 5.5% were neutral, 1.6% agreed, and 0.5% strongly agreed.

Table 15: Respondents' responses on whether clinic staff where the child was immunised were helpful (n=383)

Staff Was Helpful	Frequency	Percent
Strongly disagree	9	2.3
Disagree	17	4.4
Neutral	59	15.4
Agree	211	55.1
Strongly agree	87	22.7
Total	**383**	**100.0**

To the statement that the staff at the clinics where respondents got their children's immunisation shots were helpful, 55.1% of the respondents agreed and 22.7% strongly agreed, while 15.4% were neutral, 4.4% disagreed and 2.3% strongly disagreed.

Table 16: Respondents' responses on long waiting hours during clinic attendance

Long Waiting Hours	Frequency	Percent
Strongly disagree	43	11.2
Disagree	134	35.0
Neutral	79	20.6
Agree	89	23.3
Strongly agree	38	9.9
Total	**383**	**100.0**

To the statement that there were long waits at the clinics, 46.2% of the respondents disagreed, of which 35% merely disagreed and 11.2% strongly disagreed, 20.6% were neutral, while 33.2% agreed, out of which 23.3% merely agreed and 9.9% strongly agreed.

Table 17: Attitude of caretaker towards child immunisation and completion of vaccine schedules

Attitude	Frequency	Percent
Negative	267	69.7
Positive	116	30.3
Total	**383**	**100.0**

Most respondents (69.7%) had negative attitudes while 30.3% had positive attitudes towards uptake of vaccines.

4.3.4 Section D: Factors Related to Immunisation Service Delivery

Section D presents other factors related to immunisation service delivery and the quality of the service provided.

Table 18: Respondents' responses on clinic visits for other services

Clinic Visits Conducted	Frequency	Percent
Yes	355	92.7
No	28	7.3
Total	**383**	**100.0**
Reason For Visit		
For growth monitoring	321	90.4%
Follow up for chronic care	61	17.2%
Became sick	290	81.7%
For check up	86	24.2%
Total	**355**	**100.0%**

On whether respondents had taken their children to health institutions for other services, the majority (92.7%) responded in the affirmative while 7.3% responded in the negative.

On the reasons for taking their children to health institutions, 90.4% of the respondents mentioned growth monitoring, 81.7% mentioned sickness, 24.2% mentioned check-ups and 17.2% mentioned follow ups for chronic care. In terms of response proportions, growth monitoring constituted 42.3% followed by sickness which constituted 38.4%. Check-ups constituted 11.3% while chronic care constituted 8%.

Table 19: Respondents' responses on whether advise to vaccinate the child was provided during visit (n=383)

Caretaker Advised	Frequency	Percent
Yes	364	95.0
No	19	5.0
Total	**383**	**100.0**

On whether they received advice to vaccinate their children after delivery, 95% of the respondents answered in the affirmative while 5% said no.

Table 20: Respondents' responses on their child's place of birth and delivery attendant (n=383)

Place Of Birth	Frequency	Percent
Home	11	2.9
Health institution	372	97.1
Total	**383**	**100.0**
Delivery Attendant		
Health professional	373	97.4
TBA	4	1.0
Lay person	5	1.3
Other	1	.3
Total	**383**	**100.0**

Most respondents (97.1%) reported delivering their children from health institutions while 2.9% reported delivering from home.

Most of the respondents' deliveries (97.4%) were attended by health professionals, 1.3% were attended by lay people, 1% were attended by TBAs while 0.3% were attended by other people.

Table 21: Respondents' responses on whether advise to vaccinate child was provided after delivery (n=383)

Advice Given	Frequency	Percent
Yes	364	95.0
No	19	5.0
Total	**383**	**100.0**

On whether the respondents received advice to vaccinate their children after delivery, 95% of the respondents answered in the affirmative while 5% said no.

Table 22: Postnatal clinic attendance by the respondents after delivery (n=383)

Postnatal Care	Frequency	Percent
Yes	370	96.6
No	13	3.4
Total	**383**	**100.0**

On whether the respondents attended postnatal care after delivery of their children, 96.6% of the respondents said yes while 3.4% said no.

Table 23: Number of times respondents received postnatal care (n=383)

Postnatal Clinic Attendance	Frequency	Percent
Once	272	73.5
Twice	90	24.3
Three times or more	8	2.2
Total	**370**	**100.0**

For respondents who had attended postnatal care after delivery, the majority (73.5%) reported having attended once, 24.3% reported having attended twice, while 2.2% of the respondents reported having attended three times or more.

Table 24: Respondents' responses on whether immunisation advice was given at postnatal period

Immunisation Advise At Postnatal	Frequency	Percent
Yes	340	91.9
No	30	8.1
Total	**370**	**100.0**
MBV Reminder Given		
Yes	312	81.5
No	71	18.5
Total	**383**	**100.0**

Most respondents (91.9%) reported having received advice to vaccinate their children at post-natal period while 8.1% reported not receiving advice.

On whether the staff at the clinic always informed the respondents about when the next measles immunisation shots were due, 81.5% of the respondents said yes while 18.5% said no.

Table 25: Respondents' responses on convenience of immunisation clinics (n=383)

Convenient Hours	Frequency	Percent
Yes	327	85.4
No	56	14.6
Total	**383**	**100.0**

On whether the immunisation clinics they visited had hours convenient for them, 85.4% of the respondents agreed while 14.6% did not agree.

Table 26: Respondents' responses on age at which child received measles booster vaccine (n=383)

Age MBV Received	Frequency	Percent
18 months	268	70.0
More than 18 months	115	30.0
Total	**383**	**100.0**

The majority of the respondents (70%) reported that their children received the measles booster vaccines at 18 months of age while 30% reported having their children receive the measles booster vaccines at more than 18 months of age.

Table 27: Respondents' responses on whether caretaker returned home without receiving MBV (n=383)

Vaccine Not Given	Frequency	Percent
Yes	174	45.4
No	209	54.6
Total	**383**	**100.0**
Reason for Not Receiving Vaccine		
Vaccine not available	76	43.7
Vaccinators were absent	17	9.8
I don't know	36	20.7
Other	45	25.9
Total	**174**	**100.0**

On whether caretakers had ever returned home without getting the vaccination, 54.6% of the respondents answered in the negative while 45.4% answered in the affirmative.

On the reasons why the caretaker returned home without getting the vaccination, 43.7% cited non availability of vaccines, 9.8% cited the absence of vaccinators, while 20.7% did not know and 25.9% cited other reasons.

Table 28: Respondents' responses on the quality of service

Quality of Service	Frequency	Percent
Poor	44	11.5
Good	290	75.7
Very Good	49	12.8
Total	**383**	**100.0**

The majority (75.7%) of the respondents reported that the quality of service offered at the health facilities was good, 12.8% reported that the quality of services was very good, while 11.5% reported that the quality of service was poor.

Table 29: Respondents' responses on traditional beliefs

Types of Beliefs	Frequency	Percent
Bad	20	43.5
Good	26	56.5
Total	**46**	**100.0**

Of the respondents who reported observing traditional beliefs, the majority (56.5%) observed good beliefs while 43.5% observed bad ones.

4.3.5 Section E: Uptake of Vaccines by The Caretakers of Children

In section E the chapter presents the total uptake of vaccine of the children who participated in the study.

Table 30: Uptake of vaccines by the children of the respondents

Uptake	Frequency	Percent
Low	115	30.0
High	268	70.0
Total	**383**	**100.0**

The majority of the respondents (70%) reported a high uptake of vaccines as opposed to the 30% who reported a low uptake.

4.3.6 Section F: Association Between the Uptake of Measles Booster Vaccine (Dependent and Independent Variables)

Section F presents associations among the dependent and independent variables. In this study the dependent variable was uptake of the measles booster vaccine while the independent variables were traditional beliefs, knowledge, education level, attitude, quality of service and marital status.

Table 31: Association between dependent and independent variables

Independent Variables	Uptake Of Vaccines		P – Value
	Low, f (%)	High, f (%)	
Knowledge of Caretakers			<0.001
Low	34 (51.5)	32 (48.5)	
Medium	79 (27.3)	210 (72.7)	
High	2 (7.1)	26 (92.9)	
Attitude of Caretakers			<0.001
Negative	94 (35.2)	173 (64.8)	
Positive	21 (18.1)	95 (81.9)	
Quality of Service			<0.001
Poor	24 (54.5)	20 (45.5)	
Good	83 (28.6)	207 (71.4)	
Very Good	8 (16.3)	41 (83.7)	
Education Level			<0.001
None	10 (50.0)	10 (50.0)	
Primary	44 (45.8)	52 (54.2)	
Junior Secondary	25 (21.2)	93 (78.8)	
Senior Secondary	21 (20.6)	81 (79.4)	
College And Above	15 (31.9)	32 (68.1)	
Traditional Beliefs			0.056
Bad	7 (35.0)	13 (65.0)	
Good	3 (11.5)	23 (88.5)	
Marital Status			0.226
Married	79 (31.0)	176 (69.0)	
Single	18 (23.7)	58 (76.3)	
Widowed	10 (40.0)	15 (60.0)	
Divorced	1 (10.0)	9 (90.0)	
Separated	7 (41.2)	10 (58.8)	

The associations in Table 31 show an increase in the uptake of measles booster vaccines as the knowledge of caretakers increased. High uptake, which was recorded

at 48.5% in respondents with low knowledge, increased to 72.7% in respondents with medium knowledge and further to 92.9% in respondents with high knowledge. In like manner, low uptake decreased from 51.5% in respondents with low knowledge to 27.3% in respondents with medium knowledge and further to 7.1% in respondents with high knowledge. The observed trend was confirmed to be statistically significant by the chi-square test which yielded a p-value of 0.000, which is less than 0.05. Hence we reject the null hypothesis and conclude that there is an association between knowledge levels of caretakers and their uptake of immunisation vaccines. (X^2 =22.480, N=383, $p < 0.05$, 2-tailed).

The respondents with negative attitude had a low uptake of measles booster vaccines (35.2%) and high uptake at 64.8%. In respondents with positive attitude, low uptake decreased to 18.1% while uptake increased to 81.9%. The observed association was found to be statistically significant as the chi-square test yielded a p-value of 0.001. Hence we reject the null hypothesis and conclude that there is an association between the attitude of caretakers and their uptake of measles booster vaccines. (X^2 =11.258, N=383, $p < 0.05$, 2-tailed).

An increase in high uptake of measles booster vaccines was observed as the quality of service changed from poor to good and good to very good. In respondents who reported poor quality of service, high uptake was recorded at 45.5% and low uptake at 54.5%. In respondents who reported good quality of service, high uptake increased to 71.4% while low uptake decreased to 28.6%. The trend continued in respondents who reported very good quality of service, where high uptake increased further to 83.7% while low uptake dropped to 16.3%. The chi-square test yielded a p-value of 0.000. Hence we reject the null hypothesis and conclude that there is an association between the quality of service and the uptake of measles booster vaccines among caretakers. (X^2 =17.240, N=383, $p < 0.05$, 2-tailed).

There was an observed increase in high uptake of measles booster vaccine as education levels increased. High uptake of measles booster vaccines increased from 50% in respondents with no level of education to 79.4% in respondents with senior secondary education before dropping to 68.1% in respondents who had attained college education and above. This pattern was found to be statistically significant as the chi-square test yielded a p-value of 0.000, which is less than 0.05. Hence we reject

the null hypothesis and conclude that there is an association between levels of education of mothers/ caretakers and the uptake of measles booster vaccine. (X^2 =24.007, N=383, $p < 0.05$, 2-tailed).

In addition, there was an increase in measles booster vaccine uptake in respondents who observed good traditional beliefs as opposed to those who observed bad ones. In respondents observing bad traditional beliefs, low uptake of vaccines was recorded at 35% and high uptake at 65%. In respondents who observed good traditional beliefs, high uptake of measles booster vaccines increased to 88.5% while low uptake dropped to 11.5%. The observed pattern was however found not to be statistically significant as the chi-square test yielded a p-value of 0.056, which is greater that our threshold value of 0.05. Hence we fail to reject the null hypothesis and conclude that there was no sufficient evidence for us to prove that there is an association between the observation of traditional beliefs among caretakers and their uptake of immunisation vaccines (X^2 =3.657, N=46, $p > 0.05$, 2-tailed).

The uptake of MBV was also observed to be highest among the divorced respondents (90%) and lowest among the separated (41.2%). The second highest group of respondents in terms of uptake of measles booster vaccine were the single (76.3%), followed by the married (69%) and the widowed at 60%. No immediate pattern was observed from this cross tabulation. The chi-square test yielded a p-value of 0.226, hence we fail to reject the null hypothesis and conclude that there was no sufficient evidence for us to prove that there is an association between the caretakers' marital status and their uptake of measles booster vaccine. (X^2 =5.664, N=383, $p > 0.05$, 2-tailed).

4.3.7 Logistic Regression

Table 32: Logistic regression of dependent and independent variables

Independent Variables		Odds Ratio	95% Confidence Interval	P- Value (0.05)
Marital Status	Caretaker's Marital Status **(**ref: 1 =Married**)**			
	2 = Single	1.373	0.738 – 2.553	0.317
	3 = Widowed	1.006	0.382 – 2.650	0.990
	4 = Divorced	3.585	0.352 – 36.543	0.281
	5 = Separated	0.470	0.155 -1.422	0.181
Education	Mother's highest education level **(**1 = None**)**			
	Primary school	0.949	0.326 – 2.758	0.000
	Junior secondary school	2.390	0.778 – 7.339	0.012
	Secondary and certificate	1.917	0.601 – 6.112	0.015
	College and above	1.209	0.357 – 4.102	0.763
Knowledge	Highest knowledge level **(**0 = None**)**			
	Medium	1.749	0.902 – 3.391	1.000
	High	4.884	0.884 – 26.988	0.000
Attitude	Attitude towards MBV **(**0 = Negative**)**			
	Positive	1.740	0.970 -3.121	0.001
Quality of Service	Quality of service provided **(**0 = poor**)**			
	Good	2.698	1.350 – 5.395	1.000
	Very good	3.770	1.351 – 10.522	0.000

A binary logistic regression test was done to check the combined effect of marital status, education levels, knowledge, attitude and service related factors on the uptake of measles booster vaccine. All cases were included in the analysis and the dependent and independent variables were coded respectively. Changes in marital status were not expected to impact significantly on outcome of the regression Model while changes in

knowledge and attitude were all expected to impact significantly on the Model. Changes in education level from none to primary, primary to junior secondary and junior secondary to senior secondary were all expected to contribute significantly to the Model's outcome while changes from senior secondary to college and above were not. Changes in service quality from poor to good were not expected to contribute significantly while changes from good to very good were. The Model as a whole fitted significantly with a Chi-square value 52.238 and a p-value of 0.000 and could account for 18.1% variation in the outcome variable. The Model could correctly predict the outcome in 72.8% of the cases, with 92.5% accuracy in predicting high uptake and 27% accuracy in predicting low uptake.

In the equation, only changes in quality of service contributed significantly to the outcome of the Model. The contributions of changes in the rest of the variables were not significant. A change in quality of service from poor to good raised the odds of high uptake 2.698 times while a change from good to very good raised the odds high uptake 3.77 times.

4.3.8 Summary of Findings

The current study indicates that 71.8% mothers as the immediate caretakers of the children. On the age of the immediate caretakers, the majority (52%) were aged between 20 and 30 years. On the marital status of the caretakers, 66.6% were married. Majority of the respondents (25%) were Bemba but all the tribes were represented. Concerning religious denominations of the caretakers, 25% were Catholics by faith. In terms of occupation, 47.5% of the caretakers were unemployed. In terms of levels of education attained, 30.8% of the respondents had attained junior secondary education. Most children under investigation (82.2%) were aged between 1.5 and 3.5 years. The majority (51.2%) of the children under investigation were females. Most respondents (78.3%) knew their children's immunisation schedules. On the question of diseases that could be prevented by vaccines, 80.5% of the respondents mentioned Polio. On when the initial measles vaccine is administered, most respondents (76.8%) gave the correct answer (9 months). On when the measles booster vaccine is administered, most respondents (50.4%) gave wrong answers. Asked how they knew whether or not their children had completed the immunisation schedules, the majority (71.8%) of the

respondents said they referred to the immunisation cards. To the question whether vaccination had benefits for their children, 93.2% of the respondent answered in the affirmative. On the benefits of immunisation for respondents who said immunisation had benefits, most respondents (82.7%) cited prevention of diseases. To the question whether immunisation had side reactions, the majority (56.1%) of the respondents said yes. On the side effects of immunisation most respondents (90.4%) mentioned fever.

To the statement that immunisation shots were not safe for children, 92.4% of the respondents disagreed and to the statement that the staff at the clinics where respondents got their children's immunisation shots were helpful, 55.1% of the respondents agreed. To the statement that there were long waits at the clinics, 46.2% of the respondents disagreed. On whether respondents had taken their children to health institutions for other services, the majority (92.7%) responded in the affirmative. On the reasons for taking their children to health institutions, 90.4% of the respondents mentioned growth monitoring. On whether they received advice to vaccinate their children after delivery, 95% of the respondents answered in the affirmative. Most respondents (97.1%) reported delivering their children from health institutions and 96.6% attended postnatal care after delivery of their children. For respondents who had attended postnatal care after delivery, the majority (73.5%) reported having attended once. Most respondents (91.9%) reported having received advice to vaccinate their children at post-natal period.

On whether the staff at the clinic always informed them about when the next measles immunisation shots were due, 81.5% of the respondents said yes. On whether the immunisation clinics they visited had hours convenient for them, 85.4% of the respondents agreed. The majority of the respondents (70%) reported that their children received the measles booster vaccines at 18 months of age. On whether they had ever returned home without getting the vaccination, 54.6% of the respondents answered in the negative while 45.4% answered in the affirmative. On the reasons for returning home without getting the vaccination, 43.7% cited non availability of measles vaccines.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

Chapter five (5) presents the discussion of findings of the study on uptake of measles booster vaccine among under-five children at selected clinics in Lusaka. The main objective of the study was to determine factors that influence uptake of measles booster vaccine among under-five children in Lusaka District. The study subjects were caretakers with children aged between 18 months and 59 months. Data were collected using semi structured interview schedules.

5.2 Socio Demographic Characteristics of the Respondents

In this study, most respondents were mothers to the children under study, a good number were fathers and relatives while a small number included the sisters and other caretakers. Traditionally, mothers are the primary caretakers but fathers are also taking up the role and most of the facilities are encouraging male involvement and fathers are given priority when they bring the children for under-five clinics.

Majority immediate caretakers were aged between 20 and 30 years and very few were above 40 years old. These findings were contrary to a study by Yousif and colleagues (2013) in a study conducted in Saudi Arabia where more than two thirds of their respondents were 40 years. This study has revealed that most of the caretakers were married. This is because marriage is universal in most tribes in Zambia (CSO, 2014). The findings show that all the tribes were represented with the majority coming from the Bemba and Nsenga tribes. This shows that Zambia is a multicultural country. Currently there are 72 dialects in Zambia (CSO, 2014).

The caretakers belonged to various religious denominations which included Catholics, SDA, Pentecostals, UCZ, Moslems, Anglicans as well as other religious denominations. Zambia is a Christian nation hence, many people belong to different religious denominations. However, the minority people are Moslems. In terms of occupation most of the caretakers were unemployed, while some were self-employed and few of them were employed. The caretakers that were self-employed were

conducting various small businesses in town to support their families. Most of the caretakers were unemployed due to the fact that employment is difficult to find in Zambia. The unemployment rate stands at 20% (Trading economics, 2017).

Most of the respondents' education level ranged from junior secondary to tertiary level, while very few did not attain any form of education. These findings were similar to the findings of the Tanzania Demographic Health Survey (2010) where the percent of children 12-23 months who were fully immunized depended also on mother's education. Mothers who had no education had coverage of 63% while mothers with education had coverage of 88% (TDHS, 2010).

Most of the children under investigation were aged between 1½ years and 3½ years. This trend may indicate that caretakers with older children are reluctant to bring them for monthly growth monitoring in health facilities. The majority of the children under investigation were females. Perhaps, this could explain why the Zambian population has more females than males (CSO, 2014). These findings are dissimilar to those of Bhagraj et al., (2017), where 53% of their respondents were males and 47% were females.

5.3 Respondents Knowledge Regarding Child Immunisations and Measles Booster Vaccine

To evaluate the knowledge of mothers and caretakers regarding child immunisation and completion of vaccine schedules, the participants were asked if they knew the child immunisation schedule, diseases which can be prevented by vaccines, the age at which measles vaccine are given and also the benefits of immunisation.

The findings showed that most of the respondents knew their children's immunisation schedules as most caretakers were aware of the importance of having the child vaccinated with various life-saving vaccines commencing immediately after birth. This notion is confirmed by Flavin et al., (2012) who stated that knowledge about immunisations and its importance influence uptake of immunisations. Most of the respondents were also aware of vaccine preventable diseases such as polio, tuberculosis, measles and few caretakers mentioned diarrhoea, pneumonia, tetanus, hepatitis B, diphtheria, haemophilus influenza and pertussis. Although most caretakers were aware of the various forms of vaccines for under-five children, there is still need

for sensitisation so that the caretakers know when they are given so that they bring their children at the right time for vaccinations. This finding is in line with a study by Tumuhairwe (2016) conducted in Bushenyi district in Uganda where 90% of the mothers were aware of the immunizable diseases.

On when the initial measles vaccine is administered, most of the respondents gave the correct response. These findings are similar to Yousif et al., (2013) where a considerable number of parents (86.9%) knew the timing of the first dose in the vaccination schedule.

With regards to when the measles booster vaccine is administered, half of the respondents gave wrong responses. This could be attributed to lack of awareness as the measles booster vaccine is still a new vaccine that was introduced in Zambia in 2012.

The findings are in line with a cross-sectional survey conducted in Tanzania by Lyimbo (2012) which revealed that only 54.2% of respondents had knowledge on the correct age at which measles vaccine is given. The measles booster vaccine is still a new vaccine in the country and there is need to closely monitor the uptake in order to improve age-appropriate administration. Most of the respondents referred to the immunisation cards to try and establish whether or not their children had completed the immunisation schedules. Some of the respondents followed health professionals' instructions while others knew through other means. Ideally all the vaccines given to the children must be documented in the child's under-five card and health professional are expected to give instructions if more vaccines are required as either routine or supplementary. Caretakers have also come to realise that measles is the last vaccine children must receive, a vaccinated child looks healthy and that after the age of 18 months the child must have completed all the vaccines. However, these are just assumptions and cannot always be relied upon. In this study, it was observed that 93.2% of the respondent knew that immunisations were beneficial. Many respondents stated that immunisations were beneficial to children because they are given information, education and communication when they visit the health facilities and during child health week activities. These findings are in line with a study by Yousif et al., (2013) where parents had good knowledge on aspects related to the general role of vaccinations in preventing diseases.

Some respondents stated that immunisations had side reactions while others did not know. Wessi in Ukraine reported that the unvaccinated were more likely to think that the vaccine was ineffective or unsafe or that a booster dose was not needed. Safety

concerns including side effects associated with the vaccine can have disproportionately detrimental effects on uptake of vaccines as it brings about hesitancy and parents may consciously decide not to have their children immunised. Therefore, there is great need to provide information on the safety of the measles booster vaccine to allay related anxieties.

The current study has revealed that most of the respondents cited prevention of diseases as a benefit of immunisation, others cited the provision of immunity for the child and its role in the control of epidemics. Fever was the most outstanding side effect mentioned by the caretakers. Other side effects mentioned included shivering, painful swelling at injection site and vomiting.

The finding show that with regard to the overall knowledge levels on immunisation and completion of vaccine schedules, very few mothers had high knowledge levels were while the majority had medium knowledge levels. These findings highlight the need for health care providers to take a deliberate step to provide adequate information to mothers and caretakers in order to improve knowledge levels on measles booster vaccine.

5.4 Respondents Attitude Towards Child Immunisation and Measles Booster Vaccine

One of the objectives of the study was to evaluate the attitude of mothers and caretakers regarding child immunisation and measles booster vaccine. The attitudes of the respondents towards immunisations and measles booster vaccine were evaluated using statements measured on a likert scale.

The study shows that most of the respondents were disagreed with a statement that immunisation shots were not safe for children and affirmed that the staff at the clinics where respondents got their children's immunisation shots were helpful. However, a few of them agreed with a statement that there were long waits at the clinics. Prompt services are required so that caretakers are not kept for long hours as they have other competing needs and this can have a negative effect. It was also observed that most of the respondents had negative attitudes towards immunisation and completion of the immunisation schedules. These negative attitudes could be attributed to unfavourable incidents in certain children and also bad experiences during clinic visits. These

findings are contrary to a study conducted in Saudi Arabia by Yousif et al., (2013) which reported positive attitudes of parents towards immunisation and completion of immunisation schedules. Studies that reported a negative attitude towards immunisation include Mukherjee et al., (2009) in India, Nuwaha (2002) in Uganda and Savelsberg et al., (2002) in Cameroon.

5.5 Factors Influencing Immunisation Service Quality

In order to determine service factors that impact the uptake of measles booster vaccine, the respondents were asked questions such as utilisation of the health facility for other services, if there was any advice given regarding measles booster immunisation and also if there were cancelled measles immunisation appointments. Most of the respondents had taken their children to health institutions for other services which included; growth monitoring, sickness, check-ups and follow up for chronic care. Most of the respondents had their last deliveries attended by health professionals and they received advice to vaccinate their children after delivery. A good proportion of caretakers attended postnatal care more than once after delivery of their children. Postnatal clinics are very important and mothers should be encouraged to attend twice at the stipulated times as this gives an opportunity for mothers to be educated on various health issues and childhood vaccines are commenced. The study also revealed that in most instances respondents were reminded on the next measles immunisation date for their children and they agreed that the immunisation clinics they visited had hours that were convenient for them.

It was observed that 30% of the children in the study received the measles booster vaccines after the recommended age of 18 months. Li et al., (2013) in China reported an uptake of 76.9% for the initial MCV and 44.7% for the second dose with only 47.5% being timely administered. Those who delayed may not know the age at which the vaccine is given or could have forgotten hence the need for activation with reminders such as SMS which effectively nudge people and can push one to bring the child for vaccination. Some of the respondents reported being returned home without getting the vaccination. Such incidents of sending away clients create a bad impression about the provider and the quality of the service. As much as we are in resource constrained areas the service can still be provided in an organised and predictable

manner in order to maintain client satisfaction. The reasons for returning home without getting the vaccination included non-availability of vaccines, absence of vaccinators, while some of them did not know. In a similar study, Mitchell et al., (2009) in Pakistan reported that stagnating rates of vaccination coverage was related to increasing inequities in accessing services. A study in Mozambique reported missed opportunities and incorrect vaccinations (Jani et. al., 2008). In another related study, it was noted that apart from barriers and "missed opportunities" for vaccination, current researchers focus on vaccine hesitancy which is influenced by factors that include complacency, convenience and confidence (Naus, 2015). WHO (2012), reported that a programme can be seriously damaged by the poor interaction between staff and clients. This study shows an increase in high uptake of vaccines as service related factors changed from poor to very good.

The majority of the respondents reported that there was good quality of service but some of them indicated that the quality of service was poor.

Of the respondents who reported observing traditional beliefs, the majority of the respondents observed traditional beliefs but these did not impact the MBV uptake as they were good beliefs. These results are contrary to a study by Warrarch (2009) in Pakistan, Afghanistan and Nigeria where Muslim fundamentalists were against vaccinations.

5.6 Uptake of Measles Booster Vaccine

In the current study the majority of the respondents (70%) reported a high uptake of immunisations as opposed to the 30% who reported a low uptake as they could not take the children at the recommended age. However, this uptake is still below the WHO recommended uptake of 95%. This could be attributed to lack of reminder systems as caretakers could have forgotten considering the period of time between the initial measles vaccine and the measles booster vaccine. These findings are similar to a study in Kathmandu, Pakistan at Kanti children's hospital which reported immunisation uptake of 69% (Matsuda, 2002). Li et al., (2013) in China reported an uptake rate of 76.9%.

5.7 Associations Among the Dependent and Independent Variables

The general objective of the study was to determine factors that influence the uptake of measles booster vaccine among under-five children.

The findings of this study show an increase in high uptake of vaccines as education levels increased. High uptake of vaccines increased from 50% in respondents with no level of education to 79.4% in respondents with senior secondary education before dropping to 68.1% in respondents who had attained college education and above. This pattern was found to be statistically significant as the chi-square test yielded a p-value of 0.000, which is less than 0.05 and it was concluded that there is an association between levels of education of caretakers and their uptake of immunisation vaccines.

There was no immediate pattern observed between the caretaker's marital status and the uptake of MBV. The chi-square test yielded a p-value of 0.226, hence we failed to reject the null hypothesis and concluded that there was no sufficient evidence for us to prove that there is an association between the caretakers' marital status and their uptake of immunisation vaccines. There was an increase in vaccine uptake in respondents who observed good traditional beliefs as opposed to those who observed bad ones. In respondents observing bad traditional beliefs, low uptake of vaccines was recorded. In respondents who observed good traditional beliefs, high uptake of vaccines increased to 88.5% while low uptake dropped to 11.5%. The observed pattern was however found not to be statistically significant as the chi-square test yielded a p-value of 0.056, which is greater than our threshold value of 0.05. Hence we fail to reject the null hypothesis and conclude that there was no sufficient evidence for us to prove that there is an association between the observation of traditional beliefs among caretakers and their uptake of immunisation. The results are contrary to earlier studies which revealed that in parts of Asia and Africa, mistrust of vaccines is often tied to Western plot theories which suggest that vaccines are ploys to sterilise or infect non Western communities (WHO, 2009).

The findings show an increase in the uptake of vaccines in relation to increase in knowledge levels. High uptake, which was recorded at 48.5% in respondents with low knowledge, increased to 72.7% in respondents with medium knowledge and further to 92.9% in respondents with high knowledge. The observed trend was confirmed to be statistically significant by the chi-square test which yielded a p-value of 0.000, which is less than 0.05 and conclude that there is an association between knowledge levels of

caretakers and their uptake of immunisation vaccines. The study further revealed that in respondents with negative attitude, low uptake of vaccines was recorded, while in respondents with positive attitude there was an increase in the uptake. The observed association was found to be statistically significant as the chi-square test yielded a p-value of 0.001 and concluded that there is an association between the attitude of caretakers and their uptake of immunisation. It was also observed that there was an increase in high uptake of vaccines as the quality of service changed from poor to good and from good to very good. The trend continued in respondents who reported very good quality of service. The chi-square test yielded a p-value of 0.000 and it was concluded that there is an association between the quality of service and the uptake of immunisation among caretakers.

A binary logistic regression test was done to check the combined effect of marital status, education levels, knowledge, attitude and quality of service on the uptake of immunisation. All cases were included in the analysis and the dependent and independent variables were coded respectively. From the expected impacts of changes in variable responses, changes in marital status were not expected to impact significantly on outcome of the regression model while changes in knowledge and attitude were all expected to impact significantly on the model. Changes in education level from none to primary, primary to junior secondary and junior secondary to senior secondary were all expected to contribute significantly to the model's outcome while changes from senior secondary to college and above were not. Additionally, changes in service related factors from poor to good were not expected to contribute significantly while changes from good to very good were. The model as a whole fitted significantly with a chi-square value 52.238 and a p-value of 0.000 and could account for 18.1% variation in the outcome variable. The model could correctly predict the outcome in 72.8% of the cases, with 92.5% accuracy in predicting high uptake and 27% accuracy in predicting low uptake.

It was apparent that only changes in service related factors contributed significantly to the outcome of the model. The contributions of changes in the rest of the variables were not significant.

A change in service related factors from poor to good raised the odds of high uptake 2.698 times while a change from good to very good raised the odds high uptake 3.77 times.

5.8 Application of the Theoretical Framework to the Research Findings

The Health Belief Model that has been used applies to this study because it all starts with the caretaker's realisation that measles is a very serious disease with fatal complications but it can be prevented. The caretaker's knowledge coupled with the information from different sources which include mass media campaigns, health workers and family members can prompt them to take the children for immunisations because there is a perceived benefit. This is likely to change an individual's attitude and commitment towards immunisations and consequently an increase will be noticed in the uptake of the measles booster vaccine.

5.9 Strength and Limitations of the Study

5.9.1 Strength of the Study

There is limited information on the factors influencing the uptake of the measles booster vaccine in Zambia and since this study examined various aspects, the findings will greatly assist in improving the uptake of MBV as the country strives to eradicate this deadly but preventable disease.

5.9.2 Limitations of the Study

Cross sectional studies capture information at one point in time and thereby may not have provided a kind of trend analysis to determine contributing factors to the phenomenon. In addition, generalisation of findings may not be appropriate as data was only collected in a particular geographical location and the scenario may be different in other areas. Therefore, similar studies could be done in different geographical locations, and qualitative studies as well, in order to have an in-depth analysis of the problem.

5.10 Implications of Findings to Nursing Practice, Nursing Administration, Nursing Education, Nursing Research

5.10.1 Nursing Practice

Although the study findings showed a high uptake of measles booster vaccine (70%). Most respondents (75%) had medium knowledge levels on measles booster vaccine and 69.7% had negative attitudes towards uptake of measles booster vaccines.

Health care providers should always strive to change the mind set of mothers/caretakers, provide quality service and improve on communication with the clients at every contact in order to encourage them to come back to the facilities and have the children vaccinated at the right age.

5.10.2 Nursing Administration

Nursing administrators should ensure that health facilities are well stocked with vaccines in correct amounts to avoid stockouts and ensure that there are qualified staff to offer the services at the facilities. The Nurse administrators should ensure that mother/ caretakers are given IEC at every contact. This can be done by conducting regular spot checks at the under-five clinics and through regular reports.

There must be effective communication between the staff and the caretakers so that even when clients are returned, a valid reason must be provided and information on when they should return must be provided as well.

Systems of reminding caretakers should be in place so that they do not forget their clinic appointment and ensure health personnel check children's immunisation status at every contact with the child.

5.10.3 Nursing Education

There is need for Nurse Educators to take a leading role to ensure that measles eradication is attained by the year 2020. This can be done by intensifying information education and communication (IEC) to mothers and caretakers and more effort devoted to the development of appropriate IEC materials to assist in knowledge transfer. Nurse educators must also strive to strengthen the immunisation component in the curricular of Nurses and Midwives.

5.10.4 Nursing Research

Research is needed to assist in the identification of strategies that can mitigate the issues affecting immunisation uptake in order to improve the health of our children and consequently reduce child mortality. There is need to conduct a similar study in another locality to enable generalisation of findings and also it would be important to conduct qualitative studies on mothers/caretakers with a good uptake of MBV to assist in establishing the motivating factors that helped them adopt a positive attitude towards immunisations and MBV.

5.11 Conclusion and Recommendations

5.11.1 Conclusion

The study was conducted to determine the factors that influence the uptake of measles booster vaccine among under-five children. The findings revealed that the uptake of the measles booster vaccine in Lusaka urban District was 70%. The mothers'/caretakers knowledge levels on child immunisation and completion of vaccine schedules were medium (75%). The attitudes of mothers/caretakers towards child immunisation and completion of vaccine schedules were negative (69.7%). The current study showed a significant association between uptake of vaccines and knowledge of the mothers/caretakers (p. value 0.000). The uptake of measles booster vaccine was also significantly associated with the quality of service (p. value 0.000). The uptake of measles booster vaccine was associated with the level of education and yielded a p. value of 0.000. The study further reviewed an association between the attitude of the mothers/caretakers towards child immunisation and completion of vaccine schedules (p. value 0.001). There is need therefore for continued sensitisation of mothers/caretakers on measles booster vaccine in order to increase the uptake.

5.11.2 Recommendations

Based on the findings of the study the following recommendations were made:

- The Ministry of Health should strengthen the information dissemination system to the public in order to try and improve knowledge levels on the measles booster vaccine among caretakers of under-five children.
- The health care provider should correct myths and misconceptions surrounding the measles booster vaccine to assist the caretakers in adopting a positive attitude towards MBV.
- There is need to continuously monitor uptake of new vaccines in order to improve age-appropriate administration of measles booster doses.
- A reminder system should be devised such as text messages reminding the mothers to come back at the right time to avoid delays in uptake of the measles booster vaccine as it could expose the children to measles infection.
- Vaccine stock-out should be avoided at all levels in the supply chain so that caretakers are not turned away on appointment days. This is not only an inconvenience to the consumer but also erodes public confidence in the quality of the service provided.
- The health care providers should always check the child's immunisation status at every contact and offer appropriate advice regarding the measles booster vaccine.

5.12 Dissemination of Findings

A report of the research will be written and submitted to School of Nursing Sciences and University of Zambia Library. The findings will then be presented to the faculty of School of Nursing Sciences, University of Zambia (UNZA). Thereafter, results will be presented to various stake holders involved in provision of strategies to reduce child mortality. These included Ministry of Health and its partners, Provincial Health Office for Lusaka province. Lusaka DHMT will be given a report of the study results so that the district would use it to render evidence based care, as they provide child health services.

Staff members from Kabwata clinic, Chawama clinic, Kalingalinga clinic and Mtendere clinic will also be invited to listen to the study results so that they would use

them to render evidence based care in Maternal and Child Health (MCH) services. The results will be published in any recognized journal such as the Zambian Medical Journal or the journal of Agriculture and Biomedical Sciences. In addition, four copies of the research report will be printed and submitted to the School of Nursing Sciences, the University of Zambia Medical Library, UNZA Special collection and the Ministry of Health.

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APPENDICES

APPENDIX I: INFORMATION LEAFLET FOR PARTICIPANTS

Study Title: ***FACTORS INFLUENCING UPTAKE OF MEASLES BOOSTER VACCINE AMONG UNDER-FIVE CHILDREN IN LUSAKA URBAN DISTRICT***

Introduction

I am Daisy Syakantu, a Student from the University of Zambia pursuing my Master of Science degree in Nursing and Midwifery. I wish to invite you to take part in a study that I am conducting in Health facilities where mothers access under five clinic services in Lusaka Urban clinics. This information leaflet is providing you with information that will help you to decide if you would like to participate in this study. You should fully understand what is involved before consenting to take part. If you have any matter which you feel is not adequately explained in this leaflet, do not hesitate to phone me, Daisy Syakantu at +260 965005344 or 0977846781. You should only agree to take part if you are completely satisfied with all the procedures involved.

What is the study all about?

The purpose of the study is to determine factors influencing uptake of measles booster vaccine among under five children in Lusaka urban district

What you need to do in the study?

To participate in the study, I will first ask you to sign a consent form. This form is to show that you have accepted to answer the questionnaire addressing these factors. I shall give you the questionnaires and collect the feedback when you have finished answering or I will sit down with you and ask you the questions while I take down your responses. This can be done in the facility you are attending or in one of the

offices while you are relaxed. In case you have questions I shall be available for clarification or you can call me on the numbers indicated on the information leaflets.

Potential benefits that may come from the study

By taking part in this study you will contribute to the existing knowledge about measles immunisation coverage. This may help us see areas that may need to be worked on to help improve the uptake thus contributing to the reduction in child morbidity and mortality from measles and other vaccine preventable diseases. There are, however, no financial or direct benefits for you personally at present.

Potential Risks and Discomforts

Your rights as a participant in this study

You can choose if you want to take part in the study. You can also, during the study, say that you do not want to take part any more. You can even tell me that I cannot use the information after you have revealed to me in the questionnaire.

How will confidentiality and anonymity be ensured for the study?

What you will write is confidential and only the two of us would be able have access to your information. The questionnaires will be locked up in a safe place and destroyed two years after the findings of the study have been published. You will not need to write your name or any form of identification so that the information is not linked to you at any point.

Thank you for taking time to read the information sheet.

Your willingness to participate in this study is greatly appreciated.

PERSONS TO CONTACT FOR PROBLEMS OR QUESTIONS

The Head of Department

University of Zambia

School of Nursing Sciences

P.O. Box 50110,

Lusaka

Telephone No: 0211252453

The Chairperson

Biomedical Research Ethics Committee

School of Medicine

P.O. BOX 50110,

Lusaka

Telephone No: 0211256067.

UTENGA KWA OTENGAKO MBALI

Mutu Wa Zofufuzazi: ***ZOGWELAPO PA KATEMELA WA MATENDA A KANSAMWA (MEASLES) MU ZIPATALA ZOSANKIDWA MU LUSAKA, ZAMBIA***

Wotsogolera Wofufuza: ***DAISY SYAKANTU***

Ine ndine Daisy Syakantu, ndikutengako mbali mu maphunzilo pa sikuu lalikulu la UNZA. Mbali ya maphunzilo anga igwilizana ndi zothandizia odwala muzipatala, maka maka kunkhani za azimai pa nthawi youna mwana.

Ndifuna kufufuza mu zipatala za mu dela la Lusaka zomwe zipeleka katemela ku bana achichepele (under five).

Ndipempha kuti mutengeko mbali mu kufufuzaku.

Papala iyi izamuunikilani, ndi kukuthandizani kuti muvetse cholinga chakufufuzaku, ndipo musankhe kutengako mbali.

Ndi chaphindu kwa inu ndi ine kuti inu mukhoutile kuti mwamvetsetse za kufufuzaku musana sanke kutengako mbali.

Ngati pali zina zomwe simuna mvetse, kapena simuna khotile mungila ina iliyonse, mungathe ku imba lamya kwa ine Daisy Syakantu pa nambala +260 965005344 olo 0977846781.

Mungathe kutengako mbali mulufufuzaku, pokhappo mutavetse mokwanila ndondomeko ya zomwe zizayendetsedwela.

Cholinga Chakufufuzaku?

Tifuna kupeza zongwelapo zomwe zimalowapo pa kulandila katemela wobwezapo wa matenda a measles ku ana ochepele pa zaka zitsanu (under five) mudela la Lusaka urban district

Zomwe muzapemphedwa kuchita mu kufufuzaku?

Kuti mutengeko mbali, ndizayamba kumupemphani kuti mu saine chipepala chovomeleza. Chipepala chosaina chizasonyeza kuti mwavmela kutingakombali kuyanka mafunso azofufuza.

Muta saina pepala yovomekeza, ndizamupatsani pepala ya mafunso owe tizasebenzetsa mukufufuzaku. Mayankho amafunso apachipepala anga patsidwe pa ntawi ina; ndipo ndizatenge mayankho mutamaliza. Kapena, tingakhale pasi, ngati nthawi ikulolani, kuti ndifunse mafunso ndikulembe mayankho yomwe muzapeleke pa yokumanayo.

Ngati nikotheka, popasa mayankho, ndizathandiza kuunikila pomwe simunamvetse. Ngati mwanyamula pepala yamafunso kukayankha panthawi ina, kapena malo yena, chonde, nditumileni amya ngati pali zofunika kulongosola.

Mafunso aya sazatenga nthawi yaitali kuyankha, mwina mphindi zisanu ndi zinai (25 minutes)

Zaphindu zomwe ti embekezela titamaliza kufufuzaku:

Potengako mbali, muzathandiza ku onjeza nzelu kapena mfundo za katemela wa measles ndi kuchuka kwake. Uthenga womwe muza peleka uzathandiza kupanga zosintha kuti mwina tingaetse kuti tichulukitse anthu obweletsa ana ochepekela pa zaka zakubadwa zisanu kukatemela wa matenda a measles. Ici chingathe kuthandiza kuchepesa ana odwala matendawa ndiposo kuchepetsa ana amene ali kufa chifukwa chamatenda aya kapena ena yache yangachingiitsidwe kupyolela mu katemela.

Koma zindikilani kuti, sitipeleka ndalama kapena chiongola dzanja china chilichonse kwa inu muktithandizila ndikufufuzaku pakali pano. Koma tiyamikia pa kudzipeleka kwanu.

Zododometsa, kapena zomwe zingalakwike:

<u>Ufulu wachibadwidwe (rights) womwe mulli nawo mukufufuza uku:</u>

Muli ndi ufulu wosanka ngati mukufuna kutengako mbali mu kufufuzaku. Mungathe kuleka kutengako mbai kapena kusintha nzelu panthawe iliyonse; dziwani kuti, mutasankha kuleka, sipazakhala zomugwelani ziizonse. Mungapitilize kubweletsa mwana wanu kapena inuyo kubwela kuchipatalachi. Sipazakala kapatulula kalikonse chifukwa chosanka kutengako mbali mu kufufuzaku.

Muli ndi ufulu wokana kuyankha mafunso yena amene muona ngati simuli omasuka kuyankha pa chifukwa chilichonse.

Mungathe kunena kwaine mwachinsinsi zinthu zina zomwe simufuna anthu ena umvako, ndipo ndizasunga chisinsi chanu – mutani unikila.

CISINSI

Zomwe muzalemba mu pepalali, zizakhala pakati pa inu ndi ine, ndipo uthenga owe muzapeleka suzafalitsidwa kwaena. Mapepalawa adzakhala mumalo okhoma pa nthawi youkwanili zaka ziwili, pomwe tiza shoka kapena kuonong mungila ina – titasanthulamo maphunzilo othandiza pa nkhani ya umoyo wa ana ndi katemela.

Simuzalemba dzina pamapepala, kuti tisunge chisinsa analemba zolembazo.

Ndikuyamikilani potenga nthawi kuwelenga utengau.

Ndiku thokozani kwambili potengako mbai mu kufufuza zamaphunziozi.

ANTHU OMWE MUNGAUZE NGATI PALI ZOVUTA KAPENA MAFUNSO:

Wamukulu kumupando

Univesiti ya Zambia

Mbali ya manesi

P.O Box 50110

Lusaka

Tel: +260 211 252453

Wamukulu kumupando,

Kabungwe Kowona za kafukufuku

Biomedical Research Ethics Committee

School of Medicine

P.O. BOX 50110,

Lusaka

Telephone No: 0211 256067

APPENDIX II: CONSENT FORM

I have been fully informed of the purpose of the study. The benefits, discomforts risks and confidentiality and I agree to participate willingly. I further understand that if I take part in this study, I can withdraw at any time without having to give an explanation and taking part in this study is purely voluntary.

I…… *(Names)*

Agree to take part in answering the questionnaire

Signed/thumb……..… Date…….……..

(Participant)

Signed/thumb……. Date……...…….

(Witness)

PEPALA LOVOMEKEDZA

Ine, ndadziwitsidwaa mofikapo cholinga cha kufufuzaku. Ndamvetsa zotulukamo zake zabwino, ndiposo, andiunikila zothangwanitsa zake, zingalakwike ndi zisinsi. Ndavomela mwaufulu kuti nditengeko mbali.

Ndamvetsa kuti nigaleka pa nthawi iliyonsa popanda chifukwa, ndipo kutengako mbali mu kufufuzaku ndi chosankha change mwaufulu.

Siginecala…… Tsiku ……..

(Siginecala ya otengako mbali kapena cidindo ca cala ca cikulu)

Siginecala……..……. Tsiku ……

(Siginecala ya mboni)

Siginecala……..……. Tsiku ……

(Siginecala ya wofufuza)

Appendix III: DATA COLLECTION TOOL (QUESTIONNAIRE)

University of Zambia

Masters of Nursing and Midwifery Sciences

Questionnaire for Mothers / Caretakers

SEMI STRUCTURED INTERVIEW SCHEDULE ON UPTAKE OF MEASLES BOOSTER VACCINE AMONG UNDER-FIVE CHILDREN AT SELECTED CLINICS IN LUSAKA, ZAMBIA.

DATE OF INTERVIEW ……

PLACE OF INTERVIEW……

SERIAL NUMBER …….

INSTRUCTIONS TO THE INTERVIEWER

1. **Introduce yourself to the respondent**
2. **Ensure that the respondent is eligible for the interview and can be included in the study.**
3. **Explain the purpose of the study and assure respondent of confidentiality**
4. **Request respondent for a written consent before you start the interview.**
5. **Do not write name of respondent on interview schedule.**
6. **Ensure that you get a response for each question.**
7. **Circle the most appropriate response, or write answer on space provided.**
8. **Provide time for respondent to ask questions at the end of the interview.**
9. **Thank the respondent at the end of the interview.**

SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. Who is the immediate caretaker of the child? ***For official use***

a). Mother

b). Father

c). Sister

d). Relatives

e). other (specify)…….

2. Age of the immediate care taker ……,….years

a). less than 20 years

b). 20-30 years

c). 31-40 years

d). more than 40 years

3. Marital Status of the immediate care taker

a). Married

b). Single

c). Widowed

d). Divorced

e). Separated

f). Other (specify)……...

4. Tribe of caretaker

a). Nsenga

b). Bemba

c). Tonga

d). Lunda

e). Luvale

f). Kaonde

g). Lozi

h). Ngoni

i). Others; specify……

5. What is your denomination?

a). Catholic
b). SDA
c). UCZ
d). Pentecostal
e). Anglican
f). Moslem
g). Others; (specify)……

6. Occupational Status of the caretaker

a). Employed
b). Unemployed
c). Self-employed

7. Educational level

a). none
b). Primary school
c). Junior secondary school
d). Secondary and certificate
e). College and above
f). Other (specify)……..

8. Area of residence

a). Mtendere
b). Kalingalinga
c). Chawama
d). Kabwata

9. Age of child under investigation

a). 1 ½ to 2½ years
b). 2½ to 3½ years
c). 3½ to 4½ years
d). 4½ to 5 years

10. Sex of child under investigation

a). Male

b). Female

SECTION B: KNOWLEDGE REGARDING CHILD IMMUNISATION AND MEASLES BOOSTER VACCINE

11. Do you know the child immunisation schedule

a). Yes……

b). No…….

12. Which diseases can vaccines prevent?

a). Tuberculosis

b). Polio

c). Diphtheria

d). Pertussis

e). Tetanus

f). Measles

g). Hepatitis B

h). Haemophilus influenza

i). Pneumonia

j). Diarrhoea

k). Others (specify)……

13. When do we immunize the child with the following vaccines?

a. Initial measles vaccine …….

b. Measles Booster vaccine …….

14. How do you know whether or not your child completed the immunisation schedule?

a. I refer to immunisation card

b. I follow health professional's/HEW's instructions

c. I refer to child's age

d. If child looks healthy

e. After measles vaccine

f. I don't know

g. Other (specify)……

15. Does vaccination have a benefit for the child?

a. Yes

b. No

16. What are the benefits of immunisation?

a. Immunity for the child

b. Prevent diseases

c. Control epidemic

d. Other ……..…...

17. Does measles immunisation have side reaction?

a. Yes…….....

b. No …….

18. What are the side effects of immunisation?

a. Fever

b. Shivering

c. Pain

c. Vomiting

d. Other (specify)……..….

SECTION C: TRADITIONAL BELIEF OF MOTHER/CARETAKER

19. Mention one traditional belief in your culture that can influence the uptake of measles booster vaccine.

……
……

SECTION D: ATTITUDE REGARDING CHILD IMMUNISATION AND MEASLES BOOSTER VACCINE

20. Measles immunisation shots are not safe for children.

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree.

21. The staff at the clinic where you got your child's immunisation shots was helpful.

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree.

22. You normally had to wait for a long time in the clinic when you took your child to get his/her immunisation shots.

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree.

SECTION E: FACTORS RELATED TO IMMUNISATION SERVICE DELIVERY QUALITY

23. Have you ever taken your child to health institution for other services?

1. yes……
2. No……

24. Why did you take him/her to health institution?

1. For Growth Monitoring
2. Follow up for chronic care
3. Became sick
4. For check up
5. Other, specify……

25. Were you informed or advised to vaccinate the child during your visit?

1. Yes……
2. No……..

26. Where did you deliver the child? (Asked if the respondent is the mother)

1. Home
2. Health institution
3. Other, specify……

27. Who attended the delivery?

1. Health professional
2. TBA
3. Lay person
4. Other, specify……

28. Did you receive advise to vaccinate your child after delivery?

1. Yes
2. No

29. Did you attend post-natal care after delivery of the child?

1. Yes
2. No

30. If yes how many times did you attend postnatal care?

……..……

31. Did you receive advise to vaccinate your child at postnatal period?

1. Yes
2. No

32. Did the staff at the clinic always inform you about when the next measles immunisation shot was due?

1. Yes
2. No

33. Did the immunisation clinics that you visited have hours that were convenient for you?

1. Yes
2. No

34. At what age did the child receive the measles booster vaccine?

(Check under-five card)

1. 18 months +
2. Other, specify …….

35. Was there any occasion on which you returned home without getting the measles vaccination during your appointment?

1. Yes
2. No

36. If yes, what was the reason for not getting vaccination?

1. Vaccine not available
2. Vaccinators were absent
3. I Don't know
4. Other (specify)……..

Thank you for your cooperation!

Name of the Interviewer…… **Signature**…….……

Nyanja Questionnaire

University of Zambia

Masters of Nursing and Midwifery Sciences

Pepala lofunsa amai kapena akulu osamala ana:

MBALI IMODZI YA MAFUNSO PAZOGWELAPO PA KULANDILA KATEMELA KACHIBILI WA MATENDA A KANSAMWA (MEASLES) MU ZIPATALA ZOSANKIDWA MU LUSAKA, ZAMBIA.

TSIKU LOFUNSA ……

MALO OFUNSILAKO …….

NAMBALA …….

<u>MALANGIZO KWA OFUNSA</u>

1. **Choyamba, dziwitsani oyankha chipalachi – dzina lanu, cholinga ndi udindo wanu.**
2. **Musimikise kuti mumthu mukufunsa ndi oyenela kutengako mbali mu kufufuzaku.**
3. **Fotokozani cholinga cha kufufuzaku. Mufotokozenso kuti muzasunga mwachisinsi zomwe azayankha ofunsidwayo.**
4. **Pemphani kuti ofunsidwa kapena otengako mbali alembe pa pepala yovomekeza musana yambe kufunsa mafunso.**
5. **Osalemba dzina la oyanka pa pepala yamafunso.**
6. **Onetsani mutenga yankho ya funso ili yonse.**
7. **Oyankha, apemphedwe kuti achonge mu bolosi yoyandika ndi funso posonyenza yankho yao.**
8. **Mutasiliza mafunso ndi mayankho, lolani nthawi yofunsa mafunso.**
9. **Thokozani oyankha potengako mbali mu kufufuzaku, ndiponso popatula nthawi yoyankha mafunso anu.**

CHIGAO CHOYAMBA: UTHENGA WOKHUDZA ZACIWERENGEDWE

Malo aya ya patulidwa, osachonga, kapwna kulembamo.

1. Kodi ndani amene amasamaila mwana wanu?

a). Amai ☐

b). Atate ☐

c). Mbale wache ☐

d). Achibale ☐

e). Anthu ena osachulidwa mwambamu ☐

(masulilani)…….....….

2. Osamalila mwanawanuyo ali ndi zaka zakubadwa zingati ☐

a). Ochepekela pa makhumi awili (20 years) ☐

b). Pakati pa makhumi awii ndi atatu (20-30 yrs) ☐

c). Pakati pa makhumi atatu ndi anai 31-40 yrs ☐

d). Opitilila pa zaka mkhumi asanu (40 years) ☐

3. Kodi osamalila mwana ali muchkwati?

a). Inde nail muchikwati ☐

b). Ai, akalibe kukwatiliwapo ☐

c). Ni ofedwa ☐

d). Chikwati chao chinatha ☐ ☐

e). Anachoka mu chikwa pa ka nthawe koma akalibe kulekana. ☐

f). China chosachulidwa mwambamu (masulilani)…….....….

4. Kodi osamalila mwanayu ndi amutundu uti

a). Nyanja kapena achewa ☐

b). A'Bemba ☐

c). ATonga ☐

d). ALunda ☐

e). ALuvale ☐

f). AKaonde ☐

g). ALozi ☐ ☐

h). Mutundu wina; Masulilani……

5. Kodi osamalila mwanayu ndi a chipembezo chiti?

a). Katolika

b). Sabata

c). Pentecosti

d). A Mboni Zayehovah

e). A Anglican

f). China chosachulidwa mwambamu

(masulilani)…….....….

6. Osamalila mwana uyo ali pa nchito?

a). Inde ali pa nchito

b). Ai, sali pa nchito

7. Kodi, kumaphunzilo amukalasi, anafika mpaka pati?

a). Sanapite ku sukulu

b). Janachita makalasi yoyambiila chabe

c). Anafika ku secondale

d). Ana maliza sikulu ya kusecondale

e). Analowa maphunzilo a kosi atamaliza secondali

f). China chosachulidwa mwambamu

(masulilani)…….....…….

8. Kodi osamalila mwana achoka kudela iti ya Lusaka?

a). Mtendere

b). kalingalinga

c). Chawama

d). Chilenje

9. Kodi mwana wachichepeleyu ndi wa zaka zingati?

a). Ochepekela pa zaka ziwili (1 ½ to 2½ years)

b). Pakati pa zaka ziwili ndi zaka zitatu (2½ to 3½ yrs)

c). Pakati pa zaka zitatu ndi zaka zinai (3½ to 4½ yrs)

d). Pakati pa zaka zinai ndi zaka zisanu (4½ to 5 yrs)

10. Kodi ndi mwana mwamuna kapena mukazi?

a). Mwamuna

b). Mukazi

CHIGAO CHACHIWIRI: ZINTHU ZOMWE ZINGALENGETSE KULANDILA KAPENA KOTSALANDILA KATEMELA KA KANSAMWA

11. Kodi mudziwa nthawi zomwe mwana ayenekela kupasidwa katemela

a). Inde……..

b). Ai, sinidziwa ……...

12. Kodi ndi matenda ati olembedwa musi umu amane angatetezedwe kupyolele mu katemela?

a). TB

b). Polio

c). Diphtheria

d). Pertussis

e). Tetanus

f). Kansamwa

g). Hepatitis B

h). Haemophilus influenza B

i). Kalatso

j). Mumimba mwamupwezeze (Diarrhoea)

k). Yena chosachulidwa mwambamu (masulilani)…….....….

13. Kodi katemela wa kansamwa uyu upatsidwa liti?

a. Katemela wa kansamwa woyambilila.

b. Katemela wa kansamwa wachibili.

14. Kodi mudziwa bwanji kuti mwamaliza katemela wa mwana wanu?

a. Nimaona pa khadi
b. Ndimatsatila zomwe anena akuchipatala
c. Ndima ona musinkhu kapena zaka za mwana
d. Ndimaona thanzi ya mwana
e. Ndima dziwa mwana atapatsidwa katemela wa kansamwa
f. Sindidziwa
g. Njila ina (Masulilani ngilayo)…….....

15. Kodi katemela umathandiza mwana wanu?

a. Inde umathandiza
b. Ai, sumathandiza

16. Kodi ubwino wa katemela ndi uti?

a. Chitetezo chamuthupi (immunity) chamwana.
b. Kuteteza matenda
c. Umachepetsa kufalikila kwa matenda
d. Wina ubwino, (Masulilani ubwinowo)…….

17. Kodi katemela wa kansamwa uli ndi matenda otulukilapo?

a. Inde yalipo ……
b. Ai palibe ……

18. Kodi ndi matenda yotani yotulukilapo ku mwana atalandila katemela wa kansamwa?

a. Kupya thupi
b. Kunjengemela
c. Kumwa kubaba (zobaba)
d. Usanza (Kuluka)
e. Yena (Masulilani zinazi zotulukilapo) .....…….

CHIGAO CHACHITATU: MWAMBO NDI MIYAMBO WAIMWE MUSUNGA MWANA

19. Kodi ndi chayani chomwe mungachule mu miyambo yanu chomwe mu ganizilapo musana sankhe kupeleka mwana ku kalandila katemela wa kansamwa, wachibili (Booster).

……
……
……
……
……
……

CHIGAO CHA CHINAI: MAGANIZO YA ANTHU PA NKANI YOLANDILA NAKUTSILIZISA KULANDILA KATEMELA.

20. Katemela wa kansamwa, umaopyeza ana.

1. Inde, ndivomekeza kwambili - mosindikiza
2. Sindivomekeza
3. Maganizo anga ali pakatikati
4. Ndivomekeza
5. Nikana mosindikiza.

21. Osebenza kuchipatala komwe ndimapeleka mwana amathandizila.

1. Inde, ndivomekeza kwambili - mosindikiza
2. Sindivomekeza
3. Maganizo anga ali pakatikati
4. Ndivomekeza
5. Nikana mosindikiza.

22. Tsiku la katemela, tinadikhila pa nthawi yaitali tisanapatsidwe chillichonse.

1. Inde, ndivomekeza kwambili - mosindikiza
2. Sindivomekeza
3. Maganizo anga ali pakatikati
4. Ndivomekeza
5. Nikana mosindikiza.

CHIGAO CHACHISANU: ZINTHU ZOMWE ZILOLA NCITO YOPASA KATEMELA.

23. Kodi mumapeleka mwana wanu kuchipatala pa zifukwa zina, kapena kukatemela chabe?

    1. Inde ndimamupeleka.
    2. Ai, ndimamupeleka ku chipatala chifukwa cha katemea chabe.

24. Kodi, ndi chiti chifukwa china chomwe munapelekela mwana kuchipatala?

    1. Ku sikelo – kuka pima kakulidwe ka mwana
    2. Kuka ona malangizo a masamalidwe opitiliza (chronic care).
    3. Mwana anadwala
    4. Kukapimitsa mwana
    5. Zifukwa zina (Masulilani).....

25. Kodi akuchipatala anauunikilani zakatemela wa ana poulendowu;

    ndi kukuuzani zobweletsa ana kukatemela?

    1. Inde anatiuza za katemela……
    2. Ai sananenepo za katemela……..

26. Kodi mwana anababwila kuti?

    (Funsani ngati oyankha nda amake mwanayo)

    1. Kunyumba
    2. Kuchipatala
    3. Malo yena (Masulilani).....….....…

27. Ndani anathandizila ubeleka?

    1. Osebenza kuchipatala
    2. a TBA
    3. Munthu chabe wosapita kusukulu zamakono
    4. Yena (Masulilani** zinazi zotulukilapo).....…….

28. Kodi anakudziwitsani ndikukulangizani za katemela wa funika kupasidwa wa ana?

1. Inde
2. Ai, sananene

29. Kodi munapitiiza kupita kuchipatala kumaphunzilo a ubeeke mutaona mwanayo?

1. Inde tinapitiliza
2. Ai

30. Ngati munapitiliza, kodi munapita kangati?

…….....……
…….....
.....

31. Kodi anamuunikilani za katemea pa mauendo aya?

1. Inde fotokoza
2. Ai

32. Kodi, osebenza kuchpatala ananena tsiku lotsatilapo lomwe mwana azafunika kulandila katemela wa matenda a kansamwa?

1. Inde ananena
2. Ai

33. Kodi nthawi za katemela kuzipataa zomwe munapitako zinali kumuyenelelani inu?

1. Inde
2. Ai

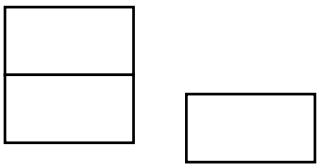
34. Kodi uyu mwana anali myezi ingati polandila katemela wa matenda a kansamwa?

(yanganani pa under-five card)

1. Myezi 18
2. Myezi zina (masulilani)

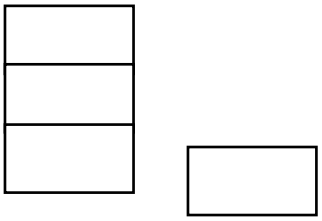
35. Kodi kunali tsiku lina lililonse lomwe munabwelela kunyumba kosalandila katemela wa kansamwa womwe munapitila kuchipatalako?

1. Inde
2. Ai



36. Ngati zinachitikapo, kodi, chifukwa chomwe simunalandilile katemela ndichiani?

1. Kunalibe mankwala
2. Anthu opasa mankwala kunalibe
3. Sindiziwa chifukwa
4. Zifukwa zina (masulilani)…..



Tsono, tamaiza mafunso yonse.

Ndikuthoozani potengako mbali, ndipo po taya nthawi yanu, komaso kupatula nthawi yakuti muyankhe mafunso aya.

Ndionga zikomo kwa inu.