FACTORS ASSOCIATED WITH MEASLES-RUBELLA DROPOUT STATUS AMONG CHILDREN IN GROOTFONTEIN DISTRICT, OTJOZONDJUPA REGION, NAMIBIA

THESIS SUBMITTED IN PARTIAL FULFILMENT

OF THE REQUIREMENTS FOR THE DEGREE

OF

MASTERS OF PUBLIC HEALTH

OF

THE UNIVERSITY OF NAMIBIA

BY

TAIMI NAMUTENYA SHOOMBE

981252

APRIL 2023

MAIN SUPERVISOR: PROF. MITONGA, KABWEBWE HONORE (UNAM)

CO-SUPERVISOR: MS A. KAMATI (UNAM)

ABSTRACT

Introduction: The prevention of child mortality through immunization is one of the most cost effective and widely applied public interventions. However, a proportion of children (20%), particularly in Namibia are not fully vaccinated with the recommended vaccines due to unknown reasons. This study aimed to investigate the factors that are associated with the Measles-Rubella immunization dropout in children seeking health care services in Grootfontein district.

Methods: A community-based unmatched case-control study was conducted among randomly selected parents/caretakers of children aged 12-23 months and with a total sample of 300 participants (100 cases and 200 controls). The cases were parents/ caretakers of children who did not receive the first dose of Measles-Rubella immunization and the controls were parents/ caretakers of children who received the first dose of Measles-Rubella immunization. Data was collected and analyzed using Epi info version 7. Logistic regression for bivariate and multivariate analysis on risk factors was carried out to determine the odds ratios at 95% confidence level and significance at a P-value of 0.05.

Results: Age of respondents (AOR=2.00, 95%CI=1.5 – 2.6, P-value=0.01); residential address (AOR=2.00, 95%CI=1.0 – 3.4, P-value=0.02); quality services provided (AOR=3.00, 95%CI=1.6 – 8.7, P-value=0.02), education level (AOR=2.00, 95%CI=1.5 – 2.3, P-value=0.02) were statistically significant associated with Measles-Rubella dropout. To reduce immunization dropout, Grootfontein district needs to focus on strengthening health education activities on immunization, create more outreach points to improve access to immunization services, and ensure availability of vaccines at Health facilities.

KEYWORDS: Measles-Rubella, Drop out Analysis, Association

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

EPI	Expanded Program on Immunization
FIC	Fully Immunized Child
GVAP	Global Vaccine Action Plan
IgM	Immunoglobulin M
MoHSS	Ministry of Health and Social Services
NDHS	Namibia Demographic Health Survey
NGO	Non -Governmental Organization
RED	Reaching Every District
SIA	Supplementary Immunization Activities
UNAM	University of Namibia
VPDs	Vaccine-Preventable Diseases
WHO	World Health Organization

DEDICATION

This thesis is dedicated to:

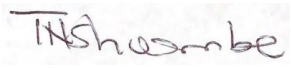
My dearest husband for his support and encouragement throughout the challenging duration of the course. My beloved parents for their inspiration motivated me to reach this far. My children, niece, nephew, and cousins, who sacrificed my care and attention for the sake of my studies. Let this accomplishment be a source of inspiration for all your academic and future endeavors.

DECLARATION

I, Taimi Namutenya Shoombe, hereby declare that this study is a true reflection of my own research and that this work or any part thereof has not been submitted for a degree at any other institution.

No part of this thesis/dissertation may be reproduced, stored in a retrieval system, or transmitted in any form or by means (e.g. electronic, mechanical, photocopying, recording, or otherwise) without the prior permission of the author, or the University of Namibia in that behalf.

I, Taimi Namutenya Shoombe, grant the University of Namibia the right to reproduce this thesis in whole or in part and in any manner or format, which the University of Namibia may deem fit.

Taimi Namutenya Shoombe		April 2023
Name of student	Signature	Date

ACKNOWLEDGEMENTS

First of all, I would like to thank the almighty God for the guidance, good health, strength, and wisdom throughout my study period. My sincere gratitude and appreciation go to my supervisors Prof. Mitonga, Kabwebwe Honore (University of Namibia) and Ms. A Kamati (University of Namibia) for their continuous positive support and mentorship.

I would like to express my sincere thanks to the University of Namibia for ethical clearance and the permission granted to me to conduct this study. My gratitude further goes to the Ministry of Health and Social Services head office and Otjozondjupa region for permitting me to conduct my study.

I would like to acknowledge the research assistants (Health Extension Workers) for their assistants during the data collection process. Special thanks to the study participants for their willingness to participate in the study and for providing me with valuable information. Special thanks to my colleagues, scholar fellows, and friends for their encouragement and support. Finally, my thanks go to all the people who have supported me to complete the research work.

CHAPTER ONE

ORIENTATION AND OVERVIEW OF THE STUDY

1.1. INTRODUCTION AND BACKGROUND INFORMATION OF THE STUDY

Vaccination against measles is regarded as a safe and cost-effective strategy to prevent measles-related morbidity and mortality (1). The immunization dropout rate is the proportion of children that received at least one dose or type of vaccine within the recommended immunization schedule but have failed to receive the remaining doses or types of vaccines to complete the recommended schedule. Pentavalent 1-to-Measles Rubella dropout rate is the proportion of children who receive the first dose of the pentavalent vaccine at six weeks of age but do not receive the Measles-Rubella vaccine at nine months of age (2).

Immunization is the most effective means of combating vaccine-preventable diseases (1). It is proven as one of the most cost-effective health interventions worldwide, through which several childhood diseases have been prevented or eradicated (3). Since the beginning of the Expanded Program on Immunization (EPI) in 1974 Worldwide, vaccines have significantly reduced vaccine-preventable diseases (VPDs) and deaths worldwide (3). However, many children are not immunized against these vaccine-preventable diseases in sub-Saharan Africa. The World Health Organization estimates that 2.5 million children under the age of five die from vaccine-preventable diseases each year. From October 2018 to 7 January 2019, about 19 539 measles cases and 39 "facility-based"

deaths (case fatality ratio: 0.2%) have been reported by the Ministry of Public Health of Madagascar (4). Angola experienced a measles outbreak in 9 districts in 2019, where a total number of 2670 cases as of week 21, 2019 were reported with a case fatality rate of 2.4% (5).

In Namibia, the Measles-Rubella vaccine is routinely given as two doses at the age of nine and 12 months. Under the Global Vaccine Action Plan (GVAP), Measles and Rubella were targeted for elimination in five WHO regions by 2020 (2). Achieving interruption of endemic measles transmission requires at least 95% vaccine coverage with two doses of Measles-Rubella-containing vaccine in each district (2).

The Expanded Programme on Immunization (EPI) in Namibia was established in 1990, after independence (4). The Programme aims to achieve at least 90% national vaccination coverage in all antigens with a dropout rate of less than 10% by the year 2010 and beyond, sustain the elimination of neonatal tetanus, poliomyelitis, and measles by the year 2010 and beyond (6). Despite the programmer's aim to have 90% coverage, only 89% of the targeted children were immunized in Namibia. The Measles-Rubella coverage gradually improved from below 60% in 2001 to 80% in 2019 (2).

Strong routine immunization systems are critical foundations for achieving and sustaining high levels of population immunity to vaccine-preventable diseases (6) The "Reaching Every District" (RED) strategy has been implemented, to expand the provision of immunization services in Namibia. Supplementary immunization activities (SIAs) also

referred to as mass-immunization campaigns, are effective strategies for delivering vaccination to children who missed routine immunization, for example, the hard-to-reach and underserved population (7). The SIAs also have the effect of rapidly increasing population immunity by reducing the number of susceptible individuals in the population, which can result in "herd" immunity. However, a proportion of children are not fully immunized with the recommended vaccines in Namibia (7). The Demographic Health survey (NDHS) (2013/2014) showed that only 89% of children aged between 12-23 months were fully immunized according to the Namibia Expanded Programme on Immunization schedule (7). This coverage is below the WHO recommended national immunization coverage of 90% and above for children below one year of age (2). The Pentavalent 1 -to-Pentavalent 3 and the pentavalent 1- to-measles Rubella immunization dropout rates of 10.5% respectively in the same NDHS were also higher than the recommendation of less than 10%. Consequently, many children are still susceptible to vaccine-preventable diseases. Namibia experienced a measles outbreak in 2013 and 2014 respectively (7).

Otjozondjupa region is one of the fourteen regions in Namibia. The region is divided into four () health districts: namely Grootfontein, Okahandja, Okakarara, and Otjiwarongo. The study focused on Grootfontein district, the vastest district in the Otjozondjupa region with a catchment population of 45056. Grootfontein district consists of eight health facilities, one district hospital with 150 bed capacity, one Health Centre, six clinics, and 25 outreach points. The district is bordering Omaheke region in the south, Kavango East

and Kavango West and Oshikoto regions in the north, Botswana in the east, and Okakarara in the southwest.

The figure 1.1 below shows the Otjozondjupa region which is highlighted in the Namibian map and Grootfontein district, study site.

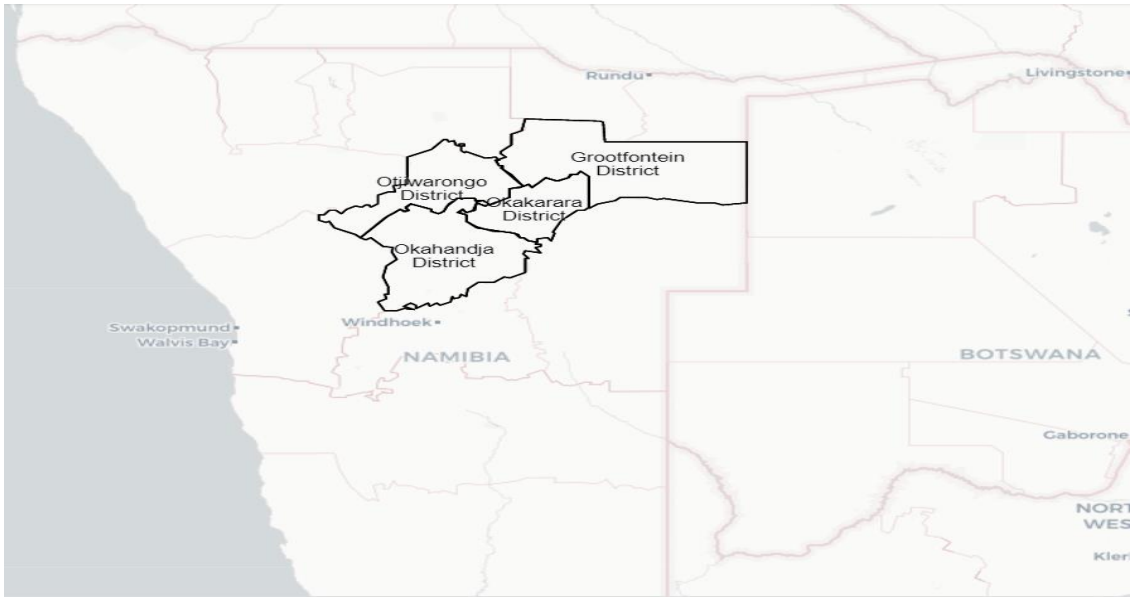


Figure 1.1: Map of Namibia showing Otjozondjupa region with Grootfontein district, study site.

1.2. STATEMENT OF THE PROBLEM

Grootfontein district implemented the expanded program on immunization in 1990. The program has been implemented at all public health facilities and outreach points. The WHO recommends that the pentavalent 1 -to-Measles-Rubella dropout rates should remain below 10% to have improved measles immunization coverage and to reduce under-five morbidity and mortality (2).

In Grootfontein district, the pentavalent 1-to-Measles-Rubella dropout rate has remained persistently above 10% over the last five years (8). This means that many of the children who manage to enroll in the immunization Programme in Grootfontein District end up not completing the recommended schedule by the time they attain one year of age. These children who fail to complete the immunization schedule in time are vulnerable to vaccine-preventable diseases (VPDs) resulting in related morbidity and mortality.

As a consequence of the persistent problem of high Measles-Rubella immunization dropout rate in the district over the last five years, the district had experienced a measles outbreak in 2014 (20). A total of one hundred and seventeen (117) cases of suspected Measles cases were recorded in the District from epidemiological week 1 to week 48. All cases were investigated by completing case-based investigation forms and collection of blood samples for confirmation. Five (5) cases were confirmed IGM positive, three (3) cases were equivocal, thirteen (13) cases were Rubella positive, sixty three (63) cases were Epi-linked, and thirty three (33) cases were negative. However, no Measles related death

was reported (20). In 2019 the district also reported 20 measles suspected cases at Omatako clinic, one of the clinics in the rural area (21). Twenty samples were taken for Measles and Rubella investigation. Four (4) cases were confirmed Rubella positive and no measles positive cases were reported (21).

Even though mothers can access the immunization services in Grootfontein as they take their children for the Pentavalent 1 dose, more than 10% of these mothers, fail to avail their children for measles Rubella immunization due to unknown reasons. Therefore, a study was needed to determine factors contributing to the high dropout for measles Rubella in Grootfontein district to inform the health care system to intervene appropriately.

1.3. PURPOSE OF THE STUDY

The purpose of the study was to investigate factors associated with Measles-Rubella immunization dropout in children seeking health care services in Grootfontein district.

1.3.1 Study objectives

The specific objectives of the study were to:

- Establish the relationship between the parental socio-demographic factors and Measles-Rubella immunization dropout
- Establish the relationship between non-socio-demographic factors and Measles-Rubella immunization dropout.

1.4 RESEARCH HYPOTHESIS

Null hypotheses [H0]

There is no relationship between parental socio and non-sociodemographic characteristics and immunization dropout.

Alternative Hypothesis [H1/Ha]

There is a relationship between parental socio and non-sociodemographic characteristics and immunization dropout.

1.5 SIGNIFICANCES OF THE STUDY

The study investigated factors that are associated with the Measles Rubella immunization dropout in children seeking health care services in Grootfontein district, Otjozondjupa region. The study results will guide Grootfontein district in particular, and Otjozondjupa region, in general, in ensuring that their planning and budgeting processes are in line with improving the immunization dropout in the district. The study will also contribute to the existing knowledge on the demographic and socio-economic characteristics of parents regarding immunization of children in the Otjozondjupa region and, in particular, the San community in Grootfontein District. Drop-out children will be referred to the health facilities and outreach teams for immunization.

1.6. LIMITATIONS OF THE STUDY

Limitations of a study are defined as influences that the researcher cannot control. (9). In this study, the language barrier could be regarded as a potential limitation. However, the researcher, with the assistance of trained research assistants who were conversant in all the dialects within the study area, made all efforts to ensure that there was good understanding, where clarity was required. In addition, the selection of one geographic region and one specific district could be limiting in terms of the generalization of the study findings.

1.7. DELIMITATION

Delimitations are choices made by the researcher and they describe boundaries set by . The study focused on investigating factors that are associated with the measles Rubella immunization dropout in children seeking health care services in Grootfontein district, Otjozondjupa region. Further research may be conducted in other geographical regions and districts within Namibia to confirm and compare the findings of this study. In addition, it was not possible to research all the regions in Namibia due to financial and time constraints.

1.8. OPERATIONAL DEFINITIONS

- **Immunization**: The process of rendering a person immune or resistant to an infectious disease, typically by the administration of a vaccine which stimulates the body's own immune system to protect the person against subsequent infection or disease (1).
- **Low immunization coverage**: An immunization coverage that is below 80% in a district and, thus, less than the WHO target of ≥ 80% (7).
- **Vaccination**: The action of administering a live or killed organism to an individual so that it may trigger an immune response. Vaccination does not guarantee immunity against the targeted disease (24).
- **Immunization dropout rate**: The proportion of children that received at least one dose or type of vaccine within the recommended immunization schedule but have failed to receive the remaining doses or types of vaccines to complete the recommended schedule (3).
- **Pentavalent 1-to-Measles Rubella dropout rate**: The proportion of children who receive the first dose of the pentavalent vaccine at six weeks of age but do not receive the measles vaccine at nine months of age (23, 35).
- **Fully immunized child (FIC):** A child who has received one dose of BCG vaccine, three doses of oral polio vaccine, three doses of pentavalent vaccine, and one dose of measles vaccine by the time of the interview (7).
- **Immunity:** Immunity is derived from the word "immune'" which means that the individual has enough defense mechanisms to fight and kill or weaken

microorganisms. Immunity is therefore the ability of the body to fight against certain disease organisms. An individual whose body has this ability is said to be immune to disease (6).

- **Vaccines:** Vaccines are substances prepared from disease causing micro-organisms that are either alive but weakened (attenuated) or killed before they are administered to an individual (3).
- **Pentavalent Vaccine**: A vaccine composed of the following five different vaccines combined in one and given in a single injection - Diphtheria, Pertussis, Tetanus, Hepatitis B, and Haemophilus influenza type B vaccines (7).
- **Measles-Rubella Vaccine:** This is a vaccine against measles, mumps, and Rubella (2).

1.9 OUTLINE OF THE CHAPTERS

The thesis chapters are outlined as follow:

Chapter one presented the orientation and background of the study, Chapter two is about literature review, Chapter three presents the methodology and design of the study, Chapter four presents the study results, and Chapter five present the discussion and conclusions of the study.

Summary

This chapter provided background information concerning Measles-Rubella immunization dropout status in the district under study. The researcher highlighted the research problem, aims, objectives, significance of the study as well as operational definitions. The next chapter will concentrate on the literature review with regards to the Measles-Rubella dropout status in developed and developing countries.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

A literature review is an organized written presentation of information on a topic that has already been published by scholars (10, 36). The purpose of the literature review is to convey to the reader what is currently known regarding the topic of interest (10). The literature review for this study focused on the existing literature related to the factors associated with Measles-Rubella dropout. 0Since immunization coverage data serves as an indicator of a health system's capacity to deliver essential services to the most vulnerable members of a population, various research studies have been conducted using completed immunization surveys (11). The immunization dropout rate is the proportion of children that received at least one dose or type of vaccine within the recommended immunization schedule but have failed to receive the remaining doses or types of vaccines to complete the recommended schedule (2).

Studies specifically addressing immunization dropout as the main contributor to low immunization coverage are quite a few (12). The majority of the studies done over the years had tended to concentrate mainly on the general factors that influenced immunization coverage but did not specifically address immunization dropout as one of the main causes of low immunization coverage (12). There were some demonstrable differences in the determinants of immunization coverage and dropout rate in developed and developing countries (38)

2.2 Determinants of immunization dropout in developed countries.

In the developed world, factors affecting maintenance of high vaccine coverage and vaccination completion include misconceptions such as fear of potential side-effects of vaccines, coupled with beliefs that vaccines cause diseases, vaccines do not work, multiple vaccines overload a child's immune system, and clean water and healthy living are better than vaccines (12). Overwhelming evidence from clinical trials shows the benefits and safety of childhood vaccination hence continuous health education and advocacy should be done to parents and guardians (2, 37).

According to the study conducted by Gulhan et al., in Diyarbakir.2008, the higher number of parents for the under immunized children are illiterate (10). It was also found that being the eighth child increased the risk of the under immunization in comparison to the first child. In fully immunized children, vaccination card application was better than dropped out children. Having vaccination at home increases the risk of under immunization. It was further revealed that the mother's education level, order of the child, consoling after vaccination, giving vaccine card, home visits for vaccination were the factors related to vaccination dropout (10,32).

Additionally, WHO analyzed 126 documents from the global grey literature to identify reasons why eligible children had incomplete or no vaccinations and reported that reasons for under-vaccination were related to immunization services and parental knowledge and attitudes. The most frequently cited factors were access to services, health staff attitudes and practices, reliability of services, false contraindications, and parent’s practical

knowledge of vaccination, fear of side effects, conflicting priorities, and parental beliefs (13). Some family demographic characteristics were strong, but underlying, risk factors for under-vaccination. Therefore, the study conducted by Puglies et al in Lusaka,Zambia 2012, suggested that every immunization program should strive to provide quality services that are accessible, convenient, reliable, friendly, affordable, and acceptable, and should solicit feedback from families and community leaders (13, 33). Every program should monitor missed and under-vaccinated children, assess, and address the causes (13).

Furthermore, another study on the reasons for dropout of immunization in children was conducted by Rahman et al, in Dhaka city, Bangladesh in 2019 (14). The study findings revealed that the main reasons for dropping out were a lack of awareness to complete the vaccination schedule, child illness, and fear of reaction and business of the mother. In conclusion, the study recommends that there is a need to intensify efforts to increase access to immunization, strengthen surveillance and promote health education to reduce immunization drop-outs (14).

2.3 Determinants of immunization dropout in developing countries.

Francis, (2012) conducted a cross-sectional study to establish the factors that are associated with the immunization dropout status among children aged 12-23 months seeking health care services in Kenya (12). The study findings revealed that maternal level of education, knowledge of vaccine-preventable diseases, and the means of transport used to the health facility have a statistically significant association with the immunization dropout status of children (12). In addition, cultural practices, beliefs, fear of side effects,

illiteracy, lack of money, and being too busy were the other maternal factors that were reported to contribute to the dropout status of children in the district (12).

Furthermore, long walking distances, inadequate number of health workers, and vaccine stock-outs were the additional health system factors that were also reported to influence the dropout status of children in Narok district, Kenya (12). The study concluded that it is important to strengthen health education programs, offer sustainable immunization outreach services to populations living far from health facilities, avoid vaccine stock-outs and procure adequate cold chain equipment for all health facilities (12).

According to the study conducted by Campbell in 2006, in Ethiopia (15), the main reasons for defaulting from the immunization program are poor counseling of mothers, unsupportive provider-client relationships, poor immunization service arrangements, and lack of systems for tracking defaulters (15). Campbell further suggested that efforts to reduce defaulter rates from the immunization program need to focus on improving the counseling of mothers and strengthening the health systems, especially with regards to service arrangements and tracking of the defaulters (15).

Tjiveze, (2012) conducted a cross-sectional study in certain rural villages in the Opuwo Health District Kunene Region Namibia to investigate the factors associated with the low measles immunization coverage in the Opuwo Health District. Tjiveze findings revealed statistically significant associations between certain socioeconomic and demographic variables and the immunization status of children (16). It emerged that with higher levels

of education, adequate financial support, easy access to health care facilities, and client-friendly services, the immunization rates of children increased. It also emerged that children from ethnic groups with a more traditional way of life, tend to be less often immunized (16, 32). The study concluded that the factors associated with the lower than national immunization levels in the Opuwo Health District could be attributed to socioeconomic, demographic, and ethnic variables (16).

Summary

In this chapter, related works of literature on factors associated with Measles-Rubella dropout were revised and presented according to the review. The literature review concluded that several factors influence immunization coverage and dropouts. Those factors include the educational level of parents, socioeconomic status, and cultural factors among others. Chapter three will focus on the study designs and data analysis methods used to conduct the research.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter describes and explains the research methodology used in the study to rule out the factors associated with Measles-Rubella drop out among children. Aspects such as study design, study population, sampling, inclusion and exclusion criteria, data collection process, data analysis, and aspects of research ethics related to the study are discussed.

3.2 RESEARCH DESIGN

In this study, a quantitative analytical community based unmatched 1:2 case-control study design was used. This design is appropriate for this particular study because it can determine the association between the factors and the outcome. The cases were eligible parents and caretakers of children who did not receive the first dose of Measles-Rubella immunization in 2020 and the controls were any eligible parents and caretakers of children who received the first dose of Measles-Rubella immunization in 2020. The analytical study aims to find the factors that predict or cause disease by examining associations rather than describing how many diseases there are. It also estimates the association between risk factors and the occurrence of the disease (19).

3.3 STUDY SITE

The study was conducted in Grootfontein district in Otjozondjupa region. Otjozondjupa region is one of the fourteen regions in Namibia. The study site was Grootfontein district, the vastest district in Otjozondjupa region with a catchment population of 45056. Grootfontein district consists of 8 health facilities, one district hospital with 150 bed capacities, 1 Health Centre, 6 clinics, and 25 outreach points. The Health Centre and all clinics provide immunization services (8). (Ref)

3.4 STUDY POPULATION

A study population is defined as a group of individuals taken from the general population who share common characteristics, such as age, sex, or health condition (19). The 2020 District Health Information System (DHIS) for Grootfontein district indicated a total of 1390 children who received Pentavalent 1 immunization of which 361 did not receive the first dose of Measles Rubella in 2020 (22). The target population were parents and caretakers of all children aged 12-23 months who received Pentavalent 1 vaccine and had reached the age by which they should have been immunized with the first dose of Measles Rubella in 2020 out of which the sample was drawn. The cases were eligible parents and caretakers of children who did not receive the first dose of Measles-Rubella immunization and the controls were any eligible parents and caretakers of children who received the first dose of Measles-Rubella immunization.

3.5 SAMPLING METHOD

A simple random sampling was applied to select cases and controls. There are a total of 7 immunizing health facilities in Grootfontein district. All 7 facilities conducting immunization were sampled. In each facility, a list of cases and controls' full addresses were pulled from the National Immunization Cohort registers. The final subset of cases and controls were selected by a simple random technique based on the probability proportional to the number of children under one year of age in each immunizing facility. This sampling frame was used to trace study participants with the help of Health Extension Workers in the community. All cases and controls were traced.

3.6 SAMPLE SIZE

The sample size was estimated by Fleiss formula using Epi-Info statistical software for unmatched case-control studies. The basic parameters used for calculating the sample size was two-sided significant level as 0.05(95% Confidence Interval), power of study 80%, the ratio of cases to controls 1:2, the proportion of children who received the first dose of Measles-Rubella vaccine 0.74(74%) as controls with exposure and 2.5 as an anticipated odds ratio. The calculated sample size was 300(100cases and 200 controls).

Unmatched Case-Control Study (Comparison of ILL and NOT ILL)

Two-sided confidence level:	95%
Power:	80 %
Ratio of controls to cases:	2
Percent of controls exposed:	74 %
Odds ratio:	2.5
Percent of cases with exposure:	87.7 %

	Kelsey	Fleiss	Fleiss w/ CC
Cases	106	100	111
Controls	212	200	221
Total	318	300	332

Figure 3.1 Epi-info sample size estimation formula.

Inclusion Criteria:

The study included parents and caretakers of children aged 12-23 months who gave consent to participate in the study. Parents/caretakers were 18 years or older. Parents/caretakers should have lived in the study area for two years or more.

Exclusion Criteria:

- Parents and caretakers of children below the age of 12 months.
- Parents and caretakers of children older than 23 months.
- Parents/caretakers who were less than 18 years.
- Parents and caretakers who stayed in the area for less than two years.

3.7 DATA COLLECTION PROCESS

3.7.1 Research instrument

The questionnaire was developed and adopted from existing works of literature on factors associated with Measles Rubella dropout. The questionnaire consisted of two sections. Section A: includes information about the demographic and socio-economic characteristics of the parents and caretakers of the children, the measles vaccination status of the children, and Section B includes: information on factors other than socio-demographic characteristics that may be associated with measles Rubella immunization dropout.

3.7.2 Validity of the data collection instrument

Validity describes how accurate the instrument measured what it was supposed to measure to represent the concept in question (19). It involves a process of data collection and analyses to determine the accuracy of the instrument. The questions for the research questionnaire were constructed using relevant literature reviews to measure validity. The questions were framed to include items that covered the research objective. The researcher established the validity of the instrument by submitting the instrument to the main supervisor and two colleagues to evaluate it before the main study. Prior to the study, the data collection instrument was pre-tested in Juliane farm settlement in Grootfontein district on ten parents/caretaker who were then excluded from the main study. The questionnaire was edited according the findings from the pilot study.

3.7.3 Reliability of the data collection instrument

Reliability refers to the consistency of measurement. The reliability of measurement is the degree to which the instrument produces equivalent results for repeated trials (19, 34). In this study, the researcher ensured that the data collection instrument was reliable. Prior to the study, the questionnaire was tested and re-tested to minimize the data collection errors. Specific measure to ensure reliability of the data collection instrument was employed by utilizing a control individual who conducted repeat interviews with six parents during the pretest of the instrument.

3.7.4 Data collection procedure

A piloted structured questionnaire was used to collect information through interviewing the participants (both cases and controls). The questionnaire was designed in English and translated into Afrikaans as a commonly used local language. Fourteen Health Extension Workers within the catchment areas of study facilities were trained to assist in tracing of mothers and data collection. The research assistants were trained on the study objective and methodology. A confidentiality agreement for Health Extension Workers to assist with data collection was obtained from Otjozondjupa Health Director. The researcher reviewed the data collected to ensure the quality and comparability of data between research assistants.

3.8 DATA ANALYSIS

Data analysis was carried out using EPI info version 7 to generate proportions and frequencies. Chi-square statistical test of significance was used to determine the significance of the relationships between the independent variables and Measles-Rubella immunization dropout. The independent variables include socio-demographic factors like age of parents/caretakers, gender, place of residence, tribe, marital status, level of education, employment, and religion. Dependent variables include factors rather than socio-demographic characteristics like distance to the health facility, waiting time, quality of services, and availability of vaccines. Bivariate logistic regression was used to generate crude Odds Ratio (OR) and 95% Confidence Interval (CI) for each of the risk factors, while multivariate analysis for the significant variables was used to generate adjusted OR and 95% CI. The significant levels of P-value were set at <0.05. Results are presented in tables and graphs.

3.9 RESEARCH ETHICS

The study commenced after approval from the University of Namibia Postgraduate Studies Committee and ethical clearance from the Health Research Ethics Committee. Permission was also obtained from the Ministry of Health and Social Services Research and Ethics Committee and the Director of Otjozondjupa region before the commencement of the study.

3.9.1 Autonomy

All enrolled study participants signed or thumb stamped the written informed consent forms before participating in the study. Study participants were informed about the purposes of the study, and the research method. The participants were assured of their

right to voluntary participation and to withdraw from the study at any time if they so wish, without any penalties.

3.9.2 Confidentiality and anonymity

The data collection tools made use of a registration number to protect the names of the study participants. Information obtained throughout the study was kept confidential and private. Data obtained from the study were kept in a lockable cabinet at the principal investigator's office under lock and key until the study was complete. The questionnaire will be destroyed after the purpose of the research has been fulfilled and finalized.

3.9.3 Non-Maleficence

Harm can be both physical and/or psychological and therefore can be in the form of stress, pain, anxiety, diminishing self-esteem, or an invasion of privacy. No study participant was exposed or subjected to physical or emotional harm.

3.9.4 Beneficence

It is the ethical responsibility to ensure that the study results were beneficial to the health needs of individuals. Drop-out children were referred to the health facilities and outreach teams for immunization. The study results will guide Grootfontein district in particular, and Otjozondjupa region, in general, in ensuring that their planning and budgeting processes are in line with improving the immunization dropout in the district.

3.9.5 Justice

The researcher also implemented the principle of justice by randomly selecting study participants, to ensure that everyone had an equal chance of participating in the study.

Summary

This chapter described how the study was carried out. It provided a brief description of the study design, population, sampling method and sample size determination, and study instrument. Moreover, the chapter explained the procedures that were used to collect data, ensure validity, reliability, and ethical considerations were discussed.

CHAPTER FOUR

RESEARCH FINDINGS

4.1. INTRODUCTION

This chapter presents the study findings based on the results of the data analysis procedure carried out on data collected from Measles-Rubella immunization dropout cases and their controls among children aged 12-23 months in Grootfontein district.

4.2.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE STUDY POPULATION

A total number of 300 parents and caretakers of children aged 12-23 months participated in the study, of these 100 were cases and 200 were controls. Among participants, majority of both cases, 84 (84 %) and controls 175 (88 %) were from age groups 20 - 39 years (Figure 4.1). The majority of cases 42% (42) among participated children were from the age group between 16-19 months, same apply to the control participants 45% (90) respectively. Case-children were fairly equally distributed among the age group of 12-15, 28% (28), and 20-23 months 15% (30), Figure 4.2. Most participants, both cases 80% (80) and controls 68% (135) were residing in rural areas and only 20% (20) of cases and 32% (64) of controls were residing in urban areas. Figure 4.4

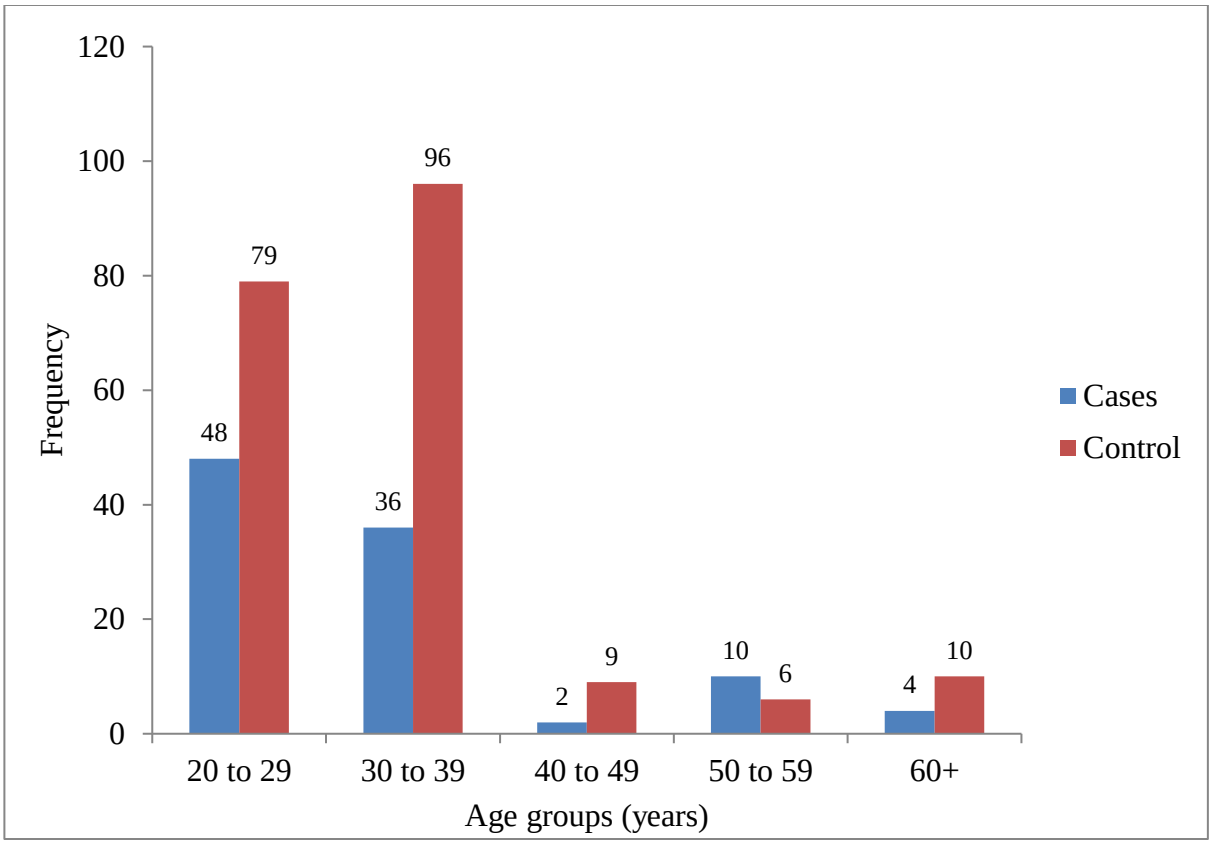


Figure 4.1: Age distribution of cases (n=100) and controls (n-200) by parents/care takers age groups, Grootfontein district (N=300).

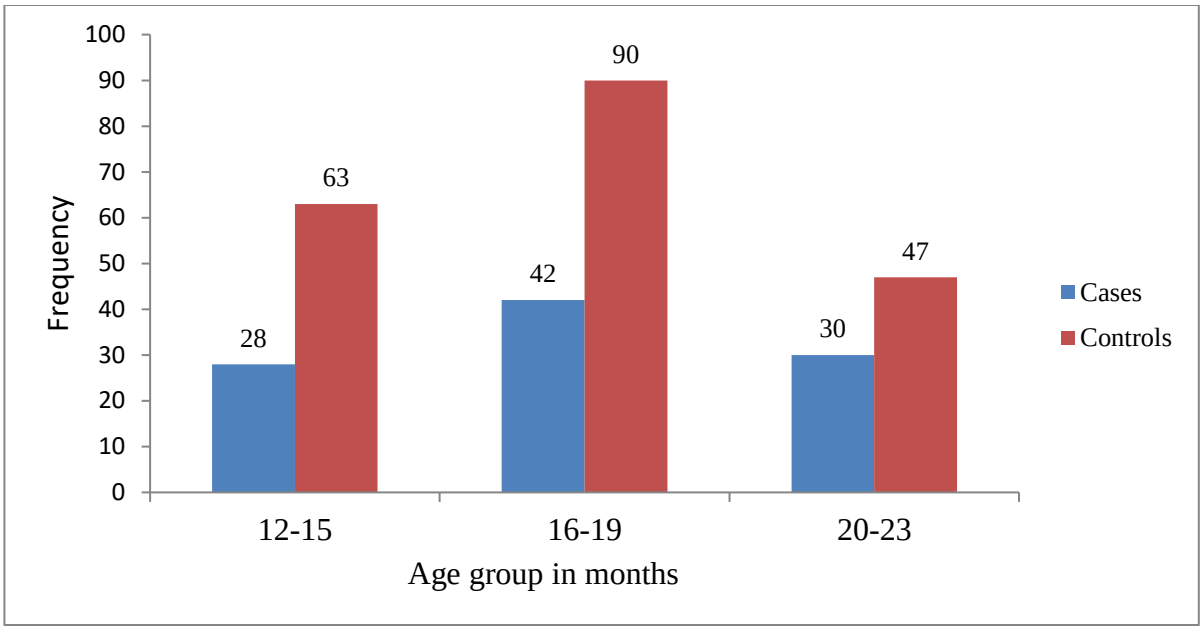


Figure 4.2: Age distribution of cases (n=100) and control (n=200) among children by age group in months, Grootfontein district (N=300).

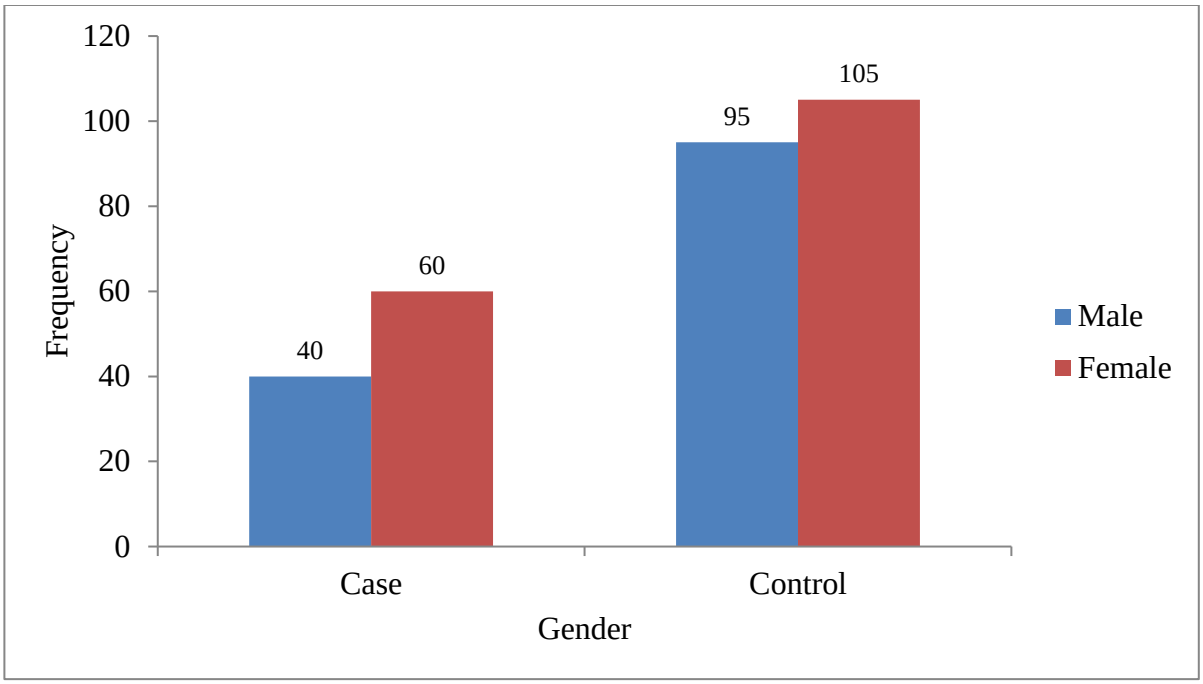


Figure 4.3: Frequency distribution of the cases and controls by gender, Grootfontein district (N=300).

Figure 4.3 shows that the majority of participants among both cases and controls were female represented with 60% (60) and 35% (105) respectively.

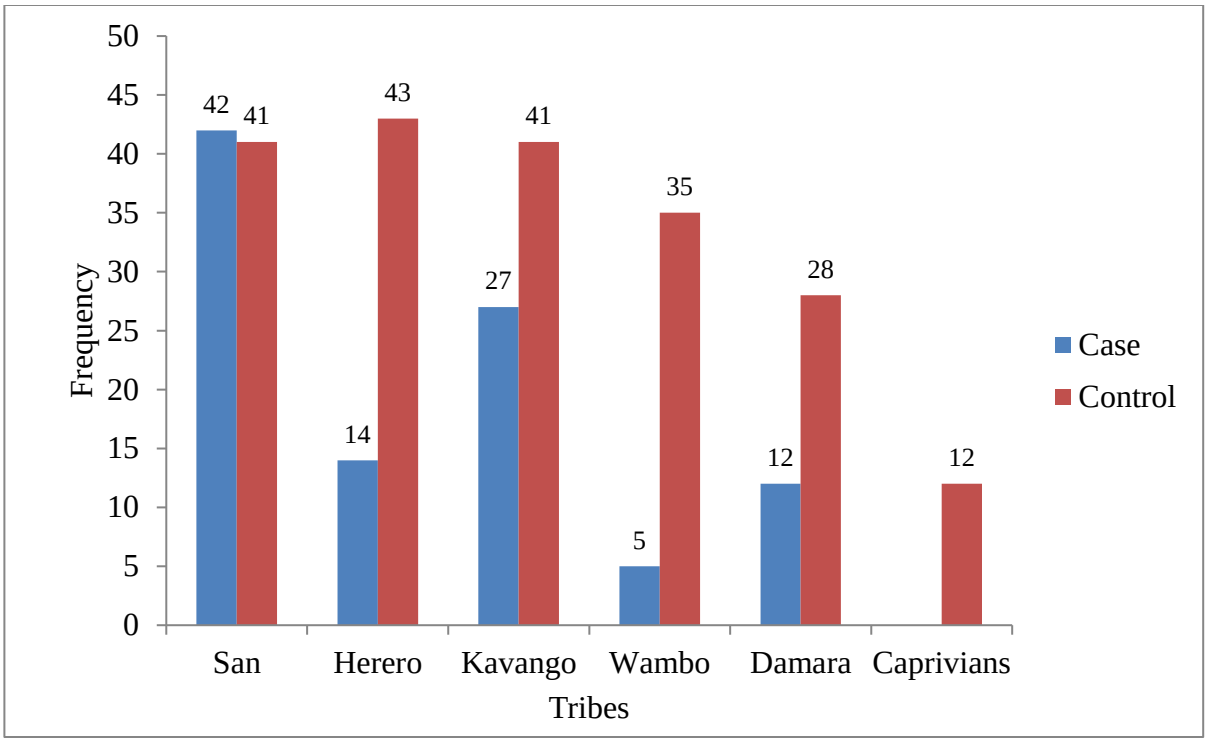


Figure 4.4: Distribution of cases and controls by tribes, Grootfontein district (N=300).

Figure 4.4 above represents that the majority of study participants among cases were San tribe with 42%, followed by Kavango tribe with 27% and the least were Wambo tribe representing only 5%. However, among controls most participants were Herero tribe representing with 22% (43), while Kavango and San were second each with 21% (41), the least were Caprivian 6% (12).

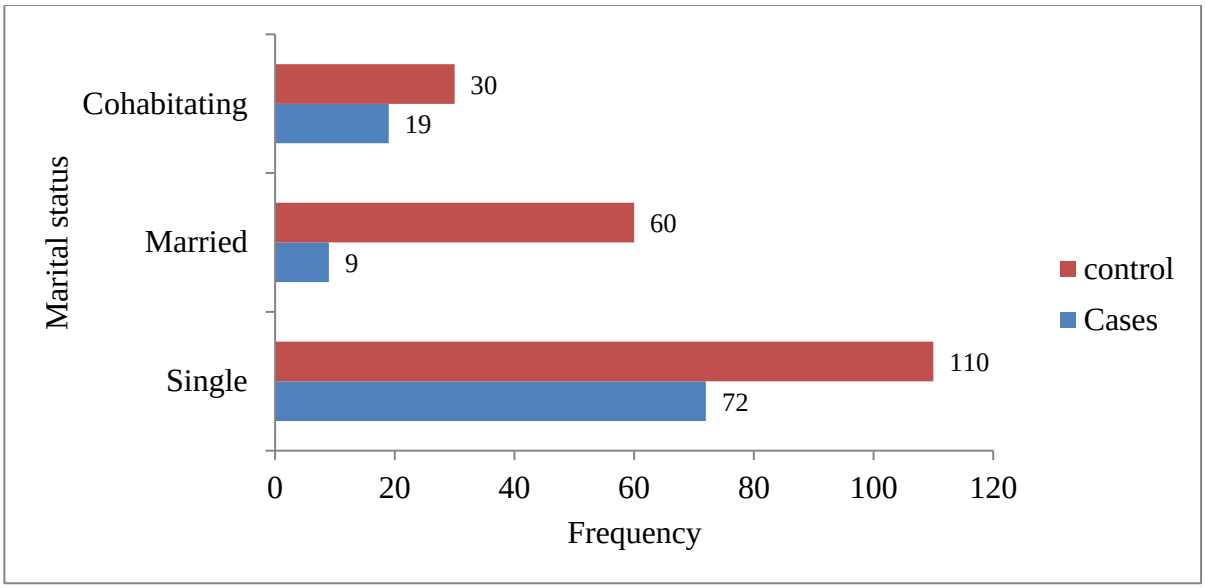


Figure 4.5: Distribution of study participants (cases and controls) by marital status, Grootfontein district (N=300).

The distribution of the study participants by their marital status showed that most of the cases 72% (72) and controls 55% (110) were single. Cohabitation was found higher in controls 30% (60) than in cases 9% (9). Out of 100 cases, only 9% (9) were married.

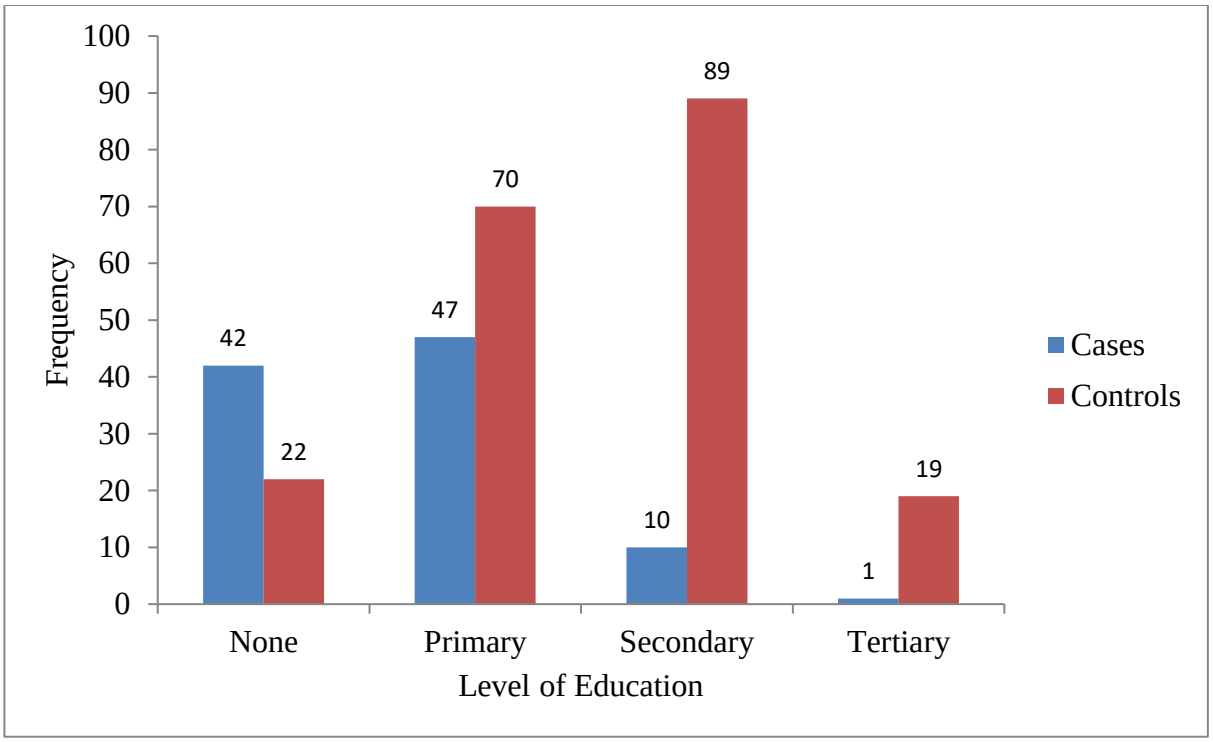


Figure 4.6: Distribution of study participants (cases and controls) by the level of education, Grootfontein district (N=300).

On analysis based on level of education as illustrated in figure 4.6, among cases majority were having primary education counting for 47% (47), 10 (10%) with secondary education and those without any level of education were 42% (42), while, the least was tertiary level with 1% (1). Among controls, most of the participants 44.5 % (89) had acquired secondary education, followed by primary level with 35% (70), while, 9.5% (19) has a tertiary level of education. A total of 11% (22) had no education level.

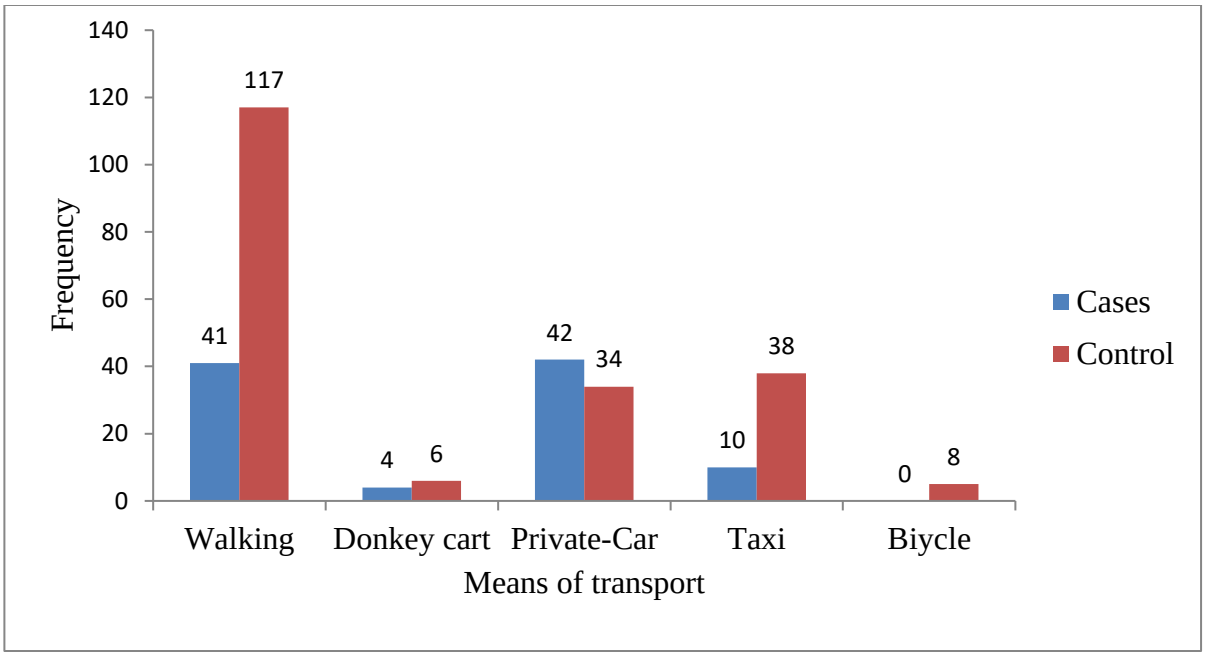


Figure 4.7: Frequency distribution of cases and controls types of transport used, Grootfontein (N=300).

Figure 4.7 shows that the majority of participants are walking to the health facilities 53 % (158) of which 14 % (41) are cases and 39% (117) controls., compared to 25% (76) of those who are using private cars as a means of transport: cases 14% (42) and controls contributed11% (34 while, only 3% (10) among the totality of both cases and controls were using a donkey cart:: cases 1%(4) and controls contributed 2% (6).

Table 4.1: Frequency distribution of the cases by Religions, Grootfontein district (n=100).

Religion	Frequency (%)	95% CI
AGS church	9 (9)	4.20 – 16.40
Bathista	2 (2)	0.24 – 7.04
Benjamin Pinkster kerk	11 (11)	5.62 – 18.83

Besteme Prinkster	2 (2)	0.24 – 7.04
Catholic	33 (33)	23.92 – 43.12
ELCIN (Evangelical Lutheran Church in Namibia)	2 (2)	0.24 - 7.04
Full Gospel church	1 (1)	0.03 – 5.45
NG	5 (5)	1.64 – 11.28
None	8 (8)	2.86 – 13.89
Oruano	3 (3)	0.62 – 8.52
ST John Church	2 (2)	0.24 – 7.04
The voice of Prophets	13 (13)	7.11 – 21.20
ZCC	9 (9)	4.20 – 16.40

Table 4.2: Frequency distribution of the controls by Religions, Grootfontein district (n=200).

Religion	Frequency (%)	95% CI
AGS church	17 (9)	5.03 – 13.26
Benjamin Pinkster kerk	16 (8).	4.64 – 12.67
Besteme Prinkster	4 (2)	0.55 – 5.04
Catholic	54 (27)	20.98 – 33.72
Evangelical Lutheran Church in Namibia (ELCIN)	33 (17)	10.35 – 20.72

Full Gospel church	4 (2)	0.55 – 5.04
Grossing healing church	1 (0.5)	0.01 – 2.75
Namibian Pintacost	1 (0.5)	0.01 – 2.75
NG	2 (1)	0.12 – 3.57
None	11 (6)	2.78 – 9.63
Oruano	9(5)	2.08 – 8.37
Seventh Day Adventist Church	12 (6)	3.14 – 10.25
Spiritual Healing Church	5 (3)	0.82 – 5.74
ST John Church	3 (2)	0.31 – 4.32
The voice of Prophets	2 (1)	0.12 – 3.57
Voice of prophets	3 (2)	0.31 – 4.32
ZCC	23 (12)	7.43 – 16.75

Table 4.1 illustrates that most of the cases were Catholic 33% (33), followed by the voice of Prophet and Benjamin Pinkster Kerk with 13% (13) and 11% (11) respectively. Among controls majority were also Catholic 27% (54), then Evangelical Lutheran Church in Namibia (ELCIN)15% (30), while the Grossing healing church and Namibian Pintacost were the least with one participant each (Table 4.2).

Table 4.3: Frequency Distribution of cases and controls by other factors rather than Socio-Demographic Characteristics, Grootfontein district (N=300).

CATEGORY	**CASES**		**CONTROLS**	
TIME TO REACH HOSPITAL	Frequency	(%)	Frequency	%
One hour	28	28	74	37
More than one hour	68	68	33	16.5
Less than one hour	4	4	89	44.5
I don't know	0	0	4	2
TIME SPENT IN HOSPITAL				
Less than an hour	15	15	43	21.5
More than one hour	9	9	17	8.5
Don't know	1	1	2	1
One hour	75	75	138	69
IMMUNIZATION SERVICE				
Good	78	78	186	93
Poor Service	5	5	3	1.5
Average	17	17	11	5.5
INFORMATION AT IMMUNIZATION				
Information on Antigen given	1	1	11	5.5
I don't remember	32	32	5	2.5

Nothing given	5	5	0	0
About fever and abscess	0	0	9	4.5
Follow update	62	62	175	87.5
TYPE OF FORUM				
Community Health education	54	54	104	52
Health facility education	11	11	52	26
Media	35	35	43	21.5
Social gathering	0	0	1	0.5
PROPOSAL TO IMPROVE SERVICE				
Avail more staffs	3	3	107	53.5
Ensure vaccine available	15	14	15	7.5
Ensure vaccines are available all days	1	1	0	0
Avail more outreach service	63	63	39	19.5
Construct more facilities to shorten the distance	11	11	9	4.5
Avail more health education to mothers	7	7	23	11.5
Nothing more needs to be done	0	0	4	2.0
Healthcare workers to improve attitude	0	0	3	1.5

Table 4.3 shows that sixty eight percent 68% (68) of cases were traveling for more than one hour to reach the hospital and they were the majority, unlike their controls which were only 16.5% (33) and the majority 44.5% (89) of controls responded that they reach the health facility in less than one hour. When it comes to time spent in the health facility majority of both cases 75% (75) and controls 69% (138) responded that they spend one hour at the health facility. Most of both cases and controls say that immunization service was good with 78% (78) and 93% (186) respectively. However, only one percent 1% (1) among cases and five-point five percent 5.5%(11) among controls indicated that they were provided information on Antigen given, while the majority of both cases 54 %(54) and controls 87.5% (175) indicated that they were given information about follow- updates, but, none of the cases responded that they were given information about fever and abscess. Regarding the proposal to improve service, most 63% (63) of cases responded that more outreach service should be availed, while, among controls, more than a half responded that avail more staffs to improve service.

4.3 ANALYTICAL ANALYSIS

4.3.1. BIVARIATE ANALYSIS OF RISK FACTORS ASSOCIATED WITH MEASLES/ RUBELLA DROPOUT

This analysis consists of two tables as below (Table 4.4 and Table 4.5).

Table 4.4: Bivariate analysis of risk factors (socio-demographic) associated with Measles-Rubella dropout, Grootfontein district (N=300)

Variable	**Cases (%)**	**Controls (%)**	**OR**	**Chi-square**	**P-value**
Age of parents (years)					
10 to 19 **(Yes)**	13(13%)	7 (3.5%)	**4.00**	10.00	**0.01***
(No)	87(87%)	193(96.5%)			
20 to 29	35 (35%)	72 (36%)	0.90	0.02	0.80
	65 (65%)	128 (64%)			
30 to 39	36 (36%)	96 (48%)	0.60	4.00	**0.04***
	64 (64%)	104 (52%)			

40 to 49	2 (2%) 98 (98%)	9 (4.5%) 111(55.5%)	0.40	1.10	0.2
50 to 59	10 (10%) 90 (90%)	6 (3%) 194 (97%)	**4.00**	6.00	**0.01***
65+	4 (4%) 96 (96)	75 (37.5%) 125 (62.5%)	0.60	38.00	**0.00***
Parent gender					
Female	96 (6%) 4 (4%)	186 (93%) 14 (7%)	2.00	1.06	0.30
Residential address					
Rural	80 (80%) 20 (20%)	135 (67.5%) 65 (32.5%)	**2.0**	5.00	**0.02***
Provision of care					
Cared by parents	79 (79%) 21 (21%)	175 (87.5%) 25 (12.5%)	0.50	4.00	0.05
Grandchild	15 (15%)	17 (8.5%)	2.00	3.00	0.09

	85 (85%)	183(91.5%)			
Caregivers	6 (6%) 94(94%)	8 (4%) 192 (96%)	1.5	0.59	0.43
Tribe					
San	42 (42%) 58 (58%)	41 (20.5%) 159 (79.5%)	3.00	15.00	**0.008***
Herero	14 (14%) 86 (86%)	43 (21.5%) 157 (78.5%)	0.60	2.00	**0.01***
Kavango	27 (27%) 73 (73%)	41(20.5%) 159 (79.5%)	1.40	1.60	0.2
Wambo	5 (5%) 95 (95%)	35 (17.5%) 165 (82.5%	0.20	9.00	**0.02***
Damara	12 (12%) 88 (88%)	28 (14%) 172 (86%)	0.80	0.20	0.63
Caprivian	0 (0%) 100 (100%)	12 (6%) 188 (94%)	0.00	6.20	**0.01***
Single	72 (72%)	110 (55%)	2.00	7.00	0.07

	29 (29%)	90 (45%)			
Marital status					
Married	9 (9%) 91(91%)	60 (30%) 140 (70%)	0.200	16.00	0.05
Cohabitating	19 (19%) 81 (81%)	30 (15%) 170 (85%)	1.30	0.80	0.37
None	42 (42%) 58 (58%)	22 (11%) 178 (89%)	6.00	38.00	**0.01***
Level of education					
Primary	47 (47%) 53 (53%)	70 (35%) 130 (65%)	1.5	35.00	**0.04***
Secondary	10 (10%) 90 (90%)	89 (44.5%) 111 (55.5%)	0.10	1.60	**0.01***
Tertiary	1 (1%) 99 (99%)	19 (9.5%) 181(90.5%)	0.90	8.00	0.05

Employment status					
Unemployed	98 (98%) 2 (2%)	123 (61.5%) 77 (38.5%)	30.00	45.00	**0.00***

Table 4.4 of bivariate analysis for socio-demographic factors, shows that there is a stronger association between unemployment and measles-rubella immunization dropout (OR=30.00, X^2=45.0, P-Value=0.00). An odd ratio of 30.0 means that there are 30 more chances of measles/ rubella immunization dropout among unemployed cases than controls. Statistical significance was also found among some caretakers age groups of 30-39 years, with weak association and 50-59 years with strong association (OR=0.60, X^2 =4.00, P-value=0.04) and (OR=4.00, X^2=6.00, P-value= 0.01) respectively, therefore there is an association between 50-59 caretakers age groups and measles immunization dropout. The study also found an association between the San tribe and Measles-Rubella immunization dropout (OR=3.00, X^2=15.00, P-value=0.008). As indicated in table 4.4 of socio-demographic analysis, there was a significant association between residential area (OR=2.0, X^2=5.0, P-value=0.02). Statistical significance was also found among participants with no level of education (OR=6.00, X^2=38.00, P-value=0.01) and those with primary education (OR=1.5, X^2=35.00, P-value=0.04). Some exposure variables such as gender, marital status, provision of care were not found to be statistically significant

Table 4.5: Bivariate analysis of other factors rather than socio-demographic characteristics that may be associated with measles-rubella dropout

Variable	Cases (%)	Controls (%)	OR	Chi-square	P-value
Means of transport to health facility					
Walking (Yes) (No)	42(42%) 58 (58%)	117(58.5%) 83(41.5%)	1.00	8.00	**0.04***
Donkey cart	4 (4%) 96 (96%)	6 (3%) 194 (97%)	3.00	3.00	0.06
Private-Car	42 (42%) 58 (58%)	34 (17%) 166 (83%)	3.50	22.00	**0.02***
Taxi	10 (10%) 90 (90%)	38 (19%) 162 (81%)	0.400	4.00	**0.04***
Bicycle	0 (0%) 100 (100%)	5 (2.5%) 195 (87.5%)	0.00	2.50	0.11
Time to reach the health facility					
1 hour	28 (28%)	74 (37%)	0.60	2.40	1. 12

	72 (72%)	126 (63%)			
More than 1hour	68 (68%) 32 (32%)	33 (16.5%) 167 (83.5%)	10.00	79.00	**0.00***
Less than less than 1 hour	4 (4%) 96 (96%)	89 (44.5%) 111(55.5%)	0.00	2.00	0. 15
I don't know	0 (0%) 100(100)	4 (2%) 196 (98%)	0.00	2.0	0.15
Time spent in health facility					
Less than 1hr	15 (15%) 85 (85%)	43 (21.5%) 157 (78.5%)	0.800	0. 10	0.70
More than 1 hour	9 (9%) 91 (91)	17 (8.5%) 183 (91.5%)	1.00	0.02	0.80
Don't know	1 (1%) 99 (99%)	2 (1%) 198 (99%	2.00	0.20	0.60
One hour	75 (75%) 25 (25%)	138 (69%) 62 (31%)			
Quality of service given					
Immunization quality-Good	78 (78%) 22 (22%)	186 (93%) 14 (7%)	0.200	14.00	**0.01***
Poor Service	5 (5%) 95 (95%)	3 (1.5%) 197 (89.5%)	3.00	3.00	0.07

Average	17 (17%) 83 (83%)	11 (5.5%) 189 (94.5%)	**4.00**	10.00	**0.01***
Information on immunization					
Information on Antigen given	1(1%) 99 (99%)	11 (5.5%) 189 (94.5%)	0.10	3.00	0.06
I don't remember	32 (32%) 68 (68%)	5 (2.5%) 95 (47.5%)	18.00	53.00	**0.00***
Nothing given	5 (5%) 95 (95%)	0 (0%) 200 (100%)	0.00	10.00	**0.01***
Fever-abscess	0 (0%) 100(100%)	9 (4.5%) 191 (95.5%)	0.00	5.00	**0.03***
Follow update	62 (62%) 38 (38%)	175 (87.5%) 25 (12.5%)	0.20	26.00	**0.03***
Attended education forum	67 (67%) 33 (33%)	191 (95.5%) 9 (4.5%)	0.09	44.00	**0.00***
Type of education forum					
Community Health education	54 (54%) 46 (46%)	104 (52%) 96 (48%)	1.1	0.10	0.70
Health facility education	11(11%) 89 (89%)	52 (26%) 148 (74%)	0.35	9.00	**0.02***

Media	35 (35%) 65 (65%)	43 (21.5%) 157 (78.5%)	2.00	7.00	**0.01***
Social gathering	0 (0%) 100 (100%)	1 (0.5%) 199 (99.5%)	0.00	0.50	0.70
Proposal to improve service					
Avail more staffs	3 (3%) 97 (97%)	107 (53.5%) 93 (46.5%)	0.02	73.00	**0.00***
Ensure vaccine available	14 (14%) 86 (86)	15 (7.5%) 185 (92.5%)	2.00	3.00	0.07
Ensure vaccines are available all days	1 (1%) 99 (99%)	0 (0%) 200 (100%)	2.00	0.20	0.60
Avail more outreach service	62 (62%) 38 (38%)	39 (19.5%) 161(80.5%)	**7.00**	57.00	**0.00***
Construct more facilities to shorten the distance	11 (11%) 89 (89%)	9 (4.5%) 191 (95.5%)	3.00	5.00	**0.03***
Avail more health education to mothers	7 (7%) 93 (93%)	23 (11.5%) 177 (88.5%)	0.5	1.5	0.20

Nothing more needs to be done	0 (0 %) 100 (100%)	4 (2%) 196 (98%)	0.00	2.0	0.15
Healthcare workers to improve attitude	0 (0%) 100 (100%)	3 (1.5%) 197 (98.5%)	0.00	1.5	0.20

Table 4.5 illustrates the association between more than 1hour to reach health facility (OR=10.00, X^2=79.00, P-value=0.00); walking (OR=1.0, X^2=8.00, P-value=0.04), I don't remember information given at immunization (OR=18.00, X^2=53.00, P-value=0.00), Average service (OR=4.00, X^2=10.00, P-value=0.01), and Measles/Rubella immunization dropout. The unavailability of vaccines in the facility is also found to be a risk factor for measles /rubella immunization dropout as it was statistically significant (OR= 2.00, X^2=5.00, P-value=0.02). Some exposure variables were not found to be statistically significant.

4.3.2. MULTIVARIATE LOGISTIC REGRESSION ANALYSIS OF RISK FACTORS FOR MEASLES-RUBELLA IMMUNIZATION DROPOUT

Table 4.6: Multivariate analysis of risk factors associated with measles /rubella immunization dropout, Grootfontein district (N=300).

Characteristics	AOR	95% CI	P-Value
Age	2.00	1.5-2.6	**0.01***
Residential address	2.00	1.0-3.4	**0.02***
Quality service	3.00	1.6-8.7	**0.02***
Education level	2.00	1.5-2.3	**0.02***
All other factors	2.00	1.6-2.3	**0.00***

The table 4.6 shows that there was a significant association between age (AOR=2.00, 95%CI=1.5 – 2.6, P-value=0.01); residential address (AOR=2.00, 95%CI=1.0 – 3.4, P-value=0.02); quality services (AOR=3.00, 95%CI=1.6 – 8.7, P-value=0.02), education level (AOR=2.00, 95%CI=1.5 – 2.3, P-value=0.02), all other factors (AOR=2.00, 95%CI=1.6 – 2.3, P-value=0.00) and Measles /Rubella immunization dropout. This is because the odds ratio was greater than 1.0, meaning that the odds of exposure among cases were 2 to 3 greater than the odds of exposure among controls. All these five risk factors were statistically significant, therefore, there is an association between those risk factors and Measles/Rubella immunization dropout. However, the strength of associations was not that very stronger.

4.4 SUMMARY

This chapter presented a detailed description of the results obtained and the analysis of data collected from cases and their controls. Bivariate and multivariate analysis of risk factors associated with measles /rubella immunization dropout were also presented. The next chapter will deal with the discussion of findings, conclusions, recommendations, and limitations of the study.

CHAPTER FIVE

DISCUSSION, CONCLUSION, LIMITATIONS, AND RECOMMENDATIONS

5.1 INTRODUCTION

In this chapter, the main findings are discussed. The study findings will be discussed comparing them to works of different literature of other studies conducted in other areas or countries. The chapter will also draw the conclusion in relation to study objectives and hypotheses Recommendations and study limitations of the study will be highlighted.

5.2 DISCUSSION OF FINDINGS

5.2.1 PARENTAL SOCIO-DEMOGRAPHIC FACTORS ASSOCIATED WITH MEASLES-RUBELLA IMMUNIZATION DROP OUT

The study results indicated that there is a significant association between parental/caretaker's age and Measles Rubella immunization dropout. The highest rate of measles dropout is found among children of parents/caretakers aged 20-39 years. This may be due to young mothers having less knowledge of health care services and not valuing the importance of full immunization of their children. This is in line with findings from the study that assessed determinants of childhood vaccination completion in Kenya which revealed that parental age is a significant determinant of immunization dropout (25). Nonetheless, it was different from the study conducted by Taapopi in 2002 in Opuwo district which revealed that the age of mothers, guardians, or caretakers did not significantly influence the vaccination status of the children (26).

Moreover, there is a significant association between unemployment and Measles-Rubella immunization dropout. This may be due to a lack of financial resources which act as a barrier to access health facilities for immunization services. Higher income status could enable the caretakers to afford transport to the Health facilities for immunization services. This finding was similar to the studies conducted in Nigeria where unemployment was found to have a significant influence on immunization dropout (27, 28). However, the study in Uganda did not indicate any association between the employment status of parents/caretakers and immunization dropout (29)

There is a positive significant association between the education levels of parents/ caregivers and immunization dropout. Mothers who had completed primary education or no formal education were more likely to have children drop out of immunization programs than mothers with secondary or higher education who have taken their children for Measles-Rubella vaccination. This may be because educated mothers/caretakers have more knowledge and decision-making skills on child health including timing on immunizing their children as compared to uneducated parents/caretakers. This finding supports the study conducted in Nigeria by Oleribe's finding that continuation and completion of the required number of vaccination in children depend on the mother's educational level (27). In contrast to these findings, in a study conducted in Ghana, parent/caretaker's education level was not statistically significant associated with immunization dropout (29).

The study found also an association between parents/care taker's residential areas, and Measles-Rubella immunization dropout. Some community members in Grootfontein district live far from health facilities and it is not easy for the parents/caretakers to afford transport fares. Thus, parents/caretakers are forced to travel long distances taking more than one hour to reach health facilities. These findings are supported by Tjiveze in the study conducted in Opuwo, Namibia, who reported similar findings that there is an association between residential areas, race and immunization coverage (16). Contrary to these findings, a study in Nigeria indicated that ethnicity and place of residence are not significant predictors of immunization dropout (30). However, one might conclude that the association between place of residence and immunization dropout may vary from country to country.

5.2.2 OTHER FACTORS RATHER THAN SOCIO-DEMOGRAPHIC FACTORS ASSOCIATED WITH MEASLES-RUBELLA IMMUNIZATION DROPOUT

Bivariate analysis revealed that other factors associated with Measles-Rubella drop out in Grootfontein district include the following: more than 1hour to reach a health facility, being unable to remember information given at immunization, and average service. Similarly, a study in Nigeria suggests that walking or traveling time and distance are key factors that influence the utilization of health services including immunization (30). The study also found that there is a significant association between the unavailability of vaccines at health facilities and Measles-Rubella dropout. Unavailability of vaccines at the health facilities on follow-up dates may discourage parents/caretakers to bring their children back for vaccination. Okunga et al. (31) had similar findings that there is an

association between the availability of vaccines at health facilities and immunization dropout.

5.3 CONCLUSION

In conclusion, various risk factors associated with Measles-Rubella immunization dropout in Grootfontein district were identified. Socio-demographic characteristics that are associated with measles-rubella dropout are age, unemployment, education, tribe, and residential area. Other factors rather than socio-demographic characteristics that are associated with Measles-Rubella dropout are more than 1hour to reach a health facility, not remembering information given at immunization session, average service, and unavailability of vaccines in health facilities. Other exposure variables such as gender, marital status and provision of care were not found to be statistically significant

5.4 LIMITATIONS

The Findings cannot be generalized countrywide as we only focused on Grootfontein district. Incomplete information from some of the records made it impossible for some variables to be analyzed. There was some communication limitations with san parents/caretakers, however the researcher managed to collect data by making use of Health Extension Workers.

5.5 RECOMMENDATIONS

Recommendations were made based on the study findings to improve and reduce measles rubella dropout. The following recommendations:

1. **For the Ministry of Health and Social Services**

Ministry of Health and Social Services should ensure a continuous supply of vaccines at health facilities. It is also recommended that more health facilities be established in order to improve access to health facilities for communities living in rural areas. Moreover, the MOHSS should avail more staff at health facilities to reduce waiting time. The study also recommends that Grootfontein district needs to focus on strengthening health education activities on immunization.The district should involve private agencies, NGOs, traditional leaders, other stakeholders, and social media platforms in the dissemination of information aimed at improving immunization completion. In addition, outreach services should be expanded to capture the hard-to-reach populations.

2. For Health care workers

Health care workers should give clear information regarding immunization follow-ups. It is recommended that the Health Care Workers keep the immunization cohort registers fully updated, to enable them to follow up with children in their catchment areas who have missed their immunization schedules. Health Extension Workers to continue conducting community health education on the importance of immunization in the community.

1. For Community members

Community leaders should educate parents/caretakers on the importance of immunization. Secondly, Community leaders should help with announcing outreach immunization services during community meetings, church services, and though the media. Traditional leaders should also help with the identification of outreach points in the community. Parents/caretakers should take children to health facilities, for immunization services as per their immunization schedules.

5.6 SUMMARY

This chapter discussed the study findings as per the objectives. The study revealed that sociodemographic and non-sociodemographic factors such as unemployment, education, living in rural areas, more than 1hour to reach health facilities, and unavailability of vaccines at health facilities were strongly associated with Measles-Rubella dropout. These findings could assist the Ministry of Health in Otjozondjupa region to implement preventative strategies which should target the identified risk factors.

6. REFERENCES

1. United Nations International Children fund. Progress for Children. A Report Card on Immunization.2005 Available at: *https://www.unicef.org/publications/index_28135.html*. Retrieved on 08 July 2019.

2. World Health Organization. Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region. 2017; [New Delhi]:

3. Baguune B, Ndago JA, Adokiya M Immunization dropout rate and data quality among children 12-23 months of age in Ghana. Arch Public Health. 2017; 75:18. Published 2017 Apr 17. Doi: 10.1186/s13690-017-0186-8

4. WHO | Measles – Madagascar. WHO [Internet]. 2019 [cited 2019 Jul 12]; Available from: https://www.who.int/csr/don/17-january-2019-measles-madagascar/en/

5. WHO.Angola Measles weekly update, week 21.2019. Bulletin World Health Organisation.

6. Biellik RJ, Allies T, Woodfill CJI, Lobanov A. Polio Outbreaks in Namibia, 1993-1995: Lessons Learned. J Infect Dis. 2011; 175 (Supplement 1): S30–6.

7. Ministry of Health and Social Services. Namibia Demographic and Health Survey 2013-2014.Cardiovasc J Africa [Internet]. ; 22(5). Available from: http://www.ncbi.nlm.nih.gov/pubmed/22042160

8. MOHSS, Grootfontein district annual report. (2018)

9. Fox, W., & Bayat, M. A guide to Managing Research. Cape Town: Juta & Co Ltd. 2014

10. Gulhan, Yigitalp & Ertem, Meliksah. Reasons for Drop out of Immunization in Children Aged Between 0-12 Months in Diyarbakir.2008. 7(4) TAF Preventive Medicine Bulletin.

11. Demicheli, V. V., Rivetti, A., Debalini, M.G. and Di Pietrantonj, C. (2011).Vaccines for Measles, Mumps, and Rubella in children. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD004407

12. Francis .K. Determinants of the immunization dropout in Narok North District, Kenya. 2012. [Master Dissertation]. University of Nairobi. Library 0536526 7.

13. Favin M, Steinglass R, Fields R, Banerjee K, Sawhney M. Why children are not vaccinated: A review of the grey literature. Into Health [Internet]. 2012; 4(4):229–38. Available at: http://dx.doi.org/10.1016/j.inhe.2012.07.004

14. Rahman MM, Islam MA, Mahalanabis D. Mothers' Knowledge about Vaccine-Preventable Diseases and Immunization Coverage of a Population with High Rate of Illiteracy. J Trop Pediatric [Internet]. 1995 Dec 1 [cited 2019 Jul 12]; 41(6):376–8. Available at: https://academic.oup.com/tropej/article-lookup/doi/10.1093/tropej/41.6.376

15. Campbell S. Increasing immunization coverage in developing countries. Prim Heal Care [Internet]. 2006 Feb 1 [cited 2019 Jul 12]; 16(1):25–9. Available at: http://rcnpublishing.com/doi/abs/10.7748/phc2006.02.16.1.25.c592

16. Tjiveze, K. Factors associated with the measles immunization coverage in the Opuwo district, Kunene region, Namibia. (2012). [Master Dissertation]. Namibia: University of Namibia.

17. Brink, H I. Fundamentals of research methodology for health care professionals. (2nd Ed).Cape Town: Creda Press. 2009.

18. Burns, N. & Grove, S. K. The practice of nursing research: Conduct critique, and utilization, (5th Ed.). St. Louis, M.O: Elsevier Saunders conduct. (2005).

19. Trochim, W. M. K. Time in research: Research methods knowledge base. (2008). Center for Social Research Methods. Available at http://www.socialresearchmethods.net/kb/introval.php.

20. MOHSS, Grootfontein Measles outbreak situational report. (2014).

21. MOHSS, Grootfontein Measles case investigation situational report. (2019).

22. MOHSS, Grootfontein District Health Information System (DHIS) report. (2020).

23. CDC. Morbidity and Mortality Weekly Report, Global routine vaccination coverage. (2013).

24. Centers for Disease Control and Prevention (CDC. Global routine vaccination coverage, 2010. MMWR. Morbidity and mortality weekly report. 2011 Nov 11; 60(44):1520-2.

25. Emmanuel OW, Samuel AA, Helen KL. Determinants of childhood vaccination completion at a peri-urban hospital in Kenya, December 2013-January 2014: a case-control study. The Pan African Medical Journal. 2015; 20.

26. Taapopi SS. Vaccination coverage and factors associated with vaccination coverage among children aged 12–23 months in Opuwo district, Kunene region, Namibia [Masters Dissertation], 2002.

27. Oleribe O, Kumar V, Awosika-Olumo A, Taylor-Robinson SD. Individual and socioeconomic factors associated with childhood immunization coverage in Nigeria. The Pan African Medical Journal. 2017; 26.

28. Subhani S, Anwar S, Ahmad MK, Jeelani G. Impact of Mother's Employment on Child Vaccination (A Case Study of Bangladesh). Journal of Finance and Economics [Online]. 2015; 3(4):64-6.

29. Baguune B, Ndago JA, Adokiya MN. Immunization dropout rate and data quality among children 12–23 months of age in Ghana. Archives of Public Health. 2017 Dec; 75(1):1-8.

30. Abdullahi S. Factors Affecting Completion of Childhood Immunization in North West Nigeria (Doctoral dissertation, Walden University), 2018

31. Bbaale E. Factors influencing childhood immunization in Uganda. Journal of health, population, and nutrition. 2013 Mar; 31(1):118.

32. Mugali RR, Mansoor F, Parwiz S, Ahmad F, Safi N, Higgins-Steele A, Varkey S. Improving immunization in Afghanistan: results from a cross-sectional community-based survey to assess routine immunization coverage. BMC public health. 2017 Dec; 17(1):1-9.

33. Pugliese-Garcia M, Heyerdahl LW, Mwamba C, Nkwemu S, Chilengi R, Demolis R, Guillermet E, Sharma A. Factors influencing vaccine acceptance and hesitancy in three informal settlements in Lusaka, Zambia. Vaccine. 2018 Sep 5; 36(37):5617-24.

34 Selby-Harrington ML, Mehta SM, Jutsum V, Riportella-Muller R, Quade D. Reporting of instrument validity and reliability in selected clinical nursing journals, 1989. Journal of Professional Nursing. 1994 Jan 1; 10(1):47-56.

35. Ibrahim A, Some E, Otieno O. Dropout From Routine Immunization Among Children 12-23 Months Of Age In Garissa Sub County, Kenya.

36. Randolph J. A guide to writing the dissertation literature review. Practical Assessment, Research, and Evaluation. 2009; 14(1):13.

37. Frieden TR. Evidence for health decision making—beyond randomized, controlled trials. New England Journal of Medicine. 2017 Aug 3; 377(5):465-75.

38. Ikilezi G, Augusto OJ, Dieleman JL, Sherr K, Lim SS. Effect of donor funding for immunization from Gavi and other development assistance channels on vaccine coverage: evidence from 120 low and middle income recipient countries. Vaccine. 2020 Jan 16; 38(3):588-96.

39. Orenstein WA, Cairns L, Hinman A, Nkowane B, Olivé JM, Reingold AL. Measles and Rubella Global Strategic Plan 2012–2020 midterm review report: Background and summary. Vaccine. 2018 Jan 11; 36:A35-42.

ANNEXURES

ANNEXURE 1: ETHICAL CLEARANCE CERTIFICATE FROM UNAM

UNAM
UNIVERSITY OF NAMIBIA

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: OSHAC /587/2020 Date: 11November, 2020

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: Factors Associated With Measles Rubella Dropout Status Among Children In Grootfontein District, Otjozondjupa Region, Namibia

Researcher: TAIMI SHOOMBE

Student Number:

Supervisor: *Dr. P.Angula(Main) Ms A.Kamati (Co)*

Campus: Oshakati Campus
Take note of the following:

(a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the HREC. An application to make amendments may be necessary.
(b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the HREC.
(c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by HREC.
(d) The HREC retains the right to:

(i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
(ii) Request for an ethical compliance report at any point during the course of the research;
(iii) Cognizance and the observation of Namibia's Research Science and Technology Act, 2004 which makes it compulsory for Non-Namibian based researchers to obtain the compulsory Research Permit from the National Commission on Research Science and Technology (NCRST), FIRST, BEFORE the research can commence.

HREC wishes you the best in your research.

Dr. J.E. de Villiers HREC Chairperson

Ms. P. Claassen: HREC Secretary

ANNEXURE 2: PERMISSION LETTER FROM MOHSS

REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198
Windhoek
Namibia

Ministerial Building
Harvey Street
Windhoek

Tel: 061 – 203 2507
Fax: 061 – 222558
E-mail: itashipu87@gmail.com

OFFICE OF THE EXECUTIVE DIRECTOR

Ref: 17/3/3 TNS
Enquiries: Mr. A. Shipanga

Date: 04 February 2021

Mrs. Taimi N. Shoombe
PO Box 1272
Grootfontein
Namibia

Dear Mrs. Shoombe

Re: Factors Associated with Measles Rubella dropout Status among Children in Grootfontein District, Otjozondjupa Region, Namibia.

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**

3.1 The data to be collected must only be used for academic purpose;
3.2 No other data should be collected other than the data stated in the proposal;
3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;

3.4 A quarterly report to be submitted to the Ministry's Research Unit;
3.5 Preliminary findings to be submitted upon completion of the study;
3.6 Final report to be submitted upon completion of the study;
3.7 Separate permission should be sought from the Ministry for the publication of the findings.

4. All the cost implications that will result from this study will be the responsibility of the applicant and **not** of the MoHSS.

Yours sincerely,

EXECUTIVE DIRECTOR

BEN NANGOMBE
EXECUTIVE DIRECTOR

ANNEXURE 3: APPROVAL LETTER FROM OTJOZONDJUPA REGION

REPUBLIC OF NAMIBIA

MINISTRY OF HEALTH AND SOCIAL SERVICE

OTJOZONDJUPA REGIONAL HEALTH DIRECTORATE

Private Bag 2612
Otjiwarongo

Tel: 067-300800
Fax No: 067-302078
E-mail: gebhardo@gmail.com

Enquiries: Mr G S Timotheus (0812407024) Date: 02 March 2021

OFFICE OF THE REGIONAL DIRECTOR

TO: TAIMI N SHOOMBE

PERMISSION TO CONDUCT A STUDY ON FACTORS ASSOCIATED WITH MEASLES RUBELLA DROPOUT STATUS AMONG CHILDREN IN GROOTFONTEIN DISTRICT, OTJOZONDJUPA REGION

1. Reference is hereby made to your letter dated 23 February 2021 on the above mentioned matter.
2. We have found your request valid and we believe the results of the study will assist Otjozondjupa Region to deal with Measles/Rubella drop out status among children better.
3. I therefore hereby state that the permission to conduct the study in Grootfontein District is hereby granted.
4. Though this is an academic paper, kindly share with this Directorate the approved results to enable the Region to plan for addressing for the potential challenges we are faced with.
5. Kindly present this letter to the Office of the Senior Medical Officer at Grootfontein Hospital when you are commencing with the data collection.
6. We wish you success in your endeavours.

Thank you

Faithfully Yours

MR GEBHARDO S TIMOTHEUS
REGIONAL DIRECTOR

MINISTRY OF HEALTH AND SOCIAL SERVICES
02 MAR 2021
REGIONAL DIRECTORATE
OTJOZONDJUPA REGIONAL OFFICE

"Your Health Our Concern"

ANNEXURE 4: RESEARCH QUESTIONAIRE

Questionnaire for factors associated with measles and rubella dropout status among children in Grootfontein district, Otjozondjupa region, Namibia 2021

Questionnaire Number……

Name of the village…….

Nearest Health Facility……

Please circle or write the appropriate response

SECTION A: DEMOGRAPHIC DATA AND SOCIOECONOMIC STATUS OF THE PARENT/CARETAKER

Objective: Establish the relationship between parental socio-demographic characteristics and immunization dropout status.

1. Age……

2. Gender ……..

3. Place of residence

a) Urban

b) Rural

4. What is your relationship to the child?

a) Parent

b) Caregiver

c) Son or daughter

d) Brother or sister

e) Grandchild

5. Tribe

a) San

b) Kavango

c) Vambo

d) Damara

e) Others ……

6. Marital status

a) Single

b) Married

c) Divorced

d) Widowed

e) Cohabiting

7. Level of education

a) None

b) Primary

c) Secondary

d) Tertiary

8. What is your current employment status?

a) Unemployed

b) Self–employed

c) Employed full time

d) Employed part-time

9. What is your religion?

a) ELCIN

b) ERCILIN

c) AGS church

d) NG church

e) Catholic

f) Oruano

g) Other (Specify) …….

10. Age of the child: …….months

11. Gender

a) Male

b) Female

12. Does the child have a health passport?

a) Yes

b) No

13. Has the child received his/her Measles-Rubella vaccination? (Compare with the passport)

a. Yes

b. No

If yes, at which age? …… months

14. If No, why has the child not received routine Measles and Rubella Vaccination ……?

SECTION B: FACTORS OTHER THAN SOCIO-DEMOGRAPHIC CHARACTERISTICS THAT MAY BE ASSOCIATED WITH MEASLES-RUBELLA IMMUNIZATION DROPOUT

15. What means of transport do you use when bringing your child for immunization services

At the health facility?

a) Walking

b) Donkey cart

c) Bicycle

d) Car

e) Motorbike

f) Taxi

g) Others ……..

16. How long does it take you to reach the nearest health facility or outreach point?

a) Less than 30 minutes

b) One hour

c) More than one hour

d) Do not know

17. How much time do you spend in the health facility waiting for the child to be immunized?

a) Less than one hour

b) More than one hour

c) The whole day

d) Do not know

18. What do you think about the quality of immunization services at the local health facility?

a) Good

b) Poor

c) Average

d) Don't know

19. Are you happy with the way the immunizing health worker serves you?

a) Yes

b) No

c) Don't know

20. What information are you normally given during immunization?

a) What the antigen given is

b) What to do if fever or abscess develops

c) Follow update for next visit

d) I do not remember

e) Nothing given

21. Are immunization services available on all weekdays at this health facility?

a) Yes

b) No

22. Have you ever come to this facility and found that the vaccine you needed for your child is not available on that particular day?

a) Yes

b) No

23. Have you ever attended any educative forum in this area where the importance of completing a child's immunization schedule was discussed?

a) Yes

b) No

c) Don't know

If "Yes", proceed to Q24 below. If "No", skip to Q25.

24. If "Yes" to Q23 above, what is the main forum where you heard about the importance of completing the immunization schedule?

a) Health Facility

b) Community Health Worker

c) Media

d) Social gathering

e) Church

f) Other (Specify) …….

25. What do you think can be done to improve the quality of the immunization services offered at the local health facility?

a) Health care providers to improve their attitudes

b) Avail more staff to shorten waiting time

c) Ensure that vaccines are always available when needed

d) Immunization services to be available on all weekdays

e) Construct more health facilities to shorten walking distances

f) Avail more health education forums for mothers

g) Avail outreach services

h) Nothing more needs to be done

Thank you very much for your time

ANNEXURE 5: RESEARCH QUESTIONAIRE IN AFRIKAANS

FAKTORE WAT VERBAND HOU MET DIE UITSAK/NIE-NAKOMING VAN IMMUNISERINGSTATUS VAN MASELS EN RUBELA ONDER KINDERS IN GROOTFONTEIN DISTRIK, OTJOZONDJUPA PASTREEK, NAMIBIË.

VRAELYS

Vraelysnommer ……

Naam van die Dorp ……

Naaste gesondheidsinstelling ……

Omkring of skryf die toepaslike antwoord.

AFDELING A: DEMOGRAFIESE DATA EN SIOSIO-EKONOMIESE STATUS VAN DIE OUER/OPSORGER.

Doelstelling: Bepaal die verband tussen sosio-demografiese kenmerke van ouers en die uitsak/nie-nakomingstatus van immunisering.

1. **Ouderdom**: ……..

2. **Geslag**: …….

3. Woonplek

a. Stedelik

b. Platteland

4. Wat is u verhouding met die kind?

a. Ouer

b. Versorger

c. Seun of Dogter

d. Broer of Suster

e. Kleinkind

5. Bevolkingsgroep:

a. Boesman

b. Herero

c. Kavango

d. Wambo

e. Damara

f. Ander……

6. Huwelikstatus

a. Enkellopend

b. Getroud

c. Geskei

d. Weduwee/Wewenaar

e. Saamwoon

7. Vlak van Onderrig ontvang:

a. Geen

b. Primêr

c. Sekondêr

d. Tersiêr

8. Wat is u huidige werkstatus?

a. Werkloos

b. Eie onderneming

c. Voltyds werksaam

d. Werk deeltyds

9. Wat is u geloofsoortuiging:

a. ELKIN

b. ERKILIN

c. AGS Kerk

d. NG Kerk

e. Katoliek

f. Orunno

g. Ander (spesifiseer)……..

10. Ouderdom van die kind: ……maande.

11. Geslag van die kind

a. Manlik

b. Vroulik

12. Het die kind ‘n gesondheidspaspoort?

a. Ja

b. Nee

13. Het die kind sy/haar inspuiting teen Masels-Rubella ontvang? (Vergelyk met die paspoort)

a. Ja

b. Nee

Indien ja, op watter ouderdom? ….....maande.

14. Indien Nee, waarom het die kind nie die roetine-inspuiting teen Masels-Rubella ontvang nie?

……

……

……

……

……

AFDELING B: ANDER FAKTORE AS SOSIO-DEMOGRAFIESE EIENSKAPPE WAT GEASSOSIEER KAN WORD MET MASELS-RUBELA IMMUNISERING UITVAL.

15. Watter vervoermiddel gebruik u wanneer u, u kind na immuniseringsdienste bring by die gesondheidsinstansie?

a. Stap
b. Donkiekar
c. Fiets
d. Motor
e. Motorfiets
f. Taxi
g. Ander ……

16. Hoe lank neem dit u om die naaste gesondheidsinstansie of uitreikpunt te bereik?

a. Minder as 30 minute
b. Een uur
c. Meer as een uur
d. Weet nie

17. Hoeveel tyd spandeer u in die gesondheidsinstansie om te wag dat u kind ingespuit word?

a. Minder as een uur
b. Meer as een uur
c. Die hele dag

d. Weet nie

18. Wat dink u van die gehalte van immuniseringsdienste by die plaaslike gesondheidsinstansie?

a. Goed
b. Swak
c. Gemiddeld
d. Weet nie

19. Is u gelukkig met die manier waarop die immuniserende gesondheidswerker u dien?

a. Ja
b. Nee
c. Weet nie

20. Watter inligting word u normaalweg tydens immunisering gegee?

a. Wat die gegewe antigeen is
b. Wat om te doen as koors of ‘n abses ontwikkel
c. Opvolgdatum vir die volgende besoek
d. Ek kan nie onthou nie
e. Geen inligting nie

21. Is immuniseringsdienste op alle weeksdae by hierdie gesondheidsinstansie beskikbaar?

a. Ja

b. Nee

22. Het u al ooit by hierdie fasiliteit gekom en gevind dat die entstof wat u vir u kind benodig nie op daardie spesifieke dag beskikbaar is nie?

a. Ja

b. Nee

23. Het u al ooit ń opvoedkundige byeenkoms in hierdie omgewing bygewoon waar die belangrikheid van die voltooïng van 'n kind se inspuitings-skedule bespreek is?

a. Ja

b. Nee

c. Weet nie

Indien "ja" gaan port na V.24 hieronder. Indien "Nee" gaan voort na V 25.

24. Indien u antwoord op V23 hierbo "Ja" was, wat is die opvoedkundige byeenkoms waar u gehoor het van die belang van die voltooïng van die immunisasie-skedule?

a. Gesondheidsfasiliteit
b. Gemeenskaps gesondheidswerker
c. Media
d. Sosiale byeenkoms
e. Kerk
f. Ander, spesifiseer

…….

25. Wat dink u kan gedoen word om die kwaliteit van die immuniseringsdienste, wat by die plaaslike gesondheidsinstelling aangebied word, te verbeter?

a. Verbetering van gesondheidspersoneel se houdings
b. Gebruik meer personeel om die wagtyd te verkort
c. Verseker dat entstowwe altyd beskikbaar is waar nodes
d. Immunisasiedienste moet op alle weeksdae beskikbaar wees
e. Bou meer gesondheidsfasiliteite om die reisafstand te verkort
f. Maak gebruik van meer byeenkomste van gesondheidsopvoeding vir moeders
g. Gebruik uitreikdienste
h. Niks meer hoef gedoen te word nie

Baie dankie vir u tyd.