SCHOOL OF MEDICINE AND HEALTH SCIENCE

EFFECTS OF COVID 19 ON THE DELIVERY OF MATERNAL AND CHILD HEALTH CARE SERVICES BEFORE AND DURING THE PANDEMIC IN LUSAKA.

BY

TESSY NAMBOZI MWEEMBA

BSPH 19217139

BSc PUBLIC HEALTH

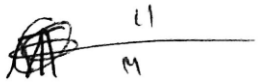
SUPERVISOR: Ms. Francisca Kawamya

A research dissertation submitted to the University of Lusaka in partial fulfillment of the requirements of a Degree in Bachelor of Science in Public Health

DECLARATION

Name of student and ID: TESSY N MWEEMBA BSPH19217139

I declare that this proposal is my creative work and to the best of my acquaintance has not been presented for a degree in any other institution.

Signature:  Date : 30TH MAY 2023

Supervisor Name: Ms. FRANCISCA KAWAMYA

This dissertation has been submitted with my approval as a University of Lusaka (UNILUS) supervisor.

School of Medicine and Health Sciences, Department of Public Health

Signature:  **Date:** 30TH MAY 2023

Contents

LIST OF ACRONYM

ANC	Antenatal care
AIDS	Acquired immunodeficiency syndrome
COVID-19	Coronavirus 2019
HIV	Human immunodeficiency virus
MoH	Ministry of Health
MCH	Maternal and child health
PNC	Postnatal care
PHEIC	public health emergency of international concern
VPD	Vaccine preventable disease
WHO	World health Organisation
ZDHS	Zambia Demographic Health Survey

LIST OF TABLES

LIST OF FIGURES

DEDICATION

I dedicate this research to my family and friends, who have always been my source of inspiration and motivation. Your love and support have been instrumental in my success.

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In the first place, I thank God the almighty for the many blessings that he bestows on me. His mercies are indeed new every morning.

Secondly, I wish to acknowledge the tremendous help I received from my supervisor, MS Francisca Kawamya. Your support, guidance and insight, I will treasure forever. Your patience is something I have really valued. Thank you. To my Family, thank you for your encouragements, I appreciate.

To my colleagues, BSPH 2019-2023, I will always remember your invaluable support and help. I once again say Thank you.

ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) is a respiratory disease caused by severe acute respiratory syndrome coronavirus. The pandemic caused a significant reduction in maternal and child health services in Lusaka, Ethiopia. The aim of this study was to explore and measure the urgent need to understand how the health systems have responded to effectively, efficiently, and equitable sustain routine service delivery of maternal and child health services during the COVID-2019 pandemic.

Methods: A retrospective study was conducted to assess the delivery of maternal and child healthcare services at kanyama general hospital before and during the first wave of COVD-19. Data was collected from routinely reported programme data. The quantitative data was used to answer the objectives.

Results: for birth attended to by skilled birth attendant after running a paired t-test found that the significance value (p-value) associated with the two-tailed test was 0.008, suggesting that the observed difference in the number of births attended to by skilled personnel before and after COVID is statistically significant. For family planning attendance we found the significance value (p-value) associated with the two-tailed test was 0.000, which we rounded off to 0.001, which is lower than the conventional threshold of 0.05. This indicates a highly significant difference in family planning attendances before and after COVID. For ANC visits before and after we found that, although the significance levels for these visits were slightly higher ($p = .025$ and $p = .039$), indicating less robust evidence, they still suggest a notable decline in the number of antenatal care visits during the pandemic. For under five fully vaccinations there was a significant difference observed while vitamin A supplementation there was no significant difference from the results recorded before and after the COVID-19 pandemic.

Conclusion: The findings of this retrospective analysis on the effects of COVID-19 on the provision of maternal, child, and nutrition services showed that there were significant disruptions in a number of areas of maternal and child healthcare.

CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND

Coronavirus disease 2019 (COVID-19) is a respiratory disease caused by severe acute respiratory syndrome coronavirus. Coronavirus has been known to affect humans, infecting the respiratory tract and causing infections ranging from mild to severe (Shereen et al., 2020). Since the first discovery in December 2019 in Wuhan, China, COVID 19 has spread rapidly worldwide. As COVID- 19 continued to spread globally, the World Health Organization on March 11, 2020 declared the outbreak as a Public Health Emergency of international concern (WHO, 2019).

The Novel Coronavirus Disease COVID-19 pandemic, which has no regard for nation, color, status, or race, poses a threat to health systems around the world. Both direct mortality from COVID-19 and indirect mortality from avoidable and treatable illnesses drastically rise when health systems are overburdened and people are unable to get necessary care (WHO, 2020). In some nations, the rapidly rising need for care for COVID-19 patients is made worse by misinformation, fear, and restrictions on the movement of persons and supplies, which interfere with the provision of healthcare to everyone.

Reduced access to and use of vital maternity and child health (MCH) services during epidemics result in a significant rise in the number of pregnant women and new mothers who experience complications or die during childbirth and the postpartum period (Roberton et. al. 2020). MCH encourages participation in the first ANC at 12 weeks or I trimester, completion of 4 ANC +, health facility delivery, breastfeeding within the first hour of birth, and access to PNC services within the 42 days of puerperium, i.e. (critical immediate care in the first hour after delivery within the labor ward, 6 hours in the postnatal ward, of transition and home recuperation, and 6 weeks after delivery). It is therefore crucial to maintain all these services even during pandemics.

In addition, health seeking behaviors for essential services is equally affected as such outbreaks bring along fear and anxieties among the general populace including the Health Care Workers (WHO, 2020). With restrictions on travel and gatherings, health facilities with limited infection prevention supplies and unreliable infection control practices, and disrupted outreach and

community health worker's routines threaten to exacerbate limited access to care and negatively impact women and children's health (Global Health, 2020). This requires undivided attention for health systems response to ensure non disruption of routine essential services.

The COVID-19 epidemic is claiming lives all over the world and disrupting the provision of primary healthcare services, especially crucial services impacting the most vulnerable populations, such as women and children. The Novel Coronavirus Disease (COVID-19) would indirectly increase maternal and neonatal mortality while directly increasing virus-related mortality. The interruption of routine maternal and childhood immunization services, which must be maintained while addressing the pandemics direct effects, is a serious concern (Clara. 2020).

For a positive pregnancy experience, it is important to maintain the standard mother and child health services as advised by the MOH-Zambia (2018) in the ANC guide lines. To protect and emphasize the health and wellness of the pregnant woman and developing fetus, the integrated ANC package combines a variety of proven effective interventions with additional services. Eight (8) crucial ANC service delivery areas must be scaled up in order for the integrated ANC package to be operationalized at the facility level. These are: 1. ANC service delivery; 2. Community involvement; 3. ANC service organization; 4. Essential ANC practices; 5. Ailment prevention; 6. Nutrition; 7. Complication management; and 8. ANC monitoring and evaluation methods. Each ANC contact comprises of three key elements:

(i) Health Information: Provision of relevant and timely ANC information, (ii) Medical Assessment: Implementation of effective clinical practices (including interventions and tests), (iii) Intra-personal Support: Provision of psychosocial and emotional support Health system strengthening interventions, such as staff training, and improving equipment, transport, supplies, etc. to support the home visits (At least one home visit should be conducted during the pregnancy). (iv) Group spaces to hold meetings (Offering women a range of opportunities for communication and support, so that their individual preferences and circumstances can be catered for) (v) Resources, e.g. additional community volunteers, transport and budget for material, for community MCH outreach activities (vi) Incorporate ANC outreach into existing community outreach programs (e.g Child health). (vii) A minimum of eight (8) ANC contacts are

recommended throughout the pregnancy period. This allows for an active engagement between the pregnant woman and health care provider and facilitates increased maternal and fetal monitoring and assessments to support a healthy pregnancy and early detection of problems.

Following the COVID-19 outbreak, the effect of containment and preparedness measures on maternal and child health in Sub-Saharan Africa, which is primarily comprised of low- and middle-income nations, could be more noticeable. Even before the development of COVID-19, millions of women lacked access to timely, high-quality maternal and child healthcare services or couldn't afford them (Clara, 2020).

In response to the pandemic, the World Health Organization (WHO) declared COVID-19 as a global public health emergency of international concern (PHEIC). For example, experience from the Ebola and HIV/AIDS outbreak shows that essential services were disrupted that included logistics and distribution of healthcare workers to sustain continuity of essential services that including maternal and child health services. For example, the 2014 Ebola outbreak in West Africa recorded a decline of service utilization by 27% and inpatient care by 44%. This was as a result in disruption of essential routine services that also includes maternal and child health services. During the Ebola epidemic in West Africa in 2014– 2016, the use of reproductive and maternal health care services plummeted so much that maternal and neonatal deaths and stillbirths indirectly caused by the epidemic outnumbered direct Ebola-related deaths. Women were unable to access family planning, completed fewer antenatal care visits, and were more likely to give birth at home. Some of these women stopped going to facilities due to fear of infection and increased physical and financial barriers. Others were denied care if they were suspected of having Ebola as many facilities were not equipped to provide maternal healthcare to infected women. (Emanuel et al. 2020).

With an average fertility rate of six children and roughly 2,062 births per day, Zambia, a country in Sub-Saharan Africa, is among the middle-income countries and has the highest fertility rate in Africa. In 2018, there were 183 maternal mortalities for every 100,000 live births. Only 68 percent of Zambian children are currently completely immunized (United Nations, 2020). In order to reduce the risk of system collapse in the supply of vital services, such as routine maternal and

infant health services, continuity of essential service delivery is necessary during the COVID-19 pandemic.

1.1 STATEMENT OF THE PROBLEM

Zambia like many other countries may not have been spared by the impact of COVID-19 on provision, access and utilization of essential services affecting the most vulnerable groups in society such as mothers and children. According to the Zambia demographic health survey maternal mortality stands at 183 deaths per100,000 lives births and childhood mortality at 27 deaths per 1000 live births (ZDHS, 2018). Researchers at the Guttmacher Institute point out that even a 10% reduction in service coverage during pregnancy could lead to millions of unintended pregnancies as family planning services are disrupted, resulting in an additional 28,000 maternal deaths, 168,000 infant deaths. Additionally, the discontinuation of routine immunization programs increases the risk of secondary outbreaks of vaccine preventable illnesses including measles, polio, tetanus, and others (VPD) (Riley., et al 2020). This focus on maintaining vital routine services emphasizes the significance of routine mother and child health system response and raises concerns about the readiness of the nation's health systems (Darmstadt et al, 2005). Given that some services, like ANC, PNC, and immunization, have few virtual options, delivering these services should still be a top priority even during the pandemic because they are essential to mothers' and children's survival. Kanyama general Hospital will be used as the study region because it is a referral hospital first and foremost, which will allow for some generalization of the results. Second, due to the country's huge population, they deliver in overcrowded clinics that are not well equipped, and some even do so at home alone, endangering both their own lives and the lives of the unborn child. The hospital records over 20 deliveries every 24 hours, over 32,032 women of childbearing age (18-49 years), 7,863 expected pregnancies, 7,571 expected deliveries, and 7,280 expected live births (MOH, 2020).

It is thus important that all pregnant women attend the recommended 4 ANC plus sessions for a health pregnancy, have access to family planning upon delivery and her child be fully immunized by the end of the first birthday even amidst the pandemic. However, disruption of such essential services may lead to losing millions of mothers and children to preventable and treatable diseases and conditions and not necessarily the pandemic (Clara., 2020).

The trends in the maternal and child health care services performance before and during national lockdown have not been adequately assessed, particularly in Lusaka. It is for this reason that the researcher will undertake this study to explore and measure the urgent need to understand how the health systems have responded to effectively, efficiently, and equitable sustain routine service delivery of maternal and child health services during the pandemic. This study is important because, according to experience, the majority of studies on COVID-19 concentrate on clinical trials and epidemiology rather than the effects of and sustainability of MCH's vital routine services on the most vulnerable groups during COVID-19.

1.2 JUSTIFICATION OF THE STUDY

Although some nations have reported evidence on how their health systems responded in order to continue providing vital services for maternal and child health, In Zambia, documentation is limited to the MOH general guidance on continuity of essential services amidst the COVID-19 pandemic with limited documentation focusing on practical health systems response on continuation of essential routine maternal and child health services.

Furthermore, there is limited information provided in the general guidance about how it should be done, only an outline of what should be done. The MOH general guideline on provision of essential services amidst the COVID-19 lacks practical tools or is poorly documented in regard to how service delivery for routine maternal and child health services should continue to satisfy the needs of the end user. However, how these services should be supplied going forward is outlined in the WHO guidelines on maintaining essential health services: operational guidance for the COVID-19 context. It was thus important to understand to what extent Zambia has operationalized this guidance, what are the best practices and what gaps exist and what can be done to bridge the gaps.

Therefore, findings from the study will enhance evidence-based planning, redesigning, and developing responsive strategies to guide practical delivery of routine maternal and child health services for the Ministry of Health and its Cooperating Partners amidst pandemics. The findings will inform the current and future epidemics too, hence averting preventable morbidity and mortality during pandemics.

STUDY OBJECTIVES

1.3 GENERAL OBJECTIVE

- To assess the effects of covid-19 on the delivery of maternal and child health care services before and during the pandemic at Kanyama level 1 hospital.

1.4 SPECIFIC OBJECTIVES

- To determine the effects of covid-19 on family planning and births attended to by a skilled birth attendant before and during the pandemic at kanyama general hospital.

- To determine the effects of covid 19 on antenatal care before and during the pandemic at kanyama general hospital.

- To determine the effects of covid 19 on child vaccinations and supplementation before and during the pandemic at kanyama general hospital.

1.5 RESEARCH QUESTIONS

- What are the effects of Covid 19 on family planning and births attended to by a skilled birth attendant before and during the pandemic at kanyama general hospital?

- What are the effects of covid 19 on antenatal care services before and during the pandemic at kanyama general hospital?

- What are the effects of covid 19 on child immunizations and supplementation before and during the pandemic at kanyama general hospital?

1.6 HYPOTHESIS

Null hypothesis - There is no association between COVID-19 and the delivery of maternal and child health services.

Alternative hypothesis - There is an association between COVID-19 and delivery of maternal and child health services.

CHAPTER TWO

2.0 LITERATURE REVIEW

The literature review section highlights other studies that have been conducted on assessing the effects of COVID-19 pandemic on the delivery of maternal and child health services before and during the pandemic across the globe, regional block and indeed within Zambia. It is made up of an empirical review that discusses similar studies related to the subject matter, followed by a discussion of the theoretical framework that highlights theories and models that have been and will be used in the future and are related to the topic.

GLOBAL REVIEW

The novel coronavirus has caused a profound impact on service utilization or delivery practices of health facilities globally. Nations with the highest economy, technology, and human development index failed to withstand its catastrophic consequence. A study done by population council on "*trends in maternal health services in Bangladesh. Before, during and after COVID-19 lockdowns (2020)".* Found that clear disruptions in maternal health services following COVID-19 and its resultant lockdowns were evident in both short and mid-term analyses of Bangladesh's district statistics. ANC and PNC visits were apparently more immediately affected by implementation of national lockdowns. Both institutional normal deliveries and C-sections declined substantially across the country. Although general trends were encouraging, many districts continued with relative declines in service, and certain districts showed no recovery, possibly indicative of longer-term negative impacts on maternal health care in certain parts of Bangladesh (Population council. 2022).

A similar study done by Jain et al. 2022 on the" *impact of COVID-19 pandemic on the maternal and child health services in India",* found that reduced coverage across all maternal and child health interventions was observed in the study. There was an overall decrease of 2.26 % in number of institutional deliveries. Antenatal care services were the worst affected with 22.91% decline. Immunization services were also dramatically decreased by more than 20%. The response of the public healthcare delivery system to the Covid-19 Pandemic is negatively affecting both the provision and utilization of maternal and child healthcare services.

Furthermore, a study done by Emmanuel et al. (2021) on *"Indirect effects of COVID-19 pandemic on reproductive, maternal, newborn and child health services in Pakistan" found that* The results showed a further reduction in access to family planning services. A one-third reduction in the number of women who received their first antenatal care by a qualified health professional will deprive thousands of pregnant women of timely identification of pregnancy-related complications. A drop in the number of institutional deliveries and caesarean sections. The effects of all three pre-existing delays leading to maternal mortality, that is, deciding to seek appropriate medical help, reaching a facility, and receiving adequate care, were accentuated by COVID-19. This was primarily because of an absence of transportation due to lockdown and partial or complete closures of routine health facilities.

Another study that was conducted by Ardebili et al. (2022), "on *the impact of COVID-19 pandemic on maternal and child health"*. The study found that the movement's restrictions that were imposed by government had further compounded the deficiency by preventing women and children from seeking medical help, as well as limiting the supply of various healthcare commodities like contraceptives, vaccines, and required medications. As a result, most campaigns to deliver these services to pregnant women and children have been put on hold or greatly diminished. Also, some affected individuals have refrained from seeking adequate RMNCH care for fear of exposure to COVID-19 infection in the process. Safety concerns about visiting health facilities have made some pregnant women resort to delivering their babies at home where the absence of birth delivery experts could result in complications during the delivery process and possible death.

Roberton et al. (2020), a global modelling analysis study conducted in the United States on "*Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: a modelling study*''. The study reviews that, due to the pandemic, there is a reduced availability of health workers, supplies, and equipment, while simultaneously a higher demand for health services. This disruption heightens risks, leading to a potential increase in maternal mortality of 8 to 39 percent and in child mortality of 10 to 45 percent.

Within six months, the world could see up to an additional 57,000 maternal and 1.2 million child deaths.

REGIONAL REVIEW

Sub-Saharan Africa has been expected to be one of the high risks regions with preexisting socio-economic predisposing and poor health infrastructure. Closure of boarders, impaired supply chains, and prolonged lockdowns has created for lack of personal protective equipment (PPE), mental health problems, and substance abuse. An indirect effect of COVID-19 pandemic on the region is markedly shown by increased morbidity and mortality due to other tropical infections such as malaria. The COVID-19 pandemic is also disrupting critical health services and undermining years of progress fighting other deadly diseases, such as human immunodeficiency virus (HIV), tuberculosis (TB), and malaria, which continue to be the leading of causes in the African region (WHO, 2020).

A multi-nation multi-site study done in eight sub-Saharan countries revealed a disruption in health service delivery and utilization in all countries during the time of covid-19 for at least one month, where the magnitude and duration varies across the nations. There, child vaccination service was the most affected service point. Whereas, there was a fall in maternal health service utilization, it could not be generalized to all. However, there observed a significant decline in institutional deliveries, antenatal and postnatal care service in some countries (Shapira G., 2021).

A similar study done by chersich et al. (2020) aimed to assess the effects of COVID-19 pandemic on maternal and child care in sub-Saharan Africa. The review found that the pandemic has led to disruptions in maternal and child health care services, including a decrease in the number of women attending antenatal visits and giving birth in health facilities. Furthermore, according to a study done by the World Health Organization (WHO), 43% of countries in sub-Saharan Africa reported disruptions in antenatal care services, and 44% reported disruptions in childbirth care services (WHO, 2020).

In a comparative study done by Jensen and Mckerrow in the district of KwaZulu-Natal South Africa, *"to assess the impact of covid-19 in routine child health services",* a fall in immunization service was observed earlier where there observed a rapid recovery. While Vitamin A

supplementation remained low in the covid-19 era. Likewise, the study concluded, there was observable disruption in multiple service indicators to service access, service delivery and child well-being. A similar study conducted by Roberton et al. (2020), the pandemic has led to a significant reduction in routine immunization coverage in sub-Saharan. The study reported that the number of children receiving the third dose of the diphtheria-tetanus-pertussis (DTP3) vaccine decreased by 10.4 million in 2020 compared to 2019. The pandemic has also disrupted vitamin A supplementation programs in Africa. A study done by Winger et al. (2021) reported that vitamin A supplementation coverage in Ethiopia, Nigeria and Uganda decreased by 35%, 39%, and 46%, respectively, during the pandemic. The study further noted that the disruption of vitamin A supplementation programs could lead to an increase in child mortality rates.

A mixed method comparative study was done to evaluate essential health and nutrition services in four selected regions of Ethiopia; Key informants from health care facilities indicate a reduction in service delivery and utilization. An evaluation in the trends of maternal nutrition and health service delivery in the months of March to July 2019 and 2020 has shown a moderate drop in facility delivery, Antenatal care. While a significant fall was observed in Vitamin A supplementation, and, infant and young child feeding services. Whereas, minimal difference was observed in other child health services (Workicho et al., 2021).

In a study done by kwabena (2021), "*on the Impact of COVID-19 on maternal Healthcare in Africa"*, COVID-19 has disrupted antenatal, skilled birth, and postnatal family planning services. Women and girls are vulnerable to the impact of COVID-19 on several fronts and represent a group whose needs including antenatal, skilled birth, and postnatal family planning services have been disrupted, leading to unmet needs for contraception and an increase in unintended pregnancies. Restricted travel due to the fear and anxiety associated with contracting COVID-19 has resulted in delays in accessing prompt skilled care and essential healthcare services such as pregnancy care, immunization, and nutritional supplementation. Misconceptions relating to COVID-19 have prompted concerns and created distrust in the safety of the healthcare system. Innovative measures are required to address these obstacles and ensure women are not denied

access to available, accessible, acceptable, and quality maternal healthcare services in spite of COVID-19.

In an article titled; *"Reasons for late presentation for antenatal care, healthcare providers' perspective"* in Gauteng, South Africa, the study revealed that Health infrastructure and system failures such as limited dedicated spaces for confidential counselling, shortages of equipment and drugs, and large patient to healthcare provider ratios are important deterrents for patients and causes of frustrations for both pregnant women and healthcare providers. Healthcare providers expressed their acute need for additional personnel, especially counsellors during night shifts, to cope with the many required tasks. Healthcare workers admitted that women endured long waiting times and were sometimes turned away because of limited staff to see to all patients. In some cases, clinics imposed daily quotas and turned away women who came after the quota was reached (Jinga et al., 2019).

LOCAL REVIEW

The Zambian Government has declared the health care system as a priority sector and is committed to ensuring that people receive quality, preventive, curative, rehabilitative, and palliative health services at all levels of service delivery. The COVID pandemic has continued to pose a serious threat on the health care delivery systems in the Country. Zambia has recently suffered a serious third wave of the pandemic, following recording of the first case on 18th March 2020. Three waves of the pandemic have been encountered with the third wave having been more aggressive in both morbidity and mortality. By end June 2021, a total of 154,948 confirmed COVID-19 cases and 2,199 COVID-19 deaths had been recorded with a case fatality rate of 1.4%. A total of 13,192 recoveries had been recorded (MoH, 2021).

The "UN Appeal " states that, Zambia is of no exception to this impact, the health system is also expected to come under severe stress with human resource, essential health commodities and supplies being diverted to support COVID-19 response. In addition to countries directing frontline health care workers to respond to COVID-19 pandemic, like many countries, Zambia has seen an increase in the number of healthcare workers infected by the COVID-19 virus resulting in shortage of essential frontline healthcare workers. As part of infection control measures, Health Care Workers must go through quarantine for a period of not less than two weeks (United Nations,

2020). Suffice to mention that even before the COVID-19, Zambia had a smaller number of Health Care workers required to meet the patient to Health Care Worker ratio. This has resonated in impacting the availability of essential health service delivery, especially health services for pregnant women and new-born that cannot be delayed or shifted to other settings.

According to a literature review by Bwalya et al. (2021), the COVID-19 pandemic has had significant effects on maternal and child health services in Zambia. The study found that the pandemic has resulted in an increase in maternal and child mortality due to limited access to essential healthcare services, particularly for women and children living in remote areas. The review also highlights the limited access to family planning services in Zambia, which has been attributed to reduction in healthcare worker availability and limited access to healthcare facilities. A similar study conducted by Chikandiwa et al. (2021) found that the pandemic has led to reduced availability of contraceptives and limited access to family planning services, leading to unintended pregnancies and unsafe abortions.

A study that was conducted by AMREF on "*impact of the COVID-19 pandemic and response on reproductive, maternal, child and adolescent health service provision in Zambia".* The study found that Covid-19 negatively affected the access to and utilization of RMNCAH services including ante natal care, deliveries, postnatal care. Challenges included; apprehension and fear of contracting the Covid-19 in the facilities, lack of masks, limited and confusing information such as the: "stay home slogan" that made clients stay home despite need for services, lack of clinic books, cost of services and transport within a more challenging economic environment due to the pandemic. The provision of RMNCAH services due to; discontinuation of outreach services, unavailability of drug, vaccines and medicine and unlimited information on COVID. Some health workers reported burn out as they organized clients to observe social distancing which resulted in long waiting periods. Others indicated psychological effects as they worked under fear (African Medical and Research Foundation, 2020).

The experiences of women and health care workers in regard to access and provision of and access to ANC, delivery, postnatal care, family planning services during the pandemic are of concern.

There is need to strengthen support to the health system including the health care workers and the clients to ensure the effects of the pandemic and the mitigation measures do not infringe on the right to quality RMNCAH care services in the face of the continuing pandemic and in Case of the future crisis.

2.1 THEORETICAL REVIEW

The social ecological model conceptualizes health broadly and focuses on multiple factors that might affect health. This board approach to thinking of health, advanced in 1974 constitution of the world health organization, includes physical, mental, and social wellbeing (WHO, 1974). It consists of individual factors, interpersonal factors, institution factors, community factors and public policy. The ecological framework is useful to this study as it will help us find out how covid affected the maternal and child health services, how individual, interpersonal, institutional and policy factors affected the maternal and child health services during the pandemic.

INDIVIDUAL FACTOR

Which influence behavior such as knowledge, attitudes, beliefs, and personality, we can also look at low education of mothers. This can cause pregnant women not attending antenatal care services because they do not understand fully the covid-19 measures that were put in place like social distancing, this will make the pregnant women, stay home to avoid adherence to the guidelines. Financial burden/income can also restrict the mothers from taking their children for immunizations because they cannot afford a mask, which was part of the COVID-19 guidelines.

INTERPERSONAL FACTORS

These interactions with other individuals have the potential to either promote interpersonal development that encourages healthy behavior or to obstruct it.

INSTITUTIONAL FACTORS

This encompasses the laws, rules, policies, and informal structures that impose restrictions on or support healthy behavior.

COMMUNITY FACTORS

These social norms, which may be formal or informal, can restrict or promote healthy behavior among people, communities, or organizations.

PUBLIC POLICY

This includes regional, national, and municipal laws and policies that limit or promote health behaviors and practices for disease prevention, including early identification, control, and management.

2.2 CONCEPTUAL FRAMEWORK

INDEPENDENT VARIABLES **DEPENDENT VARIABLES**

Ecological factors

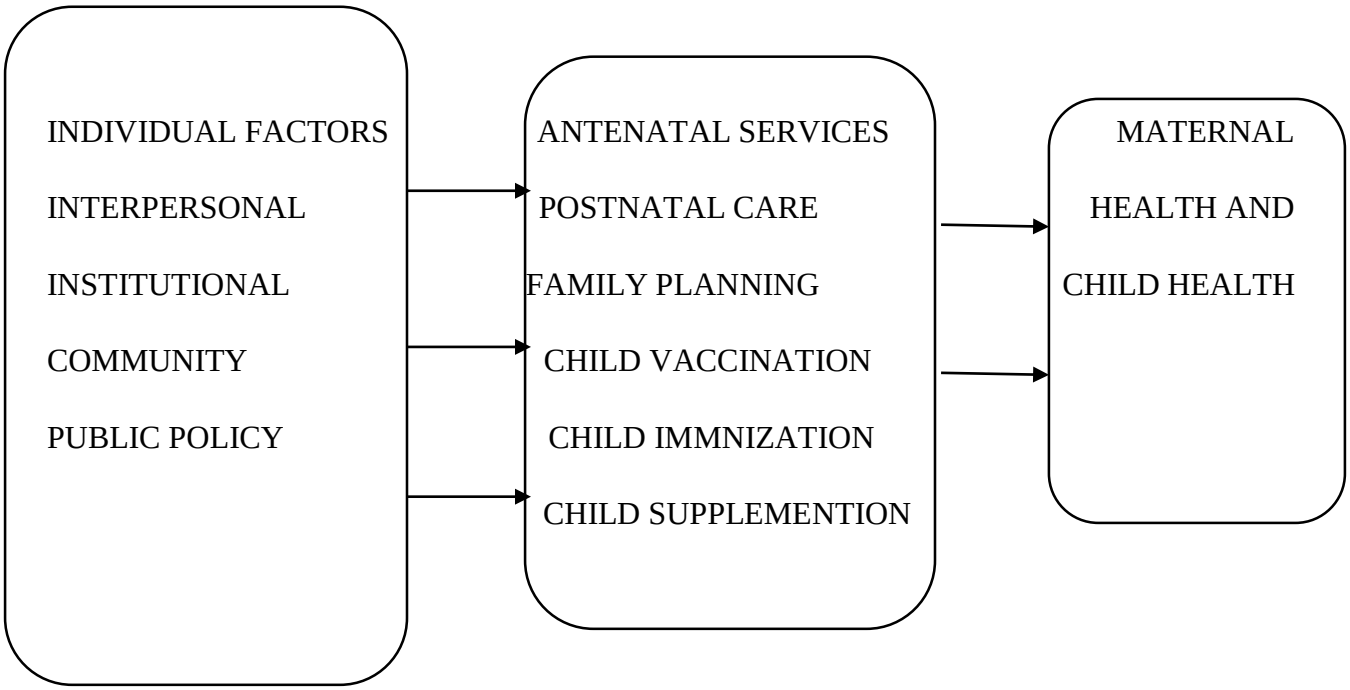

Figure 1- *Social Ecological Model*

CHAPTER 3

3.0 METHODOLOGY

3.1 STUDY APPROACH

Quantitative research methods were used in this research to ascertain the delivery of maternal and child health before and during the COVID-19 pandemic. Quantitative method was used in this study as it involved the collection of quantitative data from existing data source at kanyama general hospital as it provides maternal and child health services.

3.2 STUDY DESIGN

A retrospective cross sectional study was conducted to assess the delivery of maternal health care services before and during COVID19 lockdown using routinely reported programme data. Data was collected from January to august 2019 and during the first wave of COVID-19 which was in January to August 2021.

3.3 STUDY SITE

The study was done at kanyama general hospital, it is a referral hospital and it's the only 1st general hospital in Zambia that records high birth rates of over 20 deliveries in a day. The facility has approximately 32,032, women of childbearing age (15 to 49 yrs.).

3.4 STUDY POPULATION

All data from routine records from study population which included all women seeking maternal health service which included antenatal checkup, family planning visit, births attended to by skilled birth attendant, and child immunization, supplementation at kanyama general hospital.

Inclusion criteria

Data from all women seeking maternal health service which included antenatal checkup, family planning visit, births attended to by skilled birth attendant and data on child immunization, and supplementation at kanyama general hospital.

Exclusion criteria

Records for patients who were seeking other medical services besides maternal and child health care service were excluded from this study

3.5 SAMPLE SIZE

Sample size was calculated using the formula below:

- Formula: $n=Z^2p(1-p)/e^2$

Where:

n = sample size

Z = Z score 1.96 at 95% confidence level significance level 5%

p denotes the proportion of the target population

e= is the standard error, set to 0.05

n= $(1.96)^2 \times (0.14)(0.70))/ (0.05)^2$

= 150 sample size.

3.6 SAMPLING PROCEDURES

Purposive sampling was used to select the records in this study because they had the characteristics we needed. The records included antenatal checkup, family planning visit, births attended to by a skilled birth attendant and records on child immunization and supplementation at kanyama general hospital.

3.7 DATA COLLECTION METHODS

Data was collected from database/records at kanyama general hospital at the maternal and child health services department before the pandemic hit in 2019 from January to august and during the first wave of COVID-19 which was in January and august 2021, because the highest number of cases were reported during this time period with positivity rate being at 25.4%.

3.8 DATA ANALYSIS

Descriptive statistics was used to analyze the data. Data was entered into a Microsoft Excel database and analyzed using STATA (statistical package for the social sciences).

3.9 ETHICAL CONSIDERATION

Ethical approval to carry out the study was sought from the university of Lusaka Research Ethics clearance committee (UNILUSREC). Permission was obtained from the National Health Research Authority (NHRA). This research was done from data retrieved from kanyama general Hospital and did not involve human participants. Data was retrieved after taking formal permission from the hospital management. In order to ensure confidentiality of the data in the records, we ensured that only the researcher had access to the records. And also the names in the records were not shared with the public.

CHAPTER FOUR

4.0 RESULTS

The quantitative data that was collected from health records at kanyama general hospital was used to answer the objectives. The results will be presented in the following format: the demographic characteristics of the records, paired t-test results comparing the pre- and post-Covid outcomes of births attended by skilled birth attendants, and family planning which answered the first research question. ANC (Antenatal Care) visits, which answered the second research question. Full vaccination coverage for children under 5, and vitamin A supplementation which answered the third research question.

DEMOGRAPHIC CHARACTERISTICS

Baseline demographic characteristics of family planning included the age of women, marital status, occupation and education background of individuals seeking contraceptives. The age distribution of the women in the records was as follows: the largest group was 20-24 years, representing 32% (n=49) of the sample. The next most populous group was 25-29 years, accounting for 38.7% (n=58). The smallest groups were 35-40 years (10%, n=10) and 30-35years (22%, n=33). When it came to occupation, the majority of participants in the records (81.3% n=122) were in informal employment, while 18.7% (n=28) were in formal employment. The education level of the women from the records was as follows: a small percentage of the results (13.3%, n=20) reported never having attended school. The majority of results from the records (42 n=63%) had completed high school. Secondary school education was reported by (28% n=42) of the participants. Tertiary education, including college or university, was achieved by 16.7% (n=25) of the participants. When it came to marital status, 62% (n=93) reported being married, while (93%, n=57) were single.

The demographic characteristics of antenatal care focused on the characteristics of pregnant women accessing care. This included age, educational level, occupation and marital status. The age of the women was as follows: the largest group was 20-24 years, representing 40% (n=40) of the sample. The next most populous group was 25-29 years, accounting for 36.7% (n=55). The smallest groups were 35-40 years (4.7%, n=7) and 30-34years (18.7%, n=28). When it came to

occupation, the majority of women in the records (56.7% n=85) were in informal employment, while 43.3% (n=65) were in formal employment. The education level of the women was as follows: a small percentage of the records (16.7%, n=25) reported never having attended school. The majority of results from the records (33.3% n=50) had completed high school. secondary school education was reported by 26.7% (n=40) of the participants. Tertiary education, including college or university, was achieved by 23.3% (n=25) of the participants. When it came to marital status, 63.3% (n=95) reported being married, while (36.7%, n=55) were single.

Vaccination under 5, the demographic characteristics related to under 5 vaccination refer to factors that influenced the immunization coverage for children. This included age and sex of the children. The age distribution was as follows: the largest group was 0-12 months, representing 4.7% (n=70) of the sample. The next most populous group was 1-2 years, accounting for 32% (n=48). The smallest groups were 3-5 years (21.3%, n=32). For gender the results from the records showed that females were the highest group representing (58.7%, n=88) and males representing (41.3% n=62) of the sample.

Vitamin A supplementation, the demographic characteristics relevant to vitamin A supplementation primarily focused on the age of children receiving supplementation. The age distribution was as follows: the largest group was 1-2 years, representing 43.3% (n=65) of the sample. The next most populous group was 6-11months, accounting for 30% (n=45). The smallest group was 3-4years (26.7%, n=45). For gender the results from the records showed that females were the highest group representing (63.3%, n=95) and males representing (36.7% n=55) of the sample.

The baseline characteristics of births attended to by skilled birth attendants included various demographic factors that provided insights into the population accessing skilled care during childbirth. which showed the educational level of the births attendants. It included professional midwives representing (62%, n=93) and nurses represented (38%, n=57) of the sample.

FAMILY PLANNING

Variable	Variable Description	Frequency (N=150)	Percent (%)
Age of women	20-24yrs.	49	32.7
	25-29 yrs.	58	38.7
	30-35 yrs.	33	22
	35-40 yrs.	10	6.7
Total		150	100.0
Occupation	Formal Job	28	18.7
	Informal Job	122	81.3
Total		150	100.0
Education	Never been to school	20	13.3
	high school	63	42
	Secondary school	42	28
	Tertiary school	25	16.7
Total		150	100.0
Marital Status	Single	57	38
	Married	93	62
Total		150	100.0

Table 1: Demographic Variables

ANTENATAL CARE

Variable	Variable Description	Frequency (N=150)	Percent (%)
Age of pregnant women	20-24 yrs.	60	40
	25-29 yrs.	55	36.7
	30-34 yrs.	28	18.7
	35-40 yrs.	7	4.7
Total		150	100.0
Occupation	Formal Job	65	43.3
	Informal Job	85	56.7
Total		150	100.0
Education	Never been to school	25	16.7
	high school	50	33.3
	Secondary school	40	26.7
	Tertiary school	35	23.3
Total		150	100.0

Marital Status	Single	55	36.7
	Married	95	63.3
TOTAL			100.0

VACCINATION UNDER 5

Variable	Variable Description	Frequency (N=150)	Percent (%)
	0-12 months	70	46.7
AGE	1-2 yrs.	48	32
	3-5yrs.	32	21.3
TOTAL		150	100.0

GENDER		
FEMALE	88	58.7
MALE	62	41.3
TOTAL	150	100.0

VITAMIN A SUPPLELEMENTATION

Variable	Variable Description	Frequency (N=150)	Percent (%)
	6-11 months	45	30
AGE	1-2 years	65	43.3
	3-4 years	40	26.7
TOTAL		150	100.0
GENDER			
MALE		55	36.7
FEMALE		95	63.3
TOTAL		150	100.0

BIRTHS ATTENDED TO BY SKILLED BITH ATTENDENT

Variable	Variable Description	Frequency (N=150)	Percent (%)
EDUCATIONAL	Professional midwives	93	62
LEVEL	Nurses	57	38
TOTAL		150	100.0

Table 1: Demographic Variables

T-TEST RESULTS

Data for births attended by skilled birth attendant before and after COVID is presented below. Throughout the year 2019, there were more births attended by skilled personnel than after COVID (2021).

4.1 RESULTS FOR BIRTHS ATTENDED BY SKILLED BIRTH ATTENDANTS

This study revealed that the number of births attended to by skilled birth attendants went up post COVID versus pre COVID by an average of 126 births from month to month. The corresponding chart data and t-test results are displayed below.

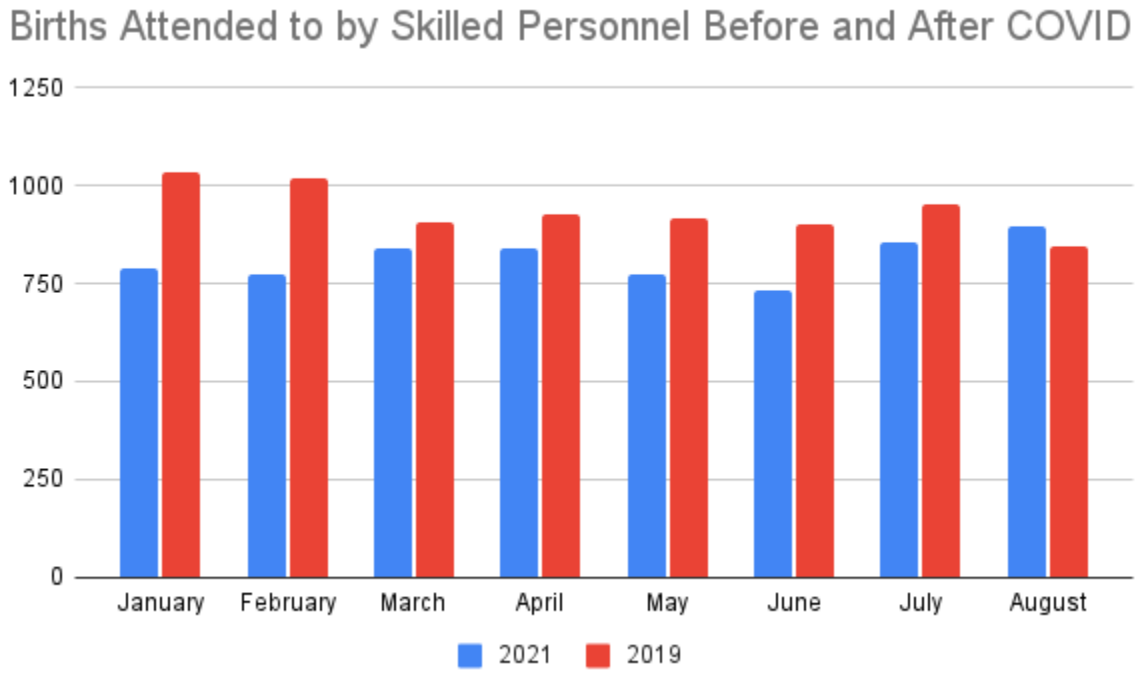

Figure 2: Births attended to by skilled personnel before and after COVID-19.

Mean	Std. Deviation	Std. Error Mean	Sig. (2-tailed)
126.125	98.063	34.6	.008

The data provided pertains to the births attended to by skilled personnel before and after the COVID pandemic. The mean number of births attended to by skilled personnel was 126.125, indicating a relatively high rate of skilled attendance before the pandemic. The standard deviation of 98.063 suggests a considerable amount of variation in the number of births attended. The standard error mean of 34.6 represents the average variability in the mean estimate from different samples. The significance value (p-value) associated with the two-tailed test was 0.008, suggesting that the observed difference in the number of births attended to by skilled personnel before and after COVID is statistically significant.

4.2 RESULTS FOR FAMILY PLANNING ATTENDANCES BEFORE AND AFTER COVID

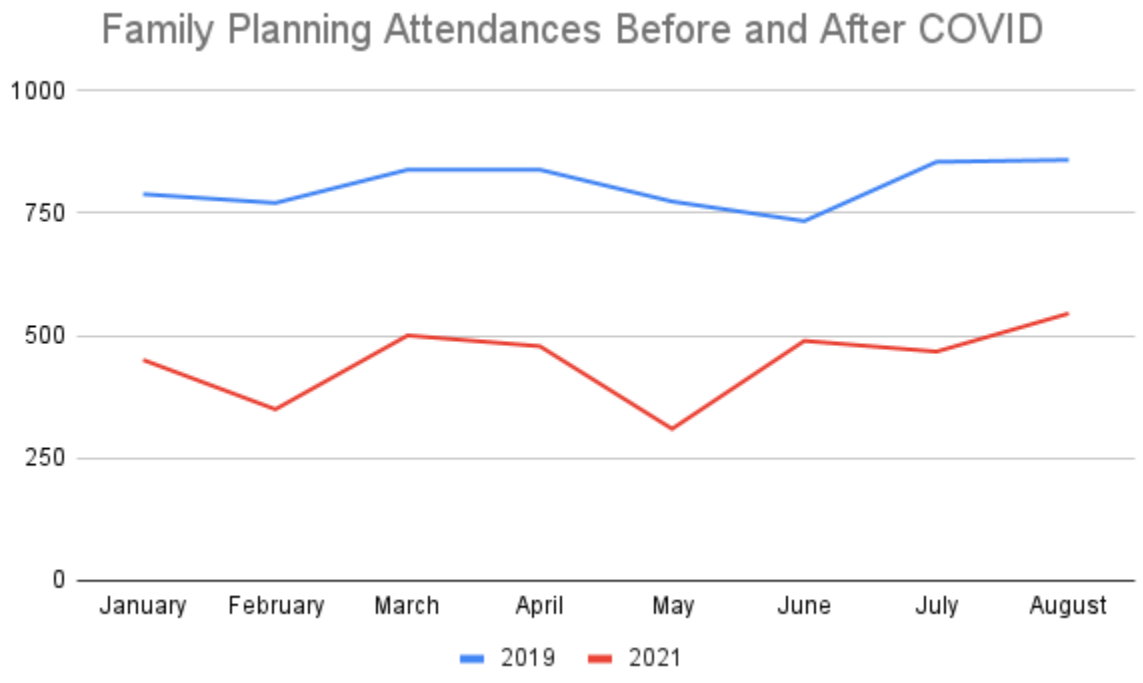

Figure 3: Family Planning attendances before and after Covid-19

A paired T-test for family planning attendance before and after COVID was conducted and a mean difference of -359.125 was found with a significance level of .000.

Before and After Covid

Paired Samples Test for Family Planning Attendances

Mean	Std. Deviation	Sig. (2 tailed)
-359.125	67.47579	.000

Table 2: Paired Samples Test for Family Planning Attendances Before and After Covid

A paired T-test for family planning attendance before and after COVID was conducted. The mean difference between the two groups was -359.125, indicating a significant decrease in family planning attendances after the pandemic. The standard deviation for this difference was 67.47579, suggesting some variability in the change among the data points. The significance value (p-value) associated with the two-tailed test was 0.000, which we rounded off to 0.001, which is lower than the conventional threshold of 0.05. This indicates a highly significant difference in family planning attendances before and after COVID.

4.3 RESULTS FOR ANC VISITS BEFORE AND AFTER COVID 19

A paired T-test for first, second, third, and fourth ANC visits before and after COVID was conducted and on average, the number of attendances for the first, second, third, and fourth visits post-COVID was down from the same months before COVID. The data and t-test results revealed that ANC visits prior to COVID in 2019 were all higher in number monthly than after the pandemic (2021).

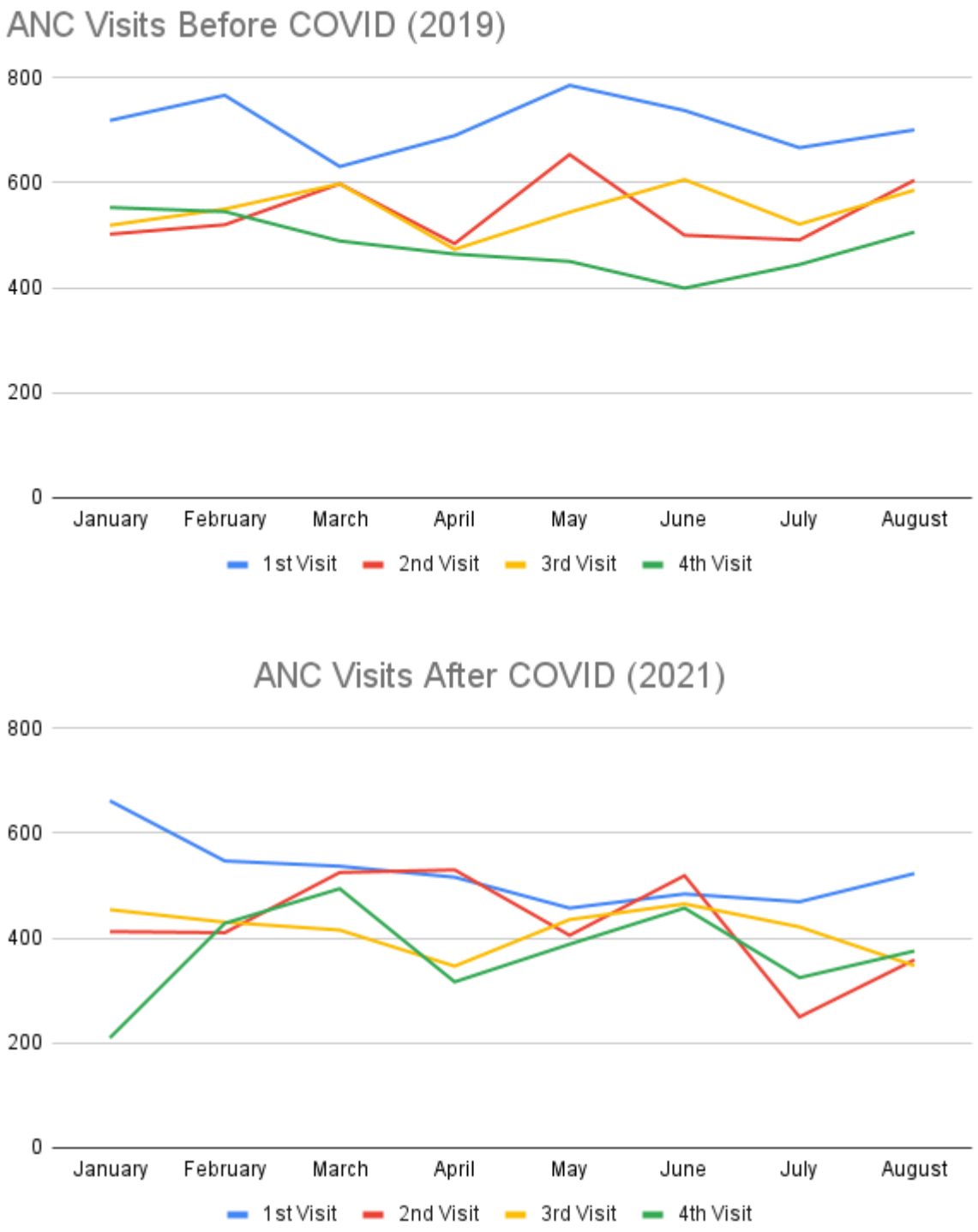

Figure 4: ANC visits before and during Covid-19

The following paired samples test data revealed that there was a decline in the number of monthly visits post COVID versus pre COVID for each of the four ANC visits.

Paired Samples Test of Antenatal Care Visits Before and After Covid

	Mean	Std. Deviation	Sig. (2-tailed)
1st ANC Visit	-188.000	85.901	.000
2nd ANC Visit	-118.250	118.149	.025
3rd ANC Visit	-146.750	56.772	.000
4th ANC Visit	-107.375	119.814	.039

Table 3: Paired Samples Test of Antenatal Care Visits Before and After Covid

The following paired samples test data revealed that there was a decline in the number of monthly visits post COVID versus pre COVID for each of the four ANC visits. The results indicate a significant decrease in the mean number of visits for the 1st ANC visit, with a mean difference of -188.000 visits and a standard deviation of 85.901. This decrease is highly significant ($p < .001$). Similarly, the 3rd ANC visit also experienced a significant decrease, with a mean difference of -146.750 visits and a standard deviation of 56.772, showing a highly significant reduction in visits ($p < .001$). The 2nd ANC visit and the 4th ANC visit also showed a decrease, with mean differences of -118.250 visits and -107.375 visits, respectively. Although the significance levels for these visits were slightly higher ($p = .025$ and $p = .039$), indicating less robust evidence, they still suggest a notable decline in the number of antenatal care visits during the pandemic.

RESULTS FOR UNDER 5 VACCINATION

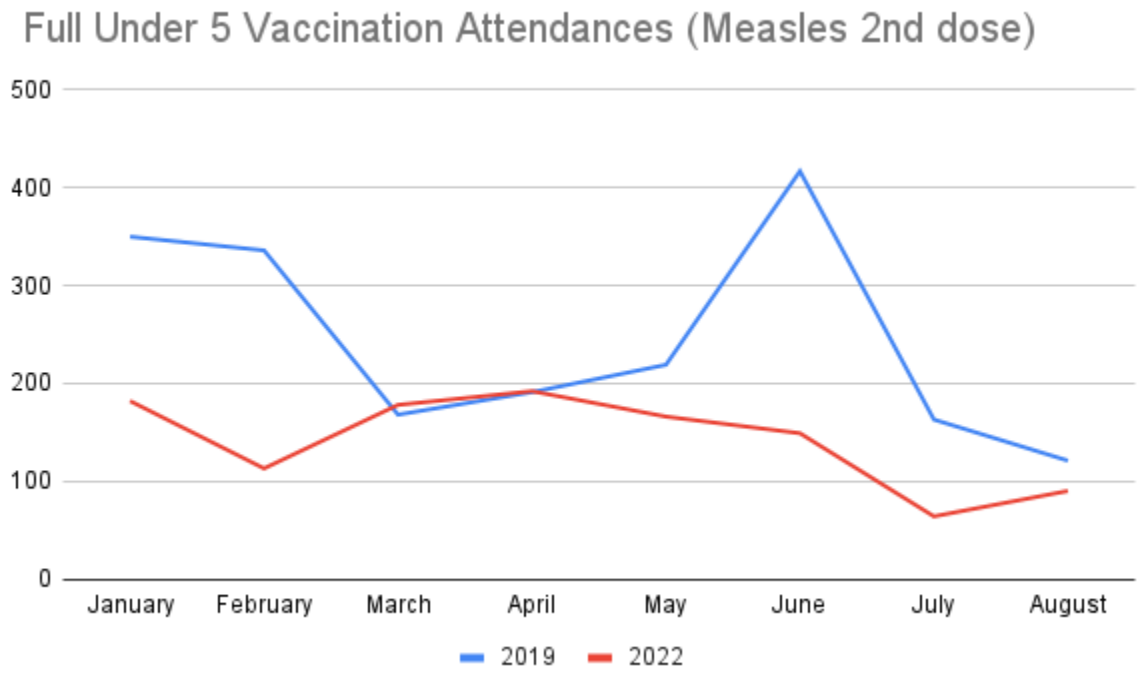

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Table 5: Full Under 5 Vaccinations

paired T-test for Measles Vaccinations before and after COVID was conducted and a mean difference of -98.375 was found with a significance level of .040.

Paired Samples Test Measles Vaccination

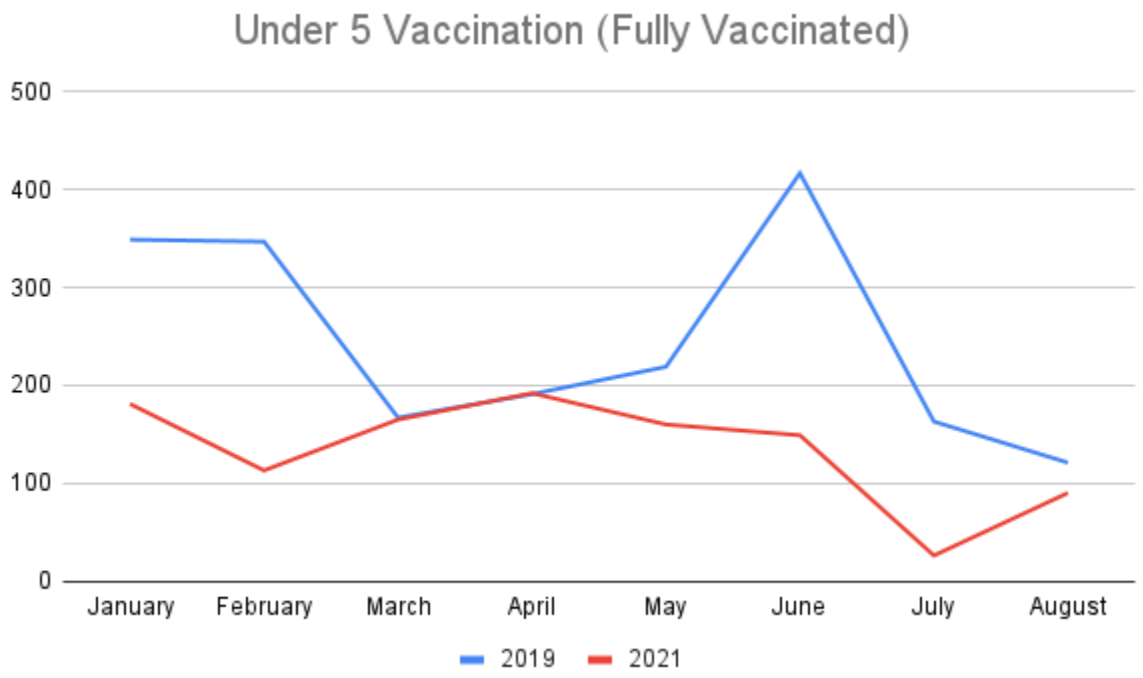
Mean	**Std. Deviation**	**Sig. (2 tailed)**
-98.375	110.347	.040

Table 4: Paired Samples Test Measles Vaccination

A paired T-test for Measles Vaccinations before and after COVID was conducted. The mean difference between those who had a measles vaccination before and after COVID was -98.375, indicating a decrease in the average measles vaccination rate after the event. The standard deviation for this difference is 110.347, suggesting some variability in the change among the samples. The significance value (p-value) associated with the two-tailed test was 0.040, which is

lower than the conventional threshold of 0.05. This indicates a statistically significant difference in measles vaccination before and after the onset of COVID.

4.4 RESULTS FOR UNDER FIVE FULLY VACCINATION



A paired T-test for fully immunized children before and after COVID was conducted, and a mean difference of -112.250 was found with a significance level of .019.

Paired Samples Fully Immunized

Mean	Std. Deviation	Sig. (2 tailed)
-112.250	105.030	.019

Table 5: Paired Samples Fully Immunized

A paired T-test for fully immunized children before and after COVID was conducted. The mean difference between the two groups was -112.250, indicating a decrease in immunization rates

after the pandemic. The standard deviation for this difference was 105.030, suggesting some variability in the change among the children. The significance value (p-value) associated with the two-tailed t-test is 0.019, indicating that the observed difference was statistically significant. This suggests that there was a substantial difference in immunization rates before and after the COVID pandemic among the fully immunized children being analyzed.

4.5 RESULTS FOR VITAMIN A SUPPLEMENTATION BEFORE AND AFTER COVID

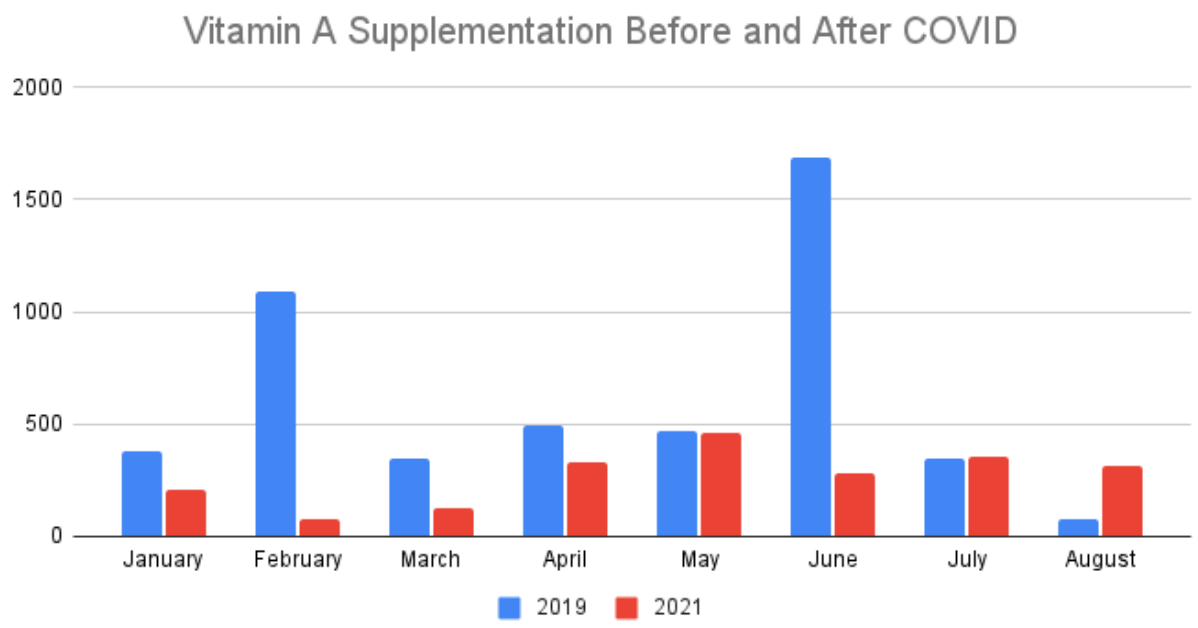


Figure 6: Vitamin A supplementation before and after Covid-19

A paired T-test for family planning attendance before and after COVID was conducted and a mean difference of -343.625 was found with a significance level of .130.

Paired Samples Test For Vitamin A Supplementation

Mean	Std. Deviation	Sig. (2-tailed)
-343.625	567.328	.130

Table 6: Paired Samples Test for Vitamin A Supplementation

A paired T-test for family planning attendance before and after COVID was conducted. The mean difference between the two groups was -343.625, indicating a decrease in the average amount of vitamin A supplementation after the COVID. The standard deviation for this difference is 567.328, which suggests a relatively high degree of variability in the change among the samples. The significance value (p-value) associated with the two-tailed test was 0.130, which exceeded the conventional threshold of 0.05. This suggests that the observed difference in vitamin A supplementation before and after the event is not statistically significant.

CHAPTER FIVE

5.1 DISCUSSION

The delivery of maternity and pediatric healthcare services has been greatly disrupted by the COVID-19 epidemic on a global scale. Designing efficient interventions and policies requires an understanding of the pandemic's implications on these services. In this discussion, the findings of a retrospective study done in Lusaka are examined, with particular attention paid to variations in the frequency of skilled deliveries, family planning, measles vaccines, and antenatal care (ANC) visits before and during the COVID-19 pandemic.

Skilled Birth Attendance:

In order to lower maternal and newborn mortality and ensure healthy delivery outcomes, skilled birth attendance is essential. In contrast to the pre-pandemic period, this study found a significant negative mean difference in skilled birth attendance post-COVID of 126.125 ($p = 0.008$). This decrease in skilled birth attendance is consistent with earlier studies carried out in several locations during the COVID-19 pandemic. According to research done in China by Wang et al. (2021), less skilled birth attendance was observed during the pandemic. The study emphasized that the drop in skilled birth attendance was caused by elements including infection fear and restricted access to medical care. Similar conclusions were drawn from a study carried out in Nigeria by Onyeneho et al. (2021), which revealed that the COVID-19 pandemic resulted in a decrease in skilled delivery attendance because of the closure of healthcare facilities and transportation issues.

The decline in competent birth attendance must be addressed since it has a major effect on both maternal and newborn health outcomes. According to numerous studies, skillful delivery attendance given by qualified medical personnel is linked to lower rates of maternal and newborn death (World Health Organization, 2019). The rapid detection and care of difficulties during labor, lowers the likelihood of negative outcomes, depending on access to experienced birth attendants.

Several measures might be taken into consideration to deal with the difficulties of continuing skilled birth attendance during the pandemic. Pregnant women can receive remote consultations, antenatal education, and support through telehealth and digital platforms, which eliminates the need for in-person visits (Liu et al., 2020). In order to ensure that competent birth attendants and essential supplies are available for safe deliveries, health systems should be strengthened (Raj et

al., 2020). In order to dispel myths and worries about COVID-19 and educate pregnant women and their families about the value of competent birth attendance, community participation, and awareness programs can be quite helpful (Muhwava et al., 2021).

Family Planning Attendance:

Attendance at family planning programs is an essential part of mother and child health services because it gives people and couples the knowledge and resources they need to plan pregnancies and make educated decisions about their reproductive health. In the post-COVID era compared to the pre-pandemic period, family planning attendance had a significant negative mean difference of -359.125 ($p = 0.000$), according to this study. This decrease in family planning usage is consistent with research done during the COVID-19 pandemic.

Tan et al.'s (2020) research in Indonesia showed a decline in the use of family planning services during the epidemic. According to the report, obstacles to family planning participation include lack of access to medical facilities, concern for COVID-19 infection, and disruptions in the supply of contraceptive supplies. Similar results were found in a study done in Ethiopia by Kassa et al. (2021), which showed a fall in the use of family planning services during the pandemic. Financial limitations and mobility restrictions were identified as the main causes of the decline. Concerns about unwanted births, insufficient birth spacing, and a potential future burden on mother and child health services are brought up by the drop in family planning attendance during the pandemic. In order to maintain access to family planning services, it is crucial to address these issues. Several approaches based on the literature already in existence can be taken into consideration.

Utilizing telemedicine and digital health technologies can give people remote access to family planning consultations, counseling, and prescriptions for contraceptives. This strategy can lessen the difficulties created by restricted mobility and cut down on the necessity for in-person meetings (Liu et al., 2020). Community-based distribution: In order to provide family planning services directly to people and communities, community health professionals and outreach initiatives can be extremely important. This strategy can assist in resolving transportation issues and guarantee that contraceptive treatments are widely accessible (Tan et al., 2020).

Antenatal Care (ANC) Visits:

When it comes to boosting mother and child health, ANC (Antenatal treatment) visits are critical because they offer support and necessary medical treatment throughout pregnancy. According to this study, fewer ANC visits were made after COVID than they were before the pandemic. Particularly, during the epidemic, fewer people on average attended the first, second, third, and fourth ANC visits. There are several explanations for the decline in ANC visits during the COVID-19 epidemic. The reduction may have been caused by concerns about getting the virus, restricted access to medical facilities, problems with transportation, and the focus of healthcare resources on the COVID-19 response. These results are consistent with the viewpoints and experiences detailed in other pandemic-era investigations.

Research from several nations has emphasized the impact of ANC service interruptions on mother and child health outcomes. According to a research by Muhwava et al. (2021) that looked at pregnant women's opinions and experiences in Zimbabwe, the pandemic resulted in fewer ANC visits because of anxiety, mobility constraints, and a lack of healthcare resources. In a different research done in China by Liang et al. (2020), it was discovered that fewer ANC visits were being made and that people were delaying seeking treatment, which led to missed opportunities for crucial pregnancy monitoring and intervention. Concerns about missed opportunities for early detection and management of pregnancy-related complications, timely provision of interventions like iron and folic acid supplementation, tetanus vaccination, and screening for infections and gestational diabetes are raised by the decline in ANC visits during the pandemic. The results for mother and child health may be significantly impacted by these missed chances.

Measles Vaccinations:

Childhood immunization programs must include the measles vaccine to prevent kids from a highly contagious and potentially serious viral infection. In contrast to the pre-pandemic period, this study found a significant negative mean difference in measles vaccines of -98.375 ($p = 0.040$). This drop in measles vaccination rates is consistent with earlier studies carried out during the COVID-19 epidemic.

There was a decline in childhood immunization rates throughout the pandemic, notably for measles vaccination, according to research carried out in several nations. Research by Mutua et al. (2021) in Kenya showed a drop in measles vaccination coverage as a result of healthcare service interruptions and parents' reluctance to enter healthcare facilities out of concern about the spread of COVID-19. Similar to this, Filia et al.'s (2020) study in Italy found a decline in measles vaccination rates and attributed it to the suspension of routine immunization programs and difficulties gaining access to medical facilities during lockdown procedures. Concerns regarding probable outbreaks and a rise in measles cases have been raised as a result of the pandemic's fall in measles vaccination rates. Measles is an extremely contagious illness that can cause serious side effects like pneumonia, encephalitis, and even death. Herd immunity and limiting the measles' ability to spread within communities require high vaccination rates.

Fully Immunized Children:

According to this study, there was a significant negative mean difference between the number of children who were fully immunized post-COVID and the pre-pandemic period of -112.250 ($p = 0.019$). The conclusions of other investigations are supported by these results. According to Elston et al. (2020), decreased immunization rates were observed in the United Kingdom as a result of fewer clinic visits and parents' worries about exposing their kids to COVID-19. Abbas et al. (2021) discovered a fall in vaccination rates in Nigeria, which they attributed to service interruptions in the health sector and vaccine reluctance. In addition, a study conducted by Bwongi et al. (2021) found that the COVID-19 pandemic had a significant impact on routine immunization services, with a decline in the number of children receiving vaccines. The disruptions in immunization services were attributed to various factors, including the suspension of outreach services, restrictions on movement. Low immunization rates can have serious consequence for children, including the risk of contracting vaccine preventable disease, severe health problems, and outbreaks of infectious diseases. It is important to prioritize immunization to protect the health of children and the community as a whole.

Vitamin A Supplementation

A paired T-test was performed in addition to the results previously mentioned to determine how the COVID-19 pandemic has affected vitamin A supplementation. When comparing the pre-pandemic period to the post-COVID period, the study showed a mean difference of -343.625, showing a decline in vitamin A supplementation. It's crucial to remember that the p-value of 0.130 fell short of the standard threshold for statistical significance (p 0.05). The absence of a statistically significant decline in vitamin A supplementation may indicate that this particular area of maternity and child health care services in Lusaka was relatively less significantly affected by the epidemic. However, it is important to interpret these results with caution and take the study's larger context into account.

The observed drop in vitamin A supplementation may be caused by a number of variables, even though there is no statistically significant difference. The pandemic's interruptions, such as limited access to healthcare facilities, scaled-down outreach efforts, and concern over COVID-19 transmission, may have affected how often people accessed services for vitamin A supplementation. It's possible that pregnant people and new moms had trouble getting to medical facilities, which prevented them from taking vitamin A supplements. The lack of a statistically significant drop in vitamin A supplementation emphasizes the need for additional research and a thorough knowledge of the factors influencing its uptake during the epidemic. Future studies should focus on qualitative components, such as the experiences and viewpoints of expectant mothers and healthcare professionals, in order to better understand the difficulties encountered and pinpoint potential solutions.

The importance of vitamin A supplementation in enhancing mother and child health should not be overlooked. A lack of vitamin A can have serious effects, such as increased susceptibility to infections and unfavorable pregnancy outcomes. Therefore, efforts to maintain appropriate vitamin A supplementation coverage should continue to be a top priority in programs for mother and child health, especially in difficult periods like the COVID-19 pandemic (Viana et al., 2020).

5.2 LIMITATIONS

Although this study offers insightful information about how COVID-19 affects the provision of maternity and child health services in Lusaka, it is crucial to recognize several limitations that could have affected the findings and how the results were interpreted.

1. Retrospective design: The study adopted a retrospective approach, comparing the pre- and post-COVID eras using historical data. Recall bias and constraints in the availability, completeness, and correctness of the data might affect this approach. The incorporation of new variables or factors that could have impacted the results may be hampered by the dependence on current data.
2. Confounding factors: The study might not have taken into consideration every possible confounding factor that could have affected how maternal and child health care services changed. Although they weren't completely taken into account in the research, factors including socioeconomic position, educational attainment, cultural customs, and other contextual factors may have had an influence on the results that were found.
3. Selection bias: The results of the study might be skewed by selection bias since the data gathered only includes those who visited hospitals or sought medical attention during the study period. The generalizability of the findings may be constrained by the exclusion of those who either did not obtain healthcare services or were unable to do so.
4. External factors: The COVID-19 pandemic may not be the only cause of the observed changes in mother and child health care services. The pandemic may have coincided with changes in healthcare regulations, budget allocation, and public health initiatives, which might have affected the results.
5. Lack of qualitative data: The study excluded qualitative information or viewpoints from healthcare professionals and service consumers and only used quantitative data. A more thorough knowledge of the experiences, obstacles, and facilitators around mother and child health care services during the pandemic would have been achieved by include qualitative data.

Despite these drawbacks, this research adds to the body of evidence already available about COVID-19's effects on maternal and pediatric healthcare services. Future research with greater sample sizes, different groups, and mixed-methods techniques may help us better understand the issues and guide focused pandemic-related treatments for mother and child health.

CHAPTER SIX

6.0 RECOMMENDATIONS

There are a number of measures that may be used to address the difficulties raised by the study's challenges with the provision of mother and child health care services during the COVID-19 pandemic. These initiatives prioritize the health and safety of expectant mothers, children, and healthcare professionals while ensuring the continuity and accessibility of important services.

Strengthen virtual and telehealth care: Accessing maternity and pediatric healthcare services may be made easier by utilizing telehealth and virtual care platforms. Through telemedicine, medical professionals may give remote consultations, disseminate health information, and keep tabs on the wellbeing of expectant mothers and young children. This strategy preserves continuity of treatment while reducing the requirement for in-person visits (Lancet Global Health, 2020).

Implement Mobile Clinics or Outreach Programs: To reach disadvantaged populations and places with limited access to healthcare institutions, mobile clinics or outreach programs might be deployed. By directly delivering ANC treatments, immunizations, and health education to expectant mothers and young children in their communities, these efforts can lower transportation obstacles and improve service accessibility (WHO, 2020).

Community involvement and health promotion: It's critical to include communities and spread the word about the value of services for mother and child health. Campaigns for health promotion help dispel myths and anxieties about seeking medical attention during the epidemic. In order to spread correct information, support good health-seeking behaviors, and boost ANC attendance and vaccination, community health workers, local leaders, and social networks may all be used (UNICEF, 2020).

6.1 CONCLUSION

In conclusion, the results of this retrospective analysis on the effects of COVID-19 on the provision of mother and child health services in Lusaka showed that the pandemic caused considerable disruptions in a number of areas of healthcare. In comparison to the pre-pandemic era, the data showed a decline in skilled birth attendance, family planning attendance, measles vaccines, and ANC visits post-COVID. Concerns regarding the possible long-term effects on mother and child health outcomes have been raised by these decreases.

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APPENDICES

APPENDIX A: STUDY TIMELINE

Budget

Budget category	**Cost**
Personnel - Travel cost - Secretarial services	K750
Supplies and stationary - Pen and pencils - Note book - Printing and binding of records	K500
Contingency funds	K1500
Total costs	K2750

WORK PLAN

Activity	Responsibility	October-November	December-January	January-March	April - June
Finalize research Proposal and Submit to the School	Researcher				
Ethical clearance From					

UNILUS-REC funding authorities					
Preparation of study tools, travel to data collection cite	Researcher				
Data collection and Management	Researcher and Research assistants				
Data entry, data Cleaning and Data analysis	Researcher and Research assistants				
Draft report writing	Researcher				
Submission of first draft report and finalization					

Data collection guide

Maternal and child health

Maternal

1) How many women attended the antenatal clinic before and during the covid 19 pandemic?
2) How many women were attended to by a skilled health worker during antenatal visits before and during the covid-19 pandemic?
3) How many women came in for family planning before and during the covid 19 pandemic?
4) How many women were attended to by a skilled birth attendant during before and during the covid-19 pandemic?

Child health

1) How many children received the full under five vaccinations before and during covid-19 pandemic?
2) How many children were given vitamin A supplementation before and during the covid-19 pandemic

UNILUSREC LETTERS
NHRA LETTER

SCHOOL OF MEDICINE AND HEALTH SCIENCES LEOPARDS HILL CAMPUS

Plot No. 37413, Off Alick Nkhata Mass Media. P. O Box 36711, Lusaka.

Phone: +260211258505, 258409 Fax +260211233409; Cell +260976075850,961917862,

E-mail:unilus@zamnet.zm,ictar@zamnet.zm

Date: 15th DECEMBER, 2022

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PERMISSION FOR **TESSY NAMBOZI MWEEMBA - BSPH 19217139 TO** CONDUCT A RESEARCH STUDY AT YOUR FACILITY/ INSTITUTION/ORGANIZATION

Reference is made to the above subject matter

The University of Lusaka, School of Medicine and Health Sciences here by requests for permission for **TESSY NAMBOZI MWEEMBA** Public Health Student to conduct research at your facility/ institution/ organization, entitled; **ASSESSMENT ON THE EFFECTS OF COVID 19 ON THE DELIVERY OF MATERNAL AND CHILD HEALTH CARE SERVICES BEFORE AND DURING THE PANDEMIC IN LUSAKA: A RETROSPECTIVE STUDY.** The research is in partial fulfillment of the requirements for the degree of Bachelor of Science Public Health. This is purely for academic purposes and information gained in such a way will not be used in the public domain without prior authorization from the institutions/ organizations involved.

The research topic has been cleared by the University of Lusaka, School of Medicine and Health Sciences Research Ethics Committee as per the attached copy. Data collection is expected to be done from **1st January, 2023 to 31st March, 2023**.

The University of Lusaka avails itself of this opportunity to review to your office the assurances of its highest considerations and looks forward to your timely and favorable response.

Prof Kasonde Bowa
MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(LSTMH),MPH(UCL)
Chairman- UNILUS REC
Professor of Urology and Consultant Urologist
Executive Dean University of Lusaka and University Teaching Hospital School of Medicine and Health Sciences.

SCHOOL OF MEDICINE AND HEALTH SCIENCES LEOPARDS HILL CAMPUS
Plot No. 37413, Off Alick Nkhata Mass Media. P. O Box 36711, Lusaka.
Phone: +260211258505, 258409 Fax +260211233409; Cell +260976075850,961917862,
E-mail:unilus@zamnet.zm,ictar@zamnet.zm

SCHOOL OF MEDICINE AND HEALTH SCIENCES RESEARCH ETHICS COMMITTEE

Ref no: IORG0010092-2023/072

Date: 15th DECEMBER, 2022

TESSY NAMBOZI MWEEMBA - BSPH 19217139

Re: RESEARCH TITLE: ASSESSMENT ON THE EFFECTS OF COVID 19 ON THE DELIVERY OF MATERNAL AND CHILD HEALTH CARE SERVICES BEFORE AND DURING THE PANDEMIC IN LUSAKA: A RETROSPECTIVE STUDY

The above research was submitted to the research ethics committee for review. The study has no major ethical problems and is approved subject to the following:

1. The study cannot be changed without express permission of the UNILUS Research ethics committee
2. Approval from the Lusaka District health Management or equivalent health authorities should be sought.
3. The study tools should be added.
4. An informed consent form should be attached and filled by all study participants (If dealing with primary data)
5. The risks and benefits should be included in the consent form.
6. Ensure before commencement that approval is sought from ZNHRA

Congratulations and the committee wishes you success in your work.

Prof Kasonde Bowa
MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(LSTMH),MPH(UCL)
Chairman- UNILUS REC
Professor of Urology and Consultant Urologist
Executive Dean
University of Lusaka and University Teaching Hospital School of Medicine and Health Sciences.

NATIONAL HEALTH RESEARCH AUTHORITY

Lot No. 18961/M, off Kasama Road, Chalala, P.O. Box 30075, LUSAKA

Tell: +260211 250309 | Email: znhrasec@nhra.org.zm | www.nhra.org.zm

Ref No: NHRA00002/25/01/2023 **Date:25th January 2023**

The Principal Investigator,
Tessy Nambozi Mweemba,
UNILUS,
Lusaka, Zambia.

Dear Mr Mweemba,

Re: Request for Authority to Conduct Research

The National Health Research Authority is in receipt of your request for ethical clearance and authority to conduct research titled **"Assessment On The Effects Of Covid-19 On The Delivery Of Maternal And Child Health Care Services Before And During The Pandemic In Lusaka: A Retrospective Study."**

I wish to inform you that following submission of your request to the Authority, our review of the same and in view of the ethical clearance, this study has been **approved** on condition that:

1. The relevant Provincial and District Medical Officers where the study is being conducted are fully appraised;
2. Progress updates are provided to NHRA bi-annually from the date of commencement of the study;
3. The final study report is cleared by the NHRA before any publication or dissemination within or outside the country;
4. After clearance for publication or dissemination by the NHRA, the final study report is shared with all relevant Provincial and District Directors of Health where the study was being conducted, University leadership, and all key respondents.

Yours sincerely,

National Health Research Authority

Ms Sandra Chilengi Sakala,
Acting Director/Chief Executive Officer