COVID – 19 PANDEMIC ON THE UTILISATION OF MATERNAL AND CHILD HEALTH SERVICES AT ENTEBBE MUNICIPALITY, UGANDA

NABIRYE LYDIA

BHND (KYU)

20/U/GMSPH/13246/PD

A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND GRADUATE TRAINING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF PUBLIC HEALTH DEGREE OF KYAMBOGO UNIVERSITY

NOVEMBER, 2024

DECLARATION

Declaration by candidate

This dissertation is my original work and has not been presented for a degree in Kyambogo University or any other Institution of Higher Learning.

Name: **Nabirye Lydia**

Signature: _____ Date: _____

APPROVAL

We confirm that the work in this dissertation was done by the candidate under our supervision

Name: **Dr. Mbatudde Maria**

Signature: _____ Date: _____

Name: **Dr. Asio Santa Maria**

Signature:_____ Date: _____

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

DEDICATION

This dissertation is dedicated to my dear parents Mr. Lugwiire Stanley and Mrs. Lugwiire Joy for their parental love, prayers and always believing in me, my Spouse Sebukeera Geoffrey for the financial assistance, my supervisors and workmates at my work place for giving me time to concentrate on my studies.

This piece of work is also dedicated to my children Namuddu Michelle and Muweesi Ethan whom their motherly time was sacrificed for the completion of this work.

Special thanks go to my dear sister Ms Namuganza Edinansi and my house assistant Nalweyiso Prossy for ensuring that all home chores are accomplished well while I concentrated on my studies.

ACKNOWLEDGEMENT

My foremost gratitude goes to Almighty God for His Grace that is always the source of my strength, hope and encouragement through the many changing scenes of life. I thank my supervisors Dr. Mbatudde Maria, Dr. Asio Santa Maria who have constantly maintained a positive outlook, believed in me.

Thanks to Dr. Nakayinga Ritah, Dr. Kyayesimira Juliet, Dr. Kaddumukasa Martha for always encouraging me to work hard and challenging me to create quality work through the Master of Science (MSc.) series on research writing and presentation. Equally important has been the support of all staff at the Department of Biological Sciences of Kyambogo University.

Thanks to the Faculty of science at Kyambogo University for the support and approving this study to be done in Entebbe municipality

Appreciation also goes to the Directorate of Research and Graduate Training of Kyambogo University for guiding the research study

My class mates Mr. Ssenyonga Steven, Mr. Otai James, Mr. Agaba Brian, Mr. Mugisha Diskson, Mr. Mwanja Wilson Steve, Ms. Atugonza Allen, Mr. Byaruhanga Peter and Ms. Nabukeera Mariam thanks for having made our study very pleasant experiences.

I thank my family members, for their unwavering moral and material support for as long as I can remember. Special thanks to my participants from Katabi Health Centre III, State House Health Centre IV and Entebbe Grade B Hospital, who took time to respond to the questionnaires given to them, this study would not have been possible without them.

LIST OF ABBREVIATION AND ACRONYMS

ANC: Antenatal Care

ANOVA: Analysis Of Variance

CI: Confidence Interval

COVID: Corona Virus Infectious Disease

DHS: Demographic Health Survey

EDD: Estimated Delivery Date

Hb: Haemoglobin

HC: Health Centre

HIV: Human immunodeficiency virus

Km: Kilometre

LMP: Last Menstrual Period

MDG: Millennium Development Goals

MHCH: Maternal Health and Child Health

MoH: Ministry of Health

OR: Odds Ratio

PPE: Personal Protective Equipment

PQCQ: Perceived Quality of Care Questionnaire

QPCQ: Quality of Prenatal Care Questionnaire

RDC: Resident District Commissioner

RHR: Reproductive Health Response

SBA: Skilled Birth Attendants

STI: Sexually transmitted infections

TB: Tuberculosis

UCG: Uganda Clinical Guideline

UDHS: Uganda Demographic Health Survey

UK: United Kingdom

UN: United Nation

WHO: World Health Organisation

HCWs: Health care workers

DEFINITION OF KEY TERMS

Antenatal care: A mother who is expecting and her unborn child get care during the pregnancy, called antenatal care (ANC), according to Kindersley (2007). In order to identify disease or potential problems, a doctor or midwife must be regularly seen. During these appointments, the doctor or midwife does an examination of, blood and urine tests, checks blood pressure, and keeps track of the development of the foetus.

Antenatal care services: are provided to expectant mothers to ensure the healthiest possible pregnancies for both them and their unborn children. These services include screening for pregnancy issues, assessing pregnancy risks, treating pregnancy-related issues, preparing expecting mothers physically and mentally for childbirth and motherhood by giving them medications to enhance pregnancy outcomes (DoH 2007).

Antenatal care utilisation: The term "utilization" refers to the process of putting something to use (The Free Dictionary 2012). Therefore, using antenatal care refers to using the services provided to pregnant women at healthcare facilities.

Knowledge: Oxford Dictionaries (2013) define knowledge as "the facts, information, and abilities acquired via experience or study."

Maternal mortality: Maternal mortality is regarded as "the death of a pregnant woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and location, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes," (World Health Organization, 2009).

Pregnant woman: When a woman's uterus contains a growing foetus, she is said to be pregnant (The Free Dictionary 2012).

Timing: Timing is the process of determining the ideal time or pace to perform something in order to obtain the intended or greatest effects (Dictionary, 2012).

ABSTRACT

All ages of people have been negatively impacted by the global Corona Virus Disease 2019 (COVID-19) outbreak, but pregnant women are particularly at risk. Maternity services changed their protocols and procedures to lessen the COVID-19 risk transmission to women, their babies, and healthcare workers. This study aimed at finding the effects of COVID – 19 pandemic on the utilisation of maternal health and child health services at Entebbe municipality from three health facilities of various levels (health centres III, IV and a hospital). A facility-based cross-sectional design with both quantitative and qualitative approaches was used to collect information at the health facilities. A total of 306 women participated in the quantitative study while 28 women participated in the qualitative study. Pre – tested structured questionnaires, interview guides were used to collect information from the women who consented to take part voluntarily in the study while document review was used to collect women's information on trends of antenatal utilisation. The findings of the study showed that there was a decline in the initiation of Antenatal Care (ANC) and a reduction in the number of antenatal visits. More than a half 72.2% were satisfied with antenatal care services provided during the pandemic of which 53.9% would recommend the facility to a relative or friend. Women who were older (=> 40 years) (aOR =25.2, 95%CI 1.6 – 389.1) and women who were more educated (aOR = 5.1, 95%CI 1.5 – 17.3) were satisfied with the service provided during the pandemic. Fear of contracting COVID-19 at health facilities, transportation difficulties, shortage of manpower, long waiting times, and harassment by security agents were the major factors that hindered the access and utilisation of Maternal Health and Child Health (MHCH) services during the pandemic. In conclusion the COVID-19 pandemic caused the interruption of health services on a global scale, including MHCH services. Effective preventive and clinical strategies to control future pandemic infection among women are necessary. It is necessary and important to replicate the study using mothers from various private hospitals.

CHAPTER ONE

INTRODUCTION

1.1 Background

Ribonucleic acid (RNA) virus with a single strand of positive sense known as the coronavirus-2 (SARS-COV2) that causes severe acute respiratory syndrome, is the cause of the developing respiratory ailment coronavirus disease 2019 (COVID-19) (Kumbeni *et al.,* 2021). It has an incubation period of 2days –2weeks after viral exposure, confirmed cases of COVID-19 usually exhibit fever, a dry cough, exhaustion, and shortness of breath as its primary clinical signs and symptoms (Guan *et al.,* 2020). The World Health Organization deemed the COVID-19 outbreak a significant worldwide public health emergency on January 30, 2020 (Meaney *et al.*, 2022).

All ages of people have been negatively impacted by the global COVID-19 outbreak, but pregnant women were particularly at risk. Maternity services changed their protocols and procedures to lessen the COVID-19 risk transmission to women, their babies, and Health Care Workers (HCWs) (Onwuzurike *et al.*, 2020).

Pregnancy and delivery problems claim the lives of 303,000 women globally each year, with Sub-Saharan Africa (SSA) and Southern Asia accounting for 99% of these deaths (Mary *et al.,* 2020). Although the new coronavirus disease 2019 (COVID19) has spread around the globe, its impact varies and is linked to the health system's resistance (Hallowell *et al.,* 2020). In Africa,

6,109,722 cases have been reported by November 14th, 2021, with 151,173 fatalities and a 2.5 percent case fatality rate (Ameyaw *et al.,* 2021). One of the most important parts of reproductive healthcare has been jeopardized (Ameyaw *et al.,* 2021). Due to pre-existing structural barriers to prenatal care (Yadufashije et al., 2017), facility-based birthing (Yaya et al., 2018), and family planning services (Ameyaw et al., 2021), African women are underutilizing essential maternal health services. According to statistics from the Demographic and Health Survey (DHS), which was carried out in 31 African nations, 35% of women used ANC occasionally, and 13% did not use it at all (Adedokun *et al.,* 2020). Another study using DHS data discovered that in 28 African countries, facility-based birth rates were from 23 percent to 66 percent (Adde *et al.,* 2020). South Africa has had a 3.4 percent rise in perinatal deaths and a 5% decrease in family planning services as a result of COVID-19, making it one of the worst-affected countries in Africa in terms of COVID-19 prevalence and maternal health consequences (Ameyaw et al., 2021). Zambia, Uganda, and the Democratic Republic of the Congo are some more (Ameyaw *et al.,* 2021). Despite this, COVID-19 regulations have been put into effect in several African countries, including South Africa, Kenya, Ghana, and Africa as a whole, with a focus on how to protect residents from economic downturns and other comparable steps to revitalize the economy. In Africa's COVID-19 measures, practical efforts to maintain and maybe even enhance the ailing reproductive health system have been mainly overlooked (Ameyaw *et al.,* 2021).

Uganda, like many other countries in the World Health Organisation (WHO) in the continent of Africa, have widely escaped the high infection rate and

mortality caused by COVID-19 that other countries experienced 84,116 confirmed cases and 1966 fatalities have been recorded as of July 6, 2021, during the first wave (Burt *et al.,* 2021). Colombo *et al.,* (2020) claim that Uganda effectively ended COVID-19's direct effects within its boundaries, despite the fact that this is probably an underestimate of the disease's actual morbidity and death. This has been accomplished through early, rapid, and severe response, as well as other measures like physical separation, mask wear, and continuous hand washing of potentially contaminated surfaces, clothing, and shoes (Colombo *et al.,* 2020).

Globally before the pandemic, significant progress had been made in reducing maternal and child mortality rates globally. However, COVID-19 threatened these gains, particularly in low-income countries with limited healthcare resources. In low-income regions, the number of facility-based deliveries and antenatal visits decreased substantially due to lockdown measures and healthcare resources being reallocated to handle the pandemic. For instance, a study by Roberton et al. (2020) predicted that, over six months, low- and middle-income countries would experience up to 2.5 million additional child deaths and over 113,000 maternal deaths due to the pandemic's effects on health services.

Sub-Saharan Africa (SSA), where maternal and child health outcomes have historically been a challenge, was disproportionately affected by these disruptions. In SSA, the maternal mortality ratio is approximately 542 per 100,000 live births, with over 250,000 maternal deaths annually (WHO, 2019). COVID-19 exacerbated these challenges by reducing access to antenatal care, skilled birth attendants, and essential services, causing severe

repercussions on maternal and child health (Yaya et al., 2020). In many SSA countries, facility-based deliveries fell by up to 20%, and vaccination programs for children were interrupted, leading to a rise in preventable diseases (Makoni, 2020).

Uganda's healthcare system, although relatively well-established, faced severe strain due to the pandemic. The country recorded its first COVID-19 case in March 2020, leading to immediate lockdowns and movement restrictions (Ministry of Health Uganda, 2020). Restrictions affected the delivery of routine health services, with maternal and child health services experiencing significant reductions in utilization. Antenatal care visits decreased by over 10% in some regions, while facility-based deliveries in Uganda dropped by nearly 12% (Kansiime et al., 2021). Immunization services for children also suffered, with reports of vaccine stock-outs and low turnout due to fear of infection and transportation restrictions (UNICEF Uganda, 2021).

Prior to the onset of the COVID-19 pandemic, Uganda's maternal and child health (MCH) services were on a gradual but steady trajectory of improvement. Government efforts, supported by international partners, had led to enhanced access to antenatal care (ANC), skilled delivery, and immunization services, which contributed to reductions in maternal and infant mortality rates. According to Uganda's Ministry of Health (MoH), approximately 97% of pregnant women accessed at least one ANC visit before the pandemic, though only 60% completed the recommended four ANC visits (Ministry of Health Uganda, 2019). Facility-based deliveries were on the rise, reaching nearly 73% nationally in 2018 (UBOS & ICF, 2019). Immunization

programs were robust, with high coverage rates for critical vaccines, thus reducing incidences of preventable childhood illnesses (WHO, 2020).

Prior to the pandemic, Uganda had made progress in reducing maternal and infant mortality, though challenges remained. The maternal mortality ratio (MMR) was estimated at approximately 336 per 100,000 live births, which, although still high, represented progress from previous years (Uganda Bureau of Statistics [UBOS], 2020). For children, the infant mortality rate (IMR) stood at 43 per 1,000 live births, with under-five mortality at 64 per 1,000 live births (UBOS & ICF, 2019). These figures underscore the importance of accessible maternal and child health services, as improved MCH access is associated with better health outcomes for women and children.

The services offered under Uganda's MCH framework included comprehensive antenatal care, safe delivery services, postnatal care, immunization, and nutritional counseling for mothers and young children (Ministry of Health Uganda, 2019). These services were critical in regions like Entebbe Municipality, which hosts both urban and peri-urban populations reliant on government health facilities. High antenatal coverage and facility-based deliveries contributed significantly to maternal and child survival rates by ensuring skilled health personnel were available to manage complications.

As a result, the COVID-19 reaction has enormous negative effects on expectant mothers, new mothers, young children, and adolescents (Ombere, 2021). For instance, according to a research on effects of COVID-19 on Uganda's neo-natal and reproductive health by Burt *et al.,* (2021), during the three-month lockdown, the number of prenatal attendances substantially

decreased and stayed below pre-COVID levels (370 fewer each month). Pneumonia, diarrhoea, and malaria cases among youngsters receiving treatment decreased during the lockdown (Burt *et al.,* 2021).

In Entebbe Municipality, a locality with diverse urban and peri-urban populations, the impact of COVID-19 on maternal and child health services was significant. Fear of contracting COVID-19 led to a decline in antenatal visits, while travel restrictions hindered many women from accessing healthcare facilities. Entebbe, like other areas in Uganda, experienced healthcare worker shortages and the redirection of resources to handle COVID-19 cases, impacting the availability of essential maternal and child health services. Essential services such as antenatal visits, facility-based deliveries, and immunization campaigns were severely constrained, further endangering maternal and child health in the municipality (Nyashanu et al., 2021).

The COVID-19 pandemic in Uganda began with the first case in March 2020, prompting the government to impose a nationwide lockdown, curfews, and restricted inter-district travel. While effective in limiting viral spread, these measures also hindered access to healthcare services, particularly in remote areas. The Ugandan Ministry of Health attempted to sustain essential healthcare services by introducing mobile health clinics and prioritizing maternal and child health services, yet challenges in service delivery persisted due to limited resources and infrastructure (Ministry of Health Uganda, 2021). Vaccine rollouts were initially slow, especially in rural areas, which delayed the restoration of regular maternal and child healthcare services.

Despite efforts to maintain maternal and child health services during the pandemic, the reduction in service utilization, coupled with challenges like fear of infection and healthcare system strain, highlighted critical gaps. Data on the specific impacts of COVID-19 on maternal and child health services in Entebbe Municipality remain limited, posing a challenge for policymakers to fully understand and address the issue. This study aimed to fill that gap by analysing the effects of COVID-19 on the utilization of maternal and child health services in Entebbe Municipality, providing valuable insights into service disruptions, access barriers, and potential areas for healthcare policy improvements in pandemic preparedness and response.

1.2 Problem statement

The COVID-19 pandemic disrupted access to health center services worldwide, particularly affecting maternal and child healthcare. Despite the Ugandan government categorizing pregnant women as a "high-risk group," maternal healthcare (MHC) services lost the priority they previously held, as healthcare personnel and resources were diverted to manage COVID-19 cases. In low-income countries, COVID-19 containment and preparedness measures have disproportionately impacted maternal and neonatal health. Even before the pandemic, millions of women faced challenges in accessing affordable, timely, and quality maternal healthcare. The pandemic worsened these challenges due to travel restrictions, lack of infection control supplies, and interrupted schedules for community health workers, further limiting access to essential maternal and child health services and significantly affecting the health outcomes for mothers and infants.

During the lockdown, pregnant women were permitted to travel to healthcare facilities. However, many were discouraged by the fear of contracting COVID-19 at these facilities and the frustration of obtaining permission to see a doctor or deliver a baby. Although travel was allowed, the extent of maternal and child health service utilization during COVID-19 in Entebbe Municipality remains unknown. This study investigated the impact of the COVID-19 pandemic on the utilization of maternal and child health services in Entebbe Municipality, with a focus on understanding the factors affecting service access in three selected health centers. Identifying the barriers within these health centers and the challenges faced in accessing maternal and child health services will provide insights into the broader implications of the pandemic on healthcare utilization.

Understanding the effects of COVID-19 on maternal and child health services is crucial for addressing gaps in service delivery and informing future policies to ensure healthcare resilience. By examining the disruptions caused by the pandemic, this study aimed to contribute to improved health outcomes for mothers and children in the context of public health emergencies.

1.3 Objectives

1.3.1 General objective

To assess COVID – 19 Pandemic on the utilisation of maternal and child health services at Entebbe municipality, Uganda

1.3.2 Specific objectives

i. To determine the level at which women attended the antenatal care visits according to the world health organisation's antenatal care model during the COVID – 19 pandemic at Entebbe municipality.

ii. To evaluate the women's perception and satisfaction with antenatal care provided to them during the COVID – 19 pandemic at Entebbe municipality.

iii. To identify the factors that hindered the women's utilisation of maternal healthcare and child care services during the COVID – 19 pandemic at Entebbe municipality.

1.4 Research questions

i. What was the level at which women attended the antenatal care visits according to the world health organisation's antenatal care model during the COVID – 19 pandemic in Entebbe municipality?

ii. What were the women's perception and satisfaction with antenatal care provided to them during the COVID – 19 pandemic in Entebbe municipality?

iii. What factors hindered the women's utilisation of maternal healthcare and child care services during the COVID – 19 pandemic in Entebbe municipality?

1.5 Scope of the study

1.5.1 Geographical scope

The study was carried out at Entebbe grade B Hospital, Katabi HC III and State House HC IV in Entebbe municipality, Wakiso district, Uganda. Providing maternal healthcare and child healthcare services to the people of the community

1.5.2 Content scope

The study aimed at finding out the influence of the COVID 19 pandemic on utilisation of maternal and child health services.

1.5.3 Time scope

The study was done for one year from December, 2022 to December, 2023. However, data collection was carried out from December 2022 to April, 2023.

1.6 Significance of the study

Given the challenge of the COVID 19 epidemic globally, nationwide and in particular health facilities in Uganda, the outcomes of this study had the following benefits:

Provision of information to health personnel on how to manage pandemics using appropriate responsive approaches with minimal effects to the community in general

Contribute to research and development on COVID-19 through provision of information on the impact of COVID-19 on services for maternity and pediatric health.

Advise the mother and care takers of children on appropriate health care seeking practices during pandemics.

The information obtained from the study is to be used by policy makers to make key decisions in providing maternal health and child health services.

New body of knowledge is added to the existing knowledge through publications.

Above all, the study is a requirement for the completion and award of the degree of Master of Public Health of Kyambogo University.

1.7 Conceptual framework

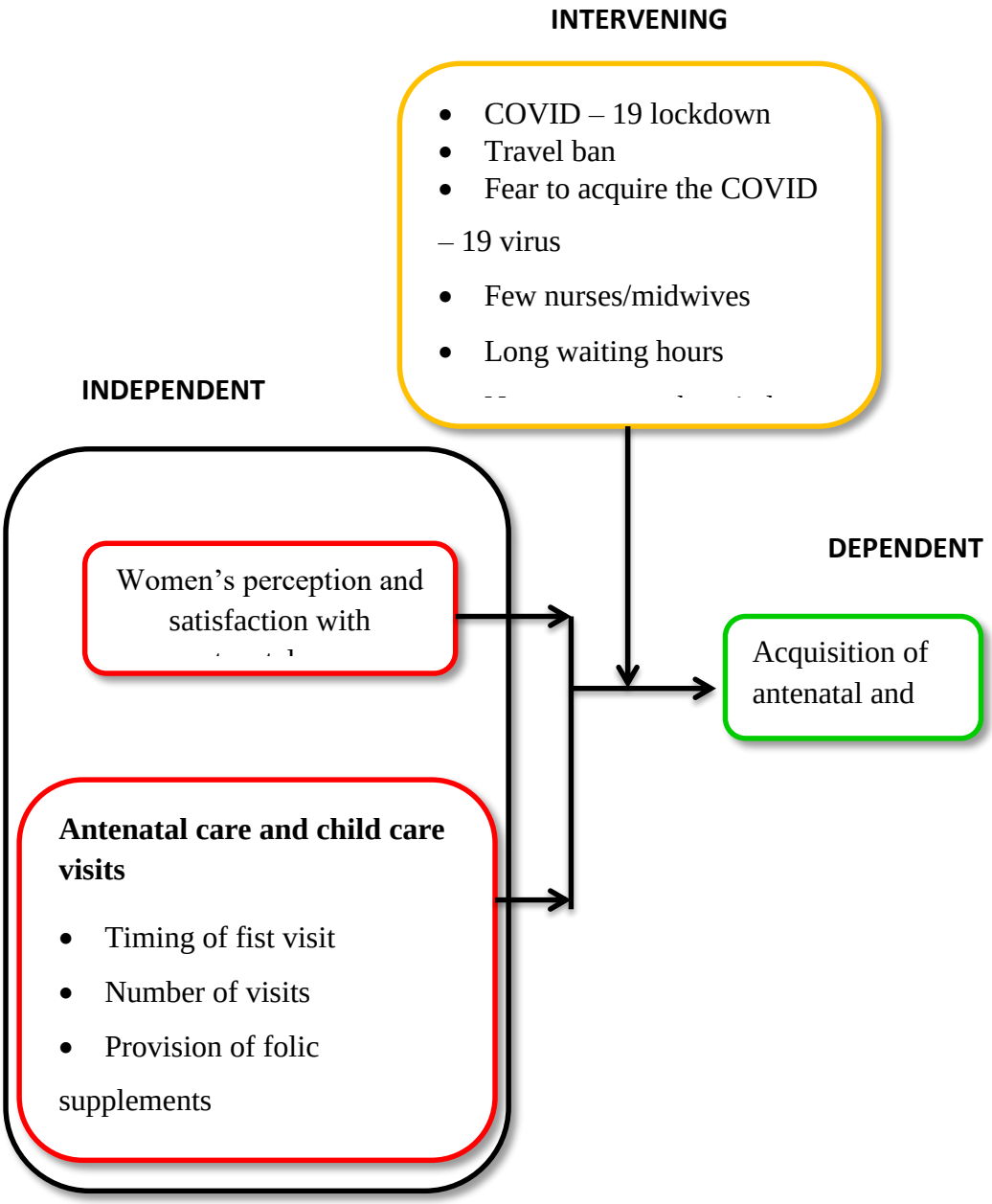


Figure 1.1: Conceptual framework

Source: Concept of the researcher.

1.7.1 Narrative

The independent variables (women's perception, satisfaction, and antenatal care visits) influence the dependent variable (acquisition of services).

However, intervening variables introduced by the COVID-19 pandemic create additional challenges that can limit or alter the impact of the independent variables on the dependent variable. For example, even if a woman has a positive perception of antenatal care, COVID-related restrictions might still prevent her from accessing these services.

This framework underscores the complex interaction between healthcare services, patient perceptions, and external barriers created by the pandemic, all of which influence the utilization of maternal and child health services.

CHAPTER TWO

LITERATURE REVIEW

2.1 Antenatal healthcare and the COVID – 19 pandemic

Prenatal care is defined by the World Health Organisation (WHO); "care a pregnant mother receives before birth," which includes programmes for immunisation, education, screening, and counselling (Akowuah *et al.,* 2018). Prenatal care introduces a mother to formal health services for the first time and links pregnant women experiencing problems to a referral network (Gebreyohannes *et al.,* 2017).

Each year 303,000 women worldwide pass away due to complications during pregnancy and delivery, with 99% of these mortalities occurred in Sub-Saharan Africa (SSA) and Southern Asia (Mary *et al.,* 2020). Antenatal care lowers the risk of maternal morbidity and death by educating women about risk factors, promoting health, preparing for birth, and treating pregnancy-related conditions (Ayalew & Nigatu, 2018). Maternal death in Sub-Saharan Africa, particularly Uganda, is still high 42 days after the pregnancy was terminated pregnancy, despite the WHO's recommendation that pregnant women visit a health facility and or hospital for the Antenatal Care (ANC) at least four times (Roberton *et al.,* 2020). Studies carried out in various nations discovered that the utilisation of pre-natal care services was significantly influenced by a number of variables, including age of mother, the number of existing children, educational level, where to stay, work, religion affiliation, socioeconomic position, and prior birth history (Ali *et al.*, 2018). Countries are

facing substantial obstacles in providing the essential, high-quality Maternal Health Care (MHC) because of the COVID-19 pandemic (Ali *et al.,* 2018).

Pregnant women and new moms may have trouble obtaining services because of delays in transportation and lockdowns, or they may be reluctant to go to medical facilities out of concern about infection (Ali *et al.,* 2018). The number of services covered for prenatal and new-born health care has decreased by 10% as a result of pandemics. Esegbona - Adeigbe (2020) estimates that this will lead to 28,000 maternal mortalities. An extra 56,700 maternal mortalities would ensue from the pandemic if ANC coverage decreased by 39.3-51.9 percent, according to a recent study conducted in the United States of America (USA). The risk of maternal morbidity and death increased, due to maternity services being disrupted and resources being diverted away from crucial prenatal care, as a result of prioritising the COVID-19 response (Esegbona - Adeigbe, 2020). Expectant mothers have been shown to experience increased levels of anxiety and obsessive-compulsive symptoms during the current COVID-19 outbreak (Yassa *et al.,* 2020). Restrictions, lockdown, and restructuring of medical systems have caused COVID-19 to have indirect population-level effects even in wealthy nations like Singapore (Ng *et al.,* 2020).

2.1.1 Effects of COVID-19 Globally

Health access is defined as "the opportunity to identify healthcare needs, seek healthcare services, reach, get, or use healthcare services, and to actually have the demand for services satisfied," based on a research by Levesque *et al.,* (2013).

Nearly every nation, region, and territory on earth has been affected by the corona virus outbreak. Around 87 million corona virus infections and almost two million fatalities were the startling truth for 2021 (Council on Foreign Relations, 2021). High-Income Countries (HICs) frequently have larger illness burdens since more instances are recorded there. However, it demonstrates that as "context" is combined with "incidence and mortality rates," Low and Middle Income Countries (LMICs) incur much burden of COVID 19. When wealth and age are taken into account, the percentage of COVID-19 related worldwide death attributable to HICs falls by a factor of 2.6 (from 78.9 to 30.7 percent), whereas the share attributable to LMICs rises thrice (from 21.1 to 69.3 percent) (WHO, 2021).

The worldwide approach to the COVID-19 outbreak has largely overlooked local context, thus weakening established public health aims. Evidence suggests that, especially in LMICs, the COVID19 method will lead to an increase in mother and child mortality and morbidity (LMICs) (Roberton et al., 2020; World Health Organization, 2021). Cultural, political, and economic issues are important for creating suitable solutions for a strong health system, as has been exuberated by the inevitability of several waves of the COVID19 epidemic worldwide.

The global response on COVID 19 epidemic has largely been a "one size fits all" strategy, focused on severe lockdowns to maintain physical isolation while aiming to protect basic health care services (HCS) to the best possible extent, despite the variance in impact. As a result, emergency services and COVID-19 care are now the main areas of emphasis rather than delivering basic healthcare services. Midwives and other maternal health specialists in Kenya

and Uganda saw a decline in the count of mothers visiting Maternal Health (MH) clinics as well as a hick in the number of late and uninsured hospital admissions (Pallangyo *et al.,* 2020).

2.1.2 Effects of COVID-19 Regionally

A recent investigation by Ahmed *et al.,* (2020) learned that lockdown limitations and the need for social isolation made it difficult for people to visit healthcare facilities, particularly Maternal and Child Health services (MCH), in part because of infection-related anxiety. The lockdown was implemented to have people stay inside their homes. The outcome was a loss of income and a reduction in daily activity. The usual patterns of obtaining healthcare were severely reduced, with only emergency care being an exception.

According to data from four low and middle income countries with low maternal and child healthcare indices that was gathered in South Africa, the current corona virus pandemic focused approach may result in more than expected damage due to a lack of access to important basic services including family planning, Antenatal Care (ANC), and properly monitored home and institutional births, there are 30% higher maternal and infant fatalities (Walker *et al.,* 2020).

A study (Levesque *et al.,* 2013), Based on data from 118 LMICs, it was anticipated that, depending on how much maternal and child health care (MCHC) is disrupted by the pandemic, under-5 mortality will increase by 9.8-44.7 percent and maternal mortality by 8.3-38.6 percent per month.

According to a study by Ahmed *et al.*, (2020), residents of slums in Kenya, Nigeria, and Bangladesh were less able to get treatment for issues other than COVID-19 during lockdowns. To encourage individuals to seek medical attention, clear communication regarding whatever is accessible and whether Infection Control (IC) measures that are required.

Those that make policies must watch out for rising prices that will hurt slum dwellers. Remote counselling, as well in order to reduce face-to-face involvement, the provision of mental health and gender-based violence services should be taken into consideration.

In five Nairobi urban slums, 9 percent of participants in a poll by the Population Council skipped health services including prenatal care and nutrition and vaccination programmes for children (Kenya Population Council, 2000).

Participants believed that the quality care had changed due to improvements in sanitation, care, attention, discretion, a light patient load, and limited mobility, nurse staffing, and faster patient attendance turnaround times (Aridi *et al.*, 2020).

The majority of participants were happy with the improvement in service quality, however some noted changes to customary prenatal care. One mother who brought her child in for vaccinations stated that the medical personnel had turned away other mothers who had brought their children in for growth monitoring. She heard someone tell them that it wasn't required for COVID-19 (Aridi *et al.*, 2020).

On the other side, it was believed that COVID 19 transmission prevention measures, such as required checking temperature at each post, would lengthen visitors' stay at the hospital. The responders related the prolonged wait hours to healthcare worker often switching out their protective gear (Aridi *et al.*, 2020).

Despite the fact that COVID-19 mitigation techniques appeared to have improved quality in the outpatient department, inpatient care appeared to have stayed unchanged. In public maternity hospital wards, there were also instances of delayed service and overcrowding (Aridi *et al.,* 2020).

2.1.3 Effects of COVID-19 Locally

The COVID-19 pandemic significantly disrupted health services globally, with notable impacts in low- and middle-income countries (LMICs) like Uganda (WHO, 2020). The pandemic strained healthcare systems and altered the delivery of routine services, including maternal and child health services (MCH) in Uganda, affecting access, quality, and utilization (Nabukeera, 2021).

When COVID-19 hit Uganda in early 2020, the government implemented several measures, such as lockdowns, curfews, and restrictions on movement, to curb its spread. While these measures helped reduce COVID-19 transmission, they indirectly restricted access to health services. For maternal health, pregnant women faced numerous challenges, including difficulties accessing prenatal care, skilled birth attendants, and postnatal services. Studies show that fear of contracting COVID-19 deterred many women from visiting health facilities, resulting in a decrease in facility-based deliveries and

antenatal care attendance, which are essential for reducing maternal and neonatal mortality (Byonanebye et al., 2022)

The healthcare workforce was also heavily impacted, as a significant number of staff and resources were redirected toward COVID-19 care. This diversion led to a decrease in availability and quality of MCH services. Additionally, supply chain disruptions caused shortages of essential medicines, personal protective equipment, and other resources necessary for maternal and neonatal care, affecting the quality and timeliness of care provided to women and children.

In Entebbe Municipality, a major entry point for international travelers due to Entebbe International Airport, the early phases of the pandemic saw an increased risk of COVID-19 exposure. The municipality's health facilities faced heightened demand for testing, isolation, and treatment services for COVID-19, leading to a significant diversion of resources from routine health services. Local reports indicate that maternal health services in Entebbe experienced a decline in usage, with reduced antenatal visits and fewer facility-based deliveries during the lockdown periods. Many women in Entebbe reported facing challenges in transportation to health centers due to travel restrictions, while others avoided hospitals altogether out of fear of exposure to COVID-19.

Data from various studies suggest a concerning decline in the utilization of MCH services during the pandemic, exacerbated by logistical and psychological barriers. For example, Uganda saw a 20% drop in antenatal care visits in certain districts during the peak of the pandemic. The Ministry of

Health Uganda data shows a 29 percent (28,939) decrease in facility deliveries in March compared to January 2020, which is 28 percent fewer than the 12-month average for 2019. Maternal mortality increased by 82 percent (from 92 to 167 women) over the same time period, a rise of 87 percent over 2019 average of 89.5 (Bell et al., 2020). Health issues with pregnancy, stillbirths, and low birth weight neonates have had the biggest and longest-lasting consequences on mother, child, and neonatal health, all of which are likely attributable to delayed care-seeking behavior (Burt et al., 2021).

Health facilities in Entebbe Municipality reported similar trends, with notable declines in immunization rates and pediatric check-ups for infants, leading to potential increases in preventable illnesses among children. The COVID-19 pandemic thus introduced new obstacles in accessing maternal and child health services, highlighting the need for pandemic-resilient health systems and focused policies to ensure continuity of essential services during health crises.

2.1.4 Women's initiation of antenatal care during the COVID 19 pandemic

World Health Organization recommendation of having a minimum of four antenatal visits. This recommendation, however, has already been revised to a minimum of eight contacts including one contact in the first trimester, two contacts in the second trimester, and five contacts in the third trimester (WHO,2018). The revision was due to the evidence that perinatal deaths increase with only four antenatal visits (de Guzman & Banal-Silao, 2022). Initiation of antenatal care during the first trimester allows timely detection

and prevention of complications. Patients receive earlier guidance on nutrition, immunization, and monitoring for danger signs (de Guzman & Banal-Silao, 2022).

Governments, in order to control the spread of COVID-19, implemented various measures such as social distancing and lockdowns (Rabbani et al., 2021). These lockdowns could affect individuals and families in terms of their ability to access the services. On the other hand, health care systems may lose resources to sustain the uninterrupted provision of services (McKee & Stuckler, 2020). Most countries redesigned antenatal care services to decrease the exposure of pregnant women to infected individuals. The number of routine antenatal care visits was reduced to six in-person and two telemedicine consults (Uwambaye et al., 2020). The Philippine Obstetrical and Gynecological Society (POGS) with the Philippine Society of Maternal-Fetal Medicine (PSMFM) (Philippine Obstetrical and Gynecological Society, 2020) adopted similar recommendations of six scheduled visits and telemedicine consults as needed. Pregnant women were encouraged to observe and maintain antenatal care appointments. Initiation of consult through a telemedicine platform was suggested for women at less than 11 weeks of gestation (de Guzman & Banal-Silao, 2022). The number of actual antenatal care visits was reduced by timing the visits to include indicated laboratory tests and foetal wellbeing studies. At least six antenatal visits were suggested at 11–13 weeks, 20 weeks, 28 weeks, 32 weeks, 36 weeks, and 37 weeks to delivery (de Guzman & Banal-Silao, 2022).

2.1.4.1 ANC visits worldwide during the COVID 19 pandemic

Attending ANC appointments was more challenging during the COVID-19 pandemic worldwide (Anggraeni et al., 2023). The number of ANC visits decreased during the pandemic, particularly among pregnant women in rural areas (Basu et al., 2021). Another scoping review concluded that prenatal care visits declined during the pandemic (Kotlar et al., 2021). In a study done in Philippines it showed that majority of the respondents (71.38%) had their first antenatal care during the first trimester as recommended (de Guzman & Banal-Silao, 2022).

Also pre-pandemic reported data by Hiroguchi and Nakazawa showed that only 63.4% of Filipino women beginning antenatal care within the first trimester (Hiroguchi & Nakazawa, 2018).

In a study done in Saudi Arabia about one-third (30%) of the women had missed at least one ANC appointment in their current pregnancy. The most common reasons for missing the appointments in primary care and hospitals, respectively, were: fear of infection 52% and 47%, facility not working usual 25% and 7.5%, fear of infection to child 19% and 17% (Rabbani et al., 2021). A recent systematic review and meta-analysis reported that during the COVID-19 pandemic there was about a 38% decline in antenatal care (ANC) appointments globally (Townsend et al., 2021). In a study done in Indonesia, most pregnant women in this study attended ANC in PHCs however, this made them feel anxious (Anggraeni et al., 2023).

In a study by Rabbani et al., one-third of our sample missed at least one appointment. Of these, at least one quarter missed more than three

appointments. Reasons for missing were mostly attributed to COVID-19. Fear of infection to oneself or to the foetus was the most reported reason, both at hospitals and PHCCs. Other reasons were mainly related to accessibility issues (Rabbani et al., 2021). Furthermore, pregnant women diagnosed with COVID-19 were requested to defer ANC visits until they are cured (Rabbani et al., 2021). A recent review had documented negative outcomes due to COVID-19 response policies (Kotlar et al., 2021).

A recent World Health survey for Saudi Arabia found that 80% of surveyed women reported that they had at least four ANC visits during their last pregnancy and 99% of deliveries occurred at hospitals in 2019 (World Health Survey, 2019). In a study done in Philippine, of the 318 respondents, 46.37% had six or more face-to-face antenatal visits (de Guzman & Banal-Silao, 2022).

In a study done in Philippine, nearly half of the women reported cancellation of scheduled antenatal visits. Reasons for cancellations included lockdown or quarantine restrictions, transportation problems, fear of going to the hospital or contracting coronavirus, financial and employment status problems, full schedules of hospitals or clinics, and lack of companion (de Guzman & Banal-Silao, 2022). These were similar to an online survey among pregnant Chinese women to investigate their attitudes toward antenatal care during the pandemic (Wu et al., 2020).

In a study done in the United Kingdom, they found that pregnant women were not examined in detail during ANC appointments, and that this may have led to health professionals missing important aspects in their pregnancy

(Karavadra et al., 2020). Participants also used social media or written documents to obtain information from their healthcare providers during the pandemic. Pregnant women in another study declared social media a useful tool in providing antenatal care and support during the pandemic, particularly with regard to obtaining pregnancy-related information, managing feelings of isolation, service specific issues, and routine care (Chatwin et al., 2021).

2.1.4.2 ANC visits in Sub-Saharan Africa during the COVID 19 pandemic

In the wake of the COVID-19 pandemic, most of these essential health services for pregnant women have been delayed or shifted, while other women do not seek ANC services at all as found in Ethiopia (Tadesse, 2020), Kenya (Mwobobia, 2020), Ghana (Manyeh et al., 2020), Uganda (Dey et al., 2021), and several other African countries (Morhe et al., 2020). Pregnant women who became infected with COVID-19 were also likely to suffer from hypercoagulability (Abdelbadee & Abbas, 2020; Abajobir, 2020), making ANC even more crucial for them.

Several studies Lusambili et al., (2020); Balogun et al., (2021); Burt et al., (2021) have revealed a reduction in access to ANC services during the COVID-19 period when compared to the period before the COVID-19 pandemic. A study conducted in Mozambique recorded a 26% decrease in the number of women attending their first standard ANC visit and a 74% increase in the number of home deliveries during the COVID-19 period (das Neves et al., 2021). Previous findings in a study carried out in Ghana, found that pregnant women during the pandemic missed ANC visits and were afraid of giving birth in health facilities due to a fear of contracting COVID 19 (Moyer

et al., 2020). In a study done in Ethiopia 29.3% of the participants had six or more face-to-face antenatal visits (Tadesse, 2020).

In studies carried out by Kassie et al., (2021); Gebreegziabher et al., (2022) the utilization of four or more ANC visits increased over the same period with this increase attributed to the possibility of the first three visits having occurred before the COVID-19 pandemic. Regional variations in ANC service utilization were observed in a study conducted in Rwanda (Wanyana et al., 2021) which reported the highest declines in the Western Province which is close to the Democratic Republic of Congo (DRC), where a huge number of COVID-19 cases were reported. This same pattern was also observed in the Gombe region in DRC, which recorded a decrease in ANC visits of approximately 45% (Hategeka et al., 2021). In an interrupted time series analysis conducted in the Democratic Republic of Congo, (Hategeka et al., 2021) ANC first standard visits increased modestly following the start of the pandemic but did not increase significantly over time as compared to the trends that would have been expected without COVID-19.

In a study done in Morocco the findings revealed a substantial reduction in the antenatal recruitment rate (-16.14%), the recruitment rate of women in antenatal visits at the 1st quarter of pregnancy (-2.09%), antenatal visit completion rate (-18.10 %), the average number of visits/pregnancies (-15.65%), high-risk pregnancy screening rate (-3.47%) (Tikouk et al., 2023). In a study of several sub-Sahara Africa countries during 2018–2020, among six hospitals recorded a total of 57,075 antenatal care visits, 38,706 institutional deliveries, 312,961 vaccinations. The COVID-19 period was associated with decreases in vaccinations (–575 vaccinations, $P < 0.0001$); however, no

statistically significant effects were found for antenatal care visits (P = 0.71) or institutional deliveries (P = 0.14) (Quaglio et al., 2022).

In a study from Kenya women who delivered during COVID-19 had significantly higher odds of delayed ANC initiation (i.e., beginning ANC during the second vs first trimester) than women who delivered before (aOR 1.72, 95% CI 1.24 to 2.37), although no significant differences were detected in the odds of attending 4–7 or ≥8 ANC visits versus <4 ANC visits, respectively (aOR 1.12, 95% CI 0.86 to 1.44 and aOR 1.46, 95% CI 0.74 to 2.86) (Landrian et al., 2022). Interestingly, despite finding that women were more likely to delay ANC initiation during the pandemic, they found no difference in the total number of visits attended among women who delivered before COVID-19 to those who delivered during. Therefore, it was a possible that concern regarding potential risks of COVID-19 infection to them or their foetus motivated women to seek frequent care once care was initiated to properly monitor development. It also may have occurred despite fears around contracting COVID-19, as well as health facilities being closed or too busy, as potential barriers to accessing or attending ANC.

2.1.4.3 ANC visits in Uganda during the COVID 19 pandemic

By 25 March, the COVID 19 created a ban on group gatherings and non-essential internal travel, recommendation to work from home and close schools (Umviligihozo et al., 2020; Hale et al., 2020). The travel restrictions included the cessation of all public transport and a ban on the use of private vehicles without explicit permission to travel (Pallangyo et al., 2020). At a local level, non-essential visits to facilities were prohibited for a short time

(from 23 March 2020 to 21 April 2020), which included the closure of ANC and childhood immunisation clinics. The Ugandan Ministry of Health (MoH) implemented screening for symptomatic patients and any patient who was positive was admitted to a dedicated ward.

Despite calls for the prioritisation of antenatal services and the consideration of the indirect impacts of lockdown restrictions on maternal health, (Menendez et al., 2020; Ogunkola et al., 2021) data from a study by Burt et al., highlight that maternity, sexual and reproductive health, new-born and child health services were severely affected by COVID-19 restrictions (Burt et al., 2021). Similarly, facilities in rural Uganda saw a drop in antenatal attendances, as have hospitals in Kenya, Ethiopia, Zimbabwe and Rwanda in the first months of the pandemic (Shikuku et al., 2020; Murewanhema et al., 2020; Ahmed et al., 2020; Abdela et al., 2020).

In a study by Ombere there was no increase in maternal mortality despite fewer ANC attendances. This could be due to more women delivering in the community, as has been reported elsewhere; (Ombere, 2021) however, the delivery rates remained constant throughout the period of study, suggesting that there may be alternative reasons for the findings, including increased maternal and neonatal morbidity, rather than mortality. Furthermore, while the number of ANC visits decreased, the delivery rate did not decline by the same amount. Kawempe hospital caters for a population of 2 million people, yet the number of women attending four ANC visits remained below 90%, although the majority of women in Kampala still deliver in hospital (94%) (Uganda Bureau of Statistics, 2018). This data suggested that ANC and hospital

delivery were not seen as a continuum of care in the setting and could account for the phenomenon of increased deliveries despite fewer ANC visits.

In one study that was conducted by Burt and colleagues in Uganda, a total shutdown in ANC services during the first 4 weeks of the country's COVID-19 lockdown (March 23 to April 21, 2020) led to 539 fewer ANC visits in the first 3 months of the lockdown compared with the 9 months before the lockdown (Burt et al., 2021).

2.2 Perception and satisfaction of women on the maternal healthcare received during the COVID 19 pandemic

Women's' perception and satisfaction with care is a key component of quality of care (WHO, 2016), with evidence showing that poor perception and satisfaction during facility-based births can have a negative effect on future use by affected women and other women within their sphere of influence (Afulani *et al.,* 2017; Ishola *et al.,* 2017). However, women's' perception and satisfaction with care, including reproductive, maternal, new-born and child health (RMNCH) services, is multi-faceted and influenced by diverse factors (Balogun *et al.,* 2021).

In a Malaysian study reported that pregnant women expressed high satisfaction with the maternal healthcare services received during the pandemic critical phase (Syed *et al.,* 2021). Nevertheless, the study was performed during the initial pandemic stages, when Malaysian maternal healthcare services were not severely affected. There was no ANC appointment rescheduling during the initial phase of the pandemic. Furthermore, the major difference was that the health clinics required pregnant

women to adhere to COVID-19 standard operating processes (Bahari *et al.,* 2024). However, the Malaysian situation deteriorated since then, where there were markedly increased cases of COVID-19, and intensive care unit admission was required by many pregnant women.

A study reported overall satisfaction regarding virtual prenatal care during the pandemic (Bahari *et al.,* 2024). The pregnant women in those study tended to be satisfied with their pandemic virtual prenatal care experiences. Nevertheless, they also generally favoured in-person care in the absence of a pandemic. In-person visits might be preferred, as they establish more optimal conditions to become familiar with the health care provider and present the opportunity for a more thorough physical examination (routine measurement of blood pressure, foetal heartbeat detection), which virtual prenatal care might limit (Liu *et al.,* 2021).

In a study done in Pakistan over 70% of the women were satisfied with care during delivery. It further showed significant association with comfortable delivery position and movement, confidence and trust in staff, involvement in decision-making, and staff assistance in a reasonable amount of time (Jafree *et al.,* 2021). This finding was supported with developing world literature which suggests that the most pertinent determinants of satisfaction of women in labour is the healthcare provider's interpersonal behaviour in terms of courteousness, promptness, and respect (Srivastava *et al.,* 2015). The finding also showed that during delivery time, the services of healthcare staff are more important for women than the fear of COVID-19 (Jafree *et al.,* 2021). In a study carried out in South Africa, the empirical findings confirmed that the birthing experiences of women differed in terms of their birth plans and the

clinic/hospital preventive measures. Some women expressed satisfaction in their birthing experiences, while others did not due to various reasons. Some participants reported the unavailability of social support, which negatively affected the experiences of women in Mmabatho (Mohulatsi *et al.,* 2023). In a study by Janevic *et al.,* (2021) of the women who delivered during the peak-pandemic response period (3/15/2020–5/11/2020), only 43.1% reported high birth satisfaction, compared to 58.6% in the pre-peak period (01/01/2020–3/14/2020).

In a study by Jafree *et al.,* (2021) over 75.8% of the women were satisfied with pre-delivery care services. It further showed significant association with better staff and administration services, greater involvement in decision-making of women, and timely room registrations and admissions. This finding was supported with other developing world literature which showed that better hospital services at pre-delivery time improve the satisfaction for women (Sayed *et al.,* 2018). In a study done in Pakistan over 60.0% of the women were satisfied with maternal post-delivery care. It further showed significant association with greater provision of necessary information and explanations, relevant to post-care (Jafree *et al.,* 2021). This finding corroborated with international results that post-delivery satisfaction of women is high when they are provided with adequate information about postnatal care for self and new-born (Karkee *et al.,* 2014).

In a study done in Nigeria the mean women's satisfaction score was 43.25 (SD: 6.28) out of a possible score of 57. Satisfaction scores for the interpersonal aspects of care were statistically significantly lower in the PHCs and general hospitals compared to teaching hospitals (Balogun *et al.,* 2021).

The study further found out that age was a particularly significant predictor of satisfaction with RMNCH services, whereby being over 30 years of age was significantly associated with an increased women's satisfaction score (ß = 1.80, 95%CI: 1.10–2.50) (Balogun *et al.,* 2021). Several studies conducted in Lagos have shown that factors such as age, marital status, occupation, income, and type of facility are significant predictors of satisfaction with health care (Ogunyemi *et al.,* 2019; Akinyinka *et al.,* 2019). In a study done in Australia, a higher proportion of women agreed that they were satisfied with the quality of care they received, than midwives and midwifery students who were reflecting on their satisfaction with the care they were able to provide (Bradfield et al., 2021).

2.3 Constraints that prevented women from using maternity services during the pandemic

2.3.1 Dread of contracting COVID-19at medical institutions

During the lockdown, the main preventer to accessing maternal health and child healthcare services was the fear of contracting COVID-19 at the facilities. Because it was widely reported that medical personnel were acquiring COVID-19, thus, health facilities were seen as high-risk locations (Akaba *et al.,* 2022). Due to the lack of information regarding the availability of health services during the lockdown, service users were also anxious about whether care providers would be able to attend to them at the facilities.

Several studies in Ethiopia and Kenya had participants attributing their low usage of ANC service to the fear of contracting COVID-19 if they visited health facilities (Hailemariam et al., 2021; Olouch – Aridi et al., 2020;

Lusambili et al., 2020). In a study by Landrian et al., found that fear of contracting the virus at the healthcare facility (Landrian et al., 2022).

According to Ahmed et al., it is reasonable to assume that several factors, including fear of contracting COVID-19, might have contributed to limiting access to care (Ahmed et al., 2021). During earlier outbreaks in West Africa and South Korea, fear of nosocomial transmission was identified as a challenge to healthcare access. (Lee & Park, 2018; Elston et al., 2016). Fear and anxiety about the persistence of the pandemic may also be responsible for women's reluctance to seek antenatal health services (Tikouk et al., 2023).

2.3.2 Movement restrictions and harassment by security personnel

Movement restrictions and harassment by security personnel: There was a curfew in effect during the lockdown, which came with other restrictions on movement. To enforce the shutdown, security personnel were stationed at checkpoints along the road (Akaba *et al.,* 2022).

Government COVID-19 movement restrictions and the subsequent limited transport access which led to the high cost of transport are believed to have played a role in reducing mothers' access to ANC services (Temesgen et al., 2021; Hailemariam et al., 2021; Banke-Thomas et al., 2022). It is reasonable to assume that several factors, including restrictive measures, might have contributed to limiting access to care (Ahmed et al., 2021).

The national guidance at the start of the pandemic resulted in the closure of public transport, which a large proportion of patients rely on to access healthcare facilities, hence impacting their physical ability to access care, as

has been reported in Africa (Ogunleye et al., 2020) and in other countries. (Wanyana et al., 2021; Shikuku et al., 2020).

2.3.3 Facility based factors

A study in Ethiopia attributed the reduced ANC utilization during the COVID-19 pandemic to facility barriers related to poor logistics, staff redeployment, and lack of incentive package affecting the provision of ANC service during the pandemic. The study further reveals that pregnant women cited their perception of poor quality of care during COVID-19 as the main reason for not attending ANC as they felt pregnancy-related issues during the pandemic may not receive sufficient attention as before (Hailemariam et al., 2021).

In hospitals, there were lengthy waiting times and a daily patient capacity limit: Hospital waiting times have grown as a result of the safety measures implemented to protect patients and staff. Additionally, several institutions decreased the amount of medical staff attending to patients, which led to additional delays in obtaining care (Akaba et al., 2022).

In a study by Landrian et al., nearly half of women who delivered during COVID-19 reported that the pandemic affected their ability to access or attend ANC. The most common reasons cited were related to facility factors, with over 80% combined reporting that COVID-19 affected their ANC use due to facilities being closed (Landrian et al., 2022). During earlier outbreaks in West Africa and South Korea, closure of healthcare facilities was identified as a challenge to healthcare access. (Lee & Park, 2018; Elston et al., 2016).

2.3.4 Distance to facility

A community-based cross-sectional study conducted in Ethiopia presented distance to health facilities as a challenge. Mothers who travelled more than 30– 60minutes and 60–90minutes to reach health facilities were 63% and 90% less likely to utilize maternal health services during the COVID-19 pandemic than those who travelled less than 30minutes to reach the health facility, respectively (Temesgen et al., 2021).

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study area

The study was carried out in Entebbe which sits on the northern shores of Lake Victoria, the largest lake in Africa (Fig 3.1). The town is situated in Uganda's Wakiso District which is approximately 34 kilometres (21 miles) south of the capital Kampala. It is located on a peninsula in Lake Victoria with a total area of 56.2 square kilometres (21,7 square miles), of which water makes up 21,7 square miles,. 0°03'00.0"N and 32°27'36.0"E are the coordinates of Entebbe (Latitude:0.0500; Longitude:32.4600). A few of the neighbourhoods of Entebbe City are Bugonga, Katabi, Nsamizi, Kitooro, Lunnyo, and Lugonjo.

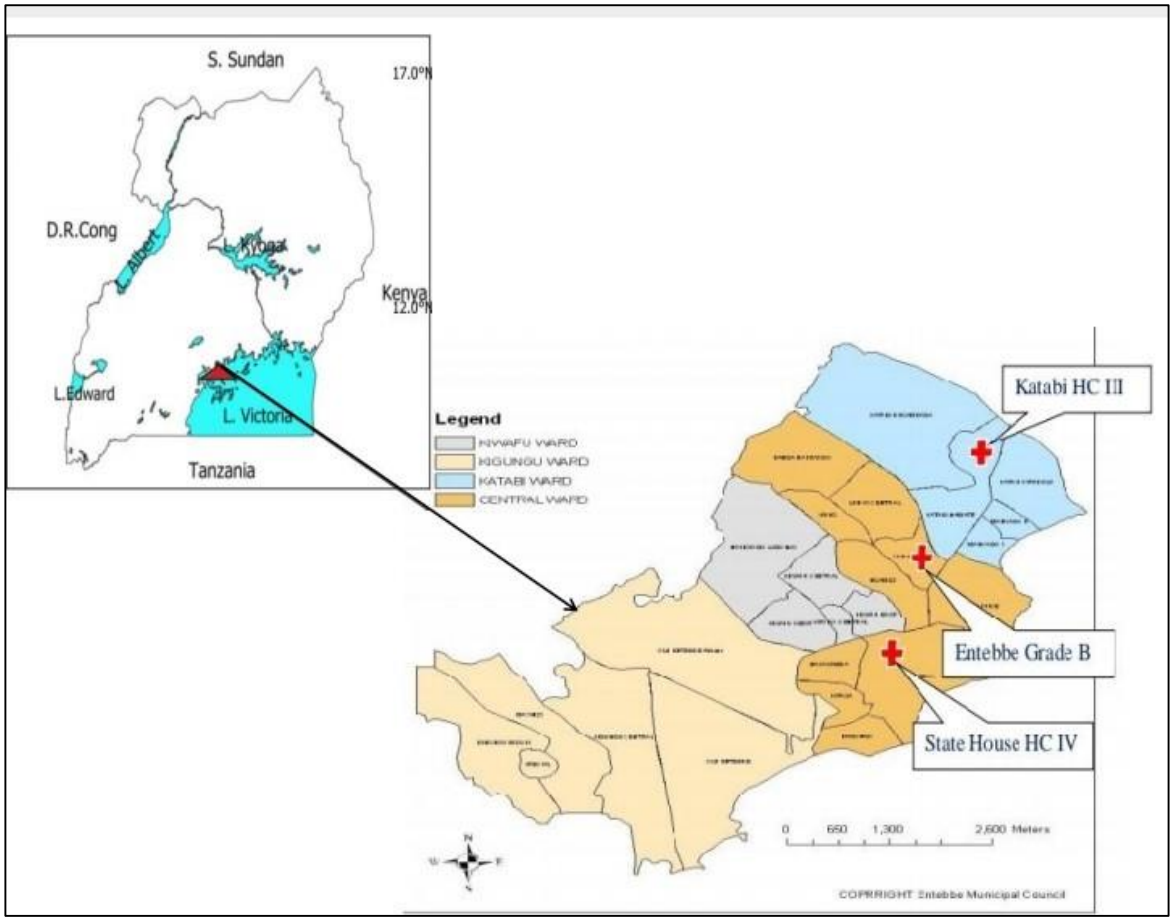


Figure 3.1: Map of study area

3.2 Study population

Participants that acquired Antenatal Care (ANC) in medical facilities were the target population, and all women who began attending ANC in Entebbe grade B Hospital, Katabi Health Centre III and State House Health Centre IV by December 2019 were included in the research population.

3.3 Study design

The utilisation of maternal health and child health services at certain healthcare institutions was examined using a facility-based cross-sectional design by collecting information from the Entebbe Municipality in Uganda, using both quantitative and qualitative methods.

Simple random sampling was used to select participants from the health facilities. The sample was selected with the review of the inclusion criteria.

3.4 Sample size determination

The actual sample that was studied was acquired from the sample size determination formulae as described by (Cochran formulae) since the total population size of the mothers was not known. Below; illustrates the sampling size computation procedure that was followed in this study.

By taking into account the number of mothers (65.0%) who had at least one antenatal care visit during their most recent or on-going pregnancy in Uganda by Ssetaala *et al.,* (2020). Therefore, the proportion of utilisation of maternal services was P = 0.65

Z= standard normal distribution (Z=1.96)

Margin of error (d) = 5%

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

$$n = \frac{(1.96)^2\ X\ 0.65(1-0.65)}{0.05^2}$$

$$n = \frac{3.8416\ X\ 0.65\ X\ 0.35}{0.0025}$$

$$n = \frac{3.8416\ X\ 0.2275}{0.0025}$$

$$n = \frac{0.874}{0.0025}$$

$$n = 349.6$$

Including the 5% non-response rate = $5\% * 349.6$

$$= 17.5$$

$$= 349.6 + 17.5$$

$$= \mathbf{367}\ \boldsymbol{participants}$$

Therefore, the sample size of the study was 367 participants from Entebbe municipality.

Each facility acquired a sample size through the equal distribution method where by each health facility acquired 122 respondents except for Entebbe hospital that had an extra one respondents due to the assumption that it contains a bigger population that received services at the facility. The distribution was presented in the Table 3.1 below.

Table 3.1: Distribution of sample size among health facilities

Health facility	**Number of participants**
Entebbe Grade B Hospital	123
Katabi HC III	122
State House HC IV	122
Total	**367**

3.5 Data collection methods and instruments

The data from the study was collected using questioning, reviewing of documents and interviews to collect information from the mothers after obtaining consent from the participants.

3.5.1 Determination of the level at which women attended the antenatal

3.5.1.1 Document Review Guide

Document Review Guide was utilised retrospectively and data from the mothers was collected by use of the Electronic Medical Records (EMR) system. The records for the months of January to December 2020 were checked for the monthly trends on attendance of the antenatal visits in accordance to the WHO during the COVID 19 pandemic.

3.5.2 Evaluation of women's perception and satisfaction with antenatal care provided to them during the pandemic period

3.5.2.1 Validated quality of prenatal care questionnaire (QPFQ)

Two sections were used in the QPFQ

Section one of the questionnaire contained mainly the demographic characteristics of the mothers giving a detail of the age, gender, education level, marital status, parity, housing status, and religion.

Section two of the quality of prenatal care questionnaire (QPFQ), was used to assess women's perspectives and satisfaction with the antenatal care given to them throughout the pandemic era, resulted in satisfaction with antenatal care. The inquiries from Factor one: Information Sharing (which includes nine items on how antenatal care providers respond to inquiries, protect patient privacy, and guarantee women understand why tests are performed and what the results mean) and Factor five: Accessibility in particular (including 5 items assessing whether women know how to contact the antenatal care provider and how available the maternity staff or prenatal care provider is to respond to

questions, concerns or needs). On a 5-point Likert scale, "Strongly disagree" was rated lowest and "Strongly agree" was rated highest.

Included was the WHO Antenatal Care Assessment of Perceived Quality of Care survey to determine general satisfaction (PQCQ). The number of antenatal appointments in relation to the expected number (answers ranged from more than expected to less than expected to about the same as expected), the gap between check-ups (answers ranged from too short to too long to about right), and the length of time spent in the hospital while waiting for an appointment (answers ranged from too long to too short to the right amount) (response options were: would like a lot more time; would like a little more time; time is about right).

3.5.3 Identification of the factors that hindered the women's utilisation of maternal healthcare and child care services during the pandemic at Entebbe municipality

3.5.3.1 Interview Guide

The Interview Guide was used to conduct an interview to determine the problems women encountered when seeking maternity healthcare and child care services at Entebbe grade B Hospital, Katabi Health Centre III and State House Health Centre IV during the COVID – 19 epidemic.

3.6 Data analysis

3.6.1 Determination of the level at which women attended the antenatal

The Nvivo software was applied in the analysis. The data was presented in form of graphs. Each data point in a graph represented the count for the variable being studied.

3.6.2 Evaluation of women's perception and satisfaction with antenatal care provided to them during the pandemic period

SPSS version 20 was used in the analysis. The demographic characteristics were presented as percentages, frequencies and Standard Deviation (SD) and displayed as tables and graphs.

Categorical variables were stated in terms of numbers; quantitative variables were provided in terms of frequencies and percentages. The possible factors of satisfaction with maternal and child care services offered to women during COVID – 19 were identified using a binary logistic regression. All significances were based on a 5% level of significance and a 95 percent confidence interval.

3.6.3 Identification of the factors that hindered the women's utilisation of maternal healthcare and child care services during the pandemic at Entebbe municipality

All responses were read in detail and coded. Content analysis was used to create themes for each participant. Analysis was performed using Nvivo software. The main themes that emerged were presented in a table.

3.7 Inclusion and Exclusion Criteria

3.7.1 Inclusion criteria

- Mothers who were above the age of 18 years.
- Mothers that had children or a child of age 1 – 3 years.
- Mothers who gave acceptance to participate in the study.

3.7.2 Exclusion criteria

- Mothers who were not at the facilities during data collection.
- Mothers who never received antenatal care and child care at the health facilities.

3.8 Quality control issues

Data was collected with the aid of two research assistants who were first oriented and trained on the need of the study and variables in the study, the components of the questionnaire and data quality management. The pre-test of the tools was done at Kawempe General Hospital, Uganda. This helped provide clarity, on the consistency of the instrument in the tools.

3.9 Ethical considerations

The study received ethical approval and authorization to perform the study at the hospital from The AIDS Support Organisation Research Ethical Committee with reference number TASO-2022-178. All participants were asked to sign written informed consent forms before answering the questionnaire, participant's confidentiality was maintained, and they took part in the study voluntarily.

CHAPTER FOUR

PRESENTATION AND DISCUSSION of RESULTS

4.0 Introduction

In this chapter, the study results were described, and the findings presented in tables, histograms and graphs. The chapter is detailed with the demographic characteristics of the mothers, trends of Antenatal Care (ANC) visits among mothers during the COVID 19 pandemic, perception and satisfaction with ANC and factors that hindered utilisation of Maternal and Child Health (MCH) services.

4.1 Determining of the level at which women attended the antenatal care visits during the pandemic

4.1.1 First trimester (1st trimester) to the health facility

The figure 4.1 below showed that before the COVID – 19 pandemic there was a high and gradual increase of mothers who attended antenatal visits in the first trimester from January to February 2020 more so in Entebbe Hospital (6.9%) and Katabi HC III (1.4%) however, there was a decrease in State House HC IV (8.5%) attendance. There was a gradual decrease (31.9%) from February to June 2020 for those utilising Entebbe hospital while an increase (16.1%) for those that used antenatal from Katabi HC III and State House HC IV (15.8%). A slight increase at Entebbe Hospital (27.4%) and State House HC IV (6.9%) was noted from October to November 2020 however, a sharp decrease was noted at Katabi HC III (34.3%) in the similar months. There was

a gradual decrease (15.7%) at Entebbe hospital from November to December 2020 for those that utilised the services in their first trimester.

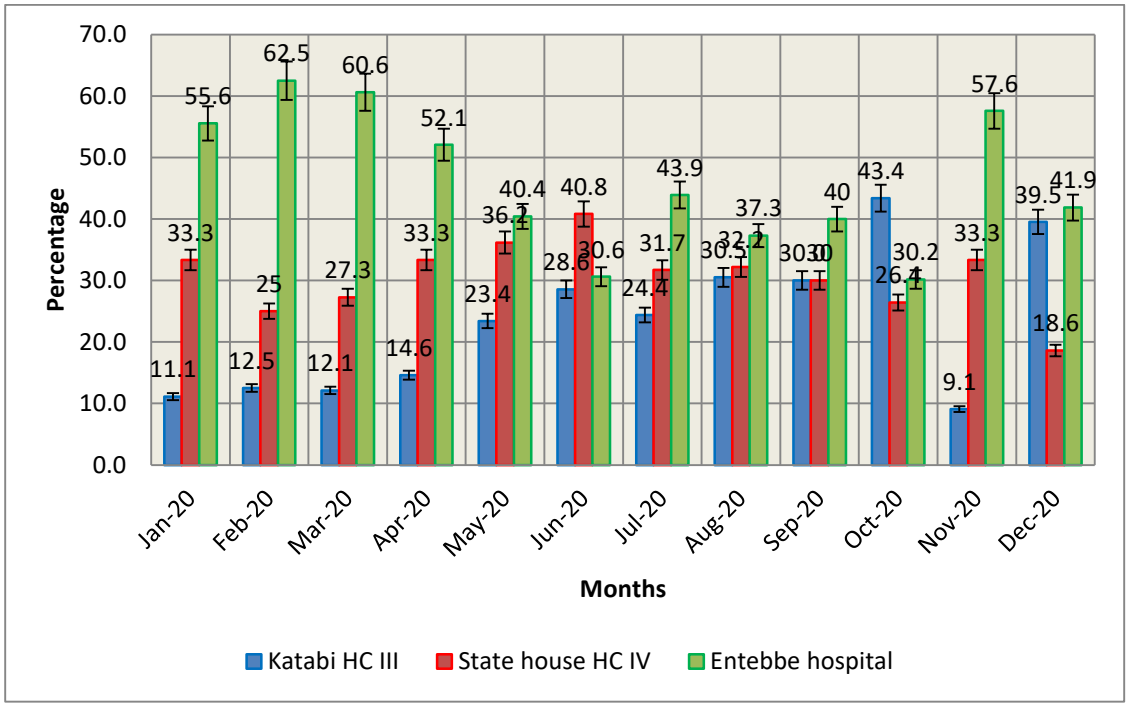


Figure 4.1: Monthly distribution of first trimester by health facility

4.1.2 Four (4) antenatal visits at the health facility

The figure 4.2 below showed a gradual decrease (35.0%) of those who attended all four (4) antenatal visits from January to May 2020 more so in Entebbe Hospital and however there was an increase in State House HC IV (15.3%) and Katabi HC III (19.7%) for the same months. There was a gradual increase from May to June 2020 for those utilising Entebbe Hospital (22.1%) while a decrease for those who used antenatal from Katabi HC III (11.4%) for the same year and an alternating increase and decrease from May to September 2020 for those utilising State House HC IV (7.1%). A decrease (12.9%) from June to September 2020 for those at Entebbe Hospital while an increase (14.0%) from October to December 2020, however an increase

(7.7%) was noted at Katabi HC III from the months of June to August 2020 and a decrease (8.2%) in the months of August to November 2020 respectively.

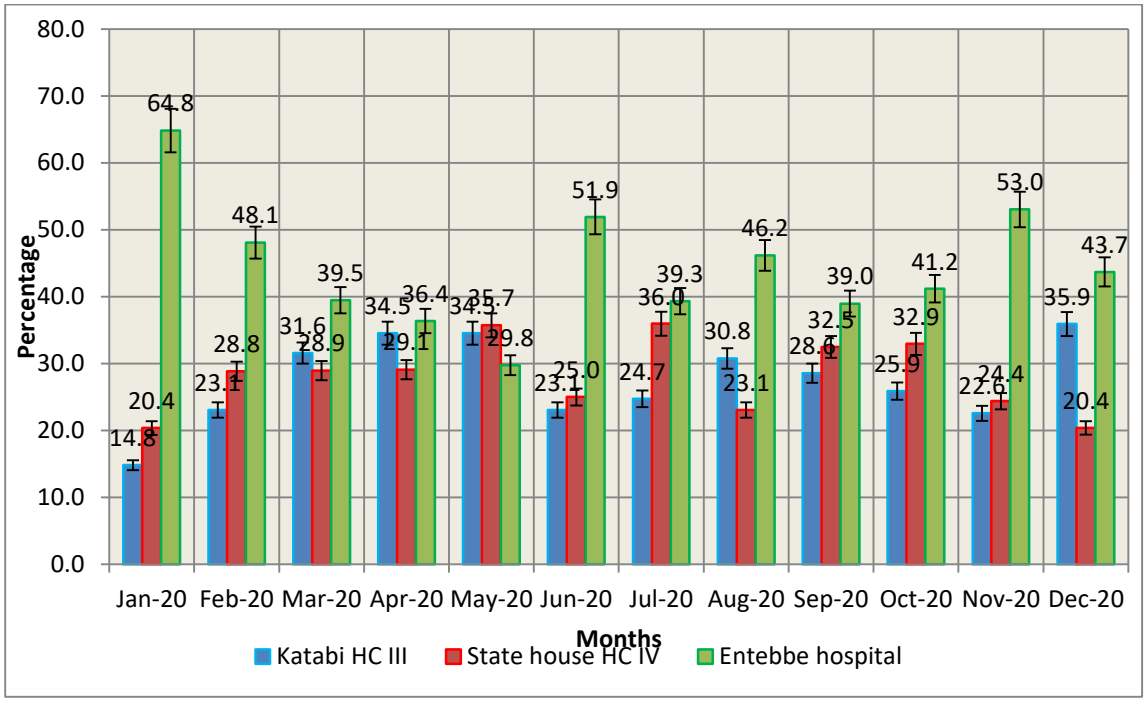


Figure 4.2: Monthly distribution of four antenatal visits by health facility

4.1.3 Over four visits (4+ visits) of antenatal care

The Figure 4.3 below showed a decrease (29.2%) from January to March 2020 and increase (8.1%) from March to April 2020 for those at Entebbe Hospital while a decrease (19.3%) from January to February 2020 and an increase (31.9%) from February to June 2020 for those who used State House HC IV, however an increase (31.5%) and was noted at Katabi HC III from the months of January to March 2020 and decrease (30.7%) from March to August 2020. There was an increase (13.4%) from April to July 2020 for those at Entebbe Hospital while a decrease (0.9%) from June to August 2020 for those who

used State House HC IV, an increase (20.7%) was noted at Katabi HC III from the months of August to December 2020.

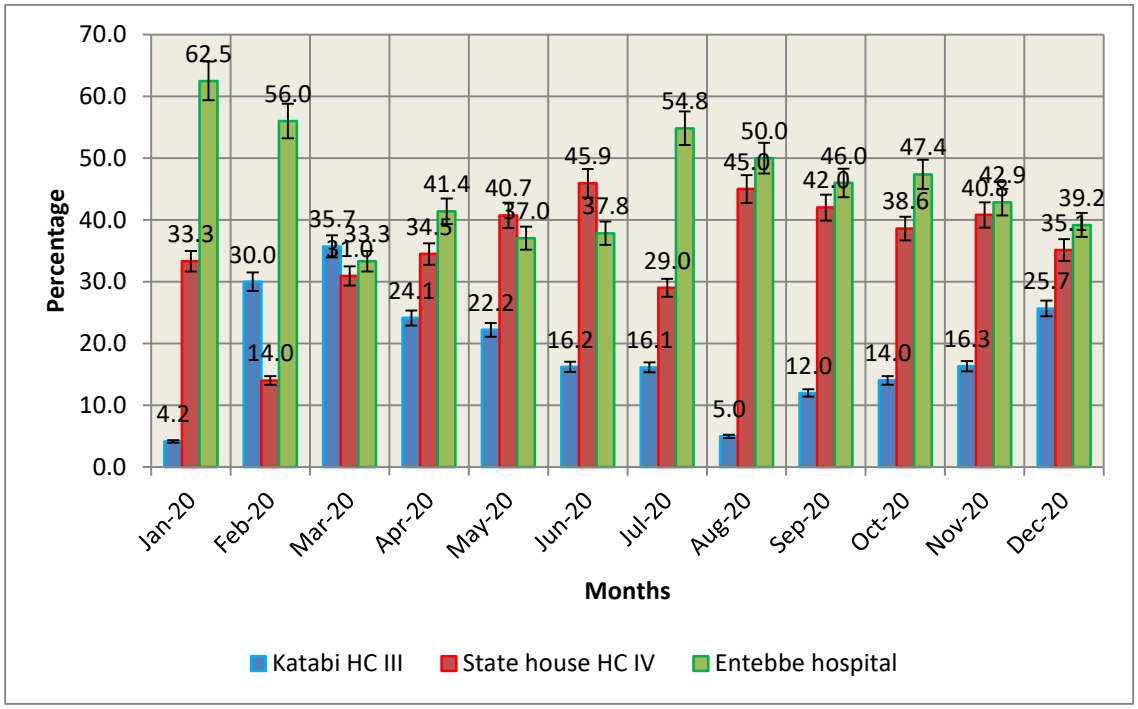


Figure 4.3: Monthly distribution of over four visits by health facility

4.1.4 Eight antenatal visits (8 contacts) at the health facility

The study showed a decrease (75.0%) from February to April 2020 at Entebbe Hospital while an increase (16.7%) from January to March 2020 for those who used State House HC IV (Figure 4.4).

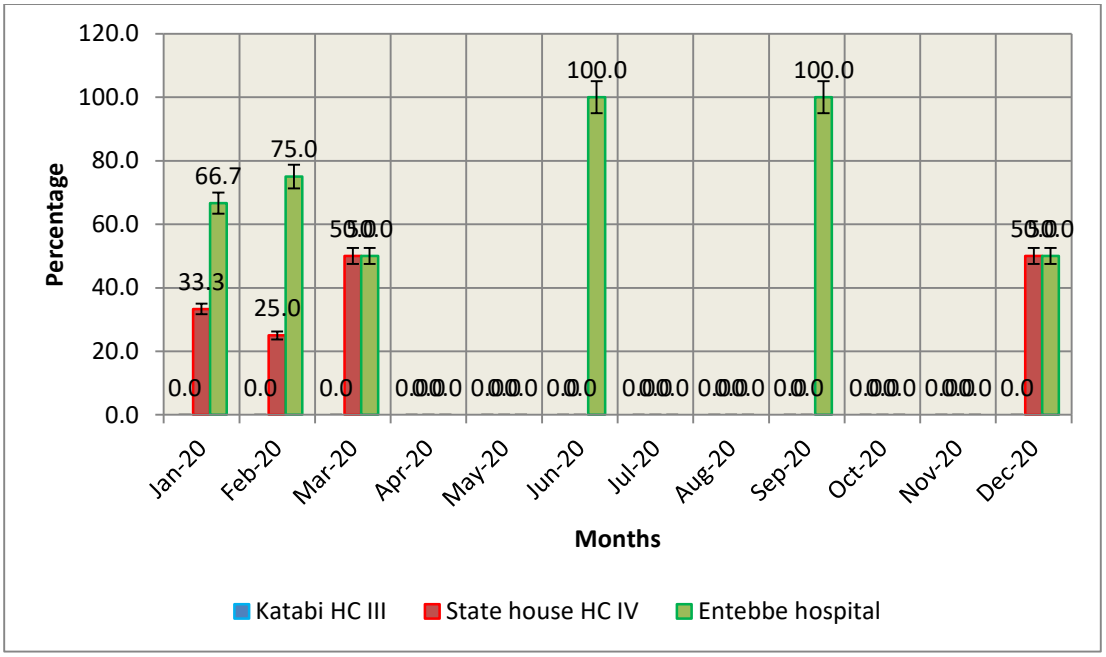


Figure 4.4: Monthly distribution of eight visits by health facility

4.1.5 Deliveries at the facilities

The Figure 4.5 below showed a decrease (47.0%) from February to December 2020 for those at Entebbe Hospital while an increase (23.7%) from February to December 2020 for those who used State House HC IV. There was an increase (29.6%) from January to June 2020 and a decrease (17.1%) from June to September 2020 for those that used Katabi HC III.

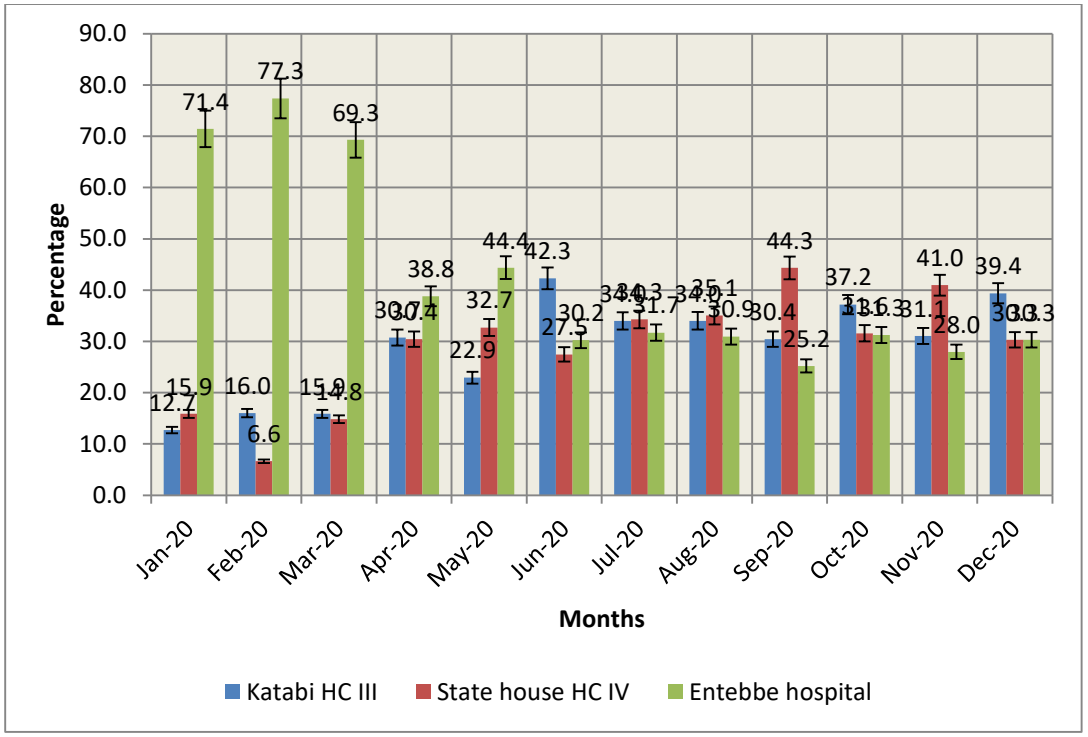


Figure 4.5: Monthly distribution of deliveries by health facilities

4.2 Women's perception and satisfaction with antenatal care provided to them during the pandemic period

4.2.1 Demographic characteristics of participants

A total of 306/337 mothers participated in the study by fully filling in the questionnaires giving a feedback rate of 90.8%. Table 4.1 showed that majority of the participants 40.2% were in the age group of 20 – 29 years. Majority of the participants 74.5% were married. This results revealed that the participants were still in their reproductive age meaning there is need to educate and protect them on their reproductive health. Majority of the study participants 33.3% had attained secondary level education. Majority of the participants 32.4% had 2 children. This result revealed that the participants had quite some level literacy. Majority of the study participants 61.8% were unemployed and therefore were categorised as stay home mothers who waited

to only to be provided for by their husbands for sustenance. Majority of the participants 35.0% travelled a distance of 1 – 3 km to the nearest health facility. This result revealed that majority of the participants majorly acquired services at facilities nearer to them. Majority of the study participants 23.2% earned < 50,000. This result reveals the low economic status of the participants in the study.

Table 4.1: Demographic characteristics of the participants

Variable	Category	Katabi HC III (n = 92)	State house HC IV (n = 103)	Entebbe hospital (n = 111)	Total (n = 306)
		n(%)	n(%)	n(%)	n(%)
Age	< 20 years	13 (14.1)	9 (8.7)	10 (9.0)	32 (10.5)
	20 - 29 years	44 (47.8)	43 (41.7)	36 (32.4)	123 (40.2)
	30 - 39 years	26 (28.3)	35 (34.0)	46 (41.4)	107 (35.0)
	40 - 49 years	9 (9.8)	13 (12.6)	13 (11.7)	35 (11.4)
	>= 50 years	0 (0.0)	3 (2.9)	6 (5.4)	9 (2.9)
Marital status	Single	11 (12.0)	5 (4.9)	6 (5.4)	22 (7.2)
	Married	68 (73.9)	77 (74.8)	83 (74.8)	228 (74.5)
	Divorced	2 (2.2)	10 (9.7)	8 (7.2)	20 (6.5)
	Widowed	7 (7.6)	9 (8.7)	10 (9.0)	26 (8.5)
	Separated	4 (4.3)	2 (1.9)	4 (3.6)	10 (3.3)
Education level	Master’s degree	0 (0.0)	2 (1.9)	8 (7.2)	10 (3.3)
	Bachelor’s degree	7 (7.6)	10 (9.7)	22 (19.8)	39 (12.7)

	Diploma	5 (5.4)	10 (9.7)	26 (23.4)	41 (13.4)
	Secondary	48 (52.2)	32 (31.1)	22 (19.8)	102 (33.3)
	Primary	18 (19.6)	25 (24.3)	20 (18.0)	63 (20.6)
	No education	14 (15.2)	24 (23.3)	13 (11.7)	51 (16.7)
Parity	1	29 (31.5)	18 (17.5)	21 (18.9)	68 (22.2)
	2	41 (44.6)	34 (33.0)	24 (21.6)	99 (32.4)
	3	15 (16.3)	29 (28.2)	40 (36.0)	84 (27.5)
	4	4 (4.3)	14 (13.6)	14 (12.6)	32 (10.5)
	> 4	3 (3.3)	8 (7.8)	12 (10.8)	23 (7.5)
Occupation	Employed	28 (30.4)	30 (29.1)	59 (53.2)	117 (38.2)
	Unemployed	64 (69.6)	73 (70.9)	52 (46.8)	189 (61.8)
Religion	Catholic	26 (28.3)	32(31.1)	28 (25.2)	86 (28.1)
	Anglican	25 (27.2)	32 (31.1)	24 (21.6)	81 (26.5)
	Muslim	15 (16.3)	14 (13.6)	12 (10.8)	41 (13.4)
	Born again	13 (14.1)	13 (12.6)	18 (16.2)	44 (14.4)
	SDA	9 (9.8)	11 (10.7)	18 (16.2)	38 (12.4)
Residence	Rural	66 (71.7)	70 (68.0)	63 (56.8)	199 (65.0)
	Urban	26 (28.3)	33 (32.0)	48 (43.2)	107 (35.0)

Family size	1 - 2	21 (22.8)	24 (23.3)	25 (22.5)	70 (22.9)
	3 - 4	46 (50.0)	35 (34.0)	40 (36.0)	121 (39.5)
	5 - 6	17 (18.5)	19 (18.4)	29 (26.1)	65 (21.2)
	> 6	8 (8.7)	25 (24.3)	17 (15.3)	50 (16.3)
Distance to facility	1 - 3 km	67 (72.8)	12 (11.7)	28 (25.2)	107 (35.0)
	4 - 6 km	17 (18.5)	27 (26.2)	36 (32.4)	80 (26.1)
	7 - 9 km	8 (8.7)	40 (38.8)	31 (27.9)	79 (25.8)
	> = 10 km	0 (0.0)	24 (23.3)	16 (14.4)	40 (13.1)
Monthly income	< 50,000	42 (45.7)	18 (17.5)	11 (9.9)	71 (23.2)
	50,000 - 150, 000	27 (29.3)	15 (14.6)	14 (12.6)	56 (18.3)
	150,000 - 250,000	5 (5.4)	31 (30.1)	26 (23.4)	62 (20.3)
	250,000 - 350,000	9 (9.8)	17 (16.5)	21 (18.9)	47 (15.4)
	350,000 - 450,000	8 (8.7)	12 (11.7)	25 (22.5)	45 (14.7)
	> 450,000	1 (1.1)	10 (9.7)	14 (12.6)	25 (8.2)
History of Still birth	No	74 (80.4)	81 (78.6)	85 (76.6)	240 (78.4)
	Yes	18 (19.6)	22 (21.4)	26 (23.4)	66 (21.6)
Used services	No	61 (19.9)	51 (16.7)	73 (23.9)	185 (60.5)
	Yes	31 (10.1)	52 (17.0)	38 (12.4)	121 (39.5)

4.2.2 Mothers' utilisation responses of information sharing during the COVID – 19 pandemic

Table 4.2 below presented the mothers' perception of information sharing on maternal health and child healthcare services between healthcare workers and mothers receiving maternal and child health care services during the COVID-19 pandemic. Concerning the giving of adequate information about prenatal test and procedures, majority 32.7% of the participants disagreed with it while the least 8.5% strongly agreed with being given adequate information about prenatal test and procedures. Majority 36.3% of the participants agreed with always being given honest answers to their questions while the least 8.8% were neutral towards always being given honest answers to their questions.

Majority 31.0% of the participants disagreed with everyone involved in their prenatal care receiving the important information about them while the least 4.9% of the participants strongly agreed with everyone involved in their prenatal care receiving the important information about them. Majority 36.6% of the participants agreed with the fact that the results of tests were explained to them in a way they could understand while the least 13.7% strongly agreed with the fact that the results of tests were explained to them in a way they could understand. Most of the participants 25.5% disagreed with their providers giving straightforward answers to their questions while the least 3.9% strongly agreed with their providers giving straightforward answers to their questions (Table 4.2).

Majority 32.0% of the participants agreed with their prenatal care providers giving them enough information to make decisions for themselves while the

least 6.9% of the participants strongly agreed with their prenatal care providers giving them enough information to make decisions for themselves. Majority 34.3% of the participants agreed with their prenatal care providers keeping their information confidential while the least 5.9% strongly agreed with their prenatal care providers keeping their information confidential. Majority 25.2% of the participants disagreed with fully understanding the reasons for blood work and other tests their prenatal care providers ordered for them while the least 5.2% strongly agreed with fully understanding the reasons for blood work and other tests their prenatal care providers ordered for them (Table 4.2).

Table 4.2: Mothers' utilisation responses on information sharing during COVID 19 pandemic

Information sharing	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I was given adequate information about prenatal test and procedures	71 (23.2)	100 (32.7)	62 (20.3)	47 (15.4)	26 (8.5)
I was always given honest answers to my questions	40 (13.1)	50 (16.3)	27 (8.8)	111 (36.3)	78 (25.5)
Everyone involved in my prenatal care received the important information about me	63 (20.6)	95 (31.0)	63 (20.6)	70 (22.9)	15 (4.9)
I was screened adequately for potential problems with my pregnancy	59 (19.3)	78 (25.5)	56 (18.3)	87 (28.4)	26 (8.5)
The results of tests were explained to me in a way I could understand	46 (15.0)	47 (15.4)	59 (19.3)	112 (36.6)	42 (13.7)
My providers gave straightforward answers to my questions	76 (24.8)	78 (25.5)	66 (21.6)	74 (24.2)	12 (3.9)
My prenatal care providers gave me enough information to make decisions for myself	60 (19.6)	67 (21.9)	60 (19.6)	98 (32.0)	21 (6.9)
My prenatal care providers kept my information confidential	56 (18.3)	66 (21.6)	61 (19.9)	105 (34.3)	18 (5.9)
I fully understood the reasons for blood work and other tests my prenatal care providers ordered for me	65 (21.2)	77 (25.2)	65 (21.2)	83 (27.1)	16(5.2)

4.2.3 Mothers' utilisation responses on availability of health personnel during the COVID – 19 pandemic

Table 4.3 below presented the mothers' perception on availability of health care workers during the COVID-19 pandemic. Majority 29.1% of the participants disagreed with knowing how to get in touch with their prenatal care provider(s) while the least 11.4% of the participants strongly agreed with knowing how to get in touch with their prenatal care provider(s).

Majority 24.2% of the participants strongly disagreed with someone in their prenatal care provider's office always returning their calls while 13.4% of the participants strongly agreed with someone in their prenatal care provider's office always returning their calls. Majority 34.0% of the participants strongly disagreed with their prenatal care provider(s) being available when they had questions concerns while 5.9% of the participants strongly agreed with their prenatal care provider(s) being available when they had questions concerns (Table 4.3).

Majority 34.6% of the participants strongly disagreed with always reaching someone in the office/clinic if they needed something while the least 2.3% of the participants strongly agreed with always reaching someone in the office/clinic if they needed something. More than a quarter of the participants strongly disagreed with reaching their prenatal care provider(s) by phone when necessary while 5.2% of the participants strongly agreed with reaching their prenatal care provider(s) by phone when necessary (Table 4.3).

Table 4.3: Mothers' utilisation responses on availability of health personnel during the COVID 19 pandemic

Availability	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I knew how to get in touch with my prenatal care provider(s)	74 (24.2)	89 (29.1)	64 (20.9)	44 (14.4)	35 (11.4)
Someone in my prenatal care provider's office always returned my calls	74 (24.2)	63 (20.6)	74 (24.2)	54 (17.6)	41 (13.4)
My prenatal care provider(s) was available when I had questions concerns	104 (34.0)	86 (28.1)	45 (14.7)	53 (17.3)	18 (5.9)
I could always reach someone in the office/clinic if I needed something	106 (34.6)	85 (27.8)	59 (19.3)	49 (16.0)	7 (2.3)
I could reach my prenatal care provider(s) by phone when necessary	107 (35.0)	79 (25.8)	49 (16.0)	55 (18.0)	16 (5.2)

4.2.4 Mothers' satisfaction with maternal and child healthcare services during COVID 19 pandemic

Table 4.4 presented that majority 46.7% of the participants needed more check – ups while the least 15.4% of the participants preferred fewer check –ups. Majority 47.4% of the participants received less than the expected number of appointments or check – ups while the least 19.3% of the participants received more than the expected number of appointments or check – ups.

Majority 44.4% of the participants noted that the time between scheduled appointments was too long of these most were from State House HC IV 54.4% and Entebbe Hospital 44.1% while 20.3% of the participants noted that the time between scheduled appointments was too short. Majority 58.8% of the participants were dissatisfied with time spent waiting in the hospital during antenatal visits of which most of them were from Katabi HC III 60.9% and State House HC IV 58.3% while 41.2% of the participants were satisfied with time spent waiting in the hospital during antenatal visits (Table 4.4).

Majority 41.2% of the participants preferred a little more time during their appointments more so at State House HC IV 46.6%, while 22.2% of the participants preferred a lot more time during their appointments. Majority 51.6% of the participants were satisfied with the antenatal care they received at the health facility more so Katabi HC III 60.9% while the least 20.6% of the participants were very satisfied with the antenatal care they received at the health facility of which majority were from State House HC IV 25.2% (Table 4.4).

Approximately half of the participants 51.0% would come back to the same health facility of which Katabi HC III and Entebbe Hospital had the highest number with 57.6% and 56.8% respectively while 18.3% wouldn't come back to the same health facility. More than half of the participants 53.9% would recommend the health facility to a relative or friend of which Katabi HC III and Entebbe Hospital had the highest number with 58.7% and 66.7% respectively while 19.6% wouldn't recommend the health facility to a relative or friend of which Katabi HC IV had 12.0%, State House HC IV had 31.1% and Entebbe Hospital had 15.3% (Table 4.4).

Table 4.4: Perception and satisfaction of women with antenatal care services

Variable	Categories	Katabi HC III (n = 92)	State house HC IV (n = 103)	Entebbe hospital (n = 111)	Total (n = 306)
		n(%)	n(%)	n(%)	n(%)
Are you happy about the number of antenatal check-ups you have had?	Would like more check - ups	52 (56.5)	27 (26.2)	64 (57.7)	143 (46.7)
	Would prefer fewer check - ups	10 (10.9)	19 (18.4)	18 (16.2)	47 (15.4)
	Number just right	30 (32.6)	57 (55.3)	29 (26.1)	116 (37.9)
Have the number of antenatal appointments or check-ups been	More than you expected	16 (17.4)	27 (26.2)	16 (14.4)	59 (19.3)
	Less than you expected	42 (45.7)	50 (48.5)	53 (47.7)	145 (47.4)
	About the same as you expected	34 (37.0)	26 (25.2)	42 (37.8)	102 (33.3)
Has the time between check-ups been	Too short	23 (25.0)	18 (17.5)	21 (18.9)	62 (20.3)
	Too long	31 (33.7)	56 (54.4)	49 (44.1)	136 (44.4)
	About right	38 (41.3)	29 (28.2)	41 (36.9)	108 (35.3)
Are you happy with the time you wait in hospital [before being seen] for appointment?	No	56 (60.9)	60 (58.3)	64 (57.7)	180 (58.8)
	Yes	36 (39.1)	43 (41.7)	47 (42.3)	126 (41.2)
Do you have enough time with the doctor/nurse/midwife	Would like a lot more time	21 (22.8)	26 (25.2)	21 (18.9)	68 (22.2)
	Would like a little more time	30 (32.6)	48 (46.6)	48 (43.2)	126 (41.2)

during your appointments?	Time is about right	41 (44.6)	29 (28.2)	42 (37.8)	112 (36.6)
How satisfied are you with the	Very satisfied	22 (23.9)	26 (25.2)	15 (13.5)	63 (20.6)
antenatal care you have	Satisfied	56 (60.9)	37 (35.9)	65 (58.6)	158 (51.6)
received in this hospital?	Not satisfied	14 (15.2)	40 (38.8)	31 (27.9)	85 (27.8)
Would you come back to the	No	11 (12.0)	25 (24.3)	20 (18.0)	56 (18.3)
same unit/hospital?	Yes	53 (57.6)	40 (38.8)	63 (56.8)	156 (51.0)
	Don't know	28 (30.4)	38 (36.9)	28 (25.2)	94 (30.7)
Would you recommend the	No	11 (12.0)	32 (31.1)	17 (15.3)	60 (19.6)
unit to a relative or friend?	Yes	54 (58.7)	37 (35.9)	74 (66.7)	165 (53.9)
	Don't know	27 (29.3)	34 (33.0)	20 (18.0)	81 (26.5)

4.2.5 Mothers' satisfaction towards maternal and child health services

Table 4.5 below showed that 42.4% of the participants had age of 20 – 29 years, 73.4% were married and 32.9% had secondary education were satisfied with the maternal health and child health care services more during the COVID – 19 pandemic. Participants, with two children acquired the most satisfaction from the maternal health and child healthcare services 32.3%. The unemployed women 60.8% and those from rural areas 65.2% were satisfied with the maternal health and child health care services more during the COVID – 19 pandemic. The participants that were of catholic faith 28.5% were satisfied with the maternal health and child health care services more during the COVID – 19. Over 40.5% of the participants that had a family size of 3 – 4 people at home were satisfied with the maternal health and child health care services more during the COVID – 19 pandemic. Over 38.0% of the participants that travelled a distance of 1 – 3 km were satisfied with the maternal health and child health care services more during the COVID – 19 pandemic. Over 24.7% of the participants with the least income earned were satisfied with the maternal health and child healthcare services. Over 78.5% of the participants with no still birth history were satisfied with the maternal health and child health care services more during the COVID – 19 pandemic.

Table 4.5: Predictors of satisfaction among women utilising maternal and child health services

		Level of satisfaction				Odds ratio (95% CI)	P - value
		Very satisfied (n = 63)	Satisfied (n = 158)	Not satisfied (n = 85)	Total (n = 306)		
Variables	**Categories**	**n (%)**	**n (%)**	**n (%)**	**n (%)**		
Age	< 20 years	7 (11.1)	15 (9.5)	10 (11.8)	32 (10.5)	9.125 (0.582 – 143.069)	0.115
	20 - 29 years	25 (39.7)	67 (42.4)	31 (36.5)	123 (40.2)	4.226 (0.309 – 57.774)	0.280
	30 - 39 years	22 (34.9)	58 (36.7)	27 (31.8)	107 (35.0)	2.710 (0.211 – 34.859)	0.444
	40 - 49 years	8 (12.7)	11 (7.0)	16 (18.8)	35 (11.4)	25.206 (1.633 – 389.133)	**0.021**
	>= 50 years	1 (1.6)	7 (4.4)	1 (1.2)	9 (2.9)	1.	1.
Marital status	Single	4 (6.3)	13 (8.2)	5 (5.9)	22 (7.2)	2.380 (0.162 – 34.914)	0.527
	Married	45 (71.4)	116 (73.4)	67 (78.8)	228 (74.5)	2.710 (0.235 – 31.231)	0.424
	Divorced	3 (4.8)	10 (6.3)	7 (8.2)	20 (6.5)	2.486 (0.163 – 37.946)	0.513
	Widowed	6 (9.5)	15 (9.5)	5 (5.9)	26(8.5)	0.936 (0.063 – 13.964)	0.962
	Separated	5 (7.9)	4 (2.5)	1 (1.2)	10 (3.3)	1.	1.
Education level	No education	10 (15.9)	25 (15.8)	16 (18.8)	51 (16.7)	1.894 (0.715 – 5.017)	0.198
	Master's degree	2 (3.2)	7 (4.4)	1 (1.2)	10 (3.3)	0.422 (0.031 – 5.688)	0.516
	Bachelor's degree	12 (19.0)	12 (7.6)	15 (17.6)	39 (12.7)	5.142 (1.532 – 17.263)	**0.008**

	Diploma	9 (14.3)	23(14.6)	9(10.6)	41 (13.4)	1.113 (0.366 – 3.385)	0.851
	Secondary	20 (31.7)	52 (32.9)	30 (35.3)	102 (33.3)	1.893 (0.793 – 4.519)	0.150
	Primary	10 (15.9)	39 (24.7)	14 (16.5)	63 (20.6)	1.	1.
Parity	1	13 (20.6)	39 (24.7)	16 (18.8)	68 (22.2)	4.278 (0.402 – 45.546)	0.228
	2	22 (34.9)	51 (32.3)	26 (30.6)	99 (32.4)	5.402 (0.515 – 56.679)	0.160
	3	18 (28.6)	42 (26.6)	24 (28.2)	84 (27.5)	4.483 (0.575 – 34.963)	0.152
	4	6 (9.5)	15 (9.5)	11 (12.9)	32 (10.5)	4.998 (0.741 – 33.701)	0.098
	> 4	4 (6.3)	11 (7.0)	8 (9.4)	23 (7.5)	1.	1.
Occupation	Employed	23 (36.5)	62 (39.2)	32 (37.6)	117 (38.2)	0.962 (0.500 – 1.850)	0.907
	Unemployed	40 (63.5)	96 (60.8)	53 (62.4)	189 (61.8)	1.	1.
Religion	Catholic	14 (22.2)	45 (28.5)	27 (31.8)	86 (28.1)	1.761 (0.394 – 7.864)	0.458
	Anglican	22 (34.9)	40 (25.3)	19 (22.4)	81 (26.5)	1.273 (0.271 – 5.995)	0.760
	Muslim	9 (14.3)	24 (15.2)	8 (9.4)	41 (13.4)	0.858 (0.163 – 4.513)	0.857
	Born again	8 (12.7)	22 (13.9)	14 (16.5)	44 (14.4)	1.395 (0.286 – 6.802)	0.681
	SDA	7 (11.1)	18 (11.4)	13 (15.3)	38 (12.4)	1.638 (0.320 – 8.391)	0.553
	Orthodox Christian	3 (4.8)	9 (5.7)	4 (4.7)	16 (5.2)	1.	1.
Residence	Rural	40 (63.5)	103 (65.2)	56 (65.9)	199 (65.0)	0.743 (0.381 – 1.450)	0.384
	Urban	23 (36.5)	55 (34.8)	29 (34.1)	107 (35.0)	1.	1.
Family size	1 - 2	19 (30.2)	38 (24.1)	13 (15.3)	70 (22.9)	0.503 (0.104 – 2.437)	0.393
	3 - 4	22 (34.9)	64 (40.5)	35 (41.2)	121 (39.5)	0.586 (0.128 – 2.683)	0.491

	5 - 6	12 (19.0)	33 (20.9)	20 (23.5)	65 (21.2)	0.823 (0.221 – 3.066)	0.772
	> 6	10 (15.9)	23 (14.6)	17 (20.0)	50 (16.3)	1.	1.
Distance to facility	1 - 3 km	22 (34.9)	60 (38.0)	25 (29.4)	107 (35.0)	0.376 (0.140 – 1.010)	0.052
	4 - 6 km	17 (27.0)	46 (29.1)	17 (20.0)	80 (26.1)	0.312 (0.112 – 0.872)	**0.026**
	7 - 9 km	20 (31.7)	35 (22.2)	24 (28.2)	79 (25.8)	0.710 (0.262 – 1.925)	0.500
	> = 10 km	4 (6.3)	17 (10.8)	19 (22.4)	40 (13.1)	1.	1.
Income per month	< 50,000	16 (25.4)	39 (24.7)	16 (18.8)	71 (23.2)	0.759 (0.167 – 3.444)	0.721
	50,000 - 150,000	13 (20.6)	30 (19.0)	13 (15.3)	56 (18.3)	1.012 (0.214 – 4.793)	0.988
	150,000 - 250,000	11 (17.5)	30 (19.0)	21 (24.7)	62 (20.3)	1.467 (0.344 – 6.258)	0.605
	250,000 - 350,000	7 (11.1)	26 (16.5)	14 (16.5)	47 (15.4)	1.013 (0.223 – 4.595)	0.986
	350,000 - 450,000	10 (15.9)	21 (13.3)	14 (16.5)	45 (14.7)	1.397 (0.298 – 6.549)	0.672
	> 450,000	6 (9.5)	12 (7.6)	7 (8.2)	25 (8.2)	1.	1.
Still birth history	No	51 (81.0)	124 (78.5)	65 (76.5)	240 (78.4)	1.007 (0.476 – 2.131)	0.985
	Yes	12 (19.0)	34 (21.5)	20 (23.5)	66 (21.6)	1.	1.
Missed ANC	No	26 (41.3)	61 (38.6)	34 (40.0)	121 (39.5)	1.084 (0.574 – 2.049)	0.803

	Yes	37 (58.7)	97 (61.4)	51 (60.0)	185 (60.5)	1.	1.
Current service	Immunisation	27 (42.9)	62 (39.2)	23 (27.1)	112 (36.6)	0.616 (0.182 – 2.081)	0.435
	Check - up	12 (19.0)	37 (23.4)	24 (28.2)	73 (23.9)	1.074 (0.304 – 3.788)	0.912
	Fe supplements	7 (11.1)	15 (9.5)	14 (16.5)	36 (11.8)	1.927 (0.475 – 7.821)	0.359
	Treatment	13 (20.6)	34 (21.5)	16 (18.8)	63 (20.6)	1.078 (0.299 – 3.894)	0.909
	Family planning	4 (6.3)	10 (6.3)	8 (9.4)	22 (7.2)	1.	1.

4.2.5.1 Predictors for mothers' satisfaction towards maternal and child health services

From the table 4.5 above, the predictors for the satisfaction of mothers when utilising the maternal health and child healthcare services were maternal age, maternal education level and distance of residence from health facilities. When the maternal age, was considered, it revealed that mothers that had an age of 40 – 49 years were 25.206 times more likely to get satisfied while utilising maternal and child care services than those with an age of > = 50 years at a 95%(CI:1.633 – 389.133). Maternal education level showed that, mothers who had attained a bachelor's degree as the highest level of education were 5.142 times more likely to get satisfied while utilising maternal and child care services than those with primary level at a 95%(CI:1.532 – 17.263). Distance of residence from health facilities indicated that, mothers who had travelled a distance of 4 – 6 km were 0.312 times less likely to get satisfied while utilising maternal and child care services than those that travelled > = 10 km at a 95%(CI:0.112 – 0.872).

4.3 Hindrances to women's utilisation of maternal healthcare and child care services during the pandemic

4.3.1 Demographic characteristics of the interviewees

Demographic characteristics of study participants were presented in Table 4.6. Majority 46.4% of the interviewees were aged 31 – 40 years followed by 20 – 30 years 21.4%. This results revealed that the participants were still in their reproductive age meaning there is need to educate and protect them on their reproductive health. Regarding parity majority 35.7% of the participants had

three children. This result reveals the high level of fertility exhibited by the participants. Majority 42.9% of the participants were from Entebbe Hospital and majority 64.3% were from the rural areas of the district. This result revealed the need for the people residing in the rural areas to move to the urban areas to seek for medical services.

Table 4.6: Demographic characteristics of interviewees

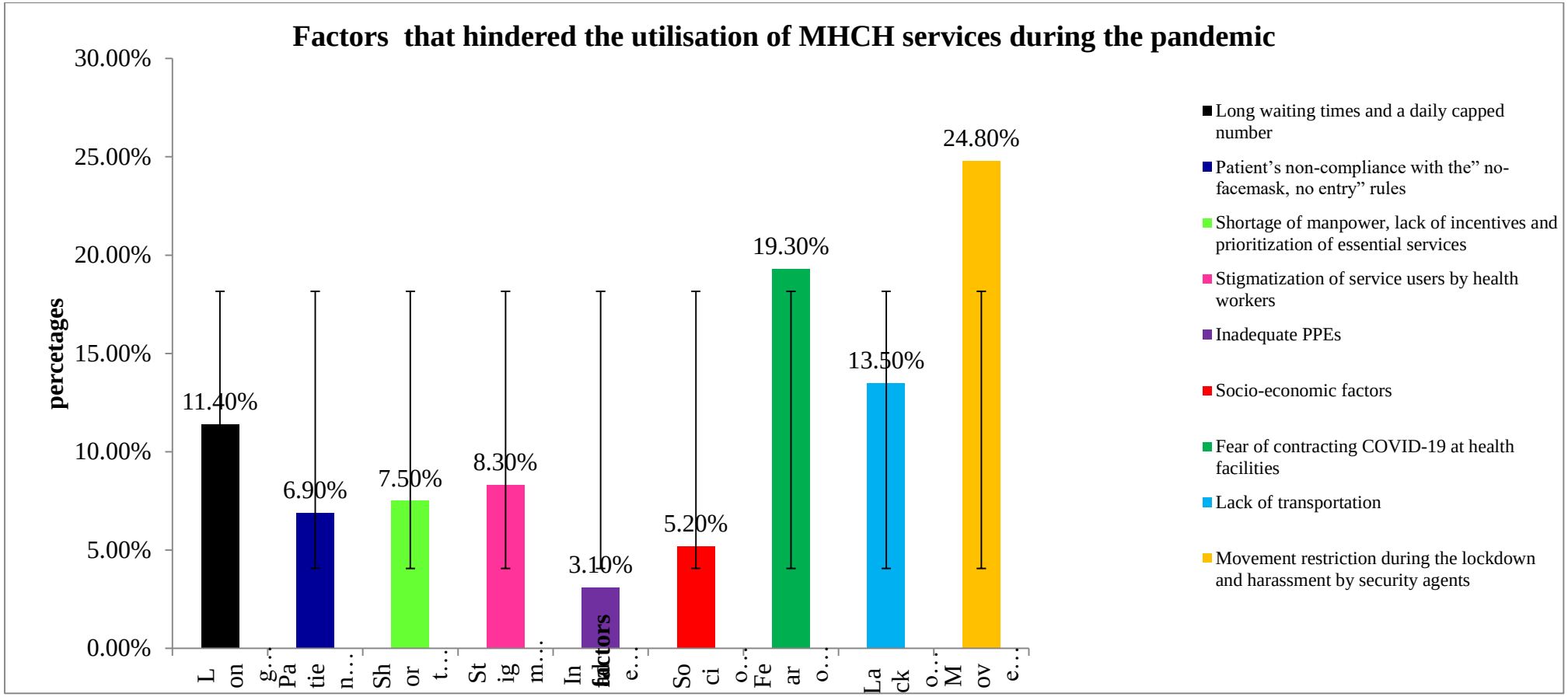
Demographics	Frequency	Percentage
Age		
< 20 years	1	3.6
20 - 30 years	6	21.4
31 - 40 years	13	46.4
41 - 50 years	5	17.9
> 50 years	3	10.7
Parity		
1	6	21.4
2	7	25.0
3	10	35.7
> 3	5	17.9
Health facility		
Katabi HC III	7	25.0
State house HC IV	9	32.1
Entebbe hospital	12	42.9
Place of residence		
Urban	10	35.7
Rural	18	64.3

4.3.2 Factors that hindered the women's utilisation Maternal Health Care services during the COVID – 19 pandemic

The qualitative factors associated with utilisation of maternal and child healthcare services were broken down into three domains: seeking care, reaching care and receiving care. Direct quotes from the interviews were used to illustrate the results at each level.

Table 4.7: Factors that influenced the decision making of women to utilise maternal and child health services during the COVID 19 pandemic

Theme	Sub – theme
Seeking care	Socio-economic factors
	Fear of contracting COVID-19 at health facilities
Reaching facility	Lack of transportation
	Movement restriction during the lockdown and harassment by security agents
Receiving care	Long waiting times and a daily capped number
	Patient's non-compliance with the" no- facemask, no entry" rules
	Shortage of manpower, lack of incentives and prioritization of essential services
	Stigmatization of service users by health workers
	Inadequate PPEs


Factors that hindered the utilisation of MHCH services during the pandemic
percetages
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
11.40%
6.90%
7.50%
8.30%
3.10%
5.20%
19.30%
13.50%
24.80%
Long waiting times and a daily capped number
Patient's non-compliance with the" no-facemask, no entry" rules
Shortage of manpower, lack of incentives and prioritization of essential services
Stigmatization of service users by health workers
Inadequate PPEs
Socio-economic factors
Fear of contracting COVID-19 at health facilities
Lack of transportation
Movement restriction during the lockdown and harassment by security agents

4.3.2.1 Seeking care

4.3.2.1.1. Socio-economic factors

Decision making around care seeking was influenced by socio-economic drivers of utilization. Small scale trading was the means of livelihood of women in this communities; during the nationwide COVID -19 lockdown, majority of these women were unable to sell their products and did not have disposable funds to buy some of the MCH requirements.

The consequence of this was the inability of women to afford some of the MCH requirements. The increased cost of transportation during the lockdown period and the associated cost of procuring personal protective equipment (PPEs) like face masks required to visit health facilities constrained the capacity of mothers to access care.

Response: …if I don't go to the market, how can I get money to buy food for my children, how can I get money to go for that antenatal. **(State house HC IV, 31 – 40 years, multigravida)**

Response: I go to the market to sell… so this really affected me and if I didn't have money to eat meaning I didn't have money to go to the health facility with better services and some of these health facilities don't provide all the medicine required, therefore they refer you to a clinic or pharmacy to buy the medication which is expensive for me since we were not working during the lockdown,…..therefore I stayed home ad used traditional herbs **(Katabi HC III, 31 – 40 years, multigravida)**

4.3.2.1.2. Fear of contracting COVID-19 at health facilities

The fears of contracting COVID-19 at the facilities were key barriers to access to MCH services during the lockdown. Health facilities were viewed as high-risk centres for contracting COVID-19 as it was widely publicized that health workers were contracting the virus.

Response: I stopped coming to the hospital because I was afraid of this virus, I had that the health facility had a section where COVID – 19 patients were kept and tested this left me thinking that I could easily acquire this deadly virus. **(Entebbe hospital, 31 – 40 years, multigravida)**

Response: ……I was anxious when my son just started little fever. I felt like taking him to the health facility but from what I would hear about the transmission of the virus, I asked myself 'How can I even be able to access the health facility because how will I even go to the health facility? What am I going to do there? Would there be health personnel to attend to me? And when I get there, won't I be infected? 'therefore, I decided not go to the health facility **(State house HC IV, > 50 years, multigravida)**

4.3.2.2 Reaching care

4.3.2.2.1. Transportation difficulties

Some mothers experienced significant delays in reaching health facilities due to transportation difficulties. The number of transportation service providers significantly reduced during the lockdown.

Potential mothers who had vehicles found it easier to visit the health facilities than those who were dependent on public transportation. Public transportation

became more expensive and difficult to access especially in remote or rural areas and some people had to resort to walking to facilities to access care.

Response: ……Especially at the pandemic period, there are times that even some of the mothers will come from far places, you'll see them looking so fagged out. One day, I encountered a mother who had also come for antenatal. I asked her 'what's the problem?' She said 'I couldn't access any transportation to come, therefore I had to walk over 10 kilometres to be here' **(Entebbe hospital, 41 – 50 years, multigravida)**

Response: When I was pregnant what prevented me from seeking healthcare was the COVID 19 total lockdown, where by cars and all means of transport were not allowed to move yet I had to walk a distance of over 17 km to the nearest health facility in the condition of pregnancy I was in…… **(State house HC IV, 20 – 30 years, primigravida)**

4.3.2.2.2. Movement restriction during the lockdown and harassment by security agents

During the lockdown, in addition to the restriction of movement, there was a curfew in place. Security agents were positioned on the road at checkpoints to enforce the lockdown. There was a consensus among mothers utilising MCH services that these checkpoints created delays in reaching the health facilities.

There were reported cases of security agencies harassing commuters and requesting for proof that they were going to the health facilities in some instances. The experience with security agents varied as some mothers, mentioned that although there were delays at checkpoints, they could continue

their journey after they presented their letter from the Resident District Commissioner (RDC).

Response: Yeah, I experienced some delays to acquire antenatal care because of the check points. The check points, you know were many on the roads. **(Katabi HC III, 31 – 40 years, multigravida)**

Response: I came to the hospital and had to go home and bring my things back, but I was stopped miles away from the check point and they were requesting a letter of clearance from the RDC, so this delayed me in getting my routine antenatal check-up. **(State house HC IV, 31 – 40 years, primigravida)**

Response: The lockdown affected everybody. Once you have your facemask and you tell them (security agents) you're heading to the hospital, and you have any evidence as in any card to show them they will believe it. Then they'll allow you to pass but apart from that, if you just tell them you're heading to hospital, they will not allow you but once you insist, they'll rather take you there by themselves. Yes, the last time I was sick, the last time, that was exactly what they did to us, I was telling them that my baby was sick (laughter). Yes, but my baby was not feeling fine, they refused because that was my first time. They had to take us there by themselves and I said it's even better it's like they know I don't have enough money to pay the boda boda. They had to take me there by themselves and we saw the doctor and we left, so while coming back still that same road. I had to show them the medicine collected there so that was how they allowed me now. **(Entebbe hospital, 31 – 40 years, multigravida)**

4.3.2.3 Receiving care

Long waiting times and a daily capped number of patients to be attended to

Due to the measures that were instituted to keep women and health workers safe from acquiring COVID – 19 pandemic at the healthcare facilities, waiting time at health facilities increased. In addition, some facilities reduced the number of health personnel attending to women and children and this resulted in further delays in receiving care.

Health facilities capped the number of persons receiving care daily and when the number of persons seeking care exceeded the allotted number, they were turned back and asked to return on a later date. This implied that patients had to visit the facilities very early to be included in the list of patients to be seen each day; this increased waiting time and some patients waited and were not attended to.

Response: Well, the thing is that they used to be many, they attended to us quickly but now they are not attending to us quickly as it used to be. You will stay longer before they attend to you because they are not giving us the care again! There are just two or three personnel that you will see to attend to the large number of women. **(Katabi HC III, 31 – 40 years, multigravida)**

Response: …You get to the health facility around 7am, you'd have to leave around 12pm. I think the healthcare providers there are not enough, we'd have to sit and sit and sit, you know. It's time consuming. That's the only challenge I have! if you gather as early as 6:30am you'd have to stay till

1:30pm sometimes, or 2:30pm which is very frustrating. **(Katabi HC III, 20 – 30 years, primigravida)**

Response: ……that's so frustrating, I came for immunisation for my third born during the first wave of COVID – 19 pandemic and I was told by the nurse that they had allocated numbers to people whose children were supposed to be immunised for that day with the aim to create social distancing to avoid overcrowding at the facility. This really frustrated me since I had travelled a long distance to come and receive the service at the facility. **(State house HC IV, 31 – 40 years, multigravida)**

4.3.2.3.1. Women's non-compliance with the "no- facemask, no entry" rules

Some women reported that when they came to the health facilities without face masks, they were declined treatment, and this caused significant delays in receiving care in instances where these patients could not afford to buy facemasks.

The health facilities were unable to provide face masks for women who were made to buy them at very high costs from hawkers at the health facilities. Therefore, the mothers seeking maternal healthcare services corroborated this and reported that they experienced significant delays due to non-use of face masks.

Some reasons given by women for not wearing facemasks was that they could not afford to buy facemasks, and they felt a chocking sensation when they wore the masks.

Response: … I had travelled to seek treatment at the health facility, but misplaced the facemask I had carried, reaching the health facility gate, I see the notice…… I had only 2,000/= that could return me home after getting the services I had come for therefore I couldn't use even 1,000/= to buy a facemask, and if I could that means I needed to walk all the way back home yet I was pregnant…..I had to go back **(Entebbe hospital, 31 – 40 years, multigravida)**

4.3.2.3.2. Inadequate personal protective equipment (PPEs) and Medical Commodities

The mothers noted that the inadequacy of PPEs affected the capacity of health facilities to respond effectively to the pandemic and maintain optimal service delivery levels since there were fears by health care workers to acquire the COVID – 19 pandemic from the patients. Some women were asked to buy PPEs as part of the service delivery process. This made them restrain from acquiring maternal services not to incur more expenses.

Response: …….during the COVID – 19 pandemic it was really challenging to acquire services at the health facilities, …….imagine I went to the health facility during my first trimester and I found the nurses sited and not handling the mothers who had arrived, I met one of them and she said "there was obviously no personal protective equipment provided to us", so we had to use our personal money… to buy these things for the health workers, to protect them, those that failed to buy were not handled that day, and there was just total lack of leadership at the facility. **(Katabi HC III, 41 – 50 years, multigravida)**

4.3.2.3.3. Stigmatization of women by health workers

Some mothers reported being stigmatized by health workers once they had any symptom that may be associated with COVID – 19 even when they did not have the disease.

The lack of testing capacity in the health facilities worsened these problems as women were denied care in the healthcare facilities until they presented COVID – 19 test results.

Response: I know of a woman who did not receive attention from the health workers because she had cough and difficulty in breathing. They insisted that she must present a COVID-19 test result. At the end of the day, it was a case of cardiac failure and she nearly died. **(State house HC IV, 20 – 30 years, multigravida)**

Response: ……during the COVID – 19 pandemic, people are afraid to come to the health facility, because the health workers would not want to be in their primary place of assignment for fear of COVID 19, coupled with inadequate personal protective equipment for the healthcare workers, ……somebody will present with malaria symptoms, 'eeh this is COVID – 19 ooh' the next thing will be for them to run to their houses in fear, this made me feel insecure and not to visit the health facilities if I presented anything similar to cough or fever. **(Entebbe hospital, 41 – 50 years, multigravida)**

4.3.2.3.4. Shortage of manpower

Majority of the health facilities experienced a significant shortage of health personnel because these staff also doubled as health care providers at the various isolation centres.

Health managers in some facilities were instructed to reduce the number of health personnel involved in the response during the lockdown and this resulted in an increased workload for health workers responding to the healthcare crisis.

This increased workload resulted in delays in the delivery of maternal health and child health services to the mothers at the various health facilities.

Response: That time they declared lockdown, the health facility had to cut down manpower that handled the mothers at the health facility, taking them to be on the COVID – 19 taskforce, this caused delays in receiving of maternal services and long waiting hours, due to the large number of people with reduced service providers…. This was really a frustrating issue. **(Entebbe hospital, 20 – 30 years, primigravida).**

4.4: Discussion

4.4.1 Level at which women attended the antenatal care visits during the pandemic

Despite recommendations for prenatal care to be prioritised and the indirect effects of lockdown limitations on maternal health to be taken into account, (Robertson *et al.,* 2020; Menendez *et al.,* 2020; Ogunkola *et al.,* 2021) this

study showed that maternal healthcare services, were severely affected by Corona Virus Disease (COVID-19) restrictions. Similar to this findings, facilities in rural Uganda saw a drop in antenatal attendances (The independent, 2020) as have hospitals in Kenya, Ethiopia, Zimbabwe and Rwanda during the pandemic (Wanyana *et al.,* 2021; Mwobobia, 2020; Thorne *et al.,* 2020; Tadesse, 2020; Shikuku *et al.,* 2020; Ahmed *et al.,* 2020). The current Uganda clinical guidelines recommend at least four goal oriented Antenatal Care (ANC) visits, far below the current WHO recommendations of at least eight contacts for a positive pregnancy experience and reduction of perinatal mortality (Ssetaala *et al.,* 2020). The ANC visits should provide components of care that include blood pressure measurement, foetal growth monitoring, urine testing, iron-folic acid supplementation, tetanus vaccination, at least three doses of Intermittent Preventive Treatment with Sulphadoxine/pyrimethamine (IPTp), deworming after the first trimester, blood group typing if not done previously, HIV and syphilis testing (Ssetaala *et al.*, 2020).

The aim of preventative services is to reduce maternal morbidity and mortality and any reduction in their availability can give an indication of the potential longer term impacts— including increased rates of maternal anaemia, puerperal sepsis, stillbirth, low birth weight, preterm birth, malaria infection, pre-eclampsia/eclampsia, and mother to child transmission of HIV (WHO, 2016).

Early initiation of ANC (i.e., initiation during the first trimester of gestation) is critical for timely detection and prevention of complications and receiving guidance on proper nutrition, immunisation, treatment for infectious diseases

and the management of other chronic conditions (WHO, 2016). Adequate utilisation of ANC is also an important strategy to improve adverse birth outcomes, including preterm birth, low birth weight, and maternal and infant mortality (WHO, 2016). The study findings show that COVID-19 was associated with delayed initiation of ANC after the first trimester and, consequently, inadequate ANC utilisation. However, for those that attended ANC early it could be possible that concern regarding potential risks of COVID-19 infection to them or their foetus motivated women to seek frequent care once care was initiated to properly monitor development. This may have occurred despite fears around contracting COVID-19, as well as health facilities being closed or too busy, as potential barriers to accessing or attending ANC. Furthermore, it's not known where women received ANC during COVID-19. It is possible that women who delivered during the pandemic were more likely to attend informal care networks like the traditional birth attendants during COVID-19 in instances where they were unable or unwilling to receive ANC within the formal healthcare system.

There are many proposed reasons why the ANC service attendances decreased so drastically during the lockdown. The national guidance at the start of the pandemic resulted in the closure of public transport, which a large proportion of patients rely on to access healthcare facilities, hence impacting their physical ability to access care, as has been reported in Sub Saharan Africa and in other countries (Wanyana *et al.,* 2021; Shikuku *et al.*, 2020; Ahmed *et al.*, 2020; Ombere, 2021). Other themes which have been reported to have affected attendances are the lack of healthcare staff, fear of infection, disruption of services due to COVID-19, lockdown orders restricting

movement and the increased price of transport (Tadesse, 2020; Temesgen *et al.,* 2021). These themes have been highlighted in other studies in the region, (Ahmed *et al.,* 2020; Ogunleye *et al.,* 2020) indicating the need to consider the implications of lockdown measures on public confidence in healthcare in future emergencies. The impacts of such public health measures must also be considered as to how they impact within different socioeconomic contexts, as changes to service use during the pandemic have not been universal, impacting more on those in lower socioeconomic circumstances (Temesgen *et al.,* 2021).

The number of ANC visits decreased, as the lockdown intensified. The delivery rate did not decline so much more so for Katabi HC III and State house HC IV by the same amount except for Entebbe hospital. This study further showed that ANC and hospital delivery are not seen as a continuum of care in these setting and could account for the phenomenon of increased deliveries despite fewer ANC visits. Alternatively, fear of contracting COVID-19 in the community may have influenced the decision to give birth in a hospital environment. The COVID-19 pandemic has impacted on childbirth and deliveries across the region, (Chmielewska *et al.,* 2021) with some reports of decreased hospital deliveries (Wanyana *et al.,* 2021; Thorne *et al.,* 2020). Facilities in Kenya have reported an increase in the number and rate of C sections and fresh stillbirths, (Shikuku *et al.,* 2020) and an increase in maternal deaths, disproportionately affecting adolescents (Shikuku *et al.,* 2020).

Sudden sharp changes in neonatal outcomes have been reported in South Africa, where an increase in neonatal mortality was linked to the disruption of services and diversion of resources due to COVID-19 necessities (Jensen &

McKerrow, 2020). As seen with this study, a hospital in Malawi found an increase in babies born earlier and at lower birth weights, however, the same study did not find this in a Zimbabwean hospital, (Chimhuya *et al.,* 2021) suggesting there are differences between countries that remain unexplained.

4.4.2 Women's perception and satisfaction with antenatal care provided to them during the pandemic period

This study evaluated the perception of women and their level of satisfaction with antenatal care during the COVID – 19 pandemic. Previous research has revealed positive correlation between women' satisfaction and health care utilization (Sehngelia *et al.,* 2021; Fifield *et al.,* 2022).

The result of this study revealed that 39.5% of women fully received the recommended antenatal care services during the COVID-19 pandemic Table 4.4. This finding was lower than the receiving of care before the pandemic mainly because of the movement restrictions, fear of contracting the virus, long waiting time at the health facilities, distance to facility due to limited transport, limited supplies at the facilities and the bad behaviours of the health workers. It was consistent with similar studies (Temesgen et al., 2021; Hailemariam et al., 2021; Banke-Thomas et al., 2022) that found out that government COVID-19 movement restrictions, fear of contracting COVID-19 and the subsequent limited transport access played a big role in reducing mothers' access to ANC services. This finding was lower than in studies done in India (45%) (Chimanker & Sahoo, 2011), Nepal (87%) (Tuladhar & Dhakal, 2011), Nigeria (81.5%) (Fagbamigbe & Idemudia, 2015), Kenya (52%) (Gitonga, 2017) and Ethiopia (66%) (Birmeta *et al.,* 2013). The

observed difference might be due to sociocultural and awareness differences, variations in socio demographic characteristics, and the difference in study period (previous studies were conducted before the COVID-19 pandemic period, unlike the current study). Since in the pandemic period the antenatal care service utilization was found to below this might be due to movement restrictions (Similarly, in Nepal, cases have been reported where, due to a lack of transportation, women developed complications on the way to the hospital and died at the health facility before receiving proper care (Poudel, 2020). This might be because stay-at-home orders lead to greater lost income, reduced purchasing power, and the inability to pay for services doubling the cost of public, which in turn limit utilization of ANC services), fear of infection (Similarly, a survey conducted in Italy among 100 pregnant women showed there was a fear of visiting hospitals for childbirth because they were scared of being infected or feared vertical transmission (Freytas – Tamura, 2020), and economic pressure, greater disruptions to health systems due to workforce and supply chain issues and the repurposing of health workers (in the US, some facilities have converted maternity wards to COVID-19 units, in order to accommodate the increasing number of COVID-19 patients (Stein *et al.*, 2020). In India and Nepal the pandemic also exposed shortfalls in the health system, with the majority of health facilities being ill equipped to deal with the pandemic (Stein *et al.*, 2020; Mohanty, 2020). The situation is harsher in developing countries due to the lack of proper infrastructure and resources (Tikouk *et al.*, 2023). This might be due to health system collapse or intentional choices made in responding to the pandemic, workforce reduction, access reduction, and also some health facility restricted number of ANC visits

due to fear of the pregnant women contracting coronavirus (Hailemariam *et al.,* 2021).

Despite challenges and restrictions, maternity services have had to continue providing a full range of services to the pregnant population. The study findings illustrate that the majority 72.2% of women who participated in this study were satisfied or very satisfied with the antenatal care provided to them during the pandemic Table 4.4. This was similar to studies done in United Kingdom, Sri Lanka, Ethiopia and Nigeria (Meaney *et al.,* 2022; Patabendige *et al.,* 2021; Kebede *et al.,* 2020) and Jafree *et al.,* (2021) who found that over 70% of the women were satisfied with care during delivery. Their study further showed significant association with comfortable delivery position and movement, confidence and trust in staff, and during delivery time, the services of healthcare staff are more important for women than the fear of COVID-19 (Jafree *et al.,* 2021).

The participants were also willing to use the same facility in subsequent pregnancies Table 4.4. It was however observed that the level of satisfaction was not always in tandem with willingness to access the services. A survey suggested that women may generally express satisfaction with the quality of antenatal services despite inconsistencies between received care and their expectations of the facilities (Oladapo *et al.,* 2008). Other authors have stated that client satisfaction may only indicate low expectations from health care services or a desire to please the interviewer, avoid anxieties about provider bias or express feelings driven by cultural perceptions (Nwaeze *et al.,* 2013).

The women in the study would like additional antenatal visits and more time with healthcare professionals during antenatal visits Table 4.4. This was mainly because of the reduction in the time with health workers and the capping of the care seekers to create room for social distance and prevent the spread of the virus at the facilities. This finding was similar to study in the United Kingdom where they found that more than half 53.1% of the participants were not contented with the number of antenatal visits and the time with the doctor for consultations (Meaney *et al.,* 2022). The additions needed could have been due to dissatisfaction with the number of visits done for service utilisation and limited contact time with the health workers, which was mostly linked to COVID-19 related restrictions implemented, which resulted in antenatal appointments and classes being cancelled, postponed. It has been showed that limited face-to-face management and engagement with women by healthcare providers during antenatal appointments may make women more vulnerable, potentially increasing the risk of postpartum depression (Viaux *et al.*, 2020; Oskovi – Kaplan *et al.,* 2020). Several recent studies have shown that the COVID-19 pandemic has aggravated perinatal anxiety and depressive symptoms among pregnant women worldwide (Patabendige *et al.,* 2020; Liu *et al.,* 2020; Ceulemans *et al.,* 2020; Yan *et al.,* 2019).

Specifically, a significant proportion of women viewed waiting time as long Table 4.4. This was because of the fact that the work force was not enough due the health workers fear of contracting the virus from the patients, inadequate personal protective equipment (PPE) for the health workers to use for their safety thus shying away from work, and the Ministry of Health

policies of reducing the work force to ensure social distance at work. These factors coupled with the high number of patients requiring the services made it hard to acquire services due to long queues. This is similar to findings from Kano in Northern Nigeria (Nwaeze *et al.,* 2013). However, studies done in Egypt, Nigeria and India showed that most women considered the time spent at the health facilities to be appropriate either the waiting time to see the physician or waiting time for result of investigation (Montasser *et al.,* 2012; Fawole *et al.,* 2008; Chandwani *et al.,* 2009). The observed difference might be due to variations in sociodemographic characteristics, and the difference in study period (previous studies were conducted before the COVID-19 pandemic period, unlike the current study). Another study demonstrated that customer satisfaction is affected not just by waiting time but by customer expectations or attribution of causes for waiting (Nwaeze *et al.,* 2013). Consequently, one of the issues in queue management is not only the actual amount of time the customer has to wait but also the customer's perceptions of that wait (Nwaeze *et al.,* 2013). The views of the women' about waiting time may be related to the health facilities' location in the most populous part of the country.

One of the main goals of antenatal care is the provision of adequate information that is essential for maintaining and improving pregnancy outcomes. A large proportion of women in this study perceived that their information needs were not satisfactorily met Table 4.2. This was mainly because during the total lockdown when there were no movements the patients could not meet the healthcare workers physically therefore, they had an option than to use electronic forms of communication which were not favourable for

most of the patients since they were of low economic standing and were not up to date with the current technology. This finding was in disagreement with a study by (Montasser *et al.,* 2012) where they found women to have satisfactory information needs, the observed difference might be due to the difference in study period (the previous studies was conducted before the COVID-19 pandemic period, unlike the current study). It should be noted that information "as much as they wanted" would generally be influenced by the social, cultural and educational context of women in these communities. Women only want to receive information that is relevant to their needs, desires and lifestyles and therefore may only perceive information that addresses personal circumstance as useful. In this study for the women who met the health workers they were given only few minutes to spend with the health workers at each visit due to large women numbers at the health facilities and restricted time of contact with health workers due to the curfew restrictions. Under such pressured circumstances, effective communication may not be possible.

According to previous studies on this topic, the link between women's satisfaction and their socio-demographic characteristics was not always straightforward (Waldenstrom *et al.,* 2004; Ranta *et al.,* 1995). However, in this study the results confirm the importance of socio-demographic factors in explaining women's satisfaction on antenatal care during the pandemic Table 4.5. This was similar to studies of; Ogunyemi *et al.,* (2019); Akinyinka *et al.,* (2019) who found out that factors such as age, marital status, occupation, income, and type of facility are significant predictors of satisfaction with health care. Relatively older women 40 – 49 years were all in all more

satisfied than others about the care received during pregnancy as found in other study (Balogun *et al.,* 2021) who found out that women who were over 30 years were twice more likely to increase their satisfaction than the younger women seeking care. This could have been due to the social media influence that has corrupted the young generation opting to get treatment solutions on the different platforms thus taking the care given at the facility as a waste of time due to the long queues or the attitude of the health workers.

Satisfaction was found to be five times higher for the most educated women with a bachelor's degree than those with primary education. This was mainly because the women who were not highly educated could not perceive the magnitude of effect caused by the COVID 19 virus thus they took restrictions as a mere denial of the right to service thus a poor attitude towards the service delivery during the pandemic. Women's satisfaction among the highly educated very much depended on the fulfilment of their expectations, as the interaction terms show (Wilde – Larsson *et al.*, 2012).

In terms of perception of quality of care two variables were examined by the Quality of Prenatal Care Questionnaire (QPCQ): information sharing, availability. Though all two variables were graded as poor by the participants, the availability of healthcare workers in the facility was the biggest concern for the women who participated in the study (Mean = 56.7%) Table 4.3. Information sharing and the availability of trained health professionals are crucial for gaining the trust of the patients, and were found inadequate by more than half of the participants, as they neither explained the needs for the required tests nor were they explained the test results. They were not involved in the decision-making process. A study in Sweden revealed that 26.5% of

women in the developed country also felt that there was an inadequate amount of information sharing during the pandemic while they were visiting health facilities (Zaigham *et al.*, 2022). A qualitative study done in Pakistan during the pandemic disclosed that it was difficult to find doctors, nurses, or health centres that could provide the necessary services during that period. This highlights the challenge faced by the users during the pandemic and this uncertainty in turn leads to dropouts from scheduled appointments (Paudel *et al.*, 2022). Pregnancy and childbirth are stressful for the mother and the whole family, as unanticipated events can happen at any stage, and if they are not sure that they will be able to reach the concerned person in time of need or that they can ask them the questions that bother them, then they lose their confidence in the system, which leads to poor utilization of health services.

4.4.3 Hindrances to women's utilisation of maternal healthcare and child care services during the pandemic

Maternal health and child health care services are essential for any community and are usually neglected and seriously affected during epidemics and pandemics, leading to long-term adverse consequences (Kumar, 2020). Evidence from other studies showed that decisions made at every level of the response to the pandemic are resulting in women being further cut off from sexual and reproductive health services, threatening sharp rises in maternal and neonatal mortality (Phumaphi *et al.*, 2020; Pollock *et al.*, 2020). Now, the global pandemic is made a bad situation even worse, as some countries diverted resources away from other essential services (Phumaphi *et al.*, 2020). United Nations (UN) Women (2020) warned that the diversion of attention

and critical resources away from the provisions of sexual and reproductive health services, including maternal health and child health care, might result in aggravated maternal and child mortality and morbidity. Findings from this study indicate that there was a likely increase in non – utilisation of Maternal and Child Health (MCH) services during the COVID-19 pandemic in Uganda. This increase could be attributed to the factors brought by the pandemic; therefore, documenting evidence of how the COVID-19 pandemic affected the utilisation of MCH services is important not only to prepare for future health system shocks but also to develop evidence-based strategies to augment the progress towards the Sustainable Development Goals.

This study reported the perceptions and experiences of mothers in Entebbe, Uganda on factors that hindered access to and utilisation of MCH services during the COVID-19 pandemic. Factors that hindered the access and utilisation of MCH services by mothers in this study included fear of contracting COVID-19 at health facilities, lack of funds to pay for services at the health facilities, transportation difficulties, shortage of manpower, long waiting times and a daily capped number of patients to be attended to at the hospitals, negative attitude of healthcare workers, harassment by security agents, and stigmatization of service users by health workers. A previous study that assessed the psychological impact of covid-19 amongst women in Italy had reported women's concerns and anxiety regarding possibility of transmission of the disease to their babies (Saccone *et al.,* 2020). This is also consistent with reports from a national survey in the United Kingdom (Karavadra *et al.,* 2020) and another study from India (Goyal *et al.,* 2020) in which women were unwilling to seek maternity care at the hospital due to fear

of the risk of coronavirus transmission to them or their babies. In a study by Davis et al., (Davis – Floyd *et al.,* 2020) it was found that women in New York, USA are preferring home deliveries instead of institutional deliveries due to the fear of being infected at the hospital. The delay in seeking care by pregnant women due to fear of getting infected with COVID-19 could lead to increased home deliveries with attendant complications, particularly among those in rural parts of the continent (Doctor *et al.,* 2018). This is more critical considering the pre-existing low skilled birth attendance in Africa relative to other regions (Sochas *et al.,* 2017). Learning from the experience of the Ebola virus in Africa, a study of the virus estimated that during the outbreak, facility delivery with skilled birth attendance reduced by 8% points (Elston *et al.,* 2016). Possible reasons for the reductions were that there were fears of contracting the Ebola virus at health facilities, distrust of the health system and rumours about the source of the disease (Elston *et al.,* 2016).

In this study, a majority of mothers resorted to giving birth in the homes of the traditional midwives in the rural areas, since most health facilities were temporarily shut down and health workers were reassigned to the COVID-19 crisis. It emerged that traditional midwives were valued by expectant mothers because they are well respected, easily accessible during COVID-19, offer flexible payment modalities, understand and abide by local customs and traditions, and provide services that skilled birth attendants do not—such as pre- and postnatal massage and more compassionate care. These findings are corroborated by Byrne *et al.,* (2016) and Ombere (2018), who reported much a similar finding. The information that was presented to the Ugandan public on news and press conferences on non-availability of Personal Protective

Equipment (PPE) and the increasing number of deaths from COVID-19 amongst health workers and mothers at that time strengthened women to resolve to stay away from the health facilities.

Most participants complained of the long waiting time and capped numbers at the facility when they had come to access and utilise the MCH services, the long waiting time was majorly influenced by the shortage of manpower at the health facilities during the pandemic while the capping of the number of women seeking the MCH service was practised to follow the directives of the ministry of health in Uganda ad world health organisation as a mechanism to reduce congestion and promote social distance thus preventing infection acquisition. Long waiting time is an important element of service delivery that must be noted as it can affect utilization of the health services. A study in Nigeria showed that 84% of patients spend 2 to 7 hours in the outpatient department and that there is a significant need to address waiting time in order to improve patient satisfaction and meet patients' expectations (Mora & Ogunfowokan, 2012). Long waiting time in the health facilities cuts into time spent on income-earning activities and this may be a major determinant of whether a health service is utilized or not.

Lockdown is an effective measure in slowing the spread of coronavirus around the globe (Flaxman *et al.*, 2020) and was implemented in several countries including Uganda to reduce community spread of COVID-19. Previous literatures have highlighted the challenges posed by the lock down especially as it relates to socio-economic losses (Poudel & Subedi, 2020). This study identified an indirect linkage between lock down and lack of access to MCH services as women could not afford to pay for health care costs or even

transport costs to reach the health facilities due to halt of economic activities. A previous study on the impact of COVID-19 on health services utilization in Nepal also reported the negative implication of lockdown on access to MCH services (Singh *et al.,* 2021). Another study from Sierra Leone, West Africa on the social consequences of COVID-19 showed that the lockdown had negative socio-economic impact on the population studied (Buonsenso *et al.,* 2020).

During the lockdown, travel by private vehicles was banned including motorcycles thereby limiting the capability of women's' movements from their homes to the health facilities. Distance to health facility has been previously noted as a barrier to the utilization of health services in Uganda (Kabagenyi *et al.,* 2022) Walking long distances to health-care facilities during the lockdown in order to access MCH services was a big challenge thus hindering and worsening the utilization. Relatedly, an increase in transport costs was also reported as sabotage to access and utilization of MCH services. In some places, transport fares tripled and given the high financial crisis, it was inevitable for people to afford and meet these costs. In addition, movement of non-health workers was entirely restricted and those who urgently wanted to seek health facilities were entitled to obtain letters from their respective Resident District Commissioners (RDC). Further, the curfew hours also limited the time within which people can travel to seek better health services. These frustrated many and probably adopted traditional methods of MCH care at the expense of skilled MCH service. This is likely to impact on an increased rate of mortality and morbidity.

The highlighted challenges in this study faced by women in accessing MCH services during the COVID-19 pandemic closely resembles the problems

identified during Ebola virus outbreaks in three West African countries (Yerger *et al.,* 2020). This suggests that disease outbreaks and pandemics impacts on MCH services in similar patterns. Therefore, concerted efforts need to be made to address the identified problems towards sustaining MHCH services during pandemics.

Previous studies conducted during the pre-COVID-19 period had reported poor attitude of health workers, poor health seeking behaviours, long waiting times and high cost of health care services as major reasons for non-utilization of MCH services in sub-Sahara Africa (Okonofua *et al.,* 2017). This study which was carried out after COVID-19 pandemic corroborated these findings but also highlighted that these existing problems were further worsened by the lockdowns. Although the problem of lack of transportation and distance of service users from the health facilities had existed before the COVID-19 pandemic, the element of harassment of women by law enforcement agents in the bid to implement the lockdown was a new perspective of hindering factors women could face in accessing MCH services in Uganda.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter details the summary, conclusions and recommendations from the results

5.2 Conclusion

5.2.1 Level at which women attended the antenatal care visits during the pandemic

Maternal and child health services were all impacted by the restrictions imposed by the Ugandan government in response to COVID-19. More so an increased likelihood of delaying ANC after the first trimester, an important predictor of adverse pregnancy outcomes. there was an increase in deliveries in the health centre IV. The study further found that several element of the WHO care model were low which were; more contacts, person-centred care, effective clinical practices, psychosocial support and well-functioning health system.

5.2.2 Women's perception and satisfaction with antenatal care provided to them during the pandemic period

Among women receiving MCH services at health facilities in Entebbe municipality, levels of utilisation of services were low while the women's satisfactions were high. Majority of the participants disagreed with everyone

involved in their prenatal care receiving the important information about them. Majority of the participants strongly disagreed with always reaching someone in the office/clinic if they needed something. Most participants were willing to recommend antenatal care at their respective facility to relatives and friends. Age, education status and distance from the facility were the significant predictors of the satisfaction level. The women's greatest concern was healthcare experts' availability and the waiting time at the facility before acquiring the services.

5.2.3 Hindrances to women's utilisation of maternal healthcare and child care services during the pandemic

The COVID-19 pandemic is an exceptional event that took the world by disbelief. It has caused the interruption of health services on a global scale, including MCH services. COVID-19 has spread rapidly in Uganda and did not spare women seeking MCH services. Access to MCH services were negatively affected by lockdown during the COVID-19 pandemic in Uganda particularly due to challenges resulting from restrictions in movements which affected women's ability to reach the health facilities as well as women's ability to pay for health care services. Additionally, there was fear of contracting COVID-19 infection at health facilities and the health systems inability to provide enabling conditions for sustained utilization of MCH services.

5.3 Recommendations

5.3.1 Level at which women attended the antenatal care visits during the pandemic

There is need to mitigate delays in ANC attendance, especially in the first trimester, the government should consider implementing mobile clinics and telehealth services for pregnant women, particularly in areas with restricted healthcare access. These services would allow early and regular ANC visits even under movement restrictions. Community health workers can also be mobilized to encourage and facilitate timely ANC attendance.

With an observed increase in deliveries at Health Centre IVs, it is crucial to expand their capacity to handle the rising demand. Additional resources, such as staffing, medical supplies, and delivery beds, should be allocated to these facilities to prevent overcrowding and maintain quality care. Furthermore, these facilities should be equipped to handle complicated deliveries, which might be redirected from higher level hospitals due to movement restrictions or fear of exposure to COVID - 19.

Enhance Components of the WHO Care Model including person centered care, effective clinical practices, psychosocial support, and a well-functioning health system, should be prioritized. This can be achieved by: Training healthcare providers on compassionate, patient centered approaches, especially under crisis conditions. Improving psychosocial support services for pregnant women and new mothers, who may experience heightened stress due to the pandemic. Implementing infection prevention measures in maternity wards to

reassure patients and reduce their fear of contracting COVID19, which has contributed to delays in seeking care.

The pandemic exposed critical gaps in Uganda's health system. There is a need for long-term investments to build a resilient system that can continue to deliver essential services even during emergencies. This includes: Improving supply chain mechanisms to ensure consistent availability of maternal and child health supplies, such as vaccines, folic acid, and PPE, during crises. Developing contingency plans to protect maternal and child health services from being deprioritized during future health emergencies.

Community health workers can be pivotal in bridging the gap between health facilities and pregnant women or new mothers who might be reluctant to attend health **centres**. CHWs should be trained and provided with resources to conduct outreach, educate women on safe ANC and childbirth practices, and provide basic ANC support where possible.

More targeted funding is required to ensure that maternal and child health services can withstand the strain of emergencies. Public private partnerships could be explored to secure additional funds. Furthermore, international donor agencies might be engaged to support specific areas such as mobile health, community outreach programs, and infrastructure improvements at Health Centre IVs.

5.3.2 Women's perception and satisfaction with antenatal care provided to them during the pandemic period

Enhanced Information Sharing: Given the gap in communication, healthcare facilities should implement strategies to ensure all healthcare providers involved in prenatal care receive relevant patient information promptly. Digital health records that are accessible to authorized personnel can improve the continuity of care and ensure providers are well-informed.

Establish Dedicated Communication Lines: Since many participants were unable to reach someone at the facility when needed, clinics should set up dedicated helplines or digital platforms for patients to communicate with healthcare providers, ask questions, or seek advice outside of their appointments.

Optimize Staff Scheduling: To address the concern about healthcare experts' availability, facilities can consider improving staff scheduling during peak hours to reduce waiting times. Facilities could also hire additional staff, especially during high demand periods, to ensure that more healthcare workers are available to attend to patients.

Provide Transportation Assistance: Since distance from the facility was a significant predictor of satisfaction, facilities could explore options for transportation support. For example, providing transport vouchers or working with community transport services could help women who live far from the facility.

Establish Outreach Services: Facilities could implement mobile health services or outreach programs in remote areas to make MCH services more accessible, particularly for women who face challenges in reaching the facility.

Tailored Health Education: With age and education status influencing satisfaction, health facilities should provide targeted health education materials that cater to various age groups and literacy levels. Simplified and visual materials for those with lower education levels could improve understanding and satisfaction with care.

Community Health Workshops: Conducting regular workshops or community based informational sessions on maternal health can help bridge knowledge gaps, boost confidence in healthcare services, and encourage utilization of MCH services.

Continuous Staff Training: Regular training for healthcare staff on patient centred care practices, communication skills, and service efficiency can improve overall patient satisfaction and service quality.

Develop Support Networks: Establishing support groups or advocacy groups for expectant mothers within the community can provide a platform for women to share experiences, encourage each other, and voice collective concerns. These groups can also facilitate health education sessions and promote the use of maternal and child health services.

5.3.3 Hindrances to women's utilisation of maternal healthcare and child care services during the pandemic

There is need for government to institute alternative measures to halt the spread of diseases instead of lockdowns so as to ensure unhindered access to MCH services during future pandemics

Government should ensure the training of health workers on emergency preparedness and alternative service delivery models

Government should ensure prioritization of sustained health education of the public on the modes of transmission of any novel disease of public health importance to help in allaying fears, myths, and misconceptions.

Government should ensure provision of special transportation arrangements and incentives for health workers, to reduce on the effect of shortage of manpower at the health facilities in case of future pandemics

Government should ensure the provision of PPEs for women and health workers safety to eradicate the fear of contracting the infections.

Government should allow free movement of pregnant women during any future lockdown.

Government should integrate community health workers by expanding existing midwifery centres and creating new ones run by qualified midwives ("skilled birth attendants") that are closer to or in rural communities to reduce burden on hospitals, and minimize infections and maternal deaths during pandemics such as COVID-19.

Government should strengthen Information Communication and Technology (ICT) media coverage to motivate mothers to access sexual and reproductive health services with all precautionary measures in place. This can be complemented by the promotion of online antenatal, postnatal, and family planning services.

Government should train and motivate community health volunteers to encourage and equip them to perform home visits, provide counselling and identify mothers who require specialised care.

Health facilities should also ensure that core sexual and reproductive health services such as antenatal, delivery, postnatal and family planning services are available and accessible to all women throughout the COVID-19 season and any future pandemics.

5.3.4 Recommendation for future research

To further understand of the utilisation of services, more research is advised on post natal utilisation among mothers during the COVID-19pandemic. The studies should be conducted qualitatively rather than quantitatively.

There is need to further research on the influence of perception on the satisfaction of mothers utilising maternal health and child health services before and during the COVID-19 pandemic.

It is necessary to replicate the study using a sizable sample of mothers from various private hospitals.

Investigating the connection between information, prior exposure, and adherence to recommended standard precautions.

REFERENCES

Abajobir, A. Africa can't let maternity care slide during the coronavirus pandemic. Conversation. 2020. Retrieved from https://theconversation. com/africa-cant-let-maternity-care-slide-during-the-coronavirus-pandemic-13 6424 on January 2, 2023.

Abdela, S. G., Berhanu, A. B., Ferede, L. M., et al. Essential healthcare services in the face of COVID-19 prevention: experiences from a referral hospital in Ethiopia. *Am J Trop Med Hyg* 2020;**103**: 1198–200.

Abdelbadee, A. Y., Abbas, A. M. Impact of COVID-19 on reproductive health and maternity services in low resource countries. *Eur J Contracept Reprod Health Care*. 2020;**2020(5):**1–3.

Adde, K. S., Dickson, K. S., Amu, H. (2020). Prevalence and determinants of the place of delivery among reproductive age women in sub–Saharan Africa. *PLoS ONE*. **15**(12): e0244875.

Adedokun, S. T., Yaya, S. (2020). Correlates of antenatal care utilization among women of reproductive age in sub-Saharan Africa: evidence from multinomial analysis of demographic and health surveys (2010–2018) from 31 countries. *Arch Public Health*; **78**:134.

Afulani, P. A., Kirumbi, L., Lyndon, A. What makes or mars the facility-based childbirth experience: thematic analysis of women's childbirth experiences in western Kenya. *Reprod Health*. 2017 Dec; **14(1)**:180. https://doi.org/10.1186/s12978-017-0446-7 PMID: 29284490

Ahmed, S. A. K. S., Ajisola, M., Azeem, K., Bakibinga, P., Chen, Y., Choudhury, N. N., Olufunke, Fayehun, O. F., Griffiths, F., Harris, B., Kibe, P., Lilford, R. J., Omigbodun, A., Rizvi, N., Sartori, J., Smith, S., Watson, S. I., Wilson, R., Yeboah, G., Aujla, N., Azam, S. I., Diggle, P. J., Gill, P., Iqbal, R., Kabaria, C., Kisia, L., Kyobutungi, C., Madan, J. J., Mberu, B., Mohamed, S. F., Nazish, A., Odubanjo, O., Osuh, M. E., Owoaje, E., Oyebode, O., de Albuquerque, J. P., Rahman, O., Tabani, K., Taiwo, O. J., Tregonning, G., Uthman, O. A., Yusuf, R. (2020). Impact of the societal

response to COVID-19 on access to healthcare for non-COVID-19 health issues in slum communities of Bangladesh, Kenya, Nigeria and Pakistan: results of pre-COVID and COVID-19 lockdown stakeholder engagements. *BMJ Glob Health*; **5**: e003042.

Ahmed, S. A. K. S., Ajisola, M., Azeem, K., et al. Impact of the societal response to COVID-19 on access to healthcare for non-COVID-19 health issues in slum communities of Bangladesh, Kenya, Nigeria and Pakistan: results of pre-COVID and COVID-19 lockdown stakeholder engagements. *BMJ Glob Health* 2020;**5:** e003042.

Akinyinka, M. R., Oluwole, E. O., Odusanya, O. O. Community perception of quality of health care received and client satisfaction in Lagos, Nigeria. *J Community Med Prim Health Care*. 2019; **31(2)**:47–65. Available from: https://www.ajol.info/index.php/jcmphc/article/view/190414

Akowuah, J. A., Agyei-Baffour, P., Awunyo-Vitor, D. (2018). Determinants of antenatal healthcare utilisation by pregnant women in third trimester in Peri-Urban Ghana. *J Trop Med*; 2018:**8**.

Ali, S. A., Dero, A. A., Ali, S. A. (2018). Factors affecting the utilization of antenatal care among pregnant women: a literature review. *J Preg Neonatal Med*. 2018; **2**(2)

Ameyaw, E. K., Ahinkorah, B. O. (2021). Impact of COVID-19 on maternal healthcare in Africa and the way forward. *Archives of Public Health* **79**:223. https://doi.org/10.1186/s13690-021-00746-6

Anggraeni, M. D., Setiyani, R., Triyanto, E., Iskandar, A., Nani, D., Fatoni, A. Exploring the antenatal care challenges faced during the COVID-19 pandemic in rural areas of Indonesia: a qualitative study. *BMC Pregnancy and Childbirth* (2023) **23**:179 https://doi.org/10.1186/s12884-023-05495-8

Aridi, O. J., Chelagat, T., Nyikuri, M. M., Onyango, J., Guzman, D., Makanga, C., Miller-Graff, L., Dowd, R. (2020) COVID-19 Effect on Access to Maternal Health Services in Kenya. Front. *Glob. Womens Health* **1**:599267. doi: 10.3389/fgwh.2020.599267

Asekun-olarinmoye, E. O., Bamidele, O. J., Egbewale, B. E., Asekun-Olarinmoye, I. O., Ojofeitimi, E. O. (2009). Consumer assessment of perceived quality of antenatal care services in a tertiary health care institution in Osun State, Nigeria. *J Turkish-German Gynecol Assoc*; **10**: 89-94.

Ayalew, T. W., Nigatu, A. M. (2018). Focused antenatal care utilization and associated factors in Debre Tabor Town,northwest Ethiopia. *BMC*; **11**:819

Bahari, N. I., Sutan, R., Abdullah, M. Z. (2024) The determinants of maternal perception of antenatal care services during the COVID-19 pandemic critical phase: A systematic review. *PLoS ONE* **19(2)**: e0297563. https://doi.org/10.1371/ journal.pone.0297563

Balogun, M., Banke-Thomas, A., Sekoni, A., Boateng, G. O., Yesufu, V., Wright, O. (2021) Challenges in access and satisfaction with reproductive, maternal, newborn and child health services in Nigeria during the COVID-19 pandemic: A cross-sectional survey. *PLoS ONE* **16(5)**: e0251382. https://doi.org/10.1371/journal. pone.0251382

Basu, A., Kim, H. H., Basaldua, R., Choi, K. W., Charron, L., Kelsall, N., et al. A Cross National Study of Factors Associated with Women's Perinatal Mental Health and Wellbeing During the COVID-19 Pandemic. *Plos Ones*. **2021**:1–18.

Bell, D., Hansen, K. S., Kiragga, A. N., Kambugu, A., Kissa, J., & Mbonye, A. K. (2020). Predicting the Impact of COVID-19 and the Potential Impact of the Public Health Response on Disease Burden in Uganda, *The American Journal of Tropical Medicine and Hygiene*, **103**(3), 1191-1197. Retrieved Aug 20, 2021, from https://www.ajtmh.org/view/journals/tpmd/103/3/article-p1191.xml

Birmeta, K., Dibaba, Y., Woldeyohannes, D. (2013). Determinants of maternal health care utilization in Holeta town, central Ethiopia. *BMC Health Serv Res*. **13(1)**:256. doi:10.1186/1472-6963-13-256

Bradfield, Z., Wynter, K., Hauck, Y., Vasilevski, V., Kuliukas, L., Wilson, A. N. (2021) Experiences of receiving and providing maternity care during the

COVID-19 pandemic in Australia: A five-cohort cross-sectional comparison. *PLoS ONE* **16(3)**: e0248488. https://doi.org/10.1371/journal.pone.0248488

Buonsenso, D., Cinicola, B., Rafaelli, F., Sollena, P., Iodice, F. (2020). Social consequences of COVID-19 in a low resource setting in Sierra Leone, West Africa. *Int J Infect Dis*; **97**:23–6. https://doi.org/10.1016/j.ijid.2020.05. 104.

Burt, J. F., Ouma, J., Lubyayi, L., Amone, A., Aol, L., Sekikubo, M., Nakimuli, A., Nakabembe, E., Mboizi, R., Musoke, P., Kyohere, M., Lugolobi, E. N., Khalil, A., Doare, K. L. (2021). Indirect effects of COVID-19 on maternal, neonatal, child, sexual and reproductive health services in Kampala, Uganda. *BMJ Global Health*; **6**: e006102. doi:10.1136/ bmjgh-2021-006102

Byrne, A., Caulfield, T., Onyo, P., Nyagero, J., Morgan, A., Nduba, J., Michelle k. (2016). Community and provider perceptions of traditional and skilled birth attendants providing maternal health care for pastoralist communities in Kenya: a qualitative study. *BMC Pregnancy Childbirth* **16 (1)**, 1–12. doi:10.1186/ s12884-016-0828-9

Ceulemans, M., Hompes, T., Foulon, V. (2020). Mental health status of pregnant and breastfeeding women during the COVID-19 pandemic: a call for action. *Int J Gynaecol Obstet*; **152**: 146-7.

Chandwani, H., Jivarajani, P., Jivarajani, H. (2009). Community perception and client satisfaction about the primary health care services In A Tribal Setting Of Gujarat - India. *The Internet Journal of Health*, **9**(2).

Chatwin, J., Butler, D., Jones, J., James, L., Choucri, L., McCarthy, R. Experiences of pregnant mothers using a social media based antenatal support service during the COVID-19 lockdown in the UK: findings from a user survey. *BMJ open*. 2021;**11(1):** e040649.

Chimankar, D., Sahoo, H. (2011). Factors influencing the utilization of maternal health care services in Uttarakhand. *Stud Ethno-Med*; **5**:209–216. doi:10.1080/09735070.2011.11886411

Chimhuya, S., Neal, S. R., Chimhini, G. (2021). Indirect impacts of the COVID-19 pandemic at two tertiary neonatal units in Zimbabwe and Malawi: an interrupted time series analysis. medRxiv2021:2021.01.06.21249322.

Chmielewska, B., Barratt, I., Townsend, R., Kalafat, E., Meulen, J. V. D., Gurol-Urganci, I., O'Brien, P., Morris, E., Draycott, T., Thangaratinam, S., Doare, K. L., Ladhani, S., Dadelszen, P. V., Magee, L., Khalil, A. (2021). Effects of the COVID-19 pandemic on maternal and perinatal outcomes: a systematic review and meta-analysis. *Lancet Glob Health*; **9**: e759–72.

Colombo, S., Scuccato, R., Fadda, A., Cumbi, A. J. (2020). COVID-19 in Africa: the little we know and the lot we ignore. *Epidemiol Prev*; **44**:408–22.

das Neves, M. P. P. H., Macaringue, C., Abdirazak, A., et al. Covid-19 pandemic impact on maternal and child health services access in Nampula, Mozambique: a mixed methods research. *BMC Health Serv Res*. 2021;**21(1):**860

Davis-Floyd, R., Gutschow, K., Schwartz, D. A. (2020). Pregnancy, birth and the COVID-19 pandemic in the United States. *Med Anthropol*; **39(5)**:413–27.

de Guzman, G. S., Banal-Silao, M. J. B. Antenatal care utilization during the COVID-19 pandemic: an online cross-sectional survey among Filipino women. *BMC Pregnancy and Childbirth* (2022) **22**:929 https://doi.org/10.1186/s12884-022-05234-5

Dey, T., Ononge, S., Weeks, A., et al. Immediate postnatal care following childbirth in Ugandan health facilities: an analysis of Demographic and Health Surveys between 2001 and 2016. *BMJ Glob Health*. 2021;**6**: e004230.

Doctor, H. V., Nkhana-Salimu, S., Abdulsalam-Anibilowo, M. (2018). Health facility delivery in sub-Saharan Africa: successes, challenges, and

implications for the 2030 development agenda. *BMC Public Health*; **18(1)**:765.

Elston, J. W. T., Moosa, A. J., Moses, F., Walker, G., Dotta, N., Waldman, R. J., Wright, J. (2016). Impact of the Ebola outbreak on health systems and population health in Sierra Leone. *J Public Health*; **38(4)**:673–8

Esegbona-Adeigbe, S. (2020). Impact of COVID-19 on antenatal care provision. *Eur J Midwifery*. doi:10.18332/ejm/121096

Fagbamigbe, A. F., Idemudia, E. S. (2015). Assessment of quality of antenatal care services in Nigeria: evidence from a population-based survey. *Reprod Health Med Care Serv Rev*; **12(1)**:88.

Fawole, A. O., Okunlola, M. A., Adekunle, A. O. (2008). Clients Perception of quality of Antenatal care. *J Natl Med Assoc*, **100(9)**, 10-17.

Fifield, J., Bell, G. A., Hirschhorn, L. R., Kibira, S. P. S., Kim, J., Makumbi, F., Nabiwemba, E., Schwarz, D., Wabwire-Mangen, F., Ratcliffe, H. L. (2022). Person-centered care in Uganda: analysis of responsiveness, patient satisfaction, patient-reported health outcomes, and trust among adults. *IJQHC Communication* **2(1)**, 1 – 9. DOI: https://doi.org/10.1093/ijcoms/lyac005

Findik, U., Unsar, S., Sut, N. (2010). Patient satisfaction with nursing care and its relationship with patient characteristics. *Nurs Health Sci*; **12**:162–9.

Flaxman, S., Mishra, S., Gandy, A., Unwin, H. J. T., Mellan, T. A., Coupland, H., Whittaker, C., Zhu, H., Berah, T., Eaton, J. W., Monod, M., Ghani, A. C., Donnelly, C. A., Riley, S., Vollmer, M. A. C., Ferguson, N. M., Okell, L. C., Bhatt, S. (2020). Estimating the efects of non-pharmaceutical interventions on COVID-19 in Europe. *Nature*; **584(7820)**:257–61.

Freytas-tamura, K. (2020). Pregnant and Scared o'Covid Hospitals, They're Giving Birth at Home. the new York Times.; Available from: https://www.nytimes.com/2020/04/21/nyregion/coronavirushome-births.html.

Gebreegziabher, S. B., Marrye, S. S., Kumssa, T. H., et al. Assessment of maternal and child health care services performance in the context of COVID-19 pandemic in Addis Ababa, Ethiopia: evidence from routine service data. *Reprod Health*. 2022;**19(1)**:42.

Gebreyohannes, Y., Ararso, D., Mengistu, F., Abay, S., Hadis, M. (2017). Improving antenatal care services utilization in Ethiopia: an evidence-based policy brief. *Int J Health Econ Policy*; **2:**111–117.

Gitonga, E. (2017). Determinants of focused antenatal care uptake among women in Tharaka Nithi County, Kenya. *Adv Public Health*; 3685401.

Goyal, M., Singh, P., Singh, K., Shekhar, S., Agrawal, N., Misra, S. (2020). The effect of COVID-19 pandemic on maternal health due to delay in seeking health care: experience from a tertiary center. *Int J Gynaecol Obstet*; **152(2)**:231–5.

Guan, W., Ni, Z., Hu, Y., Liang, W., Ou, C., He, J., Liu, L., Shan, H., Lei, C., Hui, D. S. C., Du, B., Li, L., Zeng, G., Yuen, K. Y., Chen, R., Tang, C., Wang, T., Chen, P., Xiang, J., Li, S., Wang, J., Liang, Z., Peng, Y., Wei, L., Liu, Y., Hu, Y., Peng, P., Wang, J., Liu, J., Chen, Z., Li, G., Zheng, Z., Qiu, S., Luo, J., Ye, C., Zhu, S., Zhong, N. (2020). Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med*; **382(18)**:1708–20. https://doi.org/10.1056/NEJMoa2002032 PMID: 32109013

Hale, T., Angrist, N., Cameron-Blake, E. Oxford COVID-19 government response Tracker. Blavatnik School of Government, 2020.

Hategeka, C., Carter, S. E., Chenge, F. M., et al. Impact of the COVID-19 pandemic and response on the utilisation of health services in public facilities during the first wave in Kinshasa, The Democratic Republic of the Congo. *BMJ Glob Health*. 2021;**6(7):** e005955.

Hellowell, M., Myburgh, A., Sjoblom, M. C., Gurazada, S., Clarke, D. (2020). How COVID-19 (coronavirus) affects private health care providers in developing countries. 2020. Retrieved from

https://blogs.worldbank.org/health/how-covid-19- coronavirus-affects-private-health-care-providers-developing-countries on July 16, 2020.

Horiguchi, H., Nakazawa, M. The factors Associated with the delayed First Antenatal Care in the Philippines. *Univers J Public Health*. 2018;**6(2)**:49–55. https://doi.org/10.13189/ujph.2018.060203

Ishola, F., Owolabi, O., Filippi, V. Disrespect and abuse of women during childbirth in Nigeria: A systematic review. *PLoS One*. 2017; **12(3)**: e0174084. https://doi.org/10.1371/journal.pone.0174084 PMID: 28323860

Jafree, S. R., Momina, A., Muazzam, A., Rabia Wajid, R., Calib, G. Factors Affecting Delivery Health Service Satisfaction of Women and Fear of COVID− 19: Implications for Maternal and Child Health in Pakistan. *Maternal and Child Health Journal* (2021) **25**:881–891 https://doi.org/10.1007/s10995-021-03140-4

Janevic, T., Maru, S., Nowlin, S., McCarthy K., Bergink, V., Stone, J., Dias, J., Wu S., Howell, E. A. Pandemic Birthing: Childbirth Satisfaction, Perceived Health Care Bias, and Postpartum Health During the COVID-19 Pandemic. *Maternal and Child Health Journal* (2021) **25**:860–869 https://doi.org/10.1007/s10995-021-03158-8

Jensen, C., McKerrow, N. H. (2020). Child health services during a COVID-19 outbreak in KwaZulu-Natal Province. South Africa.

Kabagenyi, A., Kyaddondo, B., Nyachwo, E. B., Wasswa, R., Bwanika, J. M., Kabajungu, E., Kiragga, A. (2022). Disruption in Essential Health Service Delivery: A Qualitative Study on Access to Family Planning Information and Service Utilization During the First Wave of COVID-19 Pandemic in Uganda. *Open Access Journal of Contraception* **2022:13** (75 - 82). https://doi.org/10.2147/OAJC.S360408

Karavadra, B., Stockl, A., Prosser-Snelling, E., Simpson, P., Morris, E. Women's perceptions of COVID-19 and their healthcare experiences: a qualitative thematic analysis of a national survey of pregnant women in the United

Kingdom. *BMC Pregnancy Childbirth*. 2020;**20(1):**1–8. https://doi.org/10.1186/ s12884-020-03283-2.

Karkee, R., Lee, A. H., & Pokharel, P. K. (2014). Women's perception of quality of maternity services: A longitudinal survey in Nepal. *BMC Pregnancy and Childbirth*, **14(1)**, 45.

Kassie, A., Wale, A., Yismaw, W. Impact of coronavirus Diseases-2019 (COVID-19) on utilization and outcome of reproductive, maternal, and newborn health Services at Governmental Health Facilities in South West Ethiopia, 2020: comparative cross-sectional study. *Int J Womens Health*. 2021;**13**:479-488.

Kebede, Y., Yitayih, Y., Birhanu, Z., Mekonen, S., Ambelu, A. (2020) Knowledge, perceptions and preventive practices towards COVID-19 early in the outbreak among Jimma university medical center visitors, Southwest Ethiopia. *PLoS ONE* **15(5)**: e0233744. https://doi.org/10.1371/journal. pone.0233744

Kotlar, B., Gerson, E., Petrillo, S., Langer, A., Tiemeier, H. The impact of the COVID-19 pandemic on maternal and perinatal health: a scoping review. *Reprod Health*. 2021, **18**:10. 10.1186/s12978-021-01070-6

Kumar, N. (2020). COVID 19 era: a beginning of upsurge in unwanted pregnancies, unmet need for contraception and other women related issues. *Eur. J. Contracept. Reprod. Health Care;* **25 (4)**: 323–325. doi:10.1080/13625187. 2020.1777398

Kumbeni, M. T., Apanga, P. A., Yeboah, E. O., Lettor, I. B. K. (2021) Knowledge and preventive practices towards COVID-19 among pregnant women seeking antenatal services in Northern Ghana. *PLoS ONE* **16(6)**: e0253446. https://doi. org/10.1371/journal.pone.0253446

Landrian, A., Mboya, J., Golub, G., Moucheraud, C., Kepha, S., Sudhinaraset, M. Effects of the COVID-19 pandemic on antenatal care utilisation in Kenya: a cross-sectional study. *BMJ Open*. 2022;**12(4):**e060185. doi:https://doi. org/10.1136/bmjopen-2021-060185.

Liu, C. H., Goyal, D., Mittal, L., Erdei, C. Patient Satisfaction with Virtual-Based Prenatal Care: Implications after the COVID-19 Pandemic. *Matern Child Health J*. 2021; **25(11)**:1735–43. https://doi.org/10.1007/ s10995-021-03211-6 PMID: 34410565

Liu, X., Chen, M., Wang, Y., Sun, L., Zhang, J., Shi, Y., Wang, J., Zhang, H., Sun, G., Baker, P. N., Luo, X., Qi, H. (2020). Prenatal anxiety and obstetric decisions among pregnant women in Wuhan and Chongqing during the COVID-19 outbreak: a cross-sectional study. *BJOG*; **127**:1229-40.

Lusambili, A. M., Martini, M., Abdirahman, F., et al. "we have a lot of home deliveries" a qualitative study on the impact of COVID-19 on access to and utilization of reproductive, maternal, newborn and child health care among refugee women in urban Eastleigh, Kenya. *J Migr Health*. 2020;**1-2**:100025

Manyeh, A. K., Amu, A., Williams, J., Gyapong, M. Factors associated with the timing of antenatal clinic attendance among first-time mothers in rural southern Ghana. *BMC Pregnancy Childbirth*. 2020;**20(1):**47.

Mary Ross-Davie, J. L., Brigante, L., Livingstone, C., Crowe, S., Pandya, P., Morris, E., O'Brien, P., Jardine, J., Relph, S., Goodyear, G. (2020). Guidance for antenatal and postnatal services in the evolving coronavirus (COVID-19) pandemic.

McKee, M., Stuckler, D. If the world fails to protect the economy, COVID-19 will damage health not just now but also in the future. *Nat Med*. 2020, **26**:640-2. 10.1038/s41591-020-0863-y

Meaney, S., Leitao, S., Olander, E. K., Pope, J., Matvienko-Sikar, K. (2022). The impact of COVID-19 on pregnant womens' experiences and perceptions of antenatal maternity care, social support, and stress-reduction strategies; *Women and Birth* **35**; 307–316. http://dx.doi.org/10.1016/j.wombi.2021.04.013 18

Melkamu, Y. (2008). “Quality of reproductive health services at private for-profit institutions in Addis Ababa,” *Ethiopian Journal of Reproductive Health*; **2(1):** pp. 35–51.

Menendez, C., Gonzalez, R., Donnay, F., Leke, R. G. F. (2020). Avoiding indirect effects of COVID-19 on maternal and child health. *Lancet Glob Health*; **8**: e863–4.

Mohanty, P. (2020). Coronavirus Lockdown III: is Indias public healthcare system prepared tofighttheCOVID-19menace? Business Today. Available from: https://www.businesstoday.in/current/economypolitics/coronavirus-lockdowncovid-19-pandemic-public-healthcaresystemdoctors-nursespatients/story/400039.html.

Mohulatsi, M. Z., Garutsa, T. C., Bahule, B. 2023. The Experiences of Expectant and New Mothers in Accessing Maternal Healthcare Services during the COVID-19 Pandemic in Mmabatho, North-West, South Africa. *Social Sciences* **12**: 381. https://doi.org/ 10.3390/socsci12070381

Montasser, N. A., Helal, R. M., Megahed, W. M., Amin, S. K., Saad, A. M., Ibrahim, T. R., Elmoneem, H. M. A. (2012). Egyptian Women's Satisfaction and Perception of Antenatal Care. *International Journal of Tropical Disease & Health* **2(2)**: 145-156.

Morhe, E. K., Anto, E. O., Coall, D. A., Adua, E., Debrah, A. Y., Addai-Mensah, O., Owusu, M., Owiredu, W. K., Obirikorang, C., Asiamah, E. A., Acheampong, E. SARS-CoV-2 updates in a West African population and precautionary measures for sustaining quality antenatal care delivery. *J Glob Health*. 2020;**10(2)**:020365.

Moyer, C. A., Sakyi, K. S., Sacks, E., Compton, S. D., Lori, J. R., Williams, J. E. O. COVID-19 is increasing ghanaian pregnant women’s anxiety and reducing Healthcare seeking. *Int J Gynecol Obstet.* 2020;**00**:1–2.

Murewanhema, G., Nyakanda, M. I., Madziyire, M. G. Restoring and maintaining robust maternity services in the COVID-19 era: a public health dilemma in Zimbabwe. *Pan Afr Med J* 2020;**37:** 32.

Mwobobia, J. M. The repercussions of COVID-19 fight. Standard newspaper Kenya. *Sect Health Sci*. 2020;2020 https://www.standardmedia.co.ke/health/a rticle/2001373476/the-repercussions-of-covid-19-fight. Accessed 2 Jan 2023

Ng, Q. X., Lee, E. Z., Tay, J. A., Arulanandam, S. (2020). Impact of COVID-19 'circuit-breaker' measures on emergency medical services utilisation and out-of-hospital cardiac arrest outcomes in Singapore. *Emerg Med Australas*. doi:10.1111/1742-6723.13668

Ogunkola, I. O., Adebisi, Y. A., Imo, U. F., Odey, G. O., Esu, E., Lucero-Prisno, D. E. (2021). Impact of COVID-19 pandemic on antenatal healthcare services in sub-Saharan Africa. *Public Health Pract*; **2**:100076.

Ogunleye, O. O., Basu, D., Mueller, D., Sneddon, J., Seaton, R. A., Yinka-Ogunleye, A. F., Wamboga, J., Miljkovic,´N., Mwita, J. C., Rwegerera, G. M., Massele, A., Patrick, O., Niba, L. L., Nsaikila, M., Rashed, W. M., Hussein, M. A., Hegazy, R., Amu, A. A., Boahen-Boaten, B. B., Matsebula, Z., Gwebu, P., Chirigo, B., Mkhabela, N., Dlamini, T., Sithole, S., Malaza, S., Dlamini, S., Afriyie, D., Asare, G. A., Amponsah, S. K., Sefah, I., Oluka, M., Guantai, A. N., Opanga, S. A., Sarele, T. V., Mafisa, R. K., Chikowe, I., Khuluza, F., Kibuule, D., Kalemeera, F., Mubita, M., Fadare, J., Sibomana, L., Ramokgopa, G. M., Whyte, C., Maimela, T., Hugo, J., Meyer, J. C., Schellack, N., Rampamba, E. M., Visser, A., Alfadl, A., Malik, E. M., Malande, O. O., Kalungia, A. C., Mwila, C., Zaranyika, T., Chaibva, B. V., Olaru, I. D., Masuka, N., Wale, J., Hwenda, L., Kamoga, R., Hill, R., Barbui, C., Bochenek, T., Kurdi, A., Campbell, S., Martin, A. P., Phuong, T. N. T., Thanh, B. N., Godman, B. (2020). Response to the novel corona virus (COVID-19) pandemic across Africa: successes, challenges, and implications for the future. *Front Pharmacol*; **11**:1205–05. y67555.

Ogunyemi, A., Ogunyemi, A., Olufunlayo, T., Odugbemi, T. Patient satisfaction with services at public and faithbased primary health centres in Lagos State: A comparative study. *J Clin Sci.* 2019; **16(3):**75. Available from: http://www.jcsjournal.org/text.asp?2019/16/3/75

Okonofua, F., Ogu, R., Agholor, K., Abdus-salam, R., Gana, M., Randawa, A., Abe, E., Durodola, A., Galadanci, H. (2017). Qualitative assessment of women's satisfaction with maternal health care in referral hospitals in Nigeria. *Reprod Health*; **14**:44. https://doi.org/10.1186/s12978-017-0305-6.

Ombere, S. O. (2018). Local perceptions of social protection schemes in maternal health in Kenya: ethnography in coastal Kenya (PhD thesis). PhD Thesis. Available at: http://biblio.unibe.ch/download/eldiss/18ombere_so.pdf (Accessed April 16, 2023).

Ombere, S. O. (2021). Access to maternal health services during the COVID-19 pandemic: experiences of indigent mothers and health care providers in Kilifi County, Kenya. *Front Sociol*; **6**:613042. doi: 10.3389/fsoc.2021.613042

Onwuzurike, C., Meadows, A. R., Nour, N. M. (2020). Examining inequities associated with changes in obstetric and gynecologic care delivery during the coronavirus disease 2019 (COVID-19) pandemic, *Obstet. Gynecol*. **136**: 37–41.

Oskovi-Kaplan, Z. A., Buyuk, G. N., Ozgu-Erdinc, A. S., Keskin, H. L., Ozbas, A., Tekin, O. M. (2020). The effect of COVID-19 pandemic and social restrictions on depression rates and maternal attachment in immediate postpartum women: a preliminary study, *Psychiatr*. Q. 1–8.

Overgaard, C., Fenger-Grøn, M., Sandall, J. (2012). The impact of birthplace on women's birth experiences and perceptions of care. *Soc Sci Med*; **74**:973–81.

Pallangyo, E., Nakate, M. G., Maina, R., et al. The impact of covid-19 on midwives' practice in Kenya, Uganda and Tanzania: a reflective account. *Midwifery* 2020;**89**: 102775–75.

Patabendige, M., Gamage, M. M., Weerasinghe, M., Jayawardane, A. (2020). Psychological impact of the COVID-19 pandemic among pregnant women in Sri Lanka. *Int J Gynecol Obstet*; **151**:150-3.

Paudel, M., Leghari, A., Ahmad, A. M., Gibbs, S., Wheeler, J., Goldberg, S., Snyder, T., Bhattarai, M. (2022). Understanding changes made to reproductive, maternal, newborn and child health services in Pakistan during the COVID-19 pandemic: A qualitative study. Sex. *Reprod. Health Matters*; **30**: 443–457.

Philippine Obstetrical and Gynecological Society, Inc. and Philippine Soci- ety of Maternal Fetal Medicine, Inc. COVID-19 and Pregnancy: A Guide to MFM specialists and General Obstetric Practitioners. 2020. https://pogs. inc.org. Accessed 1 July 2023.

Phumaphi, J., Mason, E., Alipui, N. K., Cisnero, J. R., Kidu, C., Killen, B., Pkhakadze, G., Sen, G., Yamin, A. E., Kuruvilla, S. (2020). A crisis of accountability for women's, children's, and adolescents' health. *Lancet;* **396 (10246)**: 222–224. doi:10.1016/S0140- 6736(20)31520-8

Pollock, A. M., Roderick, P., Cheng, K. K., and Pankhania, B. (2020). Covid-19: Why is the UK government ignoring WHO's advice? *BMJ* **368** (March), 1–2. doi:10.1136/bmj.m1284

Poudel, A. (2020). A 200 percent increase in maternal mortality since the lockdown began. The Kathmandu Post. Available from:https:// kathmandupost.com/national/2020/05/27/a-200–increase-in-maternal - mortality-since-thelockdown-began.

Poudel, K., Subedi, P. (2020). Impact of COVID-19 pandemic on socioeconomic and mental health aspects in Nepal. *Int J Soc Psychiatry*; **66(8)**:748– 55. https://doi.org/10.1177/0020764020942247.

Quaglio, G., Cavallin, F., Nsubuga, J. B., Lochoro, P., Maziku, D., Tsegaye, A., Azzimonti, G., Kamunga, A. M., Manenti, F., G. Putoto, G. The impact of the COVID-19 pandemic on health service use in sub-Saharan Africa. *Public Health Action*; **12**:1 2022

Rabbani, U., Saigul, A. A., Sulaiman, A., Ibrahim, T. H. (2021) Impact of COVID-19 on Antenatal Care Utilization Among Pregnant Women in Qassim, Saudi Arabia. *Cureus* **13(11):** e19554. DOI 10.7759/cureus.19554

Ranta, P., Spalding, M., Kangas-Saarela, T., Jokela, R., Hollmén, A., Jouppila, P., Jouppila, R. (1995). Maternal expectations and experiences of labour pain-options of 1091 Finnish parturients. *Acta Anaesthesiol Scand*; **39**:60–6.

Roberton, T., Carter, E. D., Chou, V. B., Stegmuller, A. R., Jackson, B. D., Tam, Y., Sawadogo-Lewis, T., Walker, N. (2020). 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. *Lancet Glob Health*; **8**: e901–8.

Saccone, G., Florio, A., Aiello, F., Venturella, R., De Angelis M. C., Locci, M. (2019). Psychological impact of coronavirus disease, et al. in pregnant women. *Am J Obstet Gynecol*. ;2020: S0002937820305275. https://doi.org/10. 1016/j.ajog.2020.05.003.

Sayed, W., Abdelaal, D., Mohammed, H. S., Abbas, A. M., & Zahran, K. M. (2018). Maternal satisfaction with delivery services at tertiary university hospital in upper Egypt, is it actually satisfying. *International Journal of Reproduction Contraception Obstetrics Gynecology*, **7(7)**, 2547–2552.

Sehngelia, L., Pavlova, M., Groot, W. (2021). Women's satisfaction with maternal care services in Georgia. *Health Policy OPEN* **2**:100028. https://doi.org/10.1016/j.hpopen.2020.100028

Shikuku, D., Nyaoke, I., Gichuru, S. Early indirect impact of COVID-19 pandemic on utilization and outcomes of reproductive, maternal, newborn, child and adolescent health services in Kenya. *medRxiv* 2020:**2020.09**.09.20191247.

Singh, D. R., Sunuwar, D. R., Shah, S. K., Karki, K., Sah, L. K., Adhikan, B., Sah, R. K. (2021). Impact of COVID-19 on health services utilization in Province-2 of Nepal: a qualitative study among community members and stakeholders. *BMC Health Serv Res*; **21**:174. https://doi.org/10.1186/s12913-021-06176-y.

Srivastava, A., Avan, B. I., Rajbangshi, P., & Bhattacharyya, S. (2015). Determinants of women's satisfaction with maternal health care: A review

of literature from developing countries. *BMC Pregnancy and Childbirth*, **15(1)**, 97.

Ssebuyira, M. (2013). "Entebbe hospital to close for renovation". Daily Monitor. Kampala.

Ssetaala, A., Nabawanuka, J., Matovu, G., Nakiragga, N., Namugga, J., Nalubega, P., Degomme, O. (2020). Antenatal Care Practices Among Hard-to-Reach Fishing Communities on Lake Victoria: A Community-Based Cross-Sectional Survey. *Journal of Primary Care & Community Health*. doi:10.1177/2150132720923101

Stein, D., Ward, K., Cantelmo, C. (2020). Estimating the potential impact of COVID-19 on mothers and newborns in low- and middle-income countries. *Health Policy Plus*.

Syed, A. A. S. A., Abdul, R. R., Sharip, S., Shah S. A., Abdullah, M. Z., Kalok, A. Pregnancy and COVID-19 Pandemic Perception in Malaysia: A Cross-Sectional Study. *Int J Environ Res Public Health*. 2021; **18(11)**: 5762. https://doi.org/10.3390/ijerph18115762 PMID: 34072017

Tadesse, E. (2020). Antenatal care service utilization of pregnant women attending antenatal care in public hospitals during the COVID-19 pandemic period. *Int J Womens Health*; **12**:1181–8. doi:https://doi.org/10.2147/IJWH.S287534.

Temesgen, K., Wakgari, N., Debelo, B. T., Tafa, B., Alemu, G., Wondimu, F., Gudisa, T., Gishile, T., Daba, G., Bulto, G. A., Soboka, B. (2021). Maternal health care services utilization amidstCOVID-19 pandemic in West Shoa zone, central Ethiopia. *PLoS One*; **16**: e0249214.

The Independent. Antenatal visits, deliveries drop in health facilities in Teso, 2020updated 14 May. Available from. Available: https:// www.independent.co.ug/antenatal-visits-deliveries-drop-in-healthfacilities-in-teso/ [Assessed 17 April 2023].

Thorne, J. G., Buitendyk, M., Wawuda, R., Lewis, B., Bernard, C., Spitzer, R. F. (2020). The reproductive health Fall-out of a global pandemic. *Sex Reprod Health Matters*; **28**:1763577.

Tikouk, J., Boubkr, A. A., Chentoufi, M. A. Impact of COVID-19 on the antenatal care services utilization in the region of Guelmim Oued Noun, Morocco. *Journal of Public Health in Africa* 2023; **14**:2263 doi:10.4081/jphia.2023.2263

Tocchioni, V., Seghieri, C., De Santis, G., Nuti, S. (2018). Socio-demographic determinants of women's satisfaction with prenatal and delivery care services in Italy. *International Journal for Quality in Health Care*; **30(8)**: 594–601 doi: 10.1093/intqhc/mzy078

Townsend, R., Chmielewska, B., Barratt, I., et al. Global changes in maternity care provision during the COVID 19 pandemic: a systematic review and meta-analysis. *E Clinical Medicine*. 2021, **37**:100947. 10.1016/j.eclinm.2021.100947

Tuladhar, H., Dhakal, N. (2011). Impact of antenatal care on maternal and perinatal utcome: a study at Nepal Medical College Teaching Hospital. *Nepal J Obstet Gynaecol*.; **6(2)**:37–43. doi:10.3126/ njog.v6i2.6755

U. N. Women. (2020). The impact of COVID-19 on women. United Nations. Available at: file:///C:/Users/camiv/Downloads/Policy-brief-the-impact-ofcovid-19-on-women-en (1).pdf (Access 15 April 2023

UCG (2016). Uganda clinical guidelines. National guidelines for managing common conditions. Ministry of health 2016.

Uganda Bureau of Statistics, ICF. Uganda demographic and health Survey 2016. Kampala, Uganda and Rockville, Maryland, USA: Uganda Bureau of Statistics ICF, 2018: 153

Umviligihozo, G., Mupfumi, L., Sonela, N., et al. Sub-Saharan Africa preparedness and response to the COVID-19 pandemic: a perspective of early career African scientists. *Wellcome Open Res* 2020; **5:**163.

Uwambaye, P., Nyiringango, G., Musabwasoni, S. M. G., Husain, A., Nessa, K., Razzaque, M. S. COVID-19 pandemic: adaptation in Antenatal Care for Better pregnancy outcomes. *Front Glob Womens Health*. 2020;**1**: 599327. doi:https://doi.org/10.3389/fgwh.2020.599327.

Viaux, S., Maurice, P., Cohen, D., Jouannic, J. M., (2020). Giving birth under lockdown during the COVID-19 epidemic, *J. Gynecol. Obstet. Hum. Reprod*. **49**: 101785.

Waldenström, U., Hildingsson, I., Rubertsson, C., Rådestad, I. (2004). A negative birth experience: prevalence and risk factors in a national sample. *Birth*; **31**:17–27.

Wanyana, D., Wong, R., Hakizimana, D. Rapid assessment on the utilization of maternal and child health services during COVID-19 in Rwanda. *Public Health Action*. 2021;**11(1)**:12-21.

WHO. Standards for improving quality of maternal and newborn care in health facilities [Internet]. Geneva, Switzerland: World Health Organization; 2016. https://apps.who.int/iris/bitstream/handle/10665/249155/9789241511216-eng.pdf?sequence=1

Wilde-Larsson, B., Sandin-Bojö, A. K., Starrin, B., Larsson, G. (2011). Birth giving women's feelings and perceptions of quality of intrapartal care: a nationwide Swedish cross-sectional study. *J Clin Nurs*; **20**:1168–77.

World Health Organization (WHO). WHO Recommendations on Antenatal Care for a positive pregnancy experience: Summary. Geneva: WHO; 2018. License: CC BY-NC -SA 3.0 IGO.

World Health Organization. (2016). WHO recommendations on antenatal care for a positive pregnancy experience.

World Health Survey: Saud Arabia. (2019). Accessed: August 15 (2023). https://www.moh.gov.sa/en/Ministry/Statistics/Population-Health-Indicators/Documents/World-HealthSurvey-Saudi-Arab

Wu, H., Sun, W., Huang, X., Yu, S., Wang, H., Bi, X., et al. Online Antenatal Care during the COVID -19 pandemic: Opportunities and Challenges. *J Med Internet Res*. 2020;**22(7):** e19916. doi: https://doi.org/10.2196/19916

Yadufashije, D., Sangano, G. B., Samuel, R. (2017). Barriers to antenatal care services seeking in Africa. George Bahati and Samuel, Rebero, Barriers to antenatal care services seeking in Africa.

Yan, H., Ding, Y., Guo, W. (2020). Mental health of pregnant and postpartum women during the coronavirus disease 2019 Pandemic: a systematic review and meta-analysis. *Front Psychol.* 2020; **11**:1-12

Yassa, M., Yassa, A., Yirmibeş, C., Birol, P., Ünlü, U. G., Tekin, A. B., Sandal, K., Mutlu, M. A., Çavuşoğlu, G., Tug, N. (2020). Anxiety levels and obsessive compulsion symptoms of pregnant women during the COVID-19 pandemic. *Turk J Obstet Gynecol*. 2020;**17(3)**:155–160. doi:10.4274/tjod.galenos.2020.91455

Yaya, S., Bishwajit, G., Uthman, O. A., Amouzou, A. (2018). Why some women fail to give birth at health facilities: a comparative study between Ethiopia and Nigeria. *PLoS One*; **13(5)**: e0196896.

Yerger, P., Jalloh, M., Coltart, C. E. M., Karina, K. (2020). Barriers to maternal health services during the Ebola outbreak in three West African countries: a literature review. *BMJ Glob Health*; **5**: e002974.

Yousuf, S., (2009). Assessment of Quality of Care in Antenatal Services in Adama Special Zone of Oromia Region, Addis Ababa University, Ethiopia.

Zaigham, M., Linden, K., Sengpiel, V., Mariani, I., Valente, E. P., Covi, B., Lazzerini, M., Elden, H. (2022). Large gaps in the quality of healthcare experienced by Swedish mothers during the COVID-19 pandemic: A cross-sectional study based on WHO standards. *Women Birth*, **35**, 619–627.

Zeine, A., Woldie, M., Ololo, S. (2010). Factors influencing antenatal care services utilization in Hadiya Zone. *Ethiopian Journal of Health Science* **20(2):**75–82.

Council on Foreign Relations. (2021). Seven Charts That Explain the COVID-19 Pandemic in 2021. Retrieved from Council on Foreign Relations

Roberton, T., et al. (2020). 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 Lancet Global Health, 8(7), e901-e908.

World Health Organization. (2021). The True Death Toll of COVID-19: Estimating Global Excess Mortality. Retrieved from WHO

WHO. (2020). Impact of the COVID-19 pandemic on maternal and child health services in LMICs.

Nabukeera, M. (2021). COVID-19 and health service utilization in Uganda.

Document review guide

Date of review: _____/_____/_____

Issue: This section intends to determine the trends of mother's utilization of antenatal care.

Health facility:

_____

Month: _____ Year:

_____

Review number: _____ Reviewer's initial:

_____

			Visits attended (weeks)					
s/no	**Card Num.**	**Age**	**First**	**Second**	**Third**	**Fourth**	**Additional**	**Delivered at facility**

Informed Consent

Informed Consent to Participate in Research

I am/We are asking you to take part in a research study called:

Effects of COVID – 19 pandemic on the utilisation of maternal health and child health services at Entebbe municipality, Uganda

The person who is in charge of this research study is Nabirye Lydia. The research will be conducted at selected health facilities at Entebbe municipality, Uganda.

Purpose of the study

The purpose of this study is to:

- To determine the level at which women attended the antenatal care visits according to the world health organisation's antenatal care model during the pandemic.
- To assess the women's perception and satisfaction with antenatal care provided to them during the pandemic period.
- To identify the factors that hindered the women's utilisation of maternal healthcare and child care services during the pandemic at Entebbe municipality.

Study Procedures

You are being asked to participate in this study, as you are a part of women who can help us to better acquire the Effects of COVID – 19 pandemic on the utilisation of maternal health and child health services.

If you take part in this study, you will be asked to:

- Take part in answering semi-structured questionnaire;
- Filling in the questionnaire will take approximately 10 minutes;
- The questionnaire will be provided at the health facility and filled in from the health facility at a time and place most convenient to you as the participant;

- The questionnaire will contain open ended, and closed ended questions

Benefits

There may be no direct benefits associated with your participation in the study, but the information you will provide will be useful in planning and proper allocation of services to health facilities to address maternal health issues.

Risks or Discomfort

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study.

Compensation

The research participants will be provided with some drinks and snacks

Privacy and Confidentiality

We will keep your study records private and confidential. Certain people may need to see your study records. By law, anyone who looks at your records must keep them completely confidential. The only people who will be allowed to see these records are:

The research team, including the Principal Investigator and those involved with the study.

I may publish what I have learnt from this study. If I do, I will not include your name. I will not publish anything that would let people know who you are.

Voluntary Participation / Withdrawal

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study. You are free to participate in this research or withdraw at any time.

There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study.

You can get the answers to your questions, concerns, or complaints

If you have any questions, concerns or complaints about this study, or experience an adverse event or unanticipated problem, contact the researcher on 0787581119/0702868198

If you have questions about your rights as a participant in this study, general questions, or have complaints, concerns or issues you want to discuss with someone outside the research, call the TASOREC Chairperson Dr. Adrian Jjuko on (414 532 580) & the executive secretary of UNCST on (0414 - 705500) respectively.

Assessment of understanding

Please check which box best describes your assessment of understanding of the above informed consent document:

☐ I have read the above informed consent document and understand the information provided to me regarding participation in the study and benefits and risks. I give consent to take part in the study and will sign the following page.

☐ I have read the above informed consent document, but still have questions about the study; therefore I do not give yet give my full consent to take part in the study.

_____

_____

Signature of Person Taking Part in Study Date

_____

Printed Name of Person Taking Part in Study

_____

Thumb print of Person Taking Part in Study

_____

_____

Signature of Person Obtaining Informed Consent / Research Authorization Date

_____

Printed Name of Person Obtaining Informed Consent / Research Authorization

Questionnaire guide

Socio demographic characteristics of participants

1. Age

< 20 years ☐

20 – 29 years ☐

30 – 39 years ☐

40 – 49 years ☐

50 years and above ☐

2. Marital status

Single ☐

Married ☐

Divorced ☐

Widowed ☐

Separated ☐

3. Education level

PhD ☐

Master's degree ☐

Bachelor's degree ☐

Diploma ☐

Secondary ☐

Primary ☐

No education ☐

4. Number of children

1 ☐

2 ☐

3 ☐

4 ☐

> 4 ☐

5. Occupation

Employed ☐

Unemployed ☐

6. Religion

Catholic ☐

Protestant ☐

Muslim ☐

Born again Christian ☐

Seventh day Adventist ☐

Orthodox Christian ☐

7. Place of residence

Rural ☐

Urban ☐

8. Family size

1 – 2 ☐

3 – 4 ☐

5 – 6 ☐

> 6 people ☐

9. Distance to health facility from home

1 – 3km ☐

4 – 6 km ☐

7 – 9 km ☐

> = 10 km ☐

10. Income per month

< 50,000 ☐

50,000 – 150,000 ☐

150,000 – 250,000 ☐

250,000 – 350,000 ☐

350,000 – 450,000 ☐

> = 450,000 ☐

11. History of still birth

Yes ☐

No ☐

12. Missed any antenatal care service due to the COVID-19 pandemic

Yes ☐

No ☐

13. Current service to be acquired at this health facility

_____

_____

_____

_____

Quality of prenatal care questionnaire (QPFQ)

	Information sharing	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
1.	I was given adequate information about prenatal test and procedures					
2.	I was always given honest answers to my questions					
3.	Everyone involved in my prenatal care received the important information about me					
4.	I was screened adequately for potential problems with my pregnancy					
5.	The results of tests were explained to me in a way I could understand					
6.	My providers gave straightforward answers to my questions					
7.	My prenatal care providers gave me enough information to make decisions for myself					
8.	My prenatal care providers kept my information confidential					

9.	I fully understood the reasons for blood work and other tests my prenatal care providers ordered for me					

	Availability	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
1.	I knew how to get in touch with my prenatal care provider(s)					
2.	Someone in my prenatal care provider's office always returned my calls					
3.	My prenatal care provider(s) was available when I had questions concerns					
4.	I could always reach someone in the office/clinic if I needed something					
5.	I could reach my prenatal care provider(s) by phone when necessary					

Interview guide

Interview Date: _____

Interview ID: _____

Health facility:

_____

Interviewer initials: _____

Age: ☐ 20 – 30, ☐ 31 – 40, ☐ 41 – 50, ☐ >50

Parity: ☐ 1 ☐ 2 ☐ 3 ☐ >3

Residence: ☐ Urban ☐ Rural

1. Did you seek any maternal services at the health facility within the COVID – 19 pandemic?
2. If yes, when exactly?
3. Are there some measures that have been put in place by this health facility to help the mothers acquire maternal and child services without being infected or inconvenienced?
4. What are some of those measures?
5. In your view are you satisfied with the efficiency, effectiveness or availability of the measures to the mothers?
6. What do you think mostly has hindered the easy access of maternal health and child health services within the COVID – 19 pandemic.
7. On the other hand, what do you think facilitated the mothers to go and acquire maternal health and child health services within the COVID – 19 pandemic?

8. In conclusion what do you think the government can do to help the health facility provide services to mothers and children safely in the current condition of the COVID – 19 pandemic?

Foomu ye enzikiziganya

Enzikiziganya okwetabba mu kunonyereza

Nze/ffe tukusaba okwetabba mukunonyereza okuyitibwa:

Okutuukiriza kwa ekirwade kya COVID – 19 ku kukozesa ebyobulamu bya bamama abembuto ne ebyobulamu bya abana mu minicipali eye Entebbe, Uganda

Omuntu akulirwa okunonyereza kunno ayitibwa Nabirye Lydia. Okunonyereza kujja kukolebwa mu malwaliro amalondemu mu municipali eya Entebbe, Uganda

Ekigendererwa kyo okunonyereza kunno

- Okuzula okwenkanya kwa abakazi okugenda okufuna obyobulamu bya bakyala nga tugoberera ekitongole ekyensi ekyobulamu mukisera kyo obulwadde obwa COVID – 19
- Okunonyereza ku kwetanira no bukufu ku byobulamu bya bakyala mukisera kyo obulwadde obwa COVID – 19
- Okuzula ebyo ebiziyiza abakazi okukozesa ebyobulamu byabakyala mukisera kyo obulwadde obwa COVID – 19

Enkola yokunonyereza

Osabidwa okwetabba mukunonyereza, kubanga oli omu ku bakazi abasobola okutuyamba okutegera okutuukiriza kwa ekirwade kya COVID – 19 ku kukozesa ebyobulamu bya bamama abembuto ne ebyobulamu bya abana

Bwe wetabba mukunonyereza kunno, ojakusabibwa okku:

- Okudamu ebibuzo kulupapula
- Okudamu ebibuzo kuyinza okutwala edakikka 10
- Empapula ezokujuza zijja kuwebwa ku ddwaliro, era ojakudamu ebibuzo kusawa zoyagadde era nekifo kyeweyagalidde
- Ebibuzo bijja kuberamu okuyanika ensongazo ne okuggalwa ensongazo

Emiganyulo

Wayinza obutabawo emiganyulo emitereevu mukwetaba mukunonyereza kunno, naye obubaka bwowa bugyakuyamba mukuteekateeka ne okuwereza ebyo kukozesa ku malwaliiro

Okwenyamira oba okuyisibwa bubi

Okunonyereza kunno kutwalibwa okubera ne okwenyamira kutono. Ekyo kitegeza nti okwenyamira okukwataganyizibwa ne okunonyereza keykimu nebyo byofunna buligyo. Tewali kewnyamira kulala okumanyidwa bwewetaba mu kunonyereza kunno.

Kuliyirirwa

Abanetaba mu kunonyeleza kunno banafuna ebyokunywa ne ebyokulya

Eddembe ne ebyama

Tuggya kukuma ebivudde mu kunonyerezza kunno nga ekyama. Abantu abamu bayinzza okwetaga okulaba ebivudde mukunonyereza. Naye mumateeka buli atunula mu bivudde mukunonyeleza alinna okitwalanga ekyama. Abantu bokka abakilizibwa okutunula mu biwandiiko be:

Tiimu enonyeleza, kwotadde omunonyeleza omukulu nabbo abali kutiimu ye

Nyinza okulanga byengyizze mukunonyeleza kunno. Nebwemba nkikoze, siggya kutekako linya lyo. Siggya kulanga kintu kyonna ekisobozesa abantu okumanya nti gwe ani.

Okwetabamu kyeyagalire/okwejjulula-

Olinna okwetabamu kunonyereza kunno nga okikozze kyeyagalire. Tolinna kuwulira okupikirizibwa okwetabamu kunonyereza kunno. Oli wadembe okwetaba mukunonyereza kunno oba okwejjulula esawa yonna.

Tewajja kubera kibonerezo bwolekerawo okwetaba mukunonyereza kunno.

Osobola okufunna okuddamu kwe ebibuzo byo, ensonga oba okwemulugunya kwo

Oba olina ebibuzo byo, ensonga oba okwemulugunya ku kunonyeleza kunno, oba olabyewo ekitali kilungi, tukirira omunonyereza omukulu ku 0787581119/0702868198.

Oba olinna ebibuzo ku dembe lyo mukunonyereza kunno, oba kwemulugunya, oba ensonga gyoyagala okutesako nomuntu ali wabweru wokunonyereza kunno, kubiri sentebe wa TASOREC Dr. Adrian Jjuko on (414 532 580) oba sekulitale omukulu owa UNCST ku (0414 -705500).

Okwetegereza kwe enzikiriziganya

Bambi kebera box ki esinga okunyonyola okwetegereza kwe enzikiriziganya yo ku kiwandiiko kinno:

☐ Nsomye ekiwandiiko era ntegedde ebiwandikidwa ebikwatagana nokwetabba mukunonyereza kunno ne emiganyulo ne okwenyamira. Mpayo okukiriza okwetaba mu kunonyereza kunno era ngenda oku teka akabonero kange ku lupapula.

☐ Nsomye ekiwandiiko naye nkyalina ebibuzo ku kunonyereza era siwayo kukiriza kwange kwetaba mu kunonyereza

_____ _____

Akabonero komuntu eyetaba mu kunonyereza Olunaku

_____

Elinnya lyomuntu eyetaba mu kunonyereza

_____

Ekinkumu kyolugalo kyomuntu eyetaba mu kunonyereza

_____

_____

Akabonero komuntu afunna okukilizibwa kwe enzikiliziganya Olunaku

_____

Elinnya lyomuntu afunna okukilizibwa kwe enzikiliziganya

Ebibuzo

Ebyobutonde bya abetabye mu kunonyeleza

1. Emyaka

< 20 years ☐

20 – 29 years ☐

30 – 39 years ☐

40 – 49 years ☐

50 years and above ☐

2. Bufumbo

Obwomu ☐

Mufumbo ☐

Wagattululwa ☐

Nnamwandu/ Ssemwandu ☐

Wayawukana ☐

3. Enjigiriza

PhD ☐

☐

Master’s degree

Bachelor’s degree ☐

Diploma ☐

Secondary ☐

Primary ☐

Sisomangako ☐

4. Olina abana bameka

Omu ☐

Babiri ☐

Basatu ☐

Banna ☐

Okusinga ku banna ☐

5. Okola

Yee ☐

Nedda ☐

6. Religion

Catholic ☐

Protestant ☐

Muslim ☐

Born again Christian ☐

Seventh day Adventist ☐

Orthodox ☐

7. Obera wa

Mukyalo ☐

Mukibugga ☐

8. Muli bameka ewaka

1 – 2 ☐

3 – 4 ☐

5 – 6 ☐

Musanvu okudda wagulu ☐

9. Kabanga kyi akaliwo mumasekati ga eddwalirro ne amaka gyobera

1 – 3km ☐

4 – 6 km ☐

7 – 9 km ☐

> = 10 km ☐

10. Ofuna sentee mekka buli mwezi

< 50,000 ☐

50,000 – 150,000 ☐

150,000 – 250,000 ☐

250,000 – 350,000 ☐

350,000 – 450,000 ☐

> = 450,000 ☐

11. Wali ovudemuko olubuto

Yee ☐

Nedda ☐

12. Wali alemeddwa okufuna ebyobulamu bya bakyala ku lwe ekirwadi kya COVID - 19

Yee ☐

Nedda ☐

13. Oze okufuna kyi ku dwaliro linno

_____

_____

_____

_____

Ebibuzo bya ebyo engeri kulabirira abembuto

	Okugabana ensonga	**Sikiliza namani**	**Sikiliza**	**mumakati**	**Nzikiriza**	**Nzikiriza namani**
1.	Bampa obumanyilivu obumala ku kwekebeza nga ngenda okufuna olubuto ne nkozesa					
2.	Nali mpebbwa okudibwamu okwamazima ku bibuzo bye nail mbuzza					
3.	Buli omu agwanira okundabiririua nga ndi lubuto yafuna ebinkwatako					
4.	Bankebera bulungi kulwe bizibu ebiyinza okubaluka ku lubuto lwange					

5.	Ebivudde mu ku keberwa bakunyoyola mu ngeri gye ntegerra					
6.	Aba mperera bampa okudamu okwamazima					
7.	Aba mperera bampa obumanyilivu okwesalirawo					
8.	Aba mperera bakuma ebinkwatako nga ekyama					
9.	Nategera ensonga yo kwekebeza aba mpererwa gye bandagirira					

	Okuberawo	**Sikiliza namani**	**Sikiliza**	**mumakati**	**Nzikiriza**	**Nzikiriza namani**
1.	Namanya engeri eyo kukwatagana ne abasawo bange					
2.	Omuntu mu office ya musawo wange yali adamu esimu zange					

3.	Omusawo wange abelawo nga nina ebibuzo					
4.	Nali ntukirira omuntu mu office nga nina kyenetaga					
5.	Nali ntukirira omusawo wange ku simmu nga kyetagisibwa					

Okubuza

Olunaku lwo okubuza: _____

Enamba eyo kubuza: _____

Eddwaliro: _____

Amanya ga abuliriza: _____

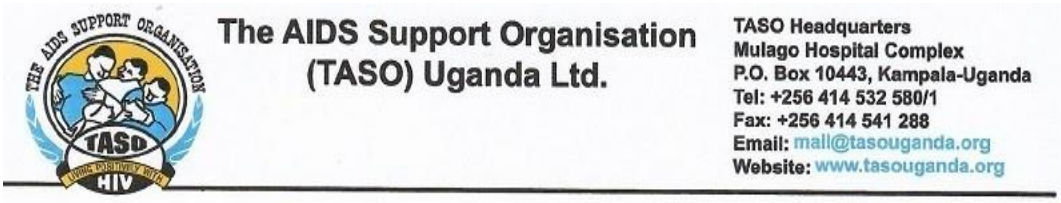
emyaka: ☐ 20 – 30, ☐ 31 – 40, ☐ 41 – 50, ☐ >50

Abanna: ☐ 1 ☐ 2 ☐ 3 ☐ >3

Gyosula: ☐ Kibugga ☐ Mukyalo

9. Wali ogenze okufuna obujanjabi oba ekikwatagana ne ebyo bulamu bya bakyalo mu kisera kya COVID – 19?
10. Oba yee, ddi?
11. Wali ebyokwelinda ebitererdwawo mu ddwaliro okwetanira okufuna obujanjabi nga tebafunye bulwwadde bulala?
12. Oba yee, waako ebimu?
13. Mukulabakwo oil mukufu ne ngeri gye bikolamu, bikwatibwamu oba okuberawo kwebyokwerinda ewaba mama?
14. Olowoza kyi ekisinze okuziyiza abakazi okugenda okufuna obujanjabi mu bisera bya COVID – 19?
15. Olowoza kyi ekyawa abakazi obuvumu okugenda okufunna obujanjjabi mu biseera bya COVID – 19
16. Mukumaliriza olowoza kyi gavumenti kye sobola okukola ku ddwaliro ki sobozese abakazi okufuna obujanjabi obumala?

Ethical Review Letter



25/11/2022

To: NABIRYE LYDIA

KYAMBOGO UNIVERSITY

0787581119/0702868198

Type: Initial Review

Re: TASO-2022-178: EFFECTS OF COVID – 19 PANDEMIC ON THE UTILISATION OF MATERNALHEALTH AND CHILD HEALTH SERVICES AT ENTEBBE MUNICIPALITY, UGANDA, ,

I am pleased to inform you that the The AIDS Support Organization (TASO) REC, through expedited review heldon **25/11/2022** approved the above referenced study.
Approval of the research is for the period of **25/11/2022** to **25/11/2023.**

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which couldchange the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records,and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of**25/11/2023** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the RECof record.

7. You are required to register the research protocol with the Uganda National Council for Science andTechnology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by The AIDS Support Organization (TASO)REC:

No.	Document Title	Language	Version Number	Version Date
1	Revised clean updated protocol	English	2.0	2022-11-16
2	Informed Consent forms	English	2.0	2022-11-07
3	Data collection tools	Luganda	1.0	2022-11-07
4	Informed Consent forms	Luganda	1.0	2022-11-07
5	Data collection tools	English	1.0	2022-10-21

Yours Sincerely

Dr.Adrian Jjuuko

For: The AIDS Support Organization (TASO) REC