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Original Research Article

Factors Affecting Maternal and Child Health Outcomes at Kanyama Level One Hospital, Lusaka, Zambia

Nseko Mwanza Chikumba[1], Sandwe Katongo[1]*, Pascalis Shipili[2]

[1]Eden University, School of Nursing and Midwifery Sciences, P.O. Box 37727, Lusaka, Zambia
[2]Mufulira College of Nursing and Midwifery, Mufulira, Zambia

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Abstract: ***Background***: Maternal and child health (MCH) outcomes remain key indicators of public health in Zambia, especially in urban areas like Lusaka, where socio-economic, infrastructural, and cultural challenges persist. Kanyama Level One Hospital, serving a densely populated and low-income community, continues to report high rates of maternal and child health complications. ***Objective***: This study aimed to identify and analyze the key factors influencing maternal and child health outcomes among women and children accessing healthcare services at Kanyama Level One Hospital in Lusaka District, Zambia. ***Methods***: A descriptive cross-sectional study design was utilized, targeting women of reproductive age and healthcare workers at the hospital. Data were collected using structured questionnaires and hospital records, and analyzed using SPSS version 26. Factors examined included socio-economic status, healthcare access, maternal nutrition, antenatal care attendance, and cultural practices. ***Results***: Among the 353 women surveyed, 57.2% experienced maternal complications, with gestational hypertension (25.2%), postpartum haemorrhage (24.8%), and anaemia (22.8%) being most common. Adverse child health outcomes included low birth weight (32.6%), preterm birth (25.2%), and neonatal sepsis (19.3%). Significant predictors of adverse outcomes included maternal age below 18 years, low educational attainment, fewer than four antenatal visits, and long distances to the hospital. Financial challenges and cultural beliefs were also identified as major barriers to healthcare utilization. ***Conclusion***: The study highlights the multifactorial nature of poor MCH outcomes at Kanyama Level One Hospital. Targeted interventions—such as improving antenatal care access, health education, economic empowerment, and healthcare staffing—are essential to enhance maternal and child health services. These findings offer vital insights for policymakers and stakeholders aiming to achieve sustainable health improvements in Zambia.

Keywords: Maternal Health, Child Health, Healthcare Access, Socioeconomic Factors, Antenatal Care, Zambia, Kanyama Level One Hospital.

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INTRODUCTION

Maternal and child health (MCH) outcomes remain a significant concern in Zambia, particularly in urban areas such as Lusaka District. Factors such as socio-economic disparities, limited healthcare access, and cultural beliefs contribute to high maternal and child mortality rates (WHO, 2021). These challenges are exacerbated in healthcare facilities like Kanyama Level One Hospital, due to lack of comprehensive research focusing on MCH outcomes (UNICEF, 2020). Understanding the specific factors influencing MCH outcomes at this hospital is crucial for developing effective interventions.

Maternal and child health (MCH) has been widely recognized as a fundamental indicator of a nation's health status and development trajectory. The World Health Organization (WHO) has reported that approximately 295,000 women globally died during and following pregnancy and childbirth in 2017, with 94% of these deaths occurring in low- and middle-income countries (LMICs). Additionally, more than five million children under the age of five died in 2020, with sub-Saharan Africa bearing the highest burden. These figures highlighted the need for enhanced interventions to address maternal and child health outcomes, particularly in resource-constrained settings.

***Corresponding Author:** Sandwe Katongo
Eden University, School of Nursing and Midwifery Sciences, P.O. Box 37727, Lusaka, Zambia

Studies have established that poor maternal and child health outcomes globally are primarily associated with poverty, limited access to quality healthcare, insufficient maternal education, undernutrition, and sociocultural practices that discourage timely health-seeking behaviours. Despite concerted global efforts—such as the Sustainable Development Goals (SDGs), which aim to reduce the maternal mortality ratio to fewer than 70 deaths per 100,000 live births by 2030—many countries, including those in sub-Saharan Africa, continue to struggle with high maternal and child morbidity and mortality rates.

Within the regional context of sub-Saharan Africa, countries have experienced disparities in access to healthcare services, with rural and low-income communities being the most affected. These disparities were often compounded by inadequate infrastructure, shortages of skilled healthcare professionals, long distances to health facilities, and deep-rooted traditional beliefs. In Zambia, maternal mortality declined from 729 per 100,000 live births in 2001 to approximately 278 per 100,000 in 2019. Although progress has been made, the rates still remain high relative to international targets.

At the local level, the Lusaka District of Zambia has encountered similar challenges, especially in densely populated and economically disadvantaged areas such as Kanyama. Kanyama Level One Hospital, a primary healthcare facility serving a large population including women of reproductive age and children under five, continues to experience suboptimal maternal and child health outcomes. The hospital has reported high incidences of gestational hypertension, postpartum haemorrhage, anaemia, low birth weight, preterm births, and neonatal sepsis. These outcomes were attributed to a combination of factors including socio-economic inequalities, cultural norms, limited healthcare infrastructure, and shortages of skilled medical personnel.

The socio-ecological framework was utilized in this study to provide a comprehensive analysis of the multifactorial determinants of maternal and child health outcomes. This model facilitated an understanding of how individual characteristics, interpersonal dynamics, community influences, organizational structures, and broader policy environments interact to influence health outcomes.

Kanyama Level One Hospital, being one of the primary health facilities in Lusaka District, faced unique challenges in meeting the maternal and child health needs of its population. While efforts had been made to enhance facility-based deliveries and antenatal care services, the hospital continued to record high levels of maternal complications and adverse child health outcomes. Compounding these issues was a lack of empirical research specifically focusing on the determinants of these outcomes within the Kanyama context.

The absence of localized, evidence-based insights into the factors affecting maternal and child health outcomes limited the ability of health managers, policy makers, and development partners to design and implement contextually appropriate interventions. The gap in research meant that interventions were often generalized and failed to address the unique socio-economic, cultural, and institutional realities of the Kanyama community.

This study was therefore conducted to address this critical knowledge gap by systematically examining the individual, interpersonal, community, organizational, and policy-level factors influencing maternal and child health outcomes at Kanyama Level One Hospital. The findings were expected to guide targeted policy and programmatic interventions aimed at improving maternal and child health within the facility and its surrounding communities.

METHODOLOGY

Study Design

The research employed a descriptive cross-sectional study design. This design was chosen because it allowed for the collection of data from a population at a single point in time, which was useful for identifying associations between various factors (such as socioeconomic status, healthcare access, etc.) and maternal and child health (MCH) outcomes.

Stratified random sampling was used to ensure representation from different socioeconomic strata and different wards within the hospital.

Study Setting

The research was conducted at Kanyama Level One Hospital, located in the Kanyama Township of Lusaka District, Zambia. This facility is located in Kanyama area, with a catchment population of close to 50,000 and has a bed capacity of 139. The hospital plays a crucial role in providing healthcare services such as maternal and child health, family planning, internal medicine and surgery, HIV/AIDS diagnosis and management etc. to a significant portion of the population living in this economically disadvantaged area.

Study Population and Sampling

The study population consisted of women of reproductive age (15–49 years) who were pregnant or had given birth within the preceding 12 months and accessed maternal and child health services at Kanyama Level One Hospital, as well as healthcare providers working in the MCH department of the hospital.

A stratified simple random sampling technique was used to ensure representation from various sub-

groups within the population. The strata included different age groups, parity status (primiparous and multiparous), and healthcare providers. Within each stratum, participants were randomly selected to minimize selection bias.

To calculate the sample size for a known population of 56,498, the study used the sample size formula for finite populations. A sample size of 383 participants was determined using a 95% confidence level and a 5% margin of error. A total of 353 women completed the questionnaire, representing 92.2% of the calculated sample size.

Inclusion and Exclusion Criteria

The study included:

1. Women aged 15–49 years.
2. Residents of Kanyama who sought maternal and child health services at Kanyama Level One Hospital.
3. Women who were currently pregnant or had given birth at Kanyama Level One Hospital within the last 12 months.
4. Participants who were willing and provided informed consent in accordance with the approved research protocol.
5. Women experiencing pregnancy-related complications, including gestational hypertension, pre-eclampsia, gestational diabetes, anaemia, and postpartum haemorrhage, provided they met the applicable eligibility and safety requirements.

The study excluded:

1. Individuals who were not residing within Kanyama compound.
2. Women outside the reproductive age range of 15–49 years.
3. Women and children who had severe or life-threatening health conditions that prevented safe participation in data collection.
4. Non-consenting participants.

Data Collection and Analysis

A structured questionnaire was used as the primary data collection tool. Structured questionnaires were administered to the selected participants to gather data on socioeconomic status, healthcare access, and nutritional status. Additionally, medical records were reviewed to collect clinical data on maternal and child health outcomes, including gestational hypertension, pre-eclampsia, gestational diabetes, anaemia, postpartum haemorrhage, and other pregnancy-related complications.

Data were analyzed using statistical software known as statistical package for social sciences (SPSS v26). Descriptive statistics (mean, median, standard deviation) were used to summarize the data. Inferential statistics (chi-square tests, t-tests, logistic regression) were employed to test the hypotheses and identify significant associations between independent variables and MCH outcomes. The study reported odds ratios, p-values, and 95% confidence intervals to examine associations between the investigated factors and adverse maternal and child health outcomes.

Pilot Study, Validity and Reliability

A pilot study was conducted at Matero Level One Hospital in Lusaka District. This facility was selected due to its similar catchment area coverage and range of maternal and child health services offered, which made it an appropriate proxy for the main study site. The pilot study involved a convenient sample of five pregnant women who were receiving maternal and child health services at Matero Level One Hospital. The primary objectives of this pilot study were to test the practicality of the study design, refine the structured questionnaire, and identify any logistical or procedural challenges that could arise during the main study.

During the pilot study, data collectors administered the structured questionnaire through face-to-face interviews with the participants. Based on the feedback, necessary adjustments were made to the questionnaire and data collection procedures.

To ensure external validity, participants were selected randomly across a wide range of socio-demographic characteristics, education and practices. To ensure internal validity, the study questions were simple, clear and concise to avoid ambiguity. In addition, a pilot study was conducted as part of the steps to ensure validity of the data collection tool and the questionnaire was reviewed by experts in maternal and child health, as well as public health researchers.

Reliability was upheld by adapting validated tools for data collection and carrying out a pilot study.

Ethical Considerations

Ethical clearance was obtained from Lusaka Apex Medical University Bio-Medical Research Ethics Committee (LAMUBREC), approval number **0070/20/09/2024**, dated 21 September 2024. Approval to conduct the study was sought from the National Health Research Authority. Permission to collect research project data was sought from the Lusaka District Health Office and the selected hospital.

All participants, including healthcare providers, key informants, and pregnant women or caregivers of eligible infants, were provided with informed consent before participating in the study. The informed consent process clearly explained the purpose of the study, the risks and benefits of participation, and the participant's right to withdraw at any time.

The privacy and confidentiality of all participants were ensured throughout the study. Personal

identification information, such as names and addresses, were kept confidential and stored securely. The research team ensured that all data collected during the study was protected and stored securely to prevent unauthorized access or use.

RESULTS

Demographic Characteristics

Table 4.1 summarizes the individual, socioeconomic, maternal related and institutional variables in the study. A total of 353 women answered the questionnaire representing a response rate of 92%. The table shows that most of the women in the study were aged between 24-34 years (36%) and 18-24 years old (30.3%). A large proportion of the women in the study were unemployed or housewives 184 (52.1%), Christians 305 (86.4%), never married 150 (42.5%) and had a monthly average income 253 (73.1%) (See Tables 4.1 for details).

**Table 4.1: Characteristics of Study Population **

	Frequency (n)	*Percent (%)*
Individual Factors		
Age-Group		
Under 18	20	5.67
18-24	107	30.3
24-34	127	36
35-45	99	28.1
Employment Status		
Unemployed	184	52.1
Self-employment	101	28.6
Formal employment	68	19.3
Level of Education		
No formal education	35	9.92
Primary school	93	26.4
Secondary school	125	35.4
Tertiary	100	28.3
Marital Status		
Never Married	150	42.5
Married	141	39.9
Divorced	40	11.3
Widowed	22	6.23
Religion		
Christianity	305	86.4
Islam	34	9.63
Hindu	6	1.7
Other	8	2.27
Socioeconomic Factors		
Level of Education (Head of House)		
No formal education	33	9.35
Primary School	51	14.45
Secondary school	96	27.2
Vocational/Technical training	77	21.81
University or higher education	96	27.2
Income Level		
Below K1000	120	33.99
K1000-3000	138	39.09
3000-7000	60	17
Above K7000	35	9.92
Type of Toilet		
Flushable toilet	151	42.78
Pit latrine with slab	110	31.16
Pit latrine open pit	72	20.4
Composting toilet	9	2.55
No toilet/bush/field	11	3.12
Water Source		
Public water supply/well	221	62.61

	Frequency (n)	*Percent (%)*
Private well	81	22.95
Bottled water	40	11.33
River/Stream	7	1.98
Other (please specify)	4	1.13
Maternal Factors		
Skilled Delivery		
Yes	300	84.99
No	53	15.01
Antenatal Attendance		
Yes	321	90.93
No	32	9.07
Number of Antenatal Visits		
1 to 4	137	39.03
4 to 6 times	162	46.15
More than 7	52	14.81
Child Factors		
Number of Children		
1	113	32.01
2	105	29.75
3	74	20.96
More than 4	61	17.28
Vaccination Status of Children		
Vaccinated	295	83.57
Not Vaccinated	58	16.43
Social Factors		
Support from Family During Delivery		
Yes	289	81.87
No	64	18.13
Family Involvement in Vaccination of Children		
Yes	277	78.47
No	76	21.53
Institutional Related Factors		
Distance to Facility		
1 to 5 kilometres	221	62.61
6 to 10 kilometres	61	17.28
Above 10 kilometres	71	20.11
Perceived Staffing Level		
Good	200	56.66
Poor	153	43.34
Perceived Attitudes of Staff		
Positive	102	28.9
Fair	175	49.58
Negative	76	21.53

Proportion of Women Experiencing Maternal Complications during Pregnancy

Figure 4.1 below shows that most of the women in the study in Kanyama 202 (57.2%) had one form or more complications associated with pregnancy such as gestational hypertension, gestational diabetes, postpartum haemorrhage, depression, oedema and preeclampsia. While only 151 (42.8%) of the women in the study did not experience any complications assessed in the study.

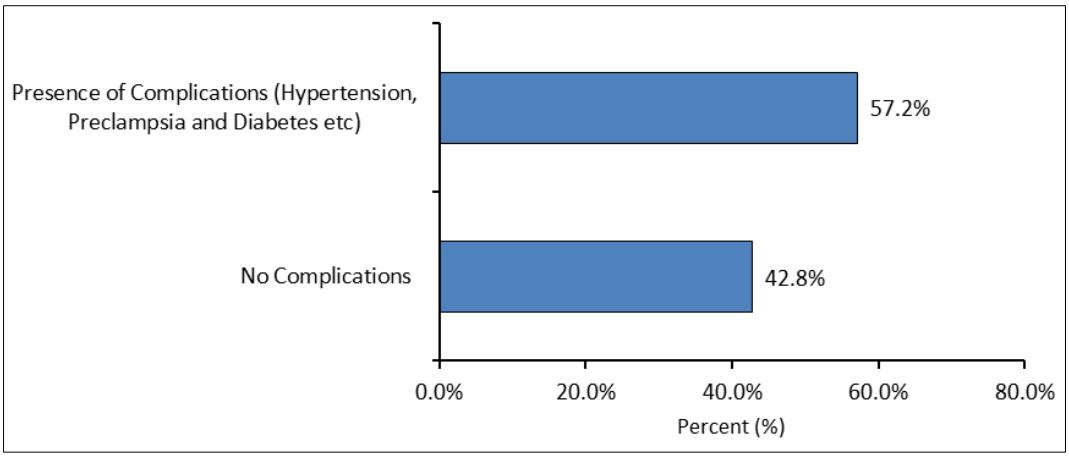


Figure 4.1: Proportion of Women with Complications during the Pregnancy

Among the reported complications the study found gestational hypertension (25.2%), postpartum haemorrhage (PPH) (24.8%) and anaemia (22.2%) were the most common observed during pregnancy. A small proportion of the study population reported having gestational diabetes (14.4%).

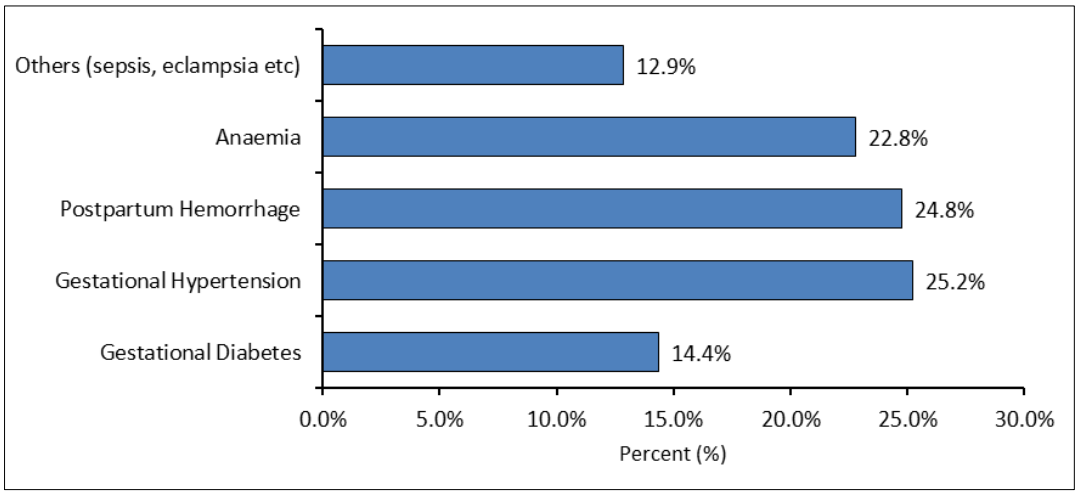


Figure 4.2: Prevalence of Various Complications among the Women in Kanyama

Factors Associated with Adverse Maternal Health Outcomes among women at Kanyama Level One Hospital

The study found that women aged above 18 years were less likely to experience any complications during their pregnancy compared with women aged below 18 years. The study also observed that women with a tertiary level of education were 0.31 times less likely to report having adverse maternal complications compared with women with no education (AOR=0.31, 95% CI: 0.11,0.86). Similarly, it was observed that women who earned ZMW 7000 and above were less likely to report having adverse pregnancy associated complications or outcomes compared to women who earned less than ZMW 3000 (AOR:0.25, 95% CI: 0.09,0.71). Furthermore, the study also found that mothers who had more than four ANC visits were 0.50 times less likely to report having adverse maternal health outcomes compared to women who had less than four ANC visits (AOR: 0.50, 95% CI: 0.29,0.87). Lastly, the study found that women who had more than one child were 2 times more likely to report having adverse complications such as gestational hypertension, diabetes etc. than women had no children.

Table 4.2: Predictors of Adverse Maternal Health Outcomes among women at Kanyama Level One Hospital

	Odds Ratio	P-Value	95% CI
Individual Factors			
Age (Years)			
Below 18	Ref		
18-24	0.56	0.36	0.16,1.96
24-34	0.57	0.39	0.16,2.04
35-45	0.40	0.18	0.10,1.52

	Odds Ratio	P-Value	95% CI
Marital Status			
Single	Ref		
Married	0.92	0.75	0.54,1.56
Level of Education			
No Education	Ref		
Primary school	1.32	0.57	0.51,3.42
Secondary school	0.71	0.46	0.28,1.77
Tertiary	0.31	0.02	0.11,0.86
Employment Status			
Unemployed	Ref		
Self-employment	1.33	0.36	0.73,2.42
Formal employment	1.79	0.16	0.79,4.07
Religion			
Christian	Ref		
Islam	1.54	0.25	0.73,3.23
Social-Economic Factor			
Monthly Income Average			
Less than ZMW 3000	Ref		
ZMW 3000-7000	0.54	0.07	0.27,1.05
More than ZMW 7000	0.25	0.01	0.09,0.71
Social Factors			
Family support During Delivery			
Yes			
No	0.68	0.28	0.34,1.37
Maternal Factors			
Antenatal Care Attendance			
Yes	Ref		
No	1.63	0.31	0.64,4.15
Frequency of Antenatal Care Attendance			
Less than 4 Visits	Ref		
More than 4 Visits	0.50	0.01	0.29,0.87
Number of Children			
1	Ref		
2	2.85	0.002	1.48,5.50
3	2.13	0.05	1.01,4.48
>4	3.69	0.01	1.49,9.14
Skilled Delivery			
Yes	Ref		
No	1.47	0.31	0.70,3.10
Hospital Related Factors			
Distance to Health Facility			
1-6 Kilometres	Ref		
6-10 kilometres	0.56	0.10	0.28,1.12
More than 10 kilometres	0.59	0.10	0.31,1.10
Staffing Level			
Good			
Poor	1.17	0.58	0.67,2.07
Perceived Attitudes of Staff			
Positive	Ref		
Negative	0.81	0.55	0.41,1.61

Prevalence of Adverse Child Health Outcomes

The study finding showed that the prevalence of adverse birth outcome among the study participants was 135(38%) and approximately 218 (62%) of the children had no adverse birth outcomes (Figure 4.3).

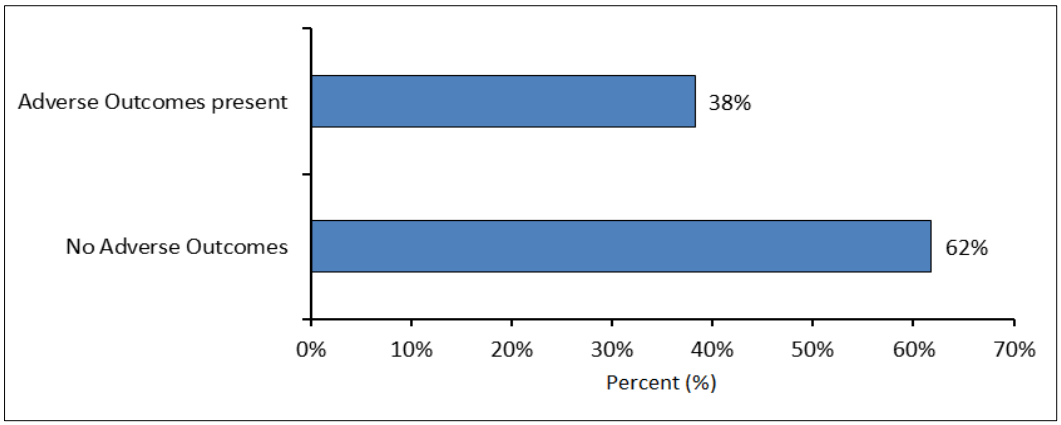


Figure 4.3: Proportion of self-reported Child Health outcomes

Out of 327 births 28(8.6%) were still birth, 32(9.8%) were LBW, 28(8.6%) preterm and 6(1.8%) were with visible birth defects. Among babies with congenital malformations four were still births.

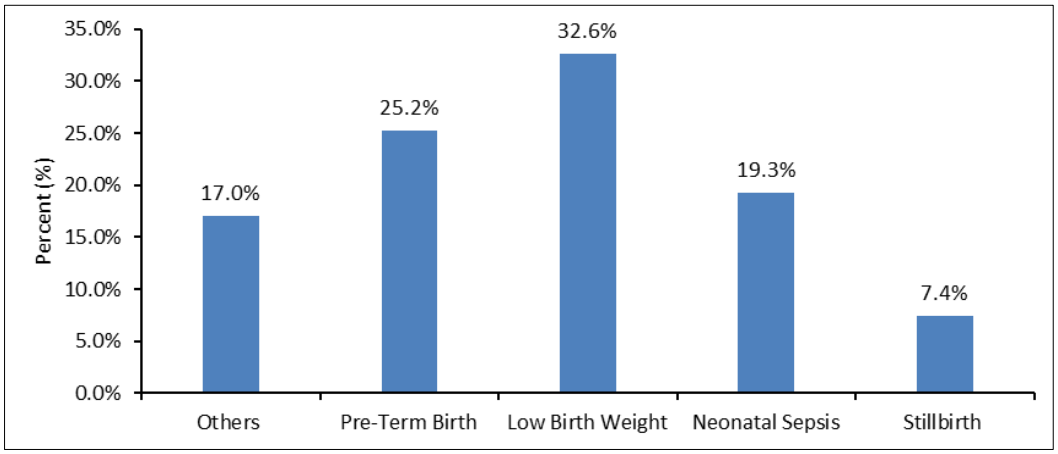


Figure 4.4: Distribution of Adverse Child Complications

Factors Associated with Adverse Child Health Outcomes

Regarding age group, the current study found that women aged between 18-24 and 24-34 years were 0.14 and 0.17 times less likely to report having children with adverse birth outcomes compared to women below 18 years and the observed differences were statistically significant (P-value<0.05). However, the study found that women aged 35 years and above were 1.05 times more likely to report having a child with an adverse health outcome compared to women below 18 years (AOR: 1.05, 95% CI: 0.28,3.97). The study also found that women that had complications during their pregnancy such as hypertension, anaemia and diabetes etc. were 4.85 times more likely to report having a child with an adverse health outcome compared to women that did not have any complications during their pregnancy (AOR: 4.85, 95%: 2.64,8.93). Similarly, the study found that women who had to travel between 6 to 10 kilometres and above to Kanyama Level One Hospital were 1.74 and 1.93 times more likely to report having a child with an adverse health come compared to women who travelled less than 6 kilometres to the hospital.

Table 4.3: Predictors of Adverse Child Health Outcomes at Kanyama Level One Hospital

	Odds Ratio	P-value	[95% Conf.
Individuals Factors			
Age (Years)			
Below 18	Ref		
18-24	0.14	0.001	0.04,0.47
24-34	0.17	0.01	0.05,0.58
35-45	1.05	0.94	0.28,3.97
Marital Status			
Single	Ref		
Married	0.62	0.09	0.35,1.08

	Odds Ratio	P-value	[95% Conf.
Level of Education			
No Education	Ref		
Primary school	0.83	0.70	0.33,2.09
Secondary school	0.55	0.20	0.22,1.37
Tertiary	0.43	0.12	0.15,1.23
Employment Status			
Unemployed	Ref		
Self-employment	0.55	0.07	0.30,1.04
Formal employment	0.52	0.14	0.22,1.22
Religion			
Christian	Ref		
Islam	1.08	0.83	0.53,2.23
Antenatal Care Attendance			
Yes			
No	1.77	0.22	0.71,4.39
Frequency of Antenatal Care Attendance			
Less than 4 Visits			
More than 4 Visits	1.17	0.59	0.66,2.06
Maternal Outcomes			
No Complication	Ref		
Complication present	4.85	0.001	2.64,8.93
Number of Children			
1	Ref		
2	0.83	0.60	0.41,1.68
3	0.92	0.83	0.42,2.02
>4	0.76	0.56	0.30,1.92
Distance to Health Facility			
1-6 Kilometres	Ref		
6-10 kilometres	1.74	0.13	0.86,3.55
More than 10 kilometres	1.93	0.05	0.99,3.77
Monthly Income Average			
Less than ZMW 3000	Ref		
ZMW 3000-7000	1.69	0.16	0.81,3.52
More than ZMW 7000	3.20	0.04	1.08,9.51

Barriers to Utilisation of Health Services

The current study found that the common barriers to utilisation of health services at Kanyama were financial challenges 121 (40.9%), distance to health facility 88 (29.7%), inadequate transport to the health facility 32 (10.8%) and cultural beliefs 30 (10.1%).

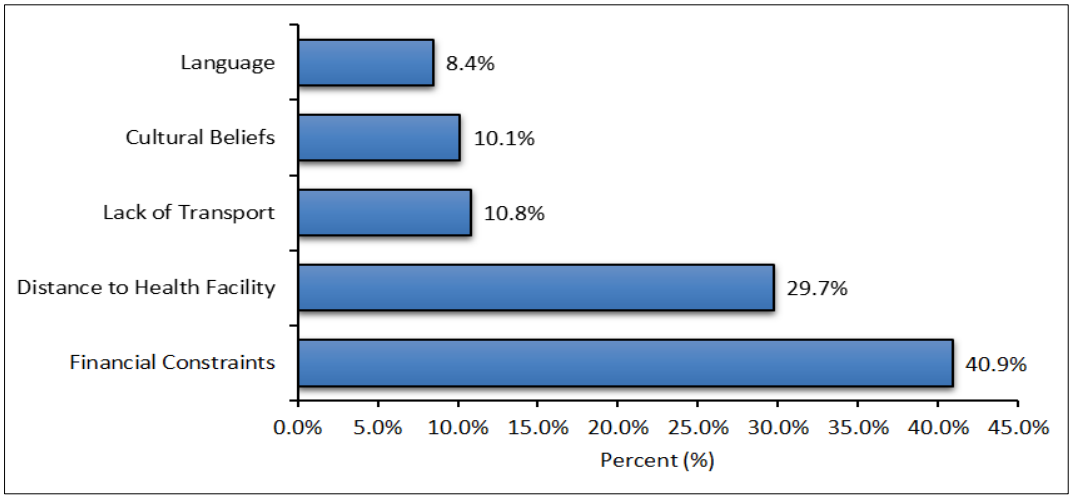


Figure 4.5: Barriers affecting Utilisation of Health Services

DISCUSSION

Maternal Health Outcomes

The study investigated factors associated with maternal and child health outcomes at Kanyama Level One Hospital. Approximately 57.2% of women reported maternal complications, predominantly gestational hypertension (25.2%), postpartum haemorrhage (24.8%), and anaemia (22.8%). These findings were consistent with a study conducted in Southwest Ethiopia, where 50.9% of women experienced adverse maternal outcomes (Gelan *et al*., 2022), but higher than the 37.6% reported in Uganda (Masembe *et al*., 2024). The variations may be attributed to differences in study populations, healthcare accessibility, diagnostic criteria, and maternal health service delivery.

The study considered gestational diabetes, hypertension, puerperal sepsis, postpartum haemorrhage, and other pregnancy-related complications as maternal health outcomes. Similarly, Semasaka Sengoma *et al.*, (2017) identified anaemia, severe vaginal bleeding, hypertension, and diabetes mellitus as common maternal complications in Rwanda. These findings highlight the continuing burden of pregnancy-related complications in resource-constrained healthcare settings.

Factors Associated with Maternal Health Outcomes

Maternal education, household income, antenatal care (ANC) attendance, and parity were important factors associated with adverse maternal health outcomes. Women with tertiary education had significantly lower odds of adverse maternal outcomes compared with those without formal education (AOR = 0.31; 95% CI: 0.11–0.86). These findings were consistent with Muluneh *et al*., (2022), who reported an increased risk of adverse maternal outcomes among women with lower educational attainment. Maternal education may improve health literacy, awareness of pregnancy-related complications, and timely utilisation of maternal healthcare services.

Similarly, women earning more than ZMW 7,000 had significantly lower odds of adverse maternal outcomes compared with women earning less than ZMW 3,000 (AOR = 0.25; 95% CI: 0.09–0.71). This finding was consistent with Tadese *et al*., (2022), who observed higher risks of adverse maternal outcomes among women from low-income households. Financial limitations may affect access to transportation, adequate nutrition, and essential maternal healthcare services.

Antenatal care attendance was significantly associated with maternal health outcomes. Women who attended more than four ANC visits had lower odds of adverse maternal complications compared with those who attended fewer than four visits (AOR = 0.50; 95% CI: 0.29–0.87). This finding was consistent with Masembe *et al*., (2024) and Muluneh *et al*., (2022), who highlighted the protective role of antenatal care utilisation. Regular ANC attendance facilitates the identification and management of pregnancy-related complications, including gestational hypertension, pre-eclampsia, anaemia, and gestational diabetes.

Multiparity was also associated with increased odds of adverse maternal outcomes. Women with two children had higher odds of complications compared with those with one child (AOR = 2.85; 95% CI: 1.48–5.50). Similar findings were reported by Dasa *et al*., (2022), who observed an increased risk of postpartum haemorrhage and malpresentation among multiparous women. These findings underscore the importance of appropriate pregnancy monitoring and risk assessment among women with previous childbirth experiences.

Cultural and Institutional Factors

Cultural and institutional factors were examined as potential influences on maternal health outcomes. Although differences in maternal outcomes were observed across religious groups, the associations were not statistically significant. Similar variations in maternal healthcare utilisation across religious groups have been reported by Kachoria *et al*., (2022) and Tadese *et al.*, (2022). Cultural beliefs and family decision-making practices may influence healthcare-seeking behaviour; however, the findings of this study do not establish religion as an independent predictor of adverse maternal outcomes.

Distance to healthcare facilities was also examined. Although the study explored geographical barriers to maternal healthcare utilisation, the associations between distance and adverse maternal outcomes were not statistically significant. Nevertheless, Mweemba *et al*., (2021) identified distance as an important barrier to maternal healthcare access in Zambia. Geographic accessibility remains relevant to timely antenatal attendance and emergency obstetric care.

Adverse Child Health Outcomes

The prevalence of adverse child health outcomes was 38%, with low birth weight (32.6%), preterm birth (25.2%), and neonatal sepsis (19.3%) being the most frequently reported complications. This finding was comparable to the approximately 40% prevalence of neonatal complications reported in Uganda (Okot *et al*., 2024). However, lower prevalences of adverse birth outcomes have been reported in Saudi Arabia and Southwest Ethiopia (Dallak *et al*., 2022; Degno *et al.,* 2021). Such variations may reflect differences in maternal characteristics, healthcare infrastructure, quality of obstetric care, and outcome definitions.

The distribution of complications was also consistent with Workineh and Workie (2022), who identified low birth weight and preterm birth among the leading adverse neonatal outcomes in Ethiopia. These findings reinforce the importance of comprehensive antenatal monitoring, timely management of maternal

complications, and access to essential neonatal healthcare services.

Factors Associated with Child Health Outcomes

Maternal age and pregnancy-related complications were significantly associated with adverse child health outcomes. Women aged 18–24 years had significantly lower odds of adverse child outcomes compared with women younger than 18 years (AOR = 0.14; 95% CI: 0.04–0.47). Similar findings were observed among women aged 24–34 years (AOR = 0.17; 95% CI: 0.05–0.58). These findings suggest that adolescent mothers may experience greater vulnerability to adverse birth outcomes. Tsegaye and Kassa (2018) similarly identified maternal age as an important factor associated with adverse pregnancy outcomes.

Maternal complications were strongly associated with adverse child health outcomes. Women who experienced complications during pregnancy had significantly higher odds of reporting adverse child outcomes than those without maternal complications (AOR = 4.85; 95% CI: 2.64–8.93). This finding was consistent with Dallak *et al.,* (2022), who identified maternal anaemia and hypertension as important factors associated with adverse birth outcomes. Pregnancy-related conditions, including gestational hypertension, pre-eclampsia, and diabetes, may compromise maternal and fetal health, underscoring the need for early identification and appropriate clinical management.

Healthcare accessibility was also relevant to child health outcomes. Women travelling more than 10 kilometres to the hospital had higher estimated odds of adverse child outcomes compared with those travelling shorter distances (AOR = 1.93; 95% CI: 0.99–3.77), although this association did not reach conventional statistical significance. Tamirat *et al*., (2021) similarly identified geographical barriers as contributors to adverse birth outcomes in sub-Saharan Africa. Improving access to maternal healthcare and emergency referral services may therefore be important for reducing preventable maternal and neonatal complications.

Study Limitations and Implications

The cross-sectional study design allowed identification of associations but did not establish causal relationships between the investigated factors and maternal or child health outcomes. The reliance on self-reported information may have introduced recall and social desirability biases, particularly regarding previous pregnancy complications and antenatal care attendance. Furthermore, conducting the study at a single healthcare facility may limit the generalisability of the findings to other settings.

Despite these limitations, the findings provide context-specific evidence to inform maternal and child healthcare interventions at Kanyama Level One Hospital. Strengthening antenatal care utilisation, maternal health education, early identification of pregnancy-related complications, and timely referral services may contribute to improved maternal and child health outcomes.

CONCLUSION

The study identified a substantial burden of adverse maternal (57.2%) and child health outcomes (38%) at Kanyama Level One Hospital. Gestational hypertension, postpartum haemorrhage, and anaemia were the most frequently reported maternal complications, while low birth weight, preterm birth, and neonatal sepsis were the leading adverse child health outcomes. Maternal education, household income, antenatal care attendance, and parity were significantly associated with maternal outcomes, while maternal age and pregnancy-related complications were important predictors of adverse child health outcomes.

The findings highlight the need to strengthen antenatal and postnatal care services, improve maternal health education, enhance early detection and management of pregnancy-related complications, and ensure timely access to emergency obstetric and neonatal care. Strengthening healthcare staffing, referral systems, and community outreach programmes may further improve service utilisation and maternal and child health outcomes. Future longitudinal studies are recommended to better understand these associations and inform sustainable maternal and child health interventions in Zambia.

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