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Determinants of low birth weight among newborns: maternal and health-related factors at China Uganda Friendship Hospital, Naguru. A cross-sectional study.

Priscillar K Mukopuuli, Hasifa Nansereko*, Jane Frank Nalubega, Ms. Immaculate Naggulu Prosperia
Mildmay Institute of Health Sciences.

Abstract

Background:
In Uganda, the prevalence of LBW is estimated at 33.5% suggesting that approximately 4 in 10 infants are born with a low birth weight. The purpose of this study was to assess the determinants of low birth weight among newborns, focusing on maternal and health-related factors at China-Uganda Friendship Hospital, Naguru, Kampala District.

Methodology:
A descriptive cross-sectional study design employing a quantitative method was used. In three days, 32 mothers were sampled using a simple random sampling technique and a structured questionnaire. The data were then analyzed using the Office (2010) programs and presented in the form of tables, graphs, and pie charts.

Results:
Out of the 32 respondents, nearly half (46.9%) were aged 20 to 34 years, and more than half (56.3%) had attained secondary school education. Concerning maternal-related factors, the majority (71.9%) visited antenatal care fewer than four times, and (62.5%) used drug substances during pregnancy. More than half (56.3%) found care to be a bit expensive at the health facilities, (62.5%) said the facility was very far and tiresome to reach, and most (71.9%) started ANC between 4 and 6 months. Additionally, more than half (56.3%) of participants reported that health workers were sometimes kind.

Conclusion:
Several maternal factors, including experience of illnesses during pregnancy, inadequate ANC attendance, substance use, and prolonged standing while pregnant, were associated with the occurrence of low birth weight.

Recommendation:
There is a need to strengthen community sensitization and health education campaigns on the importance of early and regular antenatal care, proper nutrition, and family planning to prevent unplanned pregnancies and reduce maternal complications associated with low birth weight.

Keywords: *Low Birth Weight, Newborns, Maternal, China-Uganda Friendship Hospital, Naguru.*
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Corresponding Author: Hasifa Nansereko
Email: ***haffyhussein65@gmail.com***
Mildmay Uganda School of Nursing and Midwifery

Background of the study
Low birth weight (LBW) is when a baby is born weighing less than 5.5 pounds (2500 grams) (Hossain, 2025). It is mainly caused by prematurity or intrauterine growth restrictions, and accounts for 15-30% of all births globally, with 41% in low- and middle-income countries (Ohuma et al., 2023). Contributing factors include maternal malnutrition, inadequate antenatal care, infections during pregnancy, and socioeconomic challenges (Malik et al., 2022). LBW is associated with adverse neonatal health outcomes: increased risks of neonatal mortality, morbidity, developmental delays, and long-term health complications (Kim et al., 2024).

Globally, 31-60% LBW rates are reported in South Asia and Sub-Saharan Africa (Liu et al., 2024). Asia reports 32% attributed to maternal malnutrition, inadequate prenatal care, and socioeconomic constraints (Jana, 2023). Infants born with LBW often require specialized and costly care, including neonatal intensive care and extended home-based care to manage complications such as respiratory distress and feeding difficulties (Kleinhout et al., 2021).

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In Sub-Saharan Africa, LBW prevalence is estimated at 30-35% with key contributing factors including maternal infections, inadequate nutrition, and insufficient antenatal care (Kofi Amegah et al., 2024). In Nigeria, LBW prevalence ranges between 15-30% with the highest rates observed among mothers with lower education levels and limited healthcare access causing serious neonatal complications, increased child mortality rates and economic burdens on families and the healthcare system due to the need for prolonged hospital care and specialized treatments for LBW infants (Daniel et al., 2024).

In East Africa, LBW prevalence remains high, with Tanzania reporting a rate of 34% primarily linked to maternal infections such as malaria and inadequate maternal healthcare (Ochieng Arunda, 2021). For instance, studies done in the Democratic Republic of Congo (DRC) found that LBW is significantly associated with poor maternal nutritional status, high rates of adolescent pregnancies, and insufficient prenatal care (Wa Kabanga & Islam, 2024). This has resulted in high neonatal morbidity and mortality as well as long-term developmental issues affecting the overall well-being of children and increasing the burden on healthcare systems in the region (Wa Kabanga & Islam, 2024).

In Uganda, the prevalence of LBW is estimated at 33.5% suggesting that approximately 4 in 10 infants are born with a low birth weight (Waiswa et al., 2020). The key contributing factors include maternal infections, poor nutritional status, and inadequate antenatal care (Nsereko et al., 2020). Within Kiryadongo District, the incidence of LBW is reported at 91% indicating a substantial burden of low-birth-weight deliveries in the region, which has caused increased neonatal complications, high dependency on neonatal intensive care units, and an elevated risk of long-term developmental disorders that influence the survival and growth of affected infants (Wanjala, 2019). Therefore, understanding these factors is crucial for developing targeted interventions to reduce LBW prevalence and improve neonatal health outcomes. This study thus aimed to assess the determinants of low birth weight among newborns: Maternal and health-related factors at China-Uganda Friendship Hospital, Naguru, Kampala District.

Methodology

Study design and rationale

A descriptive cross-sectional study design employing a quantitative research method was used to obtain data. The study was descriptive because determinants of low birth weight among newborns were assessed, and the data were analyzed using descriptive statistics. The study was cross-sectional because it was carried out at one point in time without further follow-up. Quantitative methods involved the use of structured tools such as questionnaires to gather numerical data. The design was chosen because it was cost-saving, easier to carry out, and carried out in a shorter time.

Study Setting and Rationale

This study was conducted at China-Uganda Friendship Hospital, Naguru, located in Kampala District, Central Uganda. The hospital lies approximately five kilometers east of Kampala city center and is accessible via Naguru Road through Jinja Road. It is a public general hospital serving a large and diverse urban population with an estimated catchment area of over 2,000 residents. China-Uganda Friendship Hospital has a comprehensive Neonatal Intensive Care Unit (NICU) that provides specialized care, including oxygen, incubators, IV fluids, and monitoring for babies with complications like low birth weight, birth asphyxia, infections, among others. It is moderately equipped, accommodating up to 15 mothers at a time. Qualified midwives, nurses, and doctors who manage a high number of deliveries, making it a suitable setting for studying birth-related complications, staff it. The geographical coordinates of the hospital are approximately 0°19'14.0" N, 32°36'21.0" E (Latitude: 0.3206°N; Longitude: 32.6058°E).

Study population

The study targeted mothers with newborns at China-Uganda Friendship Hospital, Naguru, Kampala District. The population included all mothers who gave birth to newborns within the past six months, regardless of whether the baby was born prematurely or at full term.

Sample size determination

The sample size determination followed the guidelines provided by Krejcie and Morgan's table of 1970. China-Uganda Friendship Hospital, Naguru, Kampala District, had a population of approximately 55 mothers attending the neonatal unit, and out of these, 35 mothers came with newborn babies with signs of low birth weight. Based on Krejcie and Morgan's table of 1970, a population size of 35 gave a sample size of 32, and therefore, N=35 and S=32 mothers according to Morgan's table, as shown below. Therefore, the sample size was 32 mothers for the study.

Sampling technique

This study utilized a simple random sampling technique to collect data. This technique was chosen because it ensured that the sample was representative of the study population and reduced bias in the sample. For the researcher to get the required number of study respondents, 35 pieces of similar size papers were prepared and out of these, 32

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papers were labeled as P and other 3 papers were rebelled as K. Then after this, each respondent was requested to pick papers only one single paper from enclosed box on each day of data collection and those who picked papers labelled with P were considered to participate in this study. This process was done every day while considering 11 respondents daily for three days to come up with a sample of 32 respondents.

Inclusion and Exclusion criteria

Inclusion Criteria

All Ugandan mothers, aged 18 and above, English literate, and able to read and write, were included in the study, provided they consented.

Exclusion criteria

The study excluded participants who withheld consent, those with very sick neonates, and English literates, but who, along the process, failed to continue participating in the study.

Definition of Variables

Dependent Variables

The dependent variable was low birth weight among neonates.

Independent variables

The independent variables were characteristics of the study that could be changed by the researcher to bring about change. In this case, these are:

Maternal-related determinants include maternal infections such as urinary tract infections, maternal anemia, maternal malnutrition, maternal age, inadequate prenatal care, the impact of short interpregnancy intervals, maternal stress and mental health, and maternal smoking and alcohol consumption.

Health facility-related determinants include shortages of essential maternal supplements, high healthcare costs, long distances to health facilities, the impact of healthcare workers' attitudes, inadequate training of healthcare workers, and the impact of health facility infrastructure.

Research instruments

Structured questionnaires were written in English and contained questions related to the study objectives. The questionnaire consisted of four sections: socio-demographic data, maternal-related determinants, and health facility-related determinants, with each section containing closed-ended questions to assess the respondents' answers objectively.

Data collection procedure

After the proposal approval by the research supervisor and the institution's research and ethics committee, an introductory letter from Mildmay Uganda School of Nursing and Midwifery was granted to the researcher to seek permission from the administration of China-Uganda Friendship Hospital, Naguru, Kampala District. The purpose of the study was explained, and the researcher was introduced to the study respondents at the Neonatal Unit to collect data within 3 days. Verbal permission and informed consent were sought from each respondent, and a clear explanation of the research purpose was provided. Respondents were assured of confidentiality and requested to cooperate in the researcher-administered questionnaire.

Data Management and Analysis

Data Management

On each day of collecting data, each questionnaire was first checked for completeness and accuracy by the researcher. The data collected was coded and cleaned before analysis. Accurate and filled questionnaires were kept in a lockable cabin to ensure maximum safety and confidentiality.

Data analysis

Data was analyzed manually, and after the results were entered into a computer using Microsoft Excel and Word (version 2010), they were then presented in the form of frequency tables, graphs, and pie charts.

Quality control

Validity

This was done by setting questions according to the research objectives and ensuring they aligned with the intentions of the research topic under the guidance of the research supervisor. Validity helped in measuring the accuracy of results within a study, facilitating the formulation of proper interventions to address the research problem.

Reliability

The questionnaires were pre-tested at Kisenyi Health Centre IV on 6 mothers with newborns before being used in the study site to ensure consistency and dependability of the research questionnaire.

Ethical considerations

After the approval of the proposal by the research supervisor and the institution's research and ethics committee, an introductory letter was obtained from Mildmay Uganda School of Nursing and Midwifery,

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which the researcher presented to the Director of China-Uganda Friendship Hospital, Naguru, who granted permission to the researcher to carry out research. The researcher introduced herself to the Hospital Director and then explained the purpose of the research. Thereafter, the Director directed the researcher to go to the In-charge of the maternity ward, where the researcher made a self-introduction to the in-charge. The in-charge then helped the researcher to access respondents who were provided with a written informed consent after receiving a detailed description of the study purpose. Eligible participants consented to privacy, and no incentives were given. Anonymity of the respondents was ensured at all stages of data collection and analysis.

Results

Demographic characteristics of the respondents

Table 1: showing the socio-demographics of the respondents

Variable	Category	Frequency (n=32)	Percentage (%)
Age	20 to 34 years	15	46.9
	35 years and above	9	28.1
	Below 20 years	8	25.0
Education level	Secondary school	18	56.3
	Diploma	6	18.7
	Primary school	5	15.6
	No formal education	3	9.4
Marital status	Married	17	53.1
	Unmarried	9	28.1
	Divorced	4	12.5
	Widow	2	6.3
Religion	Catholic	13	40.6
	Anglican	9	28.1
	Muslim	6	18.8
	Born again	4	12.5

Source: Primary data (2025)

Table 1 reveals that nearly half 15, 46.9%) of participants were aged 20 to 34 years, followed by 9 (28.1%) participants aged 35 years and above, and 8 (25%) participants were below 20 years. More than half 18, or 56.3%) of participants had attained secondary school education, 6 (18.7%) had diplomas, 5 (15.6%) had completed primary school, and 3 (9.4%) had no formal education. More than half of the 17 (53.1%) participants were married, 9 (28.1%) were unmarried, 4 (12.5%) were divorced, and a minority of 2 (6.3%) were widowed. Less than half, 13 (40.6%) of participants were Catholic, 9 (28.1%) were Anglican, 6 (18.8%) were Muslim, while 4 (12.5%) were Born Again.

Maternal-Related Determinants of Low Birth Weight among Newborns at China-Uganda Friendship Hospital, Naguru, Kampala District.

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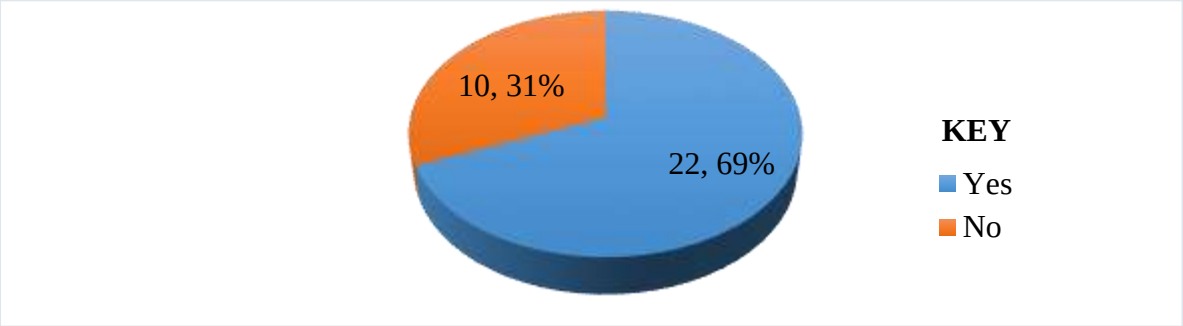
Figure 1: Showing participants who fell sick while pregnant, n=32



Source: Primary data (2025)

From Figure 1, the majority of 22 (68.8%) participants reported falling sick during their last pregnancy, while 10 (31.3%) did not.

Table 2: Showing the frequency of eating healthy food, ANC visits, interpregnancy interval, substance use, and engagement in physical work during pregnancy.

Variable	Category	Frequency (n=32)	Percentage (%)
Frequency of eating healthy food during pregnancy	Sometimes	15	46.9
	Always	11	34.4
	Rarely	6	18.8
ANC visits during the last pregnancy	Less than 4 times	23	71.9
	4 times or more	8	25.0
	Did not attend ANC	1	3.1
The gap between the last two pregnancies	18 months or more	19	59.4
	Less than 18 months	9	28.1
	First pregnancy	4	12.5
Use of drug substances during pregnancy	Yes	20	62.5
	No	12	37.5
Physical work engaged in during pregnancy	Long hours of standing	26	81.2
	Carrying heavy loads	4	12.5
	None	2	6.3
whether pregnancy was planned and wanted	Yes It was not planned Am not sure	16 24 2	18.8 75 6.2

Source: Primary data (2025)

Table 2 indicates that nearly half 15, 46.9%) of participants sometimes ate healthy food during pregnancy, 11 (34.4%) always ate healthy food, while 6 (18.8%) rarely ate healthy food. A substantial proportion, 23 (71.9%) participants visited antenatal care less than four times, 8 (25%) attended four times or more, and 1 (3.1%) never attended. Over half 19, or 59.4%) of participants had a birth spacing of 18 months or more, 9 (28.1%) had less than 18 months, and 4 (12.5%) were in their first pregnancy. Most 20 (62.5%) participants reported using drug substances during pregnancy, while 12 (37.5%) did not. A significant number of 26 (81.2%) participants engaged in long hours of standing during pregnancy, 4 (12.5%) carried heavy loads, and 2 (6.3%) did not engage in any physical work. Most 24 (75%) participants reported their pregnancies were unplanned, 6 (18.8%) had planned pregnancies, and 2 (6.2%) were unsure.

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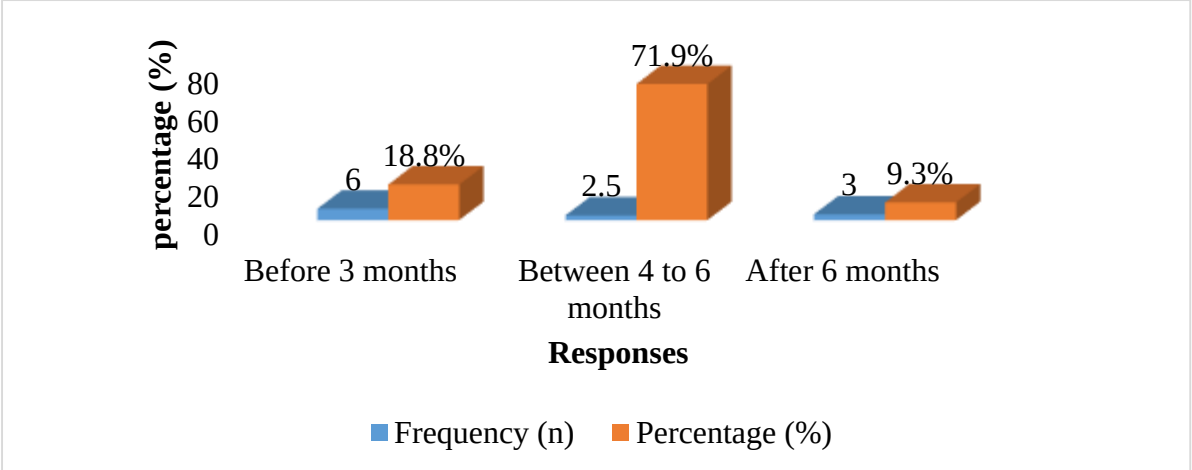
Table 3: Displays healthcare costs, distance to the health facility, health workers' attitudes, cleanliness of the facility, access to ultrasound scans, and the time health workers allocate during ANC.

Variable	Category	Frequency (n=32)	Percentage (%)
frequency of supplement provision during pregnancy	Always	27	84.4
	Rarely	3	9
	Never	2	6
Affordability of health facility costs	A bit expensive	18	56.3
	Very affordable	11	34.4
	Too expensive	3	9.3
Distance to health facility during pregnancy	Very far and tiresome	20	62.5
	A bit far, but manageable	8	25.0
	Very near	4	12.5
Health workers' attitudes during antenatal care	Sometimes kind	18	56.3
	Often rude or harsh	12	37.5
	Very kind and welcoming	2	6.2

Source: Primary data (2025)

Table 3 indicates that a significant number of 27 (84.4%) participants always received iron or folic acid tablets, 3 (9.4%) rarely received them, and 2 (6.2%) never received them. More than half of the 18 (56.3%) participants found the health facility services a bit expensive, 11 (34.4%) found them very affordable, and 3 (9.3%) found them too expensive. Most 20 (62.5%) participants reported the health facility was very far and tiresome to reach, 8 (25%) said it was a bit far but manageable, and 4 (12.5%) found it very near. Over half 18, 56.3%) of participants said the health workers were sometimes kind, 12 (37.5%) said they were often rude or harsh, and 2 (6.2%) reported they were very kind and welcoming. The majority of 25 (78.1%) participants stated the health facility was not so clean, 4 (12.5%) said it was dirty, and 3 (9.4%) found it very clean.

Figure 2: Showing time for first ANC visit, n=32



Source: Primary data (2025)

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Figure 2 shows that 23 (71.9%) participants had their first antenatal visit between 4 and 6 months, 6 (18.8%) visited before 3 months, and 3 (9.3%) visited after 6 months.

Discussion

Demographic characteristics of the respondents

Nearly half 15 (46.9%) of the participants were aged 20 to 34 years. This could be because this age range represents the peak reproductive years, where most women are biologically and socially prepared for childbirth. This disagreed with the findings of the study done by Akseer et al. (2022), which showed that mothers below 20 years had a 42% higher likelihood of delivering LBW infants.

More than half (56.3%) of participants had attained secondary school education. This could be because secondary education is more accessible than higher education and equips women with basic health literacy, which may influence pregnancy-related decisions. This disagrees with a study carried out by Godah et al. (2021), which highlighted that uneducated mothers had a 58% higher chance of delivering LBW infants.

More than half (53.1%) of participants were married. This could be because married women are more likely to plan pregnancies and seek maternal health services. This implies that marital support may play a critical role in improving birth outcomes, thus reinforcing the need to involve spouses in maternal health programs.

Nearly half (40.6%) of participants were Catholic. This may be attributed to the fact that Catholicism is one of the dominant religions in Uganda, especially in urban and peri-urban areas like Naguru. This implies that religious institutions can be important platforms for promoting maternal health awareness.

Maternal-Related Determinants of Low Birth Weight among Newborns at China-Uganda Friendship Hospital, Naguru, Kampala District

The study findings revealed that the majority (68.8%) of study participants fell sick during their last pregnancy. This could be because the urban hospital setting receives high-risk pregnancies, including women with chronic infections, malaria, or pregnancy-induced conditions like preeclampsia. This implies that maternal morbidity is a significant determinant of LBW in this context, warranting stronger prenatal surveillance and management. This agrees with a study conducted by Sharma et al. (2023), which showed that untreated infections during pregnancy led to intrauterine growth restrictions, significantly increasing the risk of preterm births and LBW.

Results showed that nearly half (46.9%) of participants ate healthy food only sometimes. This might be because economic constraints and limited nutritional knowledge may hinder consistent healthy eating during pregnancy. This implies that inadequate maternal nutrition remains a risk factor for LBW, and nutrition education should be integrated into antenatal care programs. This is similar to the results of a study done by Desyibelew & Dadi (2019), which found that 63% of pregnant women with inadequate nutritional intake delivered LBW infants due to insufficient fetal growth.

A majority proportion (71.9%) of the participants visited antenatal care fewer than four times. This could be because of poor accessibility, work constraints, or a lack of awareness about the importance of frequent ANC visits. This implies that infrequent ANC attendance limits the monitoring and management of pregnancy risks, thereby contributing to higher chances of low birth weight. This agrees with the findings of a study done by Appiah et al. (2020), which showed that 60% of mothers who attended fewer than four antenatal visits had infants with lower birth weights.

Study findings revealed that more than half (59.4%) had birth intervals of 18 months or more. This could be because health education messages advocating for adequate spacing are gaining traction among women attending health facilities. This implies that while progress is being made in promoting appropriate birth intervals, attention should shift toward other maternal risk factors contributing to LBW. This disagrees with a study done by Gurmu et al. (2022), which showed that mothers with less than 18 months between pregnancies had a 38% increased likelihood of delivering LBW infants.

Furthermore, the majority (62.5%) of the participants used drug substances during pregnancy. This could be because of high stress levels, addiction issues, or a lack of awareness about the negative effects of substance use during pregnancy. This implies that substance abuse is a major contributor to low birth weight and should be addressed through community outreach and behavioral health programs. The findings of the study agree with a study carried out by Di et al. (2022), which showed that 50% of women who smoked or consumed alcohol during pregnancy had infants with significantly lower birth weights compared to non-smoking and non-drinking mothers.

A vast number (81.2%) of the study participants engaged in long hours of standing. This could be because women often continue to perform physically demanding tasks even during late pregnancy, especially in informal or labor-intensive jobs. This implies that high physical strain may compromise fetal growth, reinforcing the need for occupational health guidance for pregnant women. These

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results disagree with a study conducted by Sejbaek et al. (2025), which showed that pregnant women involved in heavy physical labor were 44% more likely to deliver low birth weight (LBW) babies.

The research findings carried out in the field found that most (75%) participants had unplanned pregnancies. This could be because of limited access to or the use of effective family planning methods. This implies that unplanned pregnancies may be associated with inadequate maternal preparation and increased risk of poor outcomes such as LBW. This is in line with a study done by Omani-Samani et al. (2019), which indicated that unplanned pregnancies were associated with lower motivation for self-care, emotional stress, and inadequate nutrition.

Health Facility-Related Determinants of Low Birth Weight among Newborns at China-Uganda Friendship Hospital, Naguru, Kampala District

Findings showed that (84.4%) of participants regularly received iron/folic acid tablets. This could be because these supplements are widely distributed through Uganda's antenatal care programs. This implies that the supply side of maternal nutrition interventions is strong, but the issue may lie in maternal adherence or other contributing factors to LBW. This disagrees with a study conducted by Ghur et al. (2025), which found that about 55% of health facilities faced shortages of essential maternal supplements such as iron and folic acid.

More than half (56.3%) of participants found care to be a bit expensive. This could be because hidden costs such as transport, medications, or unofficial fees still affect women despite nominally free services. This implies that financial constraints remain a barrier to adequate maternal care and can indirectly contribute to low birth weight. This is similar to a study carried out by Rizkianti et al. (2021), which highlighted that 58% of low-income mothers could not afford routine antenatal care, which led to poor maternal health management and an increased prevalence of low-birth-weight babies.

Results showed that the majority (62.5%) of participants said the facility was very far and tiring to reach. This could be because of poor transport infrastructure or relocation due to urban congestion. This implies that geographical inaccessibility limits timely ANC attendance and can negatively affect fetal health. This is in line with a study done by Dotse-Gborgbortsi et al. (2022), which indicated that pregnant women living more than 10 kilometers from a healthcare facility were 48% less likely to attend regular antenatal visits, leading to inadequate maternal monitoring and increased risk of delivering low birth weight infants.

Study results showed that more than half (56.3%) of participants reported that health workers were sometimes kind. This could be because overworked staff and limited patient-provider interaction time affect service quality. This implies that inconsistent attitudes can deter women from returning for follow-ups, reducing the effectiveness of care and increasing LBW risk. This disagrees with a study carried out by Ray et al. (2023), which showed that pregnant women who encountered unwelcoming or dismissive attitudes from healthcare providers were 35% less likely to attend antenatal visits regularly.

More so, results showed most (71.9%) participants started ANC between 4 and 6 months. This could be because of delayed recognition of pregnancy, late decision-making, or cultural practices. This implies that late initiation of ANC limits early detection and management of pregnancy complications, increasing the risk of LBW. The findings agree with a study done by Wolde et al. (2019), which showed that mothers who began ANC after 28 weeks were 41% more likely to have LBW babies.

Conclusion

In conclusion, the study revealed that several maternal factors, such as experience of illnesses during pregnancy, inadequate ANC attendance, substance use, and prolonged standing while pregnant, were associated with the occurrence of low birth weight.

Regarding the health facility-related factors, mothers had late initiation of ANC (within the second trimester), found the health facility extremely far and tiring to reach, and believed that health workers did not have enough time to examine them properly. Furthermore, despite a sizable number receiving iron and folic acid supplements, many perceived care as expensive, the facility as not so clean, and health workers' attitudes as inconsistent and kind

Nursing Implications

Nurses should provide health education on proper nutrition, rest, and danger signs during pregnancy. This empowers pregnant women to eat well, get enough rest, and recognize warning signs early, helping to prevent complications for both mother and baby.

Nurses should promote early and regular antenatal care attendance according to WHO guidelines. The earlier and more often a mother visits the clinic, the better we can catch any problems early and guide her through a safer pregnancy journey.

Nurses should offer family planning counseling to encourage adequate birth spacing. When mothers space their pregnancies well, it gives their bodies time to recover and reduces risks for the next baby; this means healthier moms and healthier babies.

Nurses should screen for and discourage substance use and advise on reducing physical strain during pregnancy.

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Helping mothers avoid harmful substances and heavy work protects the baby's growth and prevents pregnancy complications.

Nurses should maintain respectful, compassionate care and advocate for clean, supportive maternity environments. When mothers feel respected and cared for in a clean, safe place, they are more likely to trust the system, follow advice, and have a positive birth experience.

Limitations of the Study

Some mothers did not accurately remember details about their pregnancy, such as nutritional intake or antenatal visits.

Recommendation

To the ministry of health (MoH)

Strengthening community sensitization and health education campaigns on the importance of early and regular antenatal care (ANC), proper nutrition, and family planning to prevent unplanned pregnancies and reduce maternal complications associated with low birth weight.

Increase access to free or subsidized antenatal services, iron and folic acid supplements, and routine ultrasound scans in both urban and rural settings.

Improve transport infrastructure and referral systems to reduce the challenge of long distances to health facilities, especially for vulnerable pregnant mothers.

To the Management of China-Uganda Friendship Hospital, Naguru

Ensure timely and respectful antenatal care by increasing staffing levels so that each pregnant woman receives sufficient consultation time with health workers.

Implement maternal-friendly service delivery by improving the cleanliness and general preparation of maternal care spaces to promote a conducive environment for care.

Train staff regularly on patient-centered care and proper communication to enhance positive attitudes and patient satisfaction during antenatal visits.

To nursing education institutions

Integrate comprehensive modules on maternal nutrition, antenatal care timing, and identification of high-risk pregnancies into the nursing and midwifery curriculum to equip future health professionals with relevant knowledge and skills.

Emphasize community-based maternal health strategies during training to empower nurses to educate and support women even at the grassroots level.

Promote ethical practice and compassionate care in maternal and child health services as a key professional responsibility.

To the Pregnant Mothers and Women of Reproductive Age

Seek antenatal care services early in pregnancy (preferably in the first trimester) and ensure they attend at least four visits or more as recommended by the World Health Organization (WHO).

Avoid drug or substance use during pregnancy and reduce engagement in physically demanding activities that may affect fetal development.

Plan pregnancies where possible, maintain a healthy diet, and adhere to iron and folic acid supplementation to support fetal growth and reduce the risk of low birth weight.

Acknowledgement

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May God richly bless them all.

List of abbreviations

ANC: Antenatal Care
DRC: Democratic Republic of Congo
HMIS: Health Management Information System
LBW: Low Birth Weight
STIs Sexually Transmitted Infections
UTIs Urinary Tract Infections

Source of funding

The study was not funded.

Conflict of interest

The author declares no conflict of interest.

Author contributions

PKM- Study developer, pretested research tools, Data collector, Data entry, and analysis.
HN- Supervised the Study.

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JFN- Co-author of this research.

Data availability
Data is available upon request.

Informed consent
There was full disclosure; full comprehension, and respondents voluntarily consented to participate in the study.

Author biography
Priscillar K Mukopuuli is a student at Mildmay Uganda School of Nursing and Midwifery, pursuing her Diploma in Midwifery Extension.
Hasifa Nansereko is a tutor and a Research Supervisor at Mildmay Uganda School of Nursing and Midwifery.
Jane Frank Nalubega is a tutor and co-author of this particular study.

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