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Prevalence and risk factors associated with gestational diabetes mellitus among pregnant women attending antenatal care at Mengo Hospital, Kampala, Uganda. A cross-sectional study.

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Abstract.

Background

Gestational diabetes mellitus (GDM) is a significant public health problem associated with adverse maternal and fetal outcomes. This study aims to determine the prevalence and associated risk factors of gestational diabetes mellitus among pregnant women attending the antenatal clinic at Mengo Hospital in Kampala District.

Methods

A hospital-based cross-sectional study was conducted among 100 pregnant women attending antenatal care at Mengo Hospital. Participants were selected using simple random sampling. Data were collected using structured questionnaires and laboratory testing using the Oral Glucose Tolerance Test (OGTT) based on WHO 2013 diagnostic criteria. Data were analyzed using SPSS version 20 and presented using tables, charts, bar graphs, and descriptive statistics.

Result

The prevalence of gestational diabetes mellitus among the study participants was 12%. A higher proportion of GDM cases occurred among women aged 35 years and above (45%)**.** Obesity (BMI ≥30 kg/m²) accounted for 15.6% of all GDM cases. Other important factors included family history of diabetes **(**58.3%**),** multiparity **(**50%), previous macrosomia **(**41.7%), previous history of GDM (33.3%**),** and hypertension (41.7%)**.** Most GDM cases were observed among married women and those with tertiary education.

Conclusion

The prevalence of GDM at Mengo Hospital is notably high. Both modifiable and non-modifiable risk factors significantly contribute to its occurrence, highlighting the need for routine screening and targeted interventions during antenatal care.

Recommendations

Routine universal screening for GDM should be strengthened during ANC visits, with emphasis on high-risk groups such as older mothers, obese women, and those with a positive family history of diabetes.

Keywords: *Gestational diabetes, fetal macrosomia, insulin resistance, pregnant women, obesity, Mengo Hospital.*
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Background of the study

Gestational diabetes mellitus remains a serious public health concern around the world, particularly in subtropical and tropical low- and middle-income countries. Gestational diabetes mellitus (GDM) is a condition of hyperglycemia that develops during pregnancy and usually resolves after birth. It is caused by insulin resistance due to placental hormones, leading to elevated blood glucose levels if untreated (International Diabetes Federation, 2024)**.** Globally, it is one of the major causes of maternal and fetal morbidity, with 23.3 million live births (15.6%) affected by hyperglycemia in pregnancy in 2024 (IDF, 2024). An estimated global prevalence of GDM is 14.0% (95% CI: 13.97-14.04%) using IADPSG criteria. Most GDM cases in

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2024 were in the IDF regions of South-East Asia (27%), Middle East and North Africa (26%), and Western Pacific (22%), with smaller shares in Africa (14%), Europe (8%), South and Central America (3%), and North America and Caribbean (2%) (IDF, 2024).

In the Sub-Saharan African region, it was reported that the pooled prevalence of GDM is 14.0% (95% CI: 11.6-16.5) from studies across 16 countries. According to the World Health Organization global report, Africa had an estimated prevalence of 9%-13.6% in 2021 (WHO, 2021). It was found in a study carried out in Mbarara Regional Referral Hospital, Uganda, that the prevalence of GDM was 10.2%, with risk factors including family history of diabetes and previous fetal Macrosomia (Kahimakazi, 2023). In 2018, it was estimated that 21.4 million pregnancies were affected by hyperglycemia, while sub-Saharan Africa represented a high burden with over 50% of cases linked to obesity and older maternal age (IDF, 2019).

In East Africa, countries like Tanzania, Kenya, and Uganda have reported GDM prevalence rates of 8.4%, 9.1%, and 8.5%, respectively, in 2022, with case detection rates being low in the population and even lower among rural women (WHO, 2022). Nevertheless, the WHO guidelines for GDM screening, which have been adopted in all East African countries, emphasize universal screening at 24-28 weeks as a critical component (WHO, 2013). Uganda has a high burden of GDM, with an estimated prevalence of 8.5-10.2%. A cross-sectional study in Kampala, Uganda, involving 3838 pregnant women, found a prevalence of 8.5% using WHO 2013 criteria, particularly higher in older women and those with obesity. The study noted that risk factors like family history and previous macrosomia were significant, suggesting a need for targeted screening (Agaba, 2022). This study aims to determine the prevalence and associated risk factors of gestational diabetes mellitus among pregnant women attending the antenatal clinic at Mengo Hospital in Kampala District.

Methodology

Study design

A cross-sectional study design was employed together with a quantitative method of data collection. A cross-sectional study design was used because it involved the collection of data at a single point in time without any follow-up. Quantitative methods were employed because numerical data were collected and presented for statistical inferences.

Study area

The study was conducted at Mengo Hospital, located in Kampala District, Central Region, Uganda. Mengo Hospital is a private not-for-profit referral health facility providing comprehensive medical services, including antenatal care and treatment of gestational diabetes mellitus, to a diverse population that includes both residents and urban dwellers. The district has a high GDM burden, with the hospital serving as a key center for maternal health under Uganda's National Maternal and Child Health Programme. The hospital is equipped with a laboratory capable of performing biochemical analyses, including oral glucose tolerance tests, and maintains medical records for ANC patients, making it an appropriate setting for this cross-sectional study.

Study population

Target population

All pregnant women who attended the antenatal clinic at Mengo Hospital

Accessible population

All pregnant women who attended health care services at the time of the study and were sent to the laboratory for GDM testing and had given their informed consent.

Selection criteria

Inclusion criteria

All pregnant women 18 years and above who were available at the time of the study and were willing to give their consent to take part in the study

Sample size determination

The sample size was determined using the technique of Kish and Leslie (1965)

$$n = \left(\frac{Z^2 PQ}{I^2}\right)$$

Where; n = sample size

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Z = the abscissa of the normal curve that cuts an area α at the tail (1- α=desired confidence level =95%) =1.96

I = Desired level of precision = ±5.5% (0.055)

P = estimated proportion or incidence of cases, taken at 91.5% (0.915)

Q = (1-P) = (1-0.915) =0.085

Sample size n = $(1.96)^2$*(0.915) *(0.085)/ $(0.055)^2$

Sample size n = 98.8 approx. 100

Therefore, the sample size of 100 participants was used

Sampling technique

Simple random sampling was employed in the study to select the participants. This was because the sampling method was easy to administer for a large population, and it gave equal chances for all study participants to get involved in the study.

Sampling procedure

Simple random sampling was employed in the study to select the participants. The names of all participants who provided informed consent were written on pieces of paper, folded to conceal their identity, and placed in a container. The folded papers were thoroughly mixed to eliminate selection bias. One paper was then randomly drawn from the container, opened, and the corresponding participant identified for inclusion in the study. This process was continued until the 100 participants were obtained.

Data collection method

Pre-tested, standardized questionnaires and patient forms were used to obtain information on the socio-demographic characteristics and clinical history of study participants. For literate participants, self-administered questionnaires were provided, while for those who were unable to read or write, trained research assistants conducted face-to-face interviews using the same questionnaires. All interviews were conducted in the local language to ensure clarity and accuracy, and responses were translated into English for analysis. This approach ensured inclusivity, minimized response bias, and enhanced the reliability and validity of the collected data.

Data collection tools

Pre-tested, standardized questionnaires and patient forms were used to obtain information on the socio-demographic characteristics and clinical history of study participants. These questionnaires and forms were used to collect data variables such as Age, BMI, family history of GDM, Previous Macrosomia, previous GDM, and hypertension.

Data collection procedure

Obtaining consent of the respondent

Informed consent was sought from all eligible study participants before enrollment. The study objectives, procedures, potential risks, and benefits were explained in detail to each participant in a language they understood. Written informed consent was then obtained. For illiterate participants, the information was read aloud by trained research assistants, and a thumbprint was used as consent in the presence of witnesses. Pre-tested, standardized questionnaires and patient forms were used to collect information on the socio-demographic characteristics and clinical history of participants. For literate participants, self-administered questionnaires were provided, while for those who could not read or write, trained research assistants conducted face-to-face interviews using the same questionnaires. All interviews were conducted in the local language to ensure clarity and accuracy, and responses were translated into English for analysis. This approach ensured inclusivity, minimized response bias, and enhanced the reliability and validity of the collected data.

Blood sample collection.

Sample Collection Procedure for Fasting Blood Glucose and OGTT:

Participants were instructed to fast overnight for at least 8–12 hours (water intake was allowed).

The test was performed in the morning between 7:00 AM and 9:00 AM.

A unique identification code was assigned to each participant to ensure confidentiality.

Fasting venous blood sample (baseline): 2–3 mL of venous blood was collected from the antecubital vein using a sterile

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venipuncture technique into grey-top vacuum tubes containing sodium fluoride/potassium oxalate as a glycolytic inhibitor and anticoagulant. This prevents glucose degradation by glycolysis.

Immediately after the fasting sample, participants ingested 75 grams of anhydrous glucose dissolved in 250–300 mL of water over a maximum of 5 minutes.

Subsequent blood samples were collected at 1 hour and 2 hours post-glucose load using the same grey-top fluoride oxalate tubes.

All tubes were gently inverted 8–10 times for proper mixing, clearly labelled with the participant's code and time of collection, and transported to the laboratory without delay at room temperature.

Participants remained seated and were advised not to smoke, eat, drink (except water), or engage in strenuous activity during the test.

Laboratory Analysis

Plasma was separated by centrifugation at 3000 rpm for 10–15 minutes within 30–60 minutes of collection. Glucose concentration was measured using a calibrated glucometer (point-of-care).

A participant was considered positive for GDM if one or more of the following WHO 2013 criteria were met;

Fasting plasma glucose: ≥ 5.1 mmol/L (92 mg/dL)

1-hour plasma glucose: ≥ 10.0 mmol/L (180 mg/dL)

2-hour plasma glucose: ≥ 8.5 mmol/L (153 mg/dL)

Internal quality control was performed daily using control samples. External quality assessment was ensured through adherence to standard operating procedures (SOPs) of the Mengo Hospital laboratory. All equipment was calibrated according to manufacturer guidelines.

Study variables

Dependent variable

Gestational Diabetes Mellitus

Independent variable

Maternal age, BMI status, HIV Co-infection, hypertension, Demographic factors

Quality control

The quality of the data was assured through pretesting of the research tools, training of research assistants, giving ample time for data collection, clear inclusion and exclusion criteria, and adherence to standard operating procedures (SOPs).

Data analysis and presentation

The collected data were coded, entered into a Microsoft Excel spreadsheet, and cleaned to eliminate errors and ensure consistency before analysis. The data were then exported to SPSS, VERSION 20, for analysis at a 95% confidence level. For consistency and completeness, all data were double-checked by the researcher. Chi-square was used to check the differences between dependent and independent variables. Presentation of data was in the form of text, figures, and tables.

Ethical consideration

Ethical approval of the study was obtained first from the Mengo Hospital Research Committee (MHREC). Upon approval, a letter of introduction from the Dean of Allied Health Sciences and the Principal of Mengo Hospital Laboratory Training School was received. This was taken to the executive director of Mengo Hospital, who approved and permitted the study to go ahead. After approval, the laboratory in charge was met to get permission for the study. Written informed consent was obtained from participants, and participation was voluntary, which means participants may withdraw from the study without consequences. Upon approval, the researcher sat in the laboratory waiting for patients sent for OGTT or FBS testing by a doctor /clinician to whom he built rapport, and requested them to participate in the study through consent.

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Names of participants were not included in the study, and data collected were stored in hard copy in lockable lockers and soft copy on computers with a strong password to maintain confidentiality. No harm was done to the subjects in this study.

Results

Socio-demographic characteristics of the study participants

Table 1: Showing socio-demographic distribution of the study participants attending ANC at Mengo Hospital (n=100).

Characteristic	Category	Frequency (n)	Percentage (%)
Age	18-24	12	12
	25-34	68	68
	≥35	20	20
Parity	Primiparous	42	42
	Multiparous (2 to 4)	40	40
	Grand multiparous (≥5)	18	18
BMI Category	Normal (18.5-24.9)	45	45
	Overweight (25.0-29.9)	33	33
	Obese (≥30.0)	22	22
Marital status	Married	68	68
	Single	32	32
Educational level	Primary	12	12
	Secondary	30	30
	Tertiary	58	58
HIV status	Positive on ART	5	5
	Negative	95	95

Table 1 shows that the majority of participants were aged 25–34 years (68%). In terms of parity, Primiparous women accounted for 42%, and regarding BMI, 45% had normal BMI. Most participants were married (68%), the majority had attained tertiary education (58%) and most participants were HIV negative (95%).

Prevalence of GDM among Pregnant women attending ANC at Mengo hospital

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Figure 1: showing the prevalence of GDM among the pregnant women attending ANC at Mengo Hospital (n=100).

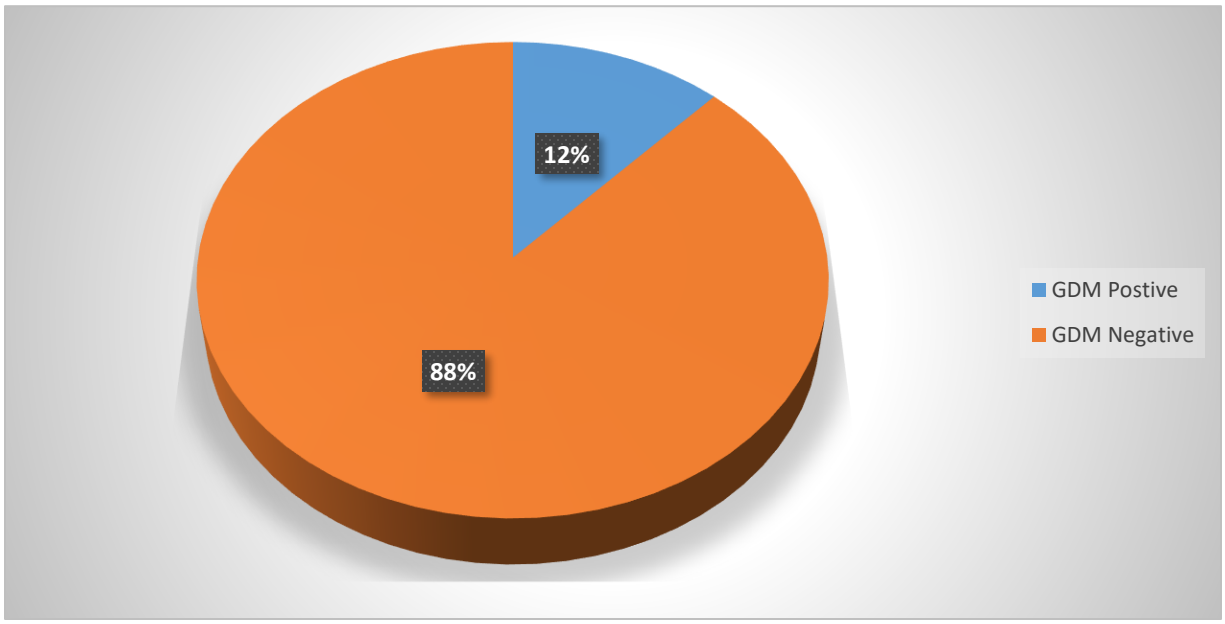

Figure 1 shows the overall prevalence of GDM among the study participants was 12%.

Prevalence of GDM in relation to Age

Figure 2: Showing the prevalence of GDM in relation to age (n=12)

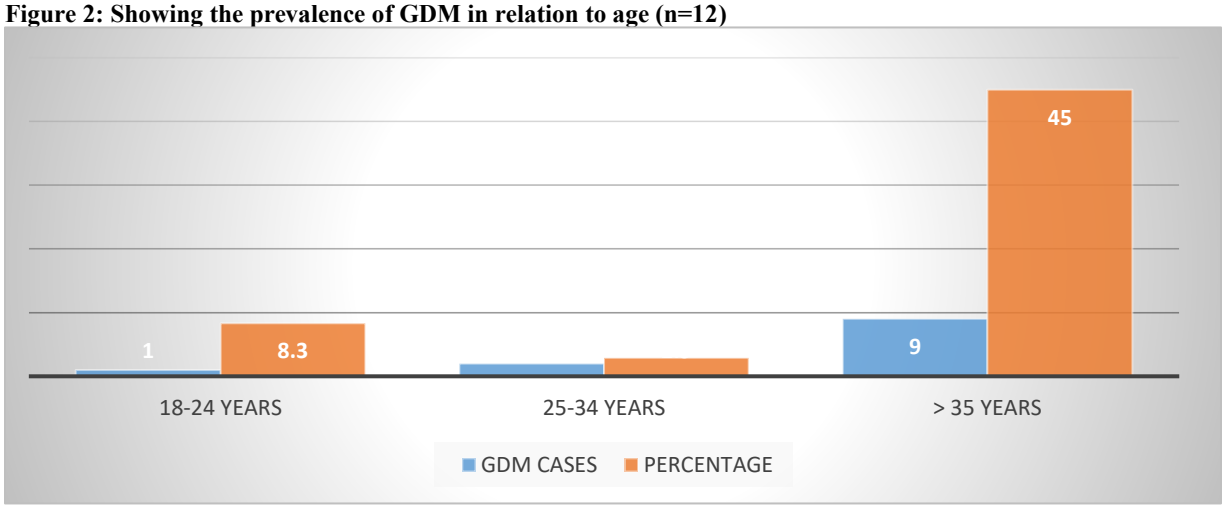

Figure 2 shows that 45% of GDM cases occurred among women aged 35 years and above and this was followed by participants who were aged 18-24 years of age who formed 8.3% percent and the cases were least among participants of 25-34 years of age with a percentage of 2.9.

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Prevalence of GDM in relation to parity

Figure 3: Showing the prevalence of GDM in relation to parity (n=12)

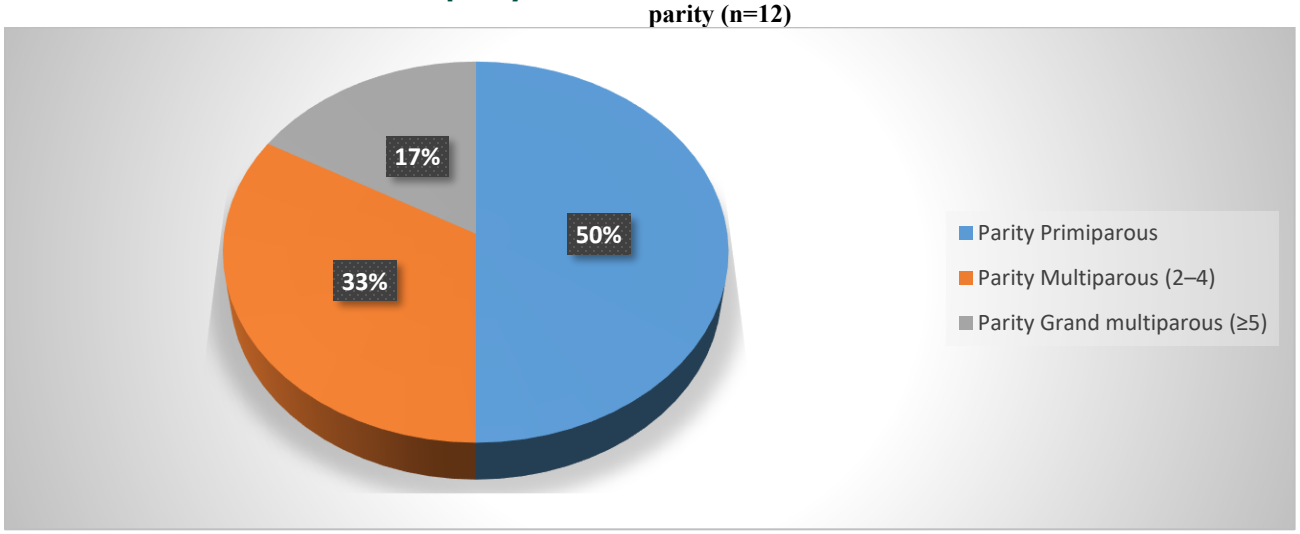

Figure 3 shows that 50% of the GDM cases among the participants were Primiparous

Prevalence of GDM in relation to BMI

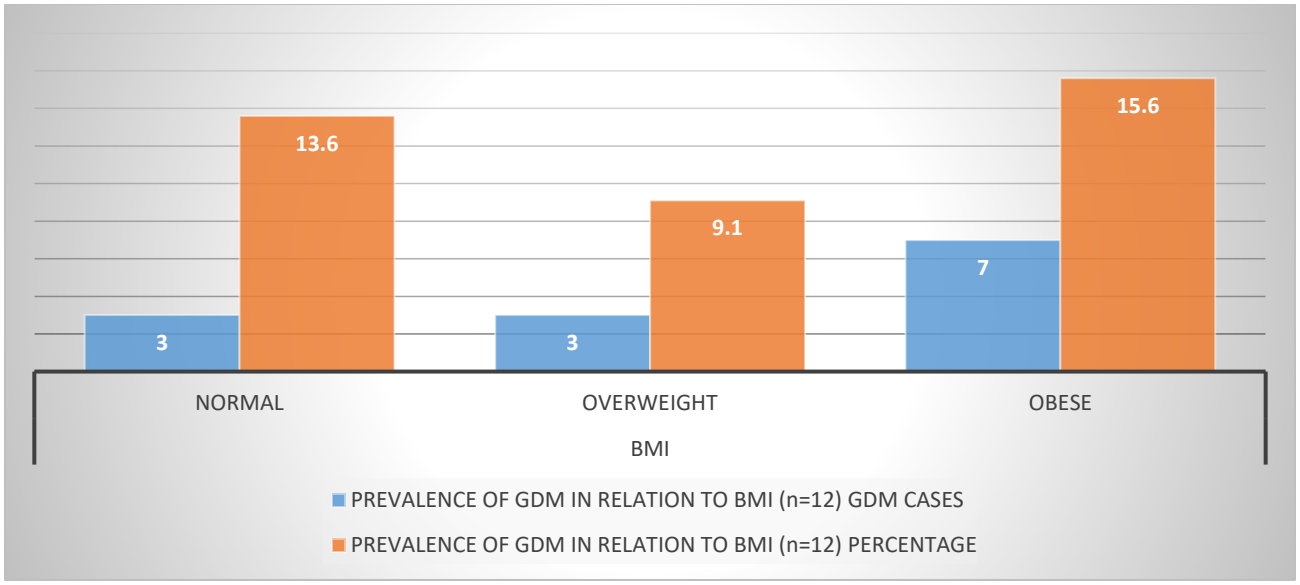

Figure 4: Showing prevalence of GDM in relation to BMI (n=12)

Figure 4 shows that the majority of GDM cases occurred among obese participants (BMI ≥30 kg/m²), accounting for 15.6% of all GDM-positive cases.

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Prevalence of GDM in relation to the marital status

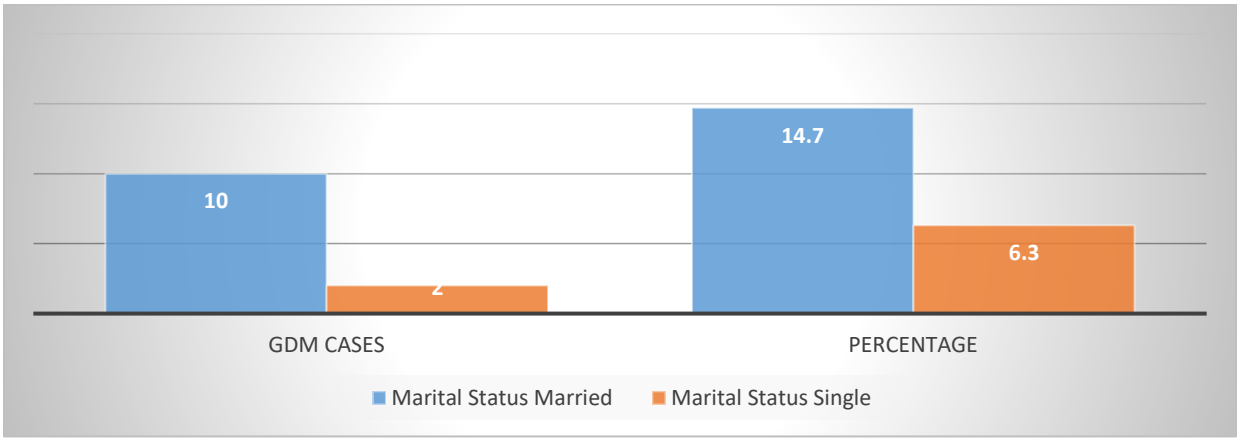

Figure 5: Showing the prevalence of GDM in relation to marital Status (n=12)

Figure 5 showed that 14.7% of the participants who were married had the highest prevalence and those not married had a percentage of 6.3%.

Prevalence of GDM in relation to education level

Table 1: Showing the prevalence of GDM in relation to level of Education (n=12)

VARIABLE	CATEGORY	GDM POSTIVE CASES	Percentage (%)
Education	Primary	1	8.3
	Secondary	3	10
	Tertiary	8	13.8

Table 2 shows that 8 of the 12 cases of GDM are from participants who had completed a tertiary level of education.

Prevalence of GDM in relation to HIV status

Table 3: Showing the prevalence of GDM in relation to HIV status (n=12)

Variable	Category	Numbers	Gdm Positive Cases	Percentage (%)
HIV	Negative	95	11	11.6
	Positive on ART	5	1	20

Table 3 shows that the 95 of the GDM cases were from participants who were HIV negative while 1 case was from a HIV positive on art participant.

Risk factors associated with GDM among pregnant women attending ANC at Mengo Hospital.

Table 4: Showing Risk factors associated with GDM among the women attending ANC at Mengo Hospital (n=100).

Risk factor	GDM Positive (n=12) n (%)	GDM Negative (n=88) n (%)
Age ≥35 years	8 (66.7)	20 (22.7)
BMI ≥30kg/m2 (obese)	7 (58.3)	15 (17.0)

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Family history of diabetes (Yes)	7 (58.3)	15 (17.0)
Previous Macrosomia (Yes)	5 (41.7)	9 (10.2)
Previous GDM	4 (33.3)	6 (6.8)
Multiparity (≥5)	6 (50.0)	12 (13.6)
Hypertension (Yes)	5 (41.7)	11 (12.5)

NB: The number of respondents who were positive for GDM was greater than 12. This was because the majority of the participants had more than one risk factor for developing GDM.

The findings presented in Table 3 showed that advanced maternal age (≥ 35 years) was the most outstanding risk factor associated with the GDM cases among the participants, accounting for 66.7%

Discussion

The prevalence of gestational diabetes mellitus among pregnant women attending ANC at Mengo Hospital in Kampala District

This study found that the prevalence of gestational diabetes mellitus (GDM) among pregnant women attending antenatal care at Mengo Hospital was 12**%**. This indicates a moderate burden of GDM in this population and highlights it as an important maternal health concern within the study setting. This finding is consistent with several studies conducted within Sub-Saharan Africa. For example, a systematic review and meta-analysis by Chileshe et al. (2025) reported a pooled prevalence of 12.63% across Sub-Saharan Africa, while Sabbagh et al. (2026) estimated a slightly higher regional prevalence of 14%**.** These findings suggest that the prevalence observed in this study falls within the expected regional range, reinforcing that GDM remains a significant but variably distributed condition in African populations. Similarly, studies conducted in East Africa show comparable results. In Uganda, Agaba et al. (2022) reported a prevalence of 8.5% among pregnant women in Kampala using WHO 2013 criteria, while Kahimakazi et al. (2023) found a slightly higher prevalence of 10.2% in a tertiary hospital setting in southwestern Uganda. The slightly higher prevalence in the current study (12%) may be attributed to increasing urbanization in Kampala, changes in dietary habits, rising obesity rates, and improved screening practices that increase case detection.

However, the prevalence in this study is lower than in some studies conducted in neighboring countries such as Tanzania, where higher rates ranging from 27% to 39% have been reported in urban settings (Mdoe et al., 2021; Grunnet et al., 2020). These differences may be explained by variations in diagnostic criteria, population characteristics, and screening strategies. Studies reporting higher prevalence often used more sensitive criteria such as IADPSG or had populations with higher obesity levels and more advanced maternal age. On the other hand, the prevalence in this study is slightly higher than earlier Ugandan and rural-based studies reporting rates below 10% (Abindu et al., 2024). This difference may be because rural populations often have lower levels of obesity, more physical activity, and reduced access to diagnostic screening, which may lead to underdiagnosis of GDM.

The findings of this study also reflect global trends where GDM prevalence is increasing due to rising maternal age, sedentary lifestyles, and increasing obesity rates. The International Diabetes Federation (2024) estimates a global prevalence of approximately 14%, which closely aligns with the current study findings, further confirming that the burden of GDM in this setting is comparable to global averages. Overall, the observed prevalence of 12% demonstrates that GDM is a significant and growing public health concern among pregnant women attending ANC at Mengo Hospital. The findings emphasize the need for routine screening and early detection strategies, especially in urban populations where risk factors such as obesity and advanced maternal age are increasingly common.

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This study identified several key risk factors associated with GDM, including advanced maternal age, obesity, family history of diabetes, previous Macrosomia, previous GDM, multiparity, and hypertension. Advanced maternal age (≥35 years) was commonly observed among women diagnosed with GDM, with 66.7% of GDM-positive participants falling within this category. This finding agrees with studies showing that increasing maternal age contributes to reduced insulin sensitivity and increased risk of glucose intolerance during pregnancy (Li et al., 2020; Wang et al., 2019). Obesity (BMI ≥30 kg/m²) was more common among participants diagnosed with GDM, with 58.3% of affected participants being obese. This aligns with findings by Agaba et al. (2022), who reported that obese women had more than double the risk of hyperglycaemia in pregnancy (PR: 2.07, 95% CI: 1.54–2.79). Recent findings from the World Health Organization (2022) also identified obesity as a major modifiable risk factor for GDM due to its role in increasing insulin resistance and metabolic dysfunction.

A family history of diabetes was observed in 58.3% of GDM-positive women, supporting evidence that genetic predisposition plays a critical role in GDM development (Plows et al., 2018). This finding is also consistent with Kahimakazi et al. (2023), who reported an adjusted odds ratio of 4.45 (95% CI: 1.48–13.34) for women with first-degree relatives with diabetes. Similarly, Chileshe et al. (2025) reported a pooled OR of 5.38, confirming that genetic susceptibility plays a central role in GDM development. Obstetric factors also showed strong associations. A history of Macrosomia was reported in 41.7% of GDM-positive women, which is consistent with findings that maternal hyperglycemia contributes to excessive fetal growth (Ye et al., 2019). Similarly, a previous history of GDM was present in 33.3% of participants, indicating a high recurrence rate in subsequent pregnancies (Schwartz et al., 2016). Previous GDM was observed in 33.3% of participants with current GDM, supporting evidence that recurrence is common. This agrees with Schwartz et al. (2016), who reported a pooled OR of 4.98, indicating that women with prior GDM are at very high risk of recurrence in subsequent pregnancies. Grand multiparity (≥5 births) was more common among GDM-positive women (50.0%) compared to GDM-negative women. This finding is supported by studies suggesting that repeated pregnancies may increase metabolic stress and insulin resistance (Bawah et al., 2019). Additionally, Hypertension was observed in 41.7% of GDM cases, compared to 12.5% among non-GDM participants. This supports findings from the American College of Obstetricians and Gynecologists (2020), which states that GDM and hypertension often coexist as part of metabolic syndrome. The shared pathophysiology involving endothelial dysfunction and insulin resistance explains this association. Most GDM cases (91.7%) occurred among HIV-negative participants. However, this does not suggest a protective effect of HIV, but rather reflects the higher proportion of HIV-negative women in the study population. This is consistent with Agaba et al. (2022), who found no strong independent association between HIV status and GDM, suggesting that HIV is not a primary determinant of gestational glucose intolerance in most Ugandan populations. Overall, these findings demonstrate that both modifiable risk factors (such as obesity and hypertension) and non-modifiable factors (such as age and genetic predisposition) contribute significantly to the occurrence of GDM.

Conclusion

The study established that the prevalence of Gestational Diabetes Mellitus among pregnant women attending ANC at Mengo Hospital was 12%, indicating a notable burden of disease among the study population. The study further identified several significant risk factors associated with GDM, including advanced maternal age, obesity, family history of diabetes, previous Macrosomia, previous GDM, multiparity, and hypertension. These findings highlight the importance of early screening, risk classification, and targeted interventions to reduce adverse maternal and neonatal outcomes.

Recommendations

The Ministry of Health and Mengo Hospital should integrate routine and universal screening for GDM into antenatal care services, particularly between 24–28 weeks of gestation. Special emphasis should be placed on high-risk groups including women aged ≥35 years, obese pregnant women, those with previous GDM, and those with a family history of diabetes.

Health care providers should routinely assess pregnant women for known risk factors such as obesity, advanced

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maternal age, multiparity, hypertension, and obstetric history (macrosomia and previous GDM). This will help in early identification and prompt monitoring of high-risk pregnancies.

There is a need to strengthen health education programs during antenatal visits focusing on healthy diet, regular physical activity, and weight management before and during pregnancy. This is particularly important in reducing modifiable risk factors such as obesity, which was strongly associated with GDM in this study.

Continuous professional development should be provided to midwives, laboratory personnel, and clinicians on updated WHO diagnostic criteria for GDM, interpretation of OGTT results, and proper management protocols to improve early detection and care.

Mengo Hospital should ensure that screening, diagnosis, counseling, and management of GDM are fully integrated within antenatal care services to improve accessibility, continuity of care, and follow-up of affected mothers.

Special follow-up clinics or enhanced monitoring should be established for women with multiple risk factors such as advanced age combined with obesity or previous history of GDM, as these groups showed a higher likelihood of developing the condition.

Further studies should be conducted using larger sample sizes and analytical (cohort or case-control) designs to better establish causal relationships and evaluate pregnancy outcomes associated with GDM in Uganda.

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List of abbreviations

ANC – Antenatal Care

ART – Antiretroviral Therapy

BMI – Body Mass Index

CI – Confidence Interval

FBS – Fasting Blood Sugar

GDM – Gestational Diabetes Mellitus

HIV – Human Immunodeficiency Virus

IADPSG – International Association of Diabetes and Pregnancy Study Groups

IDF – International Diabetes Federation

MHREC – Mengo Hospital Research Ethics Committee

OGTT – Oral Glucose Tolerance Test

PR – Prevalence Ratio

SOPs – Standard Operating Procedures

SPSS – Statistical Package for the Social Sciences

WHO – World Health Organization

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Source of funding

The study was not funded

Conflict of interest

There is no conflict of interest.

Availability of data

Data used in this study is available upon request from the corresponding author

Authors' contribution

(SA) and **(MH)** conceptualized the study and developed the research protocol. They were actively involved in all stages of data collection, data interpretation, and manuscript preparation.

(SN) and **(MH)** supervised the research, provided scientific and methodological guidance, and critically reviewed the manuscript.

(MSA), (BWO), and **(MG)** participated in data collection, contributed to manuscript writing and revision, and provided guidance during the research process, including addressing research queries and ensuring appropriate responses to issues arising during the study.

(KP), (BM), (IM), and **(LT)** contributed primarily to data collection and laboratory-related activities and provided technical support during the research.

All authors contributed to the review of the manuscript, approved the final version for submission, and agreed to be accountable for their respective contributions to the work.

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References

1. Abindu, V., Natukunda, B., & Mutabazi, M. (2024). Missed diagnosis of gestational diabetes mellitus due to selective screening: Evidence from a cross-sectional study in the West Nile sub-region, Uganda. Diabetes, Metabolic Syndrome and Obesity, 17, 447-855. https://doi.org/10.2147/DMSO.S447855
2. Agaba, D. C., Migisha, R., Namale, G., Katamba, G., & Udho, S. (2022). The burden and risk factors of hyperglycaemia in pregnancy in Uganda: A cross-sectional study. Gavin Journal of Diabetes Research and Care, 1(1), 1-10. https://www.gavinpublishers.com/article/view/the-burden-and-risk-factors-of hyperglycaemia-in-pregnancy-in-uganda-a-cross-sectional-study
3. American College of Obstetricians and Gynecologists. (2020). Gestational diabetes mellitus: Practice Bulletin No. 190. Obstetrics & Gynecology, 131(2), e49–e64. https://doi.org/10.1097/AOG.0000000000002501
4. Bawah, A. T., Seini, M. M., Kugo, A., et al. (2019). Prevalence of gestational diabetes mellitus and associated factors among pregnant women. PLOS ONE, 14(8), e0220899. https://doi.org/10.1371/journal.pone.0220899
5. Chileshe, M., Imanga, F., Zulu, A. C., & Kazonga, E. (2025). Prevalence, predictors, and outcomes of gestational diabetes mellitus in sub-Saharan Africa: A systematic review and meta-analysis. Open Journal of Epidemiology, 15(2), 421–438. https://doi.org/10.4236/ojepi.2025.152027
6. Grunnet, L. G., Hjort, L., Minja, D. T., Msemo, O. A., Møller, S. L., Prasad, R. B., Groop, L., Lusingu, J., Nielsen, B. B., Schmiegelow, C., Bygbjerg, I. C., & Christensen, D. L. (2020). High prevalence of gestational diabetes mellitus in rural Tanzania—Diagnosis mainly based on fasting blood glucose from oral glucose tolerance test.

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International Journal of Environmental Research and Public Health, 17(9), Article 3109. https://doi.org/10.3390/ijerph17093109

7. International Diabetes Federation. (2021). IDF Diabetes Atlas (10th ed.). International Diabetes Federation https://diabetesatlas.org
8. Kahimakazi, I., Abbo, C., Nakimuli, A., & Nankabirwa, V. (2023). Prevalence of gestational diabetes mellitus and associated factors among women receiving antenatal care at a tertiary hospital in South-Western Uganda. Pan African Medical Journal, 46(50). https://doi.org/10.11604/pamj.2023.46.50.38355
9. Li, Y., Ren, X., He, L., Li, J., Zhang, S., & Chen, W. (2020). Maternal age and the risk of gestational diabetes mellitus: A systematic review and meta-analysis. BMC Pregnancy and Childbirth, 20, 1–10. https://doi.org/10.1186/s12884-020-02909-9
10. Kish, L., & Leslie, R. (1965). Survey sampling. John Wiley & Sons.
11. Mdoe, M. B., Kibusi, S. M., Munyogwa, M. J., & Ernest, A. I. (2021). Prevalence and predictors of gestational diabetes mellitus among pregnant women attending antenatal clinic in Dodoma region, Tanzania: An analytical cross-sectional study. BMJ Nutrition, Prevention & Health, 4(1), 69-78. https://doi.org/10.1136/bmjnph-2020-000149
12. https://doi.org/10.4314/ahs.v20i3.25
13. Plows, J. F., Stanley, J. L., Baker, P. N., Reynolds, C. M., & Vickers, M. H. (2018). The pathophysiology of gestational diabetes mellitus. International Journal of Molecular Sciences, 19(11), 3342. https://doi.org/10.3390/ijms19113342
14. Sabbagh, I. T., Seedat, F., Hirose, A., & Wade, A. N. (2026). Prevalence of gestational diabetes mellitus in sub-Saharan Africa: A systematic review and meta-analysis. AJOG Global Reports, 6(1), Article 100607 https://doi.org/10.1016/j.xagr.2026.100607
15. Schwartz, N., Nachum, Z., & Green, M. S. (2016). Risk factors of gestational diabetes mellitus recurrence: A meta-analysis. Endocrine, 53(3), 662–671. https://doi.org/10.1007/s12020-016-0921-2
16. Simmons, D., Immanuel, J., Hague, W. M., Teede, H., Nolan, C. J., Peek, M. J., ... & Cheung, N. W. (2023). Treatment of gestational diabetes mellitus diagnosed early in pregnancy. New England Journal of Medicine, 388(23), 2132-2144. https://doi.org/10.1056/NEJMoa2214956
17. Wang, C., Wei, Y., Zhang, X., et al. (2019). A risk prediction model for gestational diabetes mellitus. BMJ Open Diabetes Research & Care, 7(1), e000696. https://doi.org/10.1136/bmjdrc-2019-000696
18. World Health Organization. (2013). Diagnostic criteria and classification of hyperglycaemia first detected in pregnancy. World Health Organization.
19. World Health Organization. (2021). Global report on diabetes and hyperglycaemia in pregnancy. World Health Organization.
20. World Health Organization. (2022). Obesity and overweight. https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight
21. Ye, W., Luo, C., Huang, J., Li, C., & Liu, Z. (2022). Gestational diabetes mellitus and adverse pregnancy outcomes: Systematic review and meta-analysis. BMJ, 377, e067946. https://doi.org/10.1136/bmj-2021-067946
22. Ye, W., Luo, C., Huang, J., Li, C., Liu, Z., & Liu, F. (2019). Gestational diabetes mellitus and adverse pregnancy outcomes: Systematic review and meta-analysis. BMJ, 367, l6131. https://doi.org/10.1136/bmj.l6131

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