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The Prevalence of Anaemia among Pregnant Mothers Attending Antenatal Clinic at Jinja Regional Referral Hospital

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ABSTRACT

Anaemia is a condition in which the number of Red blood cells or their oxygen carrying capacity is insufficient to meet physiologic needs which vary by age, sex, altitude, smoking and pregnancy status.The study specific objectives were to determine the prevalence of anemia among pregnant mothers that attended antenatal clinic at Jinja Reginal Referral Hospital and as well asto determine the risk factors associated with anemia and also to determine the prevalence of anemia among primigravidas and multigravidas.It was a cross sectional study and data was collected from 102 samples ofpregnant mothers. The samples were collected using consecutive sampling technique and analyzed using cyanmethaemoglobin method. The data and results of analysis were then collected from the laboratory request forms and check list. This was then analyzed using simple excel data sheet analysis and graphically presented in form of tables, pie charts and graphs.The study showed that the prevalence of anemia among pregnant mothers that attended antenatal clinic at Jinja Regional Referral Hospital was found to be 55% and the risk factors associated with anemia were; malaria parasites (14%), intestinal helminthes (4%), knowledge (66%), age 32.1% between 26 to 30 and 14% above 31years.The study further established the prevalence of anemia among primigravidas and multigravidas which was found to be 68% and 32% respectively. Study showed that the prevalence of anemia among pregnant mothers that attended antenatal clinic at Jinja Regional Referral Hospital was found to be 55%.

Keywords: prevalence, anaemia, pregnant mothers, antenatal clinic

INTRODUCTION

According to World Health Organization anaemia in pregnant women is defined by hemoglobin levels less than11 g/dl for1st trimester and 3rd trimester and 10.5 g/dl for 2nd trimester [1]. It can further be classified into mild anemia (10 -10.9g/dl), moderate anemia (7- 9.9g/dl) and severe anemia (<7g/dl). Anemia occurs in all stages of life but more prevalent in pregnant mothers and young children [2]. An estimated 56.4 million women worldwide are anaemic during pregnancy corresponding to 41%. In Africa, the prevalence of anaemia in pregnancy is estimated to be between 30% of the total global cases corresponding to 17.2 million pregnant women [2-8]. Anaemia has been an issue of concern in many developing countries because of its association with adverse pregnancy outcome such as increased rates of maternal and prenatal mortality, premature delivery, low birth weight, fetal physical growth and infant deaths [9-12]. Adverse conditions of anaemia in pregnancy include postpartum hemorrhage which may predispose to puerperal infection both of which are leading causes of maternal mortality in developing countries. Iron deficiency anemia is the most common type in pregnancy and contributes to over 20% of pregnancy deaths in Africa and Asia [13-20]. Other common causes of anemia include parasitic infestations such as malaria and hookworm. The predisposing factors are; young age, low socioeconomic status, and illiteracy [21].In Uganda, low social economic status, poverty, low levels of education, limited access to balanced diet and inadequate health

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information have been indicated as some of the contributing factors to anaemia in pregnancy [22].

METHODOLOGY

Study design

A cross-sectional study was used. Cross-sectional studies are carried out at one time point or over a short period.

Study area

The study was conducted at Jinja Regional Referral Hospital.

Inclusion criteria

All Pregnant women attending Jinja Regional Referral Hospital, who consented to participate inthe study were included.

Exclusion criteria

Pregnant women attending Jinja Regional Referral Hospital ANC who had hemorrhage, bleeding disorder for example hemophilia, history of blood transfusion within two months, history of surgery within two months, blood disorders like sickle cell anaemia.

Sample size Determination

The study sample size was determined according to the following formula for cross-sectional studies, Jaykaran *et al.*,2012.

$$n=\frac{Z^2P(1-P)(1-p)}{D^2}$$

Where n =desired sample size.
Z= number of standard moral deviation usually set at 1.96 which corresponds to 95%level of confidence.
P= target population estimated to have a particular characteristic. In absence of a knownestimate, the researcher will use P= 0.5 since it gives the most conservative sample size.
D=degree of accuracy level which is 0.09 (9%)
(1-p) is the proportion of the population without a characteristic. Where p is the prevalence=0.096 (9.6%)
Using the above formula; $n=\frac{1.96^2 \times 0.5(1-0.5)(1-0.096)}{0.09^2}=102.1854$

Therefore, the sample size was 102 pregnant women.

Sampling technique

A Non-Probability Convenient sampling method was used to recruit participants in the study. Convenience sampling (also known as Haphazard Sampling or Accidental Sampling) is a type ofnonprobability sampling where members of the target population that meet certain practical criteria, such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate are included for the purpose of the study. This technique was used for a rationale that different categories of pregnant women were recruited basing on the researcher's interest.

Data collection procedure

All pregnant women attending Jinja Regional Referral Hospital ANC within the study period were approached for consent. A structured questionnaire was administered to each participant, tocapture the age, family size, education level, marital status, parity, employment, knowledge, typeof food eaten regularly and the times they attended antenatal care and interpreted by the researchers in the local language. 2mls of venous blood sample were collected in EDTA tubes inthe laboratory. Haemoglobin estimation was done by cyanmethaemoglobin method. Typing of anaemia was done as per standard peripheral blood smear examination method. Results of the investigation were then be captured on the researcher's data collection sheets. The forms were checked for accuracy and completeness whereby any missing data and corrections will be addressed

Data analysis and presentation

Data was entered in the excel sheets, analyzed manually by use of appropriate formulas and theanalyzed data was presented in form of percentages and frequencies in tables, pie charts, graphs, figures and in narrative form.

Ethical considerations

An introductory letter from Kampala International, Permission to conduct the study was obtainedfrom the Jinja Regional Referral Hospital medical superintendent before proceeding to access theANC unit. A research report approved by the school was also submitted to the health unit ethics committee. Protocol and importance of study was explained to the study participants prior to recruitment. Participants consented and their records were kept with strict confidentiality by the researcher.

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RESULTS

Results collected and analyzed showed that majority of the pregnant women were in the age bracket of 21-24 with 31(30.42%), the least number of women were registered in the age groups above 30 years with 14(13.73%). Education wise, 49(48%) of the pregnant women had completed their secondary education and 11(10%) were illiterate. 59(57.84%) of the pregnant women were house wives and 13(12.75%) were civil servants. 65(64%) of the pregnant women who were considered in this study were not aware about what anaemia was or whatever caused itwhile only 37(36%) knew what anaemia was. Most of the recruited women 60(59%) in this study resided in semi urban or slum areas while those who were from urban areas accounted for 42(41%). Majority of pregnant women considered in this study 44(43%) were Catholics while other religions were fairly represented as shown in Table 1.

Table 1: Shows the demographic and socio-economic bio data of the pregnant women

Variable	Category	Frequency n= 102	Percentage
Age	15-20	29	28.4
	21-25	31	30.42
	26-30	28	27.45
	31+	14	13.73
Education level	Primary	21	20.59
	Secondary	49	48.08
	Tertiary	18	17.65
	None	11	10.78
	Others	03	2.9
Occupation	House wife	59	57.84
	Business woman	28	27.45
	Civil servants	13	12.75
	Others	02	1.96
Level of awareness about Anaemia	Aware	37	36
	Not aware	65	64
Area of residence	Urban	42	41
	Semi urban/ slums	60	59
Religion	Catholic	44	43.14
	Protestants	26	25.5
	SDA	11	10.78
	Muslims	09	8.82
	Others	12	11.76
Total		N=102	100

During the study period a total of 102 were tested for haemoglobin level, thick smears formalaria parasites were made for those who were anaemic and stool examination.

$$\frac{\text{Total Number of anaemic mothers}}{\text{total number of pregnant mothers under investigation}} \times 100$$

Out of 102 women tested for Hb 56(54.9%) were found to be having Hb level below 11.0 g/dl meaning they were anaemic.

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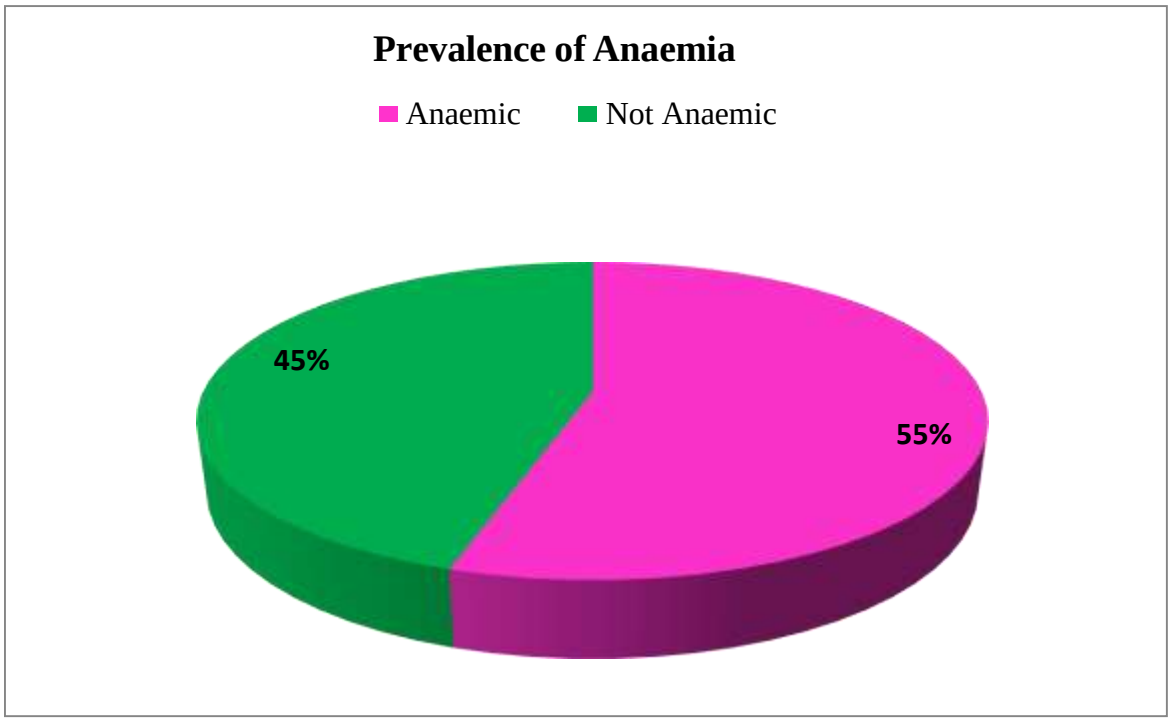
Figure 1: A pie chart showing anaemia in pregnancy.



From the study results of haemoglobin estimation out of 102 who tested for Hb, 56 (55%) hadHb of below 11.0 g/dl while 45 % had Hb above 11.0 g/dl.

Age

Table 2 and corresponding figure 2 shows anaemia by age. N= 56, 18 (32.1%) of the anaemicpregnant mothers were in the age between 26 to 30. And only 8(14%) were in ages above 31 years.

Table 2: Anaemia in pregnant women by age

Age	Anaemic	Not anaemic	Total
15-20	17	12	29
21-25	13	18	31
26-30	18	9	28
31 +	08	06	14
Total	56	46	102

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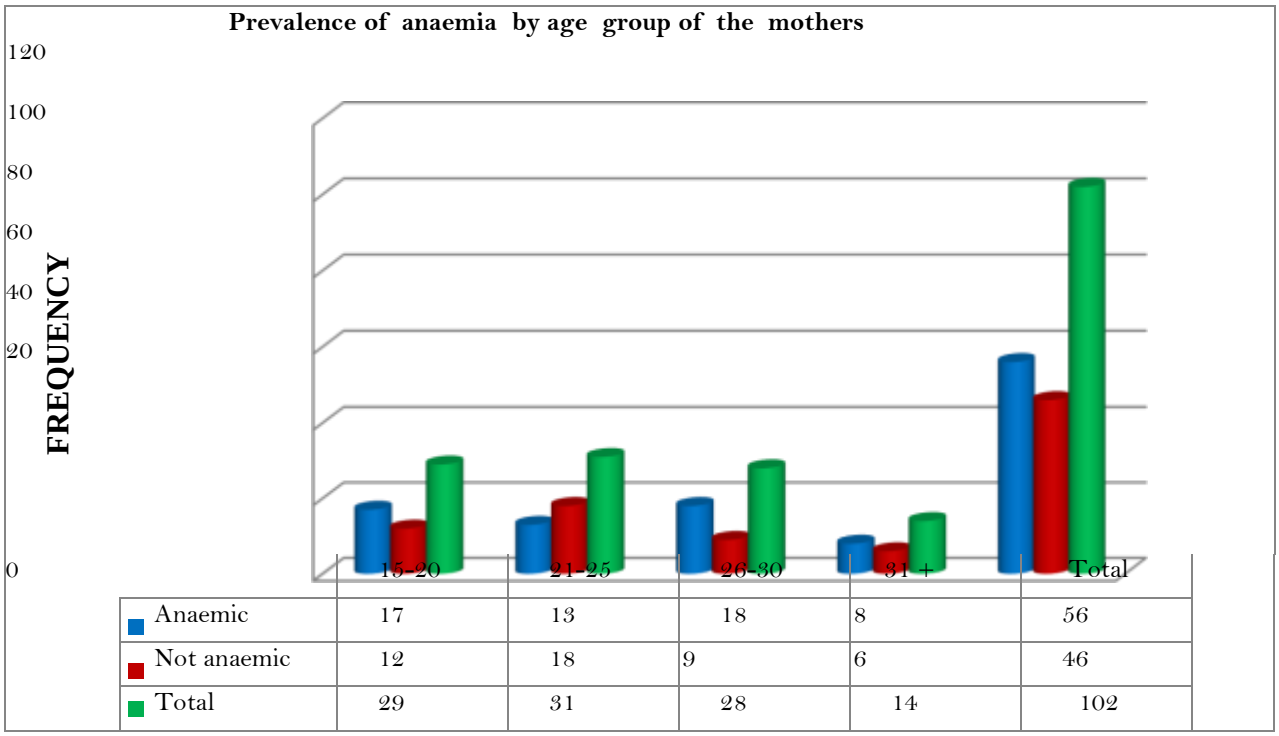
Figure 2: Distribution of anaemia cases by age.



Malaria parasites

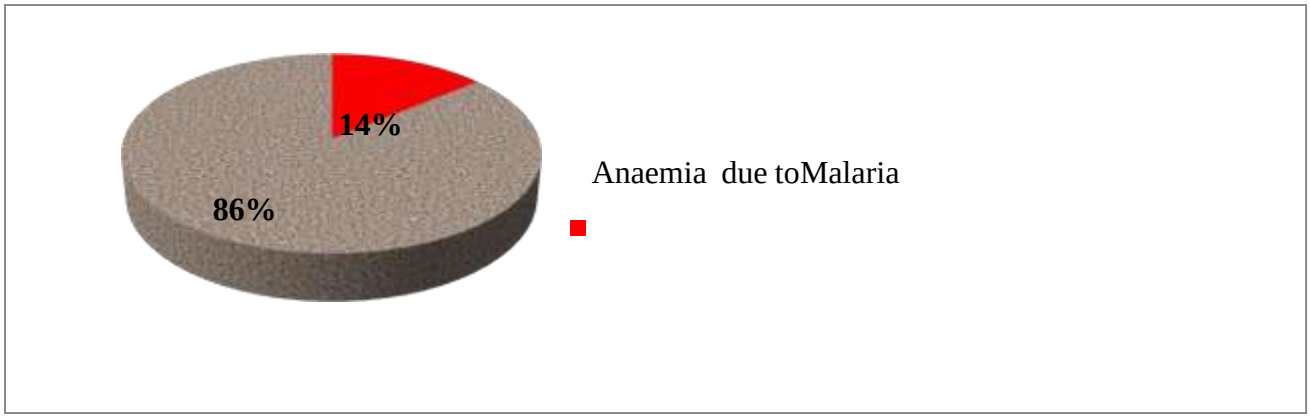
Out of the 56 pregnant women, 8(14 %) of them were anaemic due to malaria as indicated intable 3 and figure 3 below, especially due to plasmodium falciparum. This is because this malaria species causes severe anaemia as a result of red blood cell break down.

Table 3: Anaemia in pregnant women due to malaria parasites

Anaemia due to malaria	Anaemia due to other parasitic infections	Total
8	48	56

Figure 3: A pie chart showing anaemia in pregnant women due to malaria parasiteinfestation

For N= 56, 8(14 %) of the pregnant women who had anaemia were due to malaria parasites and48(86%) were due to non-malaria related causes.



Out of the 56 pregnant women, 2(4%) of them were anaemic due to intestinal helminthes asindicated in table 4 and figure 4 below, especially due to hook worm. This is because this helminthic species causes severe anaemia as a result feeding on the iron component of the haemoglobin pigment of blood, hence reducing the haemoglobin level.

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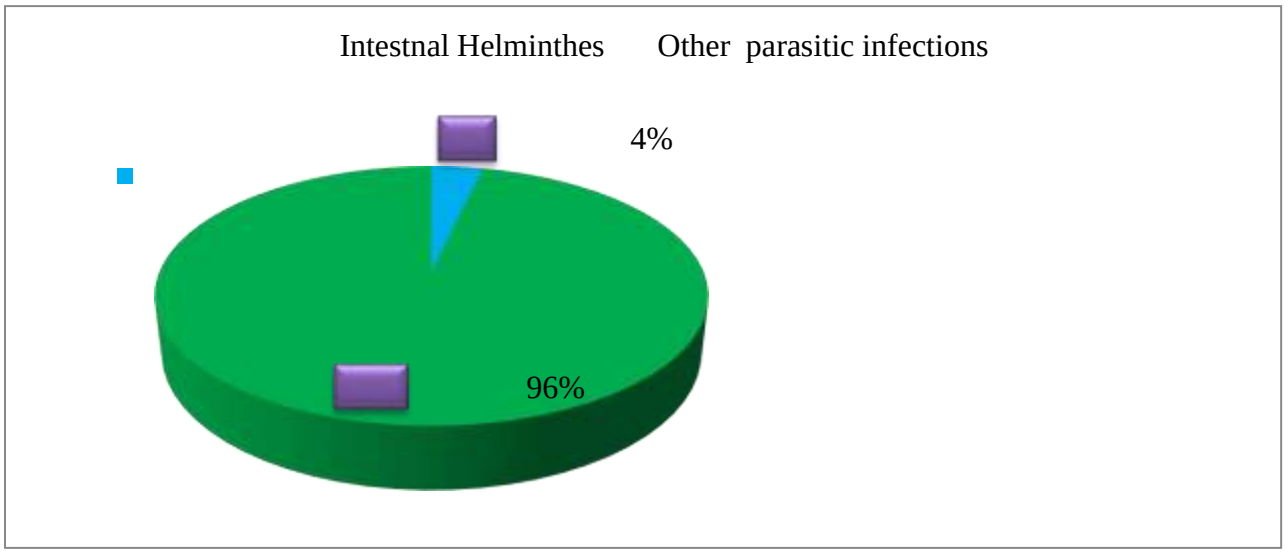
Table 4: Shows anaemia in pregnant women due to intestinal helminthes

Anaemia due to intestinal helminthes	Anaemia due to other parasitic infections	Total
2	54	56

Figure 4: Pie chart showing anaemia in pregnant women due to intestinal helminthesinfestation.



2(4%) of the pregnant women who attended Jinja Regional Referral Hospital had anaemia due to intestinal helminthes infestation whereas the 54(96 %) was due to other causes. (N=56). Out of the 56 pregnant women, 37(66%) of them were aware of anaemia through government facilities, 10 (17 %) were aware through mass media,5(8.9%) through friends and 4(7.7%) through other sources as indicated in table 4 and figure 4 below. This is due to the proper healtheducation and sensitization programs by health workers to pregnant women who attended antenatal care at these facilities, hence better nutrition to offset anaemia.

Table 5: Shows the source of information about Anaemia

Government hospitals	Mass media	Friends	Other sources	Total
37	**10**	**5**	**4**	**56**

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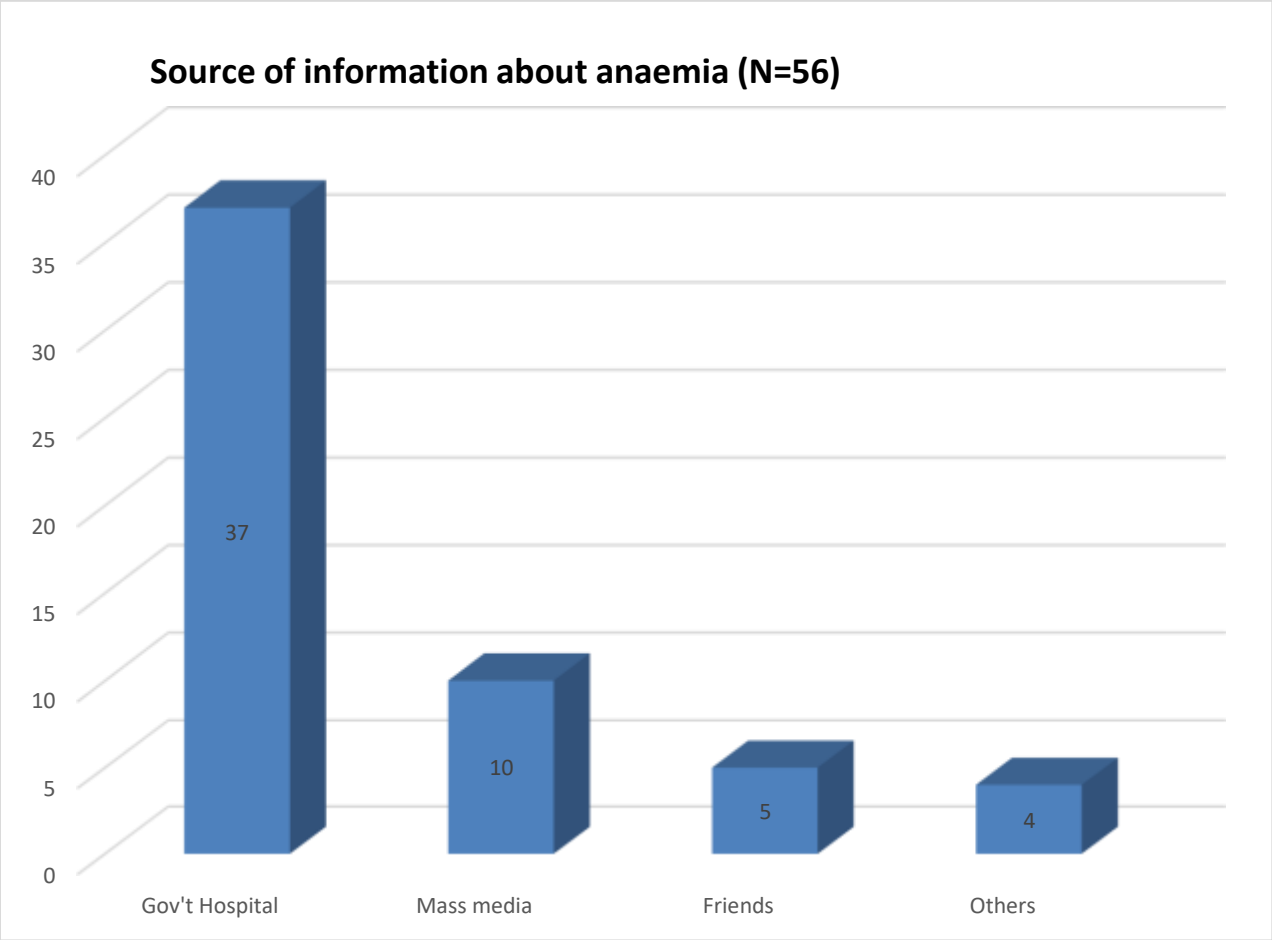
Figure 5: A bar graph showing the source of information about Anaemia



Out of the 56 anaemic pregnant mothers, 38(68%) of them were primigravidas and 18(32%) were multigravidas as shown in table 6 and figure 6 below. This is attributed to the poor haematinic compliance, not taking medication seriously, it being their first pregnancy experienceaccompanied by the menstrual cycles which further lower their haemoglobin levels.

Table 6: Shows the prevalence of anaemia among the primigravidas and multigravidas

Primigravidas	Multigravidas	Total
38	**18**	**56**

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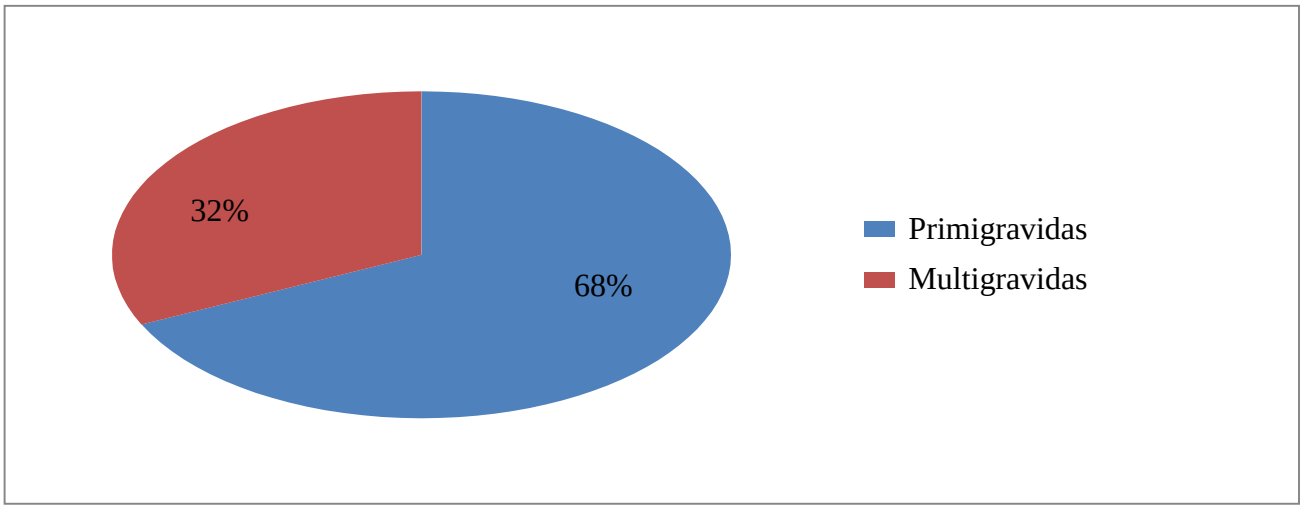
Figure 6: A pie chart showing the prevalence of anaemia among primigravidas andmultigravidas



DISCUSSION

The general prevalence of anemia among 102 pregnant mothers who attended antenatal clinic at Jinja Regional Referral Hospital in this study was (55%). This finding is not in agreement with other studies conducted in Uganda for instance a study conducted among women of reproductiveage (15-49 years) and pregnant women [22] which indicated that the prevalence of anaemia among pregnant women was 19.7%. The high rate of anaemia among pregnant women in Jinja Regional Referral Hospital could be attributed to mainly malaria and intestinal helminthes, as the commonest risk factors. Similarly, findings from Uganda Demographic and Health Surveys, reported that anaemia in pregnancy had reduced from 41.2% to 30.5% between 2001 and 2011 [23] which still was lower than what this study established which can be attributed to a smaller sample size that was studied on compared to a bigger sample studied by the Uganda Demographic and Health Surveys. However, on the sub-Saharan continent a couple of other studies showed very high prevalence ofanemia reported in comparison to our Jinja Regional Referral Hospital prevalence of 55% for instance, from Morogoro municipality, Uganda, Mbule [22] , which reported 95%, 76.9%, 70%, 69.1%, 63.1%, prevalence rates, respectively. This variation might be due to study population difference. For example, in Tanzania where the highest prevalence was reported, most of the participants were in their last trimester whereas most of the participants in this study were in the2nd and 1sttrimester. The study conducted among pregnant mothers who attended antenatal clinic at Jinja Regional Referral Hospital showed that 14 % of the anaemic pregnant women were malaria positive whichis almost similar with a study conducted in sub–Saharan Africa where 15.5% of pregnant mothers had active malaria infection [24]. This could be attributed to the fact that most of the pregnant mothers resided in the urban setting of Jinja where the population is relatively low and seasonal malaria transmission. The study also showed that 18(32.1%) of pregnant mothers who were anemic were in the age between 26 to 30 and only 8(14%) were in ages above 31 years this is in contradiction with another study conducted in sub–Saharan Africa where majority of the pregnant mothers who were anemic were above 31 years [24]. This was attributed to the fact that more women were studied on in the sub-Saharan Africa as compared to the numbers studied on in JinjaRegional Referral Hospital. The study showed that intestinal helminthes infestation is also a risk factor associated with anaemia with 2(3.6%) which is in disagreement with other studies conducted by [25-30] which showed that 75% of anaemia in pregnancy was caused by intestinal helminthes particularly hookworm. This could be attributed to medium income status of pregnantmothers who attended Antenatal clinic at Jinja Regional Referral Hospital since most of them resided in the urban areas of Jinja. The study conducted among pregnant mothers who attended antenatal clinic at Jinja Regional Referral Hospital showed that 38(68%) of pregnant mothers who were anaemic were primigravidas whereas 18(32%) were multigravidas, this was in agreement with another study carried out in Malawi where 64.2% of pregnant mothers who were anaemic were primigravidas and 33.4 were multigravidas [26-30]. This could be attributed to the fact that despite various efforts by the government such as ICDS nutrition services, distribution of iron and folic acid tablets, and rigorous health education on improving the nutrition to combatanaemia among all age groups of women, the burden is still huge affecting mostly primigravidas due to low turn up for antenatal services it being their first pregnancy experience.

CONCLUSION

The prevalence of anaemia among pregnant mothers that attended antenatal clinic at JinjaRegional Referral Hospital from September to November 2022 was found to be 55%. The risk factors associated with anaemia among pregnant mothers that attended antenatal clinic at Jinja Regional Referral Hospital from September to November 2022 was

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found to be 32.1% inpregnant mothers in the age between 26 to 30 and only 14% in the ages above 31 years. Another risk factors associated with anaemia among pregnant mothers that attended antenatal clinic at Jinja Regional Referral Hospital from September to November 2022was due to malaria parasites which was found to be 14%.

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