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Anemia Prevalence and Risk Factors Among Pregnant Women Receiving Prenatal Care at Kiryandongo General Hospital

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ABSTRACT

Pregnancy anemia is a global health issue affecting low, middle, and high-income countries, with 40.1% of expectant mothers experiencing it. In underdeveloped nations, severe anemia contributes to maternal morbidity and death. A cross-section study found that 58.2% of anemic respondents were in their mid-reproductive age, married, and had formal schooling. Over half of the population lived in rural areas, with 58% earning less than UGX75,000. Most anemic women were mildly anemic (81.3%), moderately anemic (18.8%), and none were severely anemic. The study concluded that anemia remains an unresolved public health problem in the study area.

Keywords: prevalence, risk factors, anaemia, pregnant women

INTRODUCTION

Anaemia is a disorder when there are either too few red blood cells or too little hemoglobin (Hb) in them. In particular, anaemia in pregnancy is classified as mild (10.0-10.9 g/dl), moderate (7.0 - 9.9 g/dl), and severe 7 g/dl when the haemoglobin concentration is less than 110 g/L at the first and third trimesters (Less than 11 g/dl), and 10.5 g/dl in the second trimester [1, 2]. Anaemia during pregnancy is thought to affect 56.4 million women globally, or 41.8% of all pregnant women [3]. The most afflicted region is Sub-Saharan Africa, where anaemia prevalence is projected to impact 17.2 million pregnant women, or around 30% of all cases worldwide [4]. Anemia affects 49% of Ugandan women of reproductive age, and it affects pregnant women significantly more (64.4%) [5, 6].

One of the most difficult public health issues in underdeveloped nations is anemia in pregnancy [7]. Severe anemia contributes to maternal morbidity and death on a very regular basis, even if a causal connection isn't always established [8, 9, 10]. Even mildto moderate anemia has a negative impact on wellbeing, causing fatigue, tension, and decreased job productivity [11]. Women with severe anemia have a harder time coping with moderate blood loss during labor, which increases the likelihood that they will need a blood transfusion during delivery. This puts patients at unnecessary risk of contracting the human immunodeficiency virus (HIV) and other bloodborne pathogens [12, 13]. According to estimates, there are three primary processes through which anaemia may be to blame for up to 20% of all maternal fatalities in sub-Saharan Africa. First off, anaemia reduces women's haematological reserves for blood loss, particularly after birth, making them more vulnerable to hemorrhage-related mortality. Hb4 g/dl is also connected with significant risk of heart failure, particularly during birth or shortly after, making the mother likely to die if she can't get to medical facilities quickly enough. Severe anemia is linked to greater susceptibility to infection due to poor resistance to illness. immediately [14, 15, 16].

Both hospital and community-based research have indicated a relationship between anemia and maternal mortality [17]. Low pregnancy weight gain and intrauterine development retardation, followed by low birth weight and greater perinatal death rates, are only a few of the complications that can arise from maternal anemia [18]. Additionally, severe maternal anemia may hinder the supply of

oxygen to the fetus, increasing the risk of neonatal mortality [19, 20, 21]. Additionally, babies born to anemic mothers have lower iron reserves at birth, which puts them at higher risk for developing anemia as newborns and for infant morbidity and death [22, 23]. Because of this, a crucial element of healthy parenting is the reduction of anemia during pregnancy [24].

METHODOLOGY

Study design

A quantitative cross section study approach was conducted in order to determine the prevalence and factors associated with anaemia among pregnant women admitted at Kiryandongo Hospital.

Study Site

The study was conducted in the Kiryandongo general Hospital, located in the mid-western region of Uganda, approximately 280 kilometres from Kampala the capital city of Uganda.

Study population

The study was conducted among pregnant women admitted at Kiryandongo General Hospital.

Inclusion criteria

It was included all pregnant women admitted at Kiryandongo General Hospital, available at the time of collecting data and willing to participate in the study.

Exclusion criteria

Pregnant women admitted at Kiryandongo General Hospital who decline to participate in thestudy.

Sample size determination

Sample size determination and rationale

The sample size will be determined using the Kish Leslie‟s formula (1965)

$$n = \frac{(Za/2)^2 p(1-p)}{e^2}$$

Where „n‟ is the desired minimum sample size, Z is value at α= 0.05 which is 1.96, e =margin oferror which is proposed to be 0.1, p is the proportion of pregnant women admitted at Kiryandongo General Hospital.

Since there is no literature about the prevalence of anaemia among pregnant mothers in Kiryandongo, we shall consider the median prevalence, 50% and n=385

The overall sample size will be 385

Sampling procedure

Simple random and purposive sampling techniques will be used to choose respondents to participate in the study, from whom data will be collected.

Data collection method and tool.

Data was collected by the principal investigator (PI) and trained research assistant using an interviewer-administered questionnaire. The researcher met with the targeted respondents that took part in the study, after obtaining permission for data collection from respondents. Each participant was required to give an informed consent before enrolling in the study. The researcher assisted the respondents in filling the questionnaires by explaining to the respondents for clarifications. The properly filled questionnaires then be collected and then data was taken for analysis. The researcher used a structured questionnaire and participants asked similar questions and from options, they picked the best alternative. A pen and paper were used to record the necessary information.

Data analysis

The qualitative data [25] collected will be statistically analyzed and documented using Microsoft Excel and Word version 2019 which will then be analyzed using SPSS v.16. The analyzed data will then be presented in form of tables and graphs which will be a basis for discussion and conclusion among others.

Ethical considerations

Ethical approval was sought from the Department of Obstetrics and Gynaecology, Kampala International University (K.I.U) and the Research and Ethics Committee (REC) of KIU. Permission from KGH director will be sought. Participants gave consents [26].

RESULTS

Table 1; Sociodemographic data of the participants

1. Age	Frequency	%
a. 15-20yr	31	27.7
b. 21-30yr	57	50.9
c. 30-40yr	21	18.8
d. >41yr	3	2.7
2. Parity		
a. Primigravida	26	23.2
b. Para 1	38	33.9
c. Para 2	19	17.0
d. >Para 3	29	25.9
3. Education level		
a. Primary	55	49.1
b. Secondary	42	37.5
c. College/university	11	9.8
d. None	4	3.6
4.Marital status		
a. Married	105	93.8
b. Single	4	3.6
c. Separated/divorced	3	2.7
5. Occupation		
a. civil servant	9	8.0
b. house wife	38	33.9
c. business woman	20	17.9
d. peasant farmer	45	40.2
6. Residence		
a. Rural	79	70.5
b. Urban	33	29.5
7.Monthly income		
a. < 75,000	66	58.9
b. 75,000-150,000	21	18.8

c. 160,000- 300,000	13	11.6
d. > 300,000	12	10.7
8. Main sources of information		
a. television	29	25.9
b. radio	78	69.6
c. newspaper	2	1.8
d. social media	3	2.7
e. none of the above	2	1.8
9. Religion		
a. Roman catholic	43	38.4
b. Anglican	43	38.4
c. Muslim	10	8.9
d. Pentecostal	11	9.8
e. Others	5	4.5
10. Common diet		
a. cassava, millet	57	50.9
b. posho, rice	71	63.4
c. bean, groundnuts	59	52.7
d. vegetables e.g. cabbage, Sukuma	83	74.1
e. Others	50	44.6

Figure1*: A bar graph showing the age groups ofmothers in the study.*
Majority of the respondents(58.2%) were in their mid- reproductive age (21-30 years).

Figure2*: A pie chart showing the marital statusof mothers in the study.*
Majority of the respondents(94%) were married.

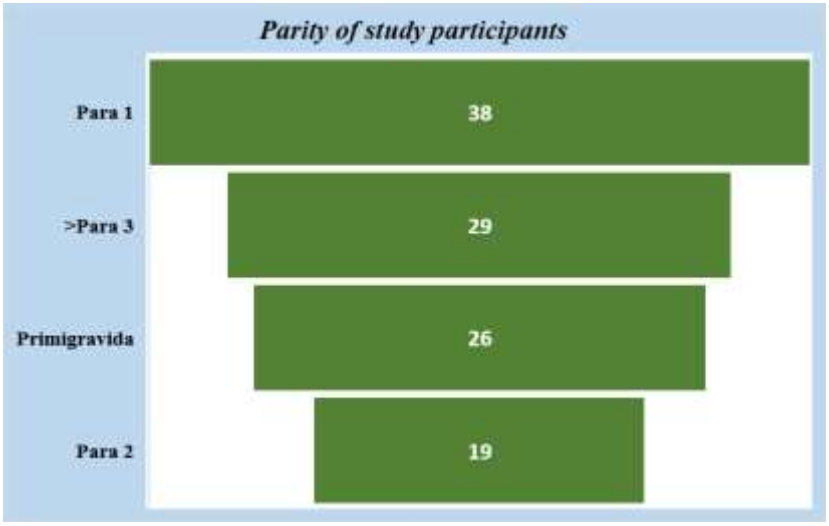

***Figure 3**: A funnel chartshowing the parity of mothers in the study. Majority of the respondents (38%) were Para 1 i.e had atleast 1 child.*

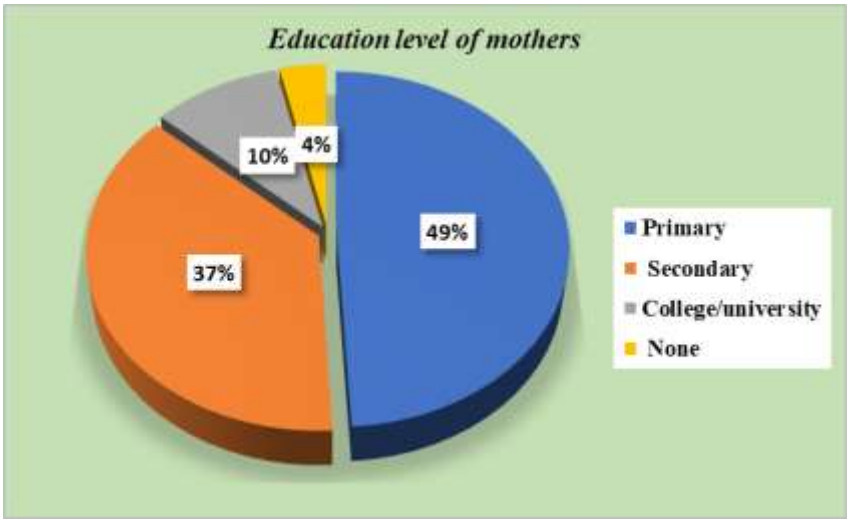

***Figure 4**: A pie chart showing the education levelof mothers in the study. Majority of the respondents(49%) had attained primarylevel education.*

The sociodemographic characteristics of the study population are shown in the table above. Majority of the respondents (58.2%) were in their mid-reproductive age (21-30 years) and nearly all women (93.8%) were married. The biggest number the study population had attained formal schooling where 49.1%, 37.5% and 9.8% had attained primary, secondary and tertiary education.More than half (70.5%) of the population in the study resided in rural areas and 58% earned an average monthly income of less than UGX75,000 with most of them being peasant farmers (40.2%) and house wives (33.9%).

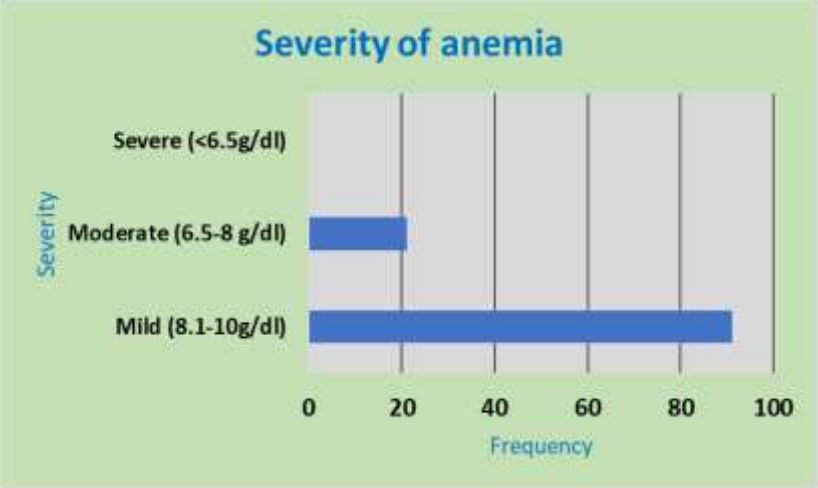

Figure 5*: A bar graph showing the severity of anemia among the study participants.*

Majority (81.3%) of the anaemic women had mild anaemia, and 18.8% had moderate anaemia, while none had severe anaemia. The general prevalence of anemia was 28%. Majority (81.3%) of the anaemic women had mild anaemia, and 18.8% had moderate anaemia, while none had severe anaemia.

DISCUSSION

Low, middle, and high income countries are all affected by pregnancy-related anemia, which raises the danger of complications and mortality during pregnancy [27]. Low iron intake that does not meet the high needs during pregnancy is the most common reason foranemia in pregnant women. Low blood iron levels can raise the risk of preterm birth, low birth weights, restricted fetal growth, and sepsis shortly after birth, all of which carry a high risk of mother and child mortality if they are not treated or managed [28, 29]. There were 28% cases of anaemia in this study. This prevalence is higher than that found in Ethiopian studies (9.7%). Hailu et al., [4] Nigeria (ten percent) and Ethiopia (11.6%) [30]. The prevalence is, however, lower than the global prevalence of anemia in pregnancy, which has been estimated at 40.1% [31], as well as Uganda's national prevalence of 30.4% (Stevens et al., 2013). This depicts the spatial distribution of anaemia from region to region, based on the research methods used. The prevalence was also lower when compared to other studies in Uganda, including one in southwestern Uganda with a prevalence of 62.8%, Hoima with a prevalence of 12.1%, and Gulu with a prevalence of 32.9%. [31, 32]. The prevalence of anaemia in the current study is also lower than in previous studies conducted outside of Uganda, such as in Kisangani, DRC, where it was 76.2% [33] and southwest Ethiopia, where it was 23.5% [34]. The discrepancies in findings could be related to bigger sample sizes, HB estimating methodologies, and geographical regions in earlier studies compared to the current study.

The majority of anaemic women in this research (81.3%) had mild anaemia, 18.8% had moderate anaemia, and none had severe anaemia. According to another study conducted in the Tanzanian highlands, the intensity ranged from mild (23%) to moderate (4.6%) to severe (0.5%) [35]. According to a study conducted in South West Ethiopia, of all pregnant women who were anemic, 59.7% had mild anemia, 33.3% had moderate anemia, and 7% had severe anemia [36]. According to a study conducted in Uganda at Kisugu Health Center IV, mild anemia affected 28.1% of people, moderate anemia

affected 51.7%, and severe anemia affected 20.2% of people [37]. Research conducted in Kenya at Mbagathi County Hospital in Nairobi found that mild and moderate anemia were 62.9% and 36.3%, respectively, with just 0.8% having severe anemia [38]. Research in Somalia at SOS Hospital in Mogadishu found that light anemia was 15.14%, moderate anemia was 56.58%, and severe anemia was 12.66% [39]. Another study on anemia in pregnancy in Ethiopia found that 64.3%, 32%, and 4% of respondents had mild, moderate, or severe anemia, respectively [40]. Research conducted in a rural Indian village revealed that the majority of people had moderate anemia (50.9%), while the rest had mild or severe anemia-(30.17% and 18.9%, respectively) [41]. Another study conducted in Western Nepal revealed that the severity of anemia was 74.8% for moderate anemia and 25.2% for mild anemia [42]. Anemia was found to be mild, moderate, or severe in another study conducted in Northern Tanzania, with respective prevalence rates of 7.6%, 8.1%, and 2.3% [43].

Pregnancy anemia is commonly thought to grow with increasing parity and maternal age [44]. Older women are anticipated to be multigravida in addition to the overall body frailty associated with prolonged maternal age. By lowering the mother's iron reserves throughout each pregnancy and causing blood loss during each delivery, multigravida may cause anaemia. The majority of anemic mothers in this study (58.2%) were in the middle of their reproductive lives (21-30 years). These findings contrast with those of [8], who found that the risk of anemia increases with maternal age and that pregnant women over the age of 31 have considerably higher anemia levels than moms between the ages of 18 and 24. These finding conflicts with other research from the Kisumu District of Kenya, Ethiopia, Tanzania, andEgypt that revealed that anaemia risk increases dramatically in late pregnancy [8, 30, 22, 7].

The women's low socioeconomic position may have a substantial effect on their dietary habits and health-seeking behavior [24]. Low socioeconomic class women typically consume diets that are heavy in carbohydrates and phytates, which prevent the absorption of ironand other trace minerals like zinc and calcium as well as animal protein and vitamins in the intestines [5]. This suggests that empowering women economically would be crucial to lowering the prevalence of anemia in our society. Peasant farmers made up themajority of anemic mothers (40.2%), followed by housewives (33.9%). These findings conflict with research from Pakistan [45] and Brazil [46], were employed participants had a considerably higher prevalence of anemia than housewives. Being a housewife and residing in Gulu were discovered to be separate risk factors in a study on the prevalence of anemia in pregnancy in Gulu and Hoima regional hospitals in Uganda [32]. Compared to their counterparts, women with secondary or higher education were less likely to be anemic. Numerous studies have shown that education lowers the risk of anemia. Pregnant women with higher levels of education make more money, eat healthier, and don't have nutritional anemia [7]. Additionally, research in Ethiopia found that pregnant women with no education had a greater prevalence of anemia [4]. Additional positive outcomes for mothers and children have been linked to secondary and higher education, including higher rates of exclusive breastfeeding, attendance at the recommended four or more prenatal visits, use of skilled labor assistance, and seeking medical attention for children who have malaria or pneumonia [12]. Women education and empowerment are not within health sector and there is a need for multisectoral collaboration in combating anaemia and other maternal health problems [22].

According to broad consensus, anaemia during pregnancy rises with parity because iron stores are repeatedly depleted [44-50]. As the proportion of anemic pregnant women dropped as parity grew, this study, like those of other researchers [47-53], did not support this association between parity and anemia. This conclusion may be explained by growing parity, improved knowledge

of the benefits of medication and a healthy diet, and increased clinic interaction with other expectant patients [48-54]. These would somewhat cancel out the effects of increased parity. Another reason could be that women with greater parities registered for ANC earlier in the pregnancy when their needs for iron were still lower than those with lower parities, who did so later in pregnancy when their needs for iron were considerably higher, predisposing them to anemia. The upshot of this is that in a societylike ours where malaria is an endemic problem, the nulliparous/primigravidae who are more sensitive to the disease waited until parasitemia had negatively impacted them before booking, putting them at a higher risk of anemia.

CONCLUSION

The findings of this study conclude that anaemia is still an unresolved public health problem in the study area. The prevalence of anaemia in the current study was 28%. This study's anemic women were mostly mildly anemic (81.3%), moderately anemic (18.8%), and none were severely anemic. The majority of anemic mothers in this study (58.2%) were in the middle of their reproductive lives (21-30 years). Peasant farmers made up the majority of anemic mothers, followed closely by housewives and compared to their counterparts, women with secondary or higher education were less likely to be anemic. Furthermore, the proportion of anemic pregnant women dropped as parity grew.

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