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Assessment of Obstetric Characteristics Associate with Anemia Disease among Pregnant Women Attending Antenatal Clinics at Garowe General Hospital, Somalia

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Existence of anaemia pregnancy women is when it comes to this hematologic abnormality. Hemoglobin deficiency during pregnancy has serious effect on maternal and fetus development, which could prompt high maternal mortality rates.
Purpose of the Study: The purpose of the study was to assess obstetric characteristics associate with anemia disease among pregnant women attending antenatal clinics at Garowe general hospital.

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Methods: A hospital based cross-sectional study design was conducted. Systematic random sampling method was used to select 266 pregnant women. Mothers who attended Antenatal Clinic during the study period and who met the inclusion criteria were interviewed and a capillary blood sample was taken. Hemoglobin level was determined by using HemoCue photometer. A structured questionnaire as well as focus group discussions were held in collecting data. Qualitative data was analyzed using a content technique and quantitative data was analyzed using descriptive and inferential statistics.
Results: The inferential statistics entailed a bivariate chi-square analysis and odds ratio (OR) with corresponding 95% confidence intervals (CI) computed to find association between independent and dependent variables. The study found that 46% of the pregnant women in the study were anemic. Obstetric characteristics such as the interval or space between births and the abortion history of the mother was significantly associated with anemia disease.
Recommendation: The study recommends that stakeholders including governments, Non-Governmental Oganization and the private sector in Somalia should seek to increase access to iron and folic acid supplements, should increase education on nutrition. In addition, the study recommends that sanitation and access to clean water should also be enhanced. Finally, the study recommends that the underlying socio-economic factors such as poverty, lack of education, unemployment and poor housing that lead to anemia should be addressed.

Keywords: Anemia; pregnant women; preterm; hemoglobin.

1. INTRODUCTION

Anemia is diagnosed when there is less than 11g/dl of the hemoglobin (Hb) fixation in the blood of pregnant women. This threshold is considered to be the illness threshold for anemia. This disorder reduces the amount of oxygen that the blood is able to convey to the tissues of the body, which may be dangerous not only to the mother but also to the unborn child she is carrying. It is impossible to exaggerate how crucial it is for both the mother and the developing fetus that she keeps her hemoglobin content at a healthy level throughout her pregnancy [1,2]. Due to the fact that the mother and the hatchling rely on this oxygen supply as their major source, a dip below the permitted levels might be harmful to both the mother and the hatchling [3]. According to the World Health Organization [4], 1.62 billion individuals throughout the world, or 24.8% of the population, suffer from pallor.

According to the United States Agency for International Development (2011), anemia affects more than 500 million women living in underdeveloped nations, and four out of every ten pregnant women are considered to be in a weak physical condition. Even though there have been studies conducted on what is currently being done and what needs to be done internationally to address the prevention and treatment of maternal sickness, the prevalence of anemia and maternal mortality rates continue to stay high around the globe (USAID, 2011). Iron deficiency anemia, often known as IDA, is responsible for about some of the instances of anemia that are encountered in today's society. The incidence of IDA is often seen in children who are still in preschool and in women who are pregnant. Consuming iron-rich foods and taking iron supplements may help women enhance their physical and mental performance, as well as their productivity at work and their general financial well-being [5,6]. In addition, it has been shown that taking an iron supplement during pregnancy may enhance maternal, neonatal, and newborn outcomes, as well as, curiously enough, long-term results for young children [7,8,9]. These improvements can be attributed to better iron absorption. A moderate risk to public health exists when the prevalence of anemia falls within the range of 5.0% to 19.9%. When the prevalence of an issue ranges from 20.0% to 39.9%, it is considered to be a moderate public health hazard. According to McLean et al. [10], a serious threat to public health exists when the prevalence of an issue reaches or exceeds 40 percent. The prevalence of anemia is lowest among pregnant women in South America, accounting for just 24.1% of all cases (Worldwide pervasiveness of Anemia. 1993.). The prevalence of anemia is highest among pregnant women in sub-Saharan Africa, where it accounts for 57% of all cases. This is followed by South – East Asia, where it accounts for 48% of all cases. Accessible in February 2018). The commonness of anemia among pregnant women in East African nations are changes for instance; Rwanda 23.5%, Kenya 40.3%, Tanzania 48%,

Ethiopia 29% and Somalia is 49.7% (World Bank, 2019). This information demonstrates that there is deprived to convey research about factors that could contribute high Anemia predominance among pregnancy women living in Somalia.

1.1 Justification of The Study

Anemia is a serious problem for mothers to deal with throughout their pregnancies since it is linked to unfavorable outcomes for both the mother and the child. Because of this, the World Health Organization (WHO) agreed that one of their three health-related Millennium Development Goals (MDG) would be to reduce maternal deaths [11]. One of the World Health Assembly's Global Nutrition Goals for 2025 is to reduce the number of people who have anemia [12]. Research on anemia during pregnancy has led to a better understanding of the factors that can cause it.

However, in Somalia, there is little studies which is related to anaemia in pregnancy. Considering the issues brought about by iron deficiency, more research is expected to contribute proper policies and frameworks that will guarantee the decrease of anaemia in pregnancy. In light of this, the purpose of this research is to investigate the variables associated with anemia in pregnant women who attended ANC at the Garowe main hospital

2. METHODS

The Garowe General Hospital served as the location for the research project. The Garowe General Hospital is a hospital in the Garowe area of Puntland, Somalia. This facility is owned by the government. It provides a full range of services, including medical, surgical, pediatric, and maternity care, among other areas of expertise. In addition to this, it acts as a referral center for other medical institutions located within the Garowe district and the adjacent district of the Nugal area. Between the dates of December 20th, 2022 and February 15th, 2023, cross-sectional research was carried out with the purpose of exploring a variety of issues that are associated with iron deficiency in pregnant women. The participants in the research were selected at random from among a pool of 266 pregnant women who were presently enrolled in the prenatal care program at Garowe district hospital.

2.1 Target Population

The target population was all pregnant women attending antenatal clinic at Garowe General Hospital. The researchers used a questionnaire that was conducted by the researchers themselves in order to collect the data that was required. During the research project, the researchers talked to pregnant women who were at the Garowe district hospital's prenatal center and told them what the goals of the study were.

2.2 Sample Size

To establish the sample size of the research, Yamane 1963 formula was used where by 266 participants were chosen to take part in the study. After being cleaned, the data were then imported into a version 26.0 of the SPSS program in order to be analyzed. The data were coded, and then verified, in order to make their modification, analysis, and display as straightforward as possible.

In order to determine means, frequencies, and standard deviations for the descriptive data, tables were constructed in SPSS and used to conduct the analysis. The examination of inferential data included the testing of hypotheses, as well as the assessment of associations and connections between the variables.

2.3 Inclusion Criteria

i. All pregnant women attending Antenatal clinics at Garowe General Hospital lived in that area for more than six months
ii. Pregnant women who consent to participate in the study.

2.4 Exclusion Criteria

i. All pregnant women who were not attending Antenatal clinics at Garowe General Hospital not lived in that area for more than six months
ii. Pregnant women who did not consent to participate in the study.

3. RESULTS AND DISCUSSION

3.1 Introduction

This chapter presents the results obtained from the primary qualitative and quantitative data collected in accordance with the methodology

discussed in chapter three. The risk factors associated with anaemia were sub-divided into three categories: The socio-demographic factors, obstetric characteristics and dietary intake. The socio-demographic factors investigated include the age of the mothers, their highest level of education, income levels as well as their occupation. The quantitative survey involved a sample size of 266 respondents.

3.2 Response Rate

The response rate of the study shows how representative the sample size is in relation to the target population. The response rate significantly affects the credibility of the findings of the study. A good response rate is representative of the target population and as such makes it possible to make inferences from the sample. A low response rate threatens the reliability pf the results and reduces the statistical significance of the findings. The study issued 266 questionnaires and the response rate was as shown in Table 1.

Table 1. Response Rate

Category	Administered Questionnaires	Response Rate
Returned	228	85.7%
Unreturned	38	14.3%
Total	266	100%

Source: Primary Data

The results in Table 1 showed that 228 out of 266 respondents dully filled and returned their questionnaires and this translates to a response rate of 85.7%. Based on the findings of Babbie [13], a response rate of 85.7% is very good for the study. This was a good response rate as mentioned by Babbie [13] that a return rate of 85.7% is very good for study. In addition, Focus group discussions (FGDs) were administered to groups of 8-12 members.

3.3 Dietary Intake of the Participants

The study sought to determine the dietary intake of the pregnant others who were involved as the respondents of the study. The results on the diets were as shown below. The table shows the number of times that the respondents had eaten different types of foods. For purposes of easier analysis, the study categorized eating a particular food twice or less times a week as rarely, 3 or 4 times a week as average and between 5 and 7 times as often.

The results show that most 82.90% of the respondents rarely ate fish while 7.4% ate fish an average number of times and 9.60% had fish often. This was backed by a mean of 1.333 and standard deviation of 1.797 indicating that most respondents rarely ate fish. The results also show that most (92.60%) of the respondents rarely had ate fish while 4.90% had it often as shown by the mean and standard deviation of 0.904 and 1.270 respectively. In addition, the results showed that most (14.50%) rarely ate goat/beef while 57.40% had it often as shown by the mean of 3.673 and standard deviation of 1.017.

The study further showed that 40.80% of the relationships while 41.20% ate cabbage often as shown by the mean and standard deviation of 3.491 and 2.314 respectively. The study further showed that 47% of the respondents had eaten beans and legumes rarely as opposed to 34.20% who had it often. 25.20% rarely had fruits, 32.90% had the, on an average basis while 41.80% had the often. In addition 58.60% had eaten vegetables often, 23.30% had them on an average basis while 18.20 had them rarely. Finally, the study showed that 55.50% of the respondents had green leafy vegetables often. The results show that animal based diets such as chicken, fish, goats and beef were not as commonly available or affordable for most of the respondents. Plant based foods such as green vegetables and cabbages were more common and as such doctors and other medical personnel in the antenatal clinics should guide the respondents on what diets they can adopt in the absence of meat as a way of preventing them from getting anemia.

In addition, the study sought to determine whether the respondents used folic acid or iron tablets and the results were as presented Table 3.

The results show that most (55.6%) of the respondents used iron tablets compared to 45.4% who did not. In addition, 52.8% of the women involved in the study used folic acid tablets. The results imply that about half of the mothers did not use supplements and this presents a significant challenge given the poor dietary inputs. As such, efforts should be made to encourage more pregnant women to use iron and folic acid tablets in order to prevent them

Table 2. Dietary Intake of Participants

Statement	Never	1 Day	2 Days	3 Days	4 Days	5 Days	6 Days	7Days	Mean	Std. Dvn.
How often you have eaten fish in the last seven days.	39.00%	38.20%	5.70%	2.60%	4.80%	3.50%	3.90%	2.20%	1.333	1.797
How often you have eaten Chicken in the last seven days.	39.90%	50.90%	1.80%	1.30%	1.30%	3.10%	0.90%	0.90%	0.904	1.270
How often you have eaten Beef/Goat in the last seven days.	3.60%	4.10%	6.80%	10.30%	17.80%	22.90%	18.90%	15.60%	3.673	1.017
How often you have eaten Cabbage in the last seven days.	12.70%	12.70%	15.40%	8.80%	9.20%	14.90%	16.20%	10.10%	3.491	2.314
How often you have eaten beans and legumes in the last seven days.	13.20%	14.90%	18.90%	10.50%	8.30%	14.50%	10.10%	9.60%	3.180	2.252
How often you have eaten fruits in the last seven days.	4.90%	11.90%	18.40%	16.70%	16.20%	16.60%	13.90%	1.30%	3.395	1.744
How often you have eaten vegetables in the last seven days.	2.70%	9.50%	6.00%	14.00%	9.20%	21.80%	26.70%	10.10%	3.452	2.309
How often you have eaten green leafy vegetables in the last seven days	4.50%	7.50%	8.80%	11.00%	12.70%	16.10%	16.40%	24.00%	3.360	2.406

Source: Primary Data

Table 3. Use of tablets

Use of Tablets		Percentage
Iron	Yes	55.6%
	No	45.4%
Folic Acid	Yes	52.8%
	No	47.2%

Source: Primary Data

from getting anemia. The focused group discussion revealed that the constituents of the pregnant mothers' daily meal intake as a key factor in preventing anaemia. The foods such as beef, chicken and fish were rich in iron, folic acid and vitamin B12 which helped to prevent anaemia. Most of the women had access to beef and goat meat and this helps to prevent them from getting anaemia. For those who could not access meat, plant-based alternatives such as beans, legumes and vegetables such as kales were recommended. In addition, the use of iron and folic acid supplements were recommended as a way of preventing pregnant mothers visiting the Garowe General Hospital antenatal clinic.

3.4 Bivariate Analysis

When doing cross tabulation to analyze the results of tests of independence, the Chi-Square statistic is often used as an evaluation tool. The purpose of these tests is to determine whether or not there is a statistically significant link between two factors by contrasting the pattern of responses that actually took place in the cells with the pattern that should have taken place if the variables were totally unconnected to one another and operating independently of one another. If this number is less than or equal to the predetermined alpha level (which is often 0.05), the result is considered to be statistically significant. According to Kothari [14], a confidence level of 95% is enough when testing for a link between the variables being considered. As a result, the confidence levels used in this investigation to examine the associations between variables were set at 95%. In order to assess whether or not categorical factors are associated with anemia in pregnant women in Puntland State, Somalia, a Chi-square test was carried out on the variables in question. The results are presented in Table 4.

The Chi-square results indicated that age had a Chi-square value of 8.278 and P-value = 0.012<0.05. Monthly income was statistically significant with anaemia among pregnant women in Somalia's Puntland State with a chi-square value of 19.262and P-Value of 0.013. Birth Space had a Chi-square value of 21.836 and a

Table 4. Chi square Outputs

Factors	Chi-Square	Df	Asymp. Sig.
Age	8.278a	1	0.012
Education	6.115a	4	0.191
Monthly Income	19.262a	8	0.013
Occupational Status	17.371a	3	0.182
Birth Space	21.836a	3	0.000
Gestational Trimester	5.819a	4	0.268
Abortion History	22.317a	4	0.000
ANC Visits	0.813a	1	0.367
Fish	3.084a	1	0.278
Chicken	0.000a	1	0.999
Beef/Goat Meat	30.678a	1	0.000
Cabbage	6.634a	3	0.157
Beans and Legumes	15.694a	3	0.001
Fruits	13.052	1	0.000
Vegetables	9.387a	3	0.025
Green Leafy Vegetables	8.133a	4	0.088
Iron Tablets	15.060a	4	0.005
Folic Acid Tablets	9.031a	1	0.003

Source: Primary Data

P-Value= 0.000< 0.05.The respondents abortion history had a Chi-square value of 22.317 and a P-Value=0.000 and was therefore significant. A diet of Beef or Goat meat had a Chi-square of 30.678 and a P-Value of 0.000 and was therefore significantly associated with anaemia among pregnant women in Somalia's Puntland State. In addition, a diet of beans and legumes was also found to have be significantly associated with a Chi-square value of 13.226 and a P value of 0.001.

The chi-square for fruits in the diet was 10.895, and the P-Value was 0.000. The chi-square value for a diet of veggies was 9.387, and the P-Value was 0.025. With a Chi-square of 12.195 and a P-Value of 0.005, it was clear that expecting women in Somalia's Puntland State who used Iron Tablets were more likely to have anemia. Lastly, a Chi-square of 8.039 and a P-Value of 0.003 showed that taking Folic Acid Tablets was strongly linked to anemia.

4. CONCLUSIONS

The study gives important information about what makes pregnant women in Puntland, Somalia, more likely to have anemia. The results show that maternal factors like the number of years between births and the number of abortions are strong drivers of anemia during pregnancy. In particular, the study found that short time between births, which was described as less than 24 months, was linked to a higher risk of anemia in pregnant women in Puntland. This result is the same as what other studies have shown about how close together births hurt the health of both mothers and children. The study also found that expecting women in Puntland who had an abortion in the past were more likely to have anemia. This result shows how important it is to have complete post-abortion care services that deal not only with the physical problems that can happen after an abortion, but also with how it might affect the feeding of the mother. Overall, the study shows how important it is to take maternal factors into account when planning and carrying out treatments to reduce the number of pregnant women with anemia in Puntland, Somalia.

5. RECOMMENDATIONS

The study recommends that stakeholders and in particular the government through the health ministry should promote the use of family planning services to increase birth spacing and reduce the risk of anemia associated with short birth intervals. In addition access to comprehensive post-abortion care services should be enhanced. This will help address the physical and nutritional needs of women who have undergone abortion, to reduce the risk of anemia associated with abortion history. The study suggests that nutrition education programs should be made to encourage pregnant women to eat more iron-rich foods and eat a more varied diet, especially if they don't get enough important micronutrients from their diet. Also, people with a stake in the issue should try to make it easier for pregnant women from low-income families to get cheap, healthy food through programs that help with food poverty.

In general, the study says that the underlying social and economic problems that cause anemia should be fixed. Poverty is often linked to anemia, so fixing problems like lack of schooling, unemployment, and bad living can help lower the number of pregnant women in Somalia's Puntland State who have anemia.

CONSENT

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standards written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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