Prevalence of Anaemia in Pregnancy and Related Factors among Women Attending Antenatal Care (ANC) in General Hospital Bunza, Kebbi State, Nigeria

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Abstract

Background: Anaemia in pregnancy remains a major cause of maternal death in Sub-Saharan Africa, and it mostly results from a deficiency of iron and folate.Objectives: To determine the prevalence of anemia and the factors associated with it among pregnant women in Bunza, Nigeria. Materials and Method: A cross-sectional study conducted among 327 pregnant women attending ANC in General Hospital Bunza, Kebbi State, Nigeria. Data were collected using a pretested questionnaire. Estimation of packed cell volume and RDT were alsodone for the participants; datawereanalysedusing IBMSPSS version 20. Results: The mean packed cell volume of the respondents was 30.7, with a SD 3.7 and majority of the respondents were having anemia 240(75.7%). Level of education of the respondents and their spouses, age at first pregnancy, spouses' occupation, and the trimester at which the respondents booked were found to be significant p ≤0.05for anemic status. Conclusion: The prevalence of anemia in pregnancy is high among pregnant women in Bunza, Nigeria, with the factors associated with it being the levels of education of the woman and that of her spouse, spouse's occupation, having the first pregnancy before the age of 19 years, and late booking. Recommendations: Anemia in Pregnancy should be considered a public health problem in the LGA and state in general and girl child education should be given priority as a long term measure.

Keywords

prevalence, anemia, pregnancy, factors, Kebbi state, Nigeria

1. Introduction

Anaemias a condition in which the number of red blood cells is insufficient to meet the body's physiologic needs (WHO, 2011) and when this occurs in pregnancy it is called anemiain pregnancy. The prevalence of anemiais an important health indicator for communities (WHO, 2007). Endemic

problems such as malaria, helminthic infections, and poor nutrition in many developing countries have madeanemiaa major challenge to the health of pregnant women (Walraven, 2007). Pregnant women requires increased amount of iron and folate, therefore they become prone to anemiaif these micronutrients are not provided through supplementation (Hassan, Zahran, Youness, & Nady, 2015), and deficiency of these two micronutrients are the most common causes of anaemia in pregnant women in sub-Sahara Africa (Hassan, Nady, Youns, & Zahran, 2016).Iron deficiency anaemiaaccounts for approximately 50% of cases of anaemia in pregnancy,other causes of anemia include sickle cell disease, malaria, megaloblasticanemias due to vitamin B12 deficiency, thalassemia, blood loss, helminthic infection, underlying malignancy and chronic disease.

Anemiahas been shown to be a public health problem that affects low, middle, and high-income countries and as such, the second global nutrition target for 2025 calls for a 50% reduction of anemiain women of reproductive age (WHO, 2015). Anaemia in pregnancy affects about half of all pregnant women worldwide (Bruno, Mclean, & Egli, 2008). Although only 15% of pregnant women are anaemic in developed countries, the prevalence of anemiain developing countries is relatively high (33% to 75%) (WHO, 1993). WHO estimates of 2011 puts the prevalence of anaemia in pregnancy at 46.3% for the African region (AFRO), while the South East Asia Regional (SEARO) remains the region with highest prevalence (48.7%) of anaemia in pregnancy of all WHO regions (WHO, 2015). WHO estimates puts the prevalence of anemiain pregnancy in Nigeria at 58% (95%CI: 36%-71%) (WHO, 2015). Increased maternal age, reduced number of antenatal care visits, residing in rural area, intestinal parasites, malaria parasitaemia, and being a primigravidahave been shown to be statistically associated with anaemia in pregnancy (Paul et al., 2016; Onoh, Lawani, Ezeonu, Nkwo, Onoh, & Ajah, 2015; Asrie, 2017) .

Anemia in pregnancy is associated with low birth weight and increased risk of maternal and perinatal mortality (WHO, 2015). Also, it is responsible for about 20% maternal deaths in Africa and (11%) maternal deaths in Nigeria despite the availability of proven and cost effective measures in preventing these deaths (Bruno, Mclean, & Egli, 2008). Reducing anemia is as an important component of the health of women and in particular women of reproductive age group. Detecting anemia in pregnancy early will aid effective management and would contribute to the planning of appropriate strategies targeted at reducing the burden of maternal morbidity and mortality (Hassan, Nady, Youns, &Zahran, 2016). This study aims to assess the prevalence of anemia in pregnancy and related factors among pregnant women attending ANC at General Hospital, Bunza, Nigeria.

2. Methodology

This study was carried out at General Hospital, Bunza, Nigeria. Bunza is one of the 22 LGAs in Kebbi state, Nigeria, and has a population of 121,461 according to 2006 census with a projected population of 167,154 in 2018; the predominant tribes are Hausa and Fulani, and the majority of the residents are Muslims. This study was a cross-sectional study and all the pregnant women attending ANC in the hospital were eligible for the study with the exception of those that were temporary residents.

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The sample size wasestimated at 284 using the formula n=Z2pq/d2a 24.5% of anemia among pregnant women obtained from a previous study (Mohammed & Emmanuel, 2013) and a precision level of 5%. Allowing for a 10% non-response, gives a minimum sample size of 315; however, a total of 327 questionnaires was administered.

Respondents were recruited over a period of six months between December 2016 and May 2017 using systematic sampling technique; validated and pre-tested questionnaires were administered in the clinic area after obtaining informed consent from the respondents. Blood samples were collected in heparinised capillary tubes and packed cell volume estimation was done for the participants after questionnaire administration (using Bio Lion XC-H12, 12000rpm centrifuge, and Bio Lion Haematocrit reader). Categorization of anemia status was done based on the WHO standard classification for anaemia in pregnancy as mild anaemia: haemoglobin level of 10-10.9g/dL; moderate anemia: haemoglobin level of 7.0-9.0g/dL; and severe anemia: haemoglobin <7g/dl (5) Proportion of respondents with packed cell volume less than 33% was calculated. Data was analysed using IBM SPSS version 20, Categorical variables were summarised using frequency and proportions, while mean and standard deviation were calculated for quantitative variables. Pearson's Chi square test was used to test for association between the outcome variable (PCV) and other variables. Ethical clearance for the study was obtained from the Ethical Committee of Kebbi state Ministry of Health; and permission to conduct the study was sought from the management of the hospital.

3. Results

3.1 Respondents'Socio-Demographic Characteristics

The ages of the respondents ranged from 14 to 50 years (mean = 24.4 ± 5.6), and most them 124 (37.9%) were aged between 19-23 years. Majority of the respondents 253 (77.4%) were Hausa by tribe, and most of them 207 (63.3%) reside in rural areas. Majority of the respondents 193(59.0%) had Quranic education, more than half of them 193 (59.0%) were in monogamous relationship, and about two-third 209 (66.0%) had their first pregnancy between 15 and 19 years of age. The mean age at marriage among the respondents was 16.9 ± 2.6 yrs, and the mean age at first pregnancy was 18.3 ± 2.8 yrs (Table 1).

Table 1. Socio-Demographic Characteristics of the Respondents

Variables	Frequency (n =327)	Percentage
Age group (years)		
lessthan18	33	10.1
19-23	124	37.9
24-28	93	28.4
29-33	53	16.2
34-39	17	5.2
>=40	7	2.1
Level of education		
Primary	39	11.9
Secondary	80	24.5
Tertiary	9	2.8
Quranic	193	59.0
Tribe		
Hausa	253	77.4
Fulani	57	17.4
Yoruba	2	.6
Igbo	5	1.5
Others	9	2.8
Place of residents		
Rural	207	63.3
Urban	120	36.7
Type of marriage		
Monogamy	193	59.0
Polygamy	134	41.0

3.2 Perceived Causes of Anemia among the Study Subjects

Regarding what they perceived to be the causes of anemia in pregnancy, (34.6%), (55.4%), (3.4%) and (5.8%) of the respondents believed that anemia in pregnancy is caused by malaria, poor diet, worm infestation and witchcraft respectively (Table 2).

Table 2. Perceived Causes of Anemia among the Respondents

Perceived causes n=(327)	Frequency	Percentage
poor diet	181	55.4
Malaria	113	34.6
Witchcraft	19	5.8
worm infestation	11	3.4
Others	3	0.9

3.3 Prevalence and Severity of Anemia among the Study Subjects

The packed cell volume of the respondents ranged from 18% to 41% (mean = 30.7 ±3.7), majority of the respondents were anemic 240 75.7%; out of this, 59.2% were mildly anemic, 39.6% were moderately anemic while 1.2% were severely anemic.

Table 3. Prevalence and Severity of Anemia among the Study Subjects

Anemia status (n = 327)	Frequency	Percentage
Anemic	240	75.7
No anemia	87	24.3
Severity of anemia (n =240)	**Frequency**	**Percentage**
Severe anemia	3	1.2
Moderate anemia	95	39.6
Mild anemia	142	59.2

Prevalence of anemia was found to be lowest amongst pregnant women with tertiary level of education (22%), and those on implant form of contraceptives (44%). About (19.4%) of women who were anemic were also positive for malaria on RDT. Also, prevalence of anemia was highest amongst women who booked in their third trimester (80%), and those who were multi-gravida (78.5%).

On question of what they perceive to be the causes of anemia in pregnancy (34.6%), (55.4%), (3.4%) and (5.8%) of the respondents believed that anemia in pregnancy is caused by malaria, poor diet, worm infestation and witchcraft respectively.

3.4 Factors Associated with Anemia in Pregnancy among the Study Subjects

Chi square test shows significant association (p= 0.001) between anemia status and the level of education of the respondents. A significant association (p=0.045) was found between anemia status and spouse's level of education. Also, anemic status was found to be significantly associated with tribe of respondents, spouse occupation, age of respondents at first pregnancy and trimester at which the respondent booked for antenatal care.

Table 4. Factors Associated with Anemia in Pregnancy among the Study Subjects

Variable	Anemia Freq. (%)	No Anemia Freq. (%)	χ^2	df	p-value
Age group compared to anemia status					
lessthan18	27 (81.8)	6 (18.2)			
19-23	87(73.1)	32(26.9)	1.38	5	0.926
24-28	69(75.8)	22(24.2)			
29-33	40(78.4)	11(21.6)			
34-39	12(75.0)	4(25.0)			
>=40	5(71.4)	2(28.6)			
Area of residence and anemia status					
Rural	149(75.6)	48(24.4)	0.002	1	0.964
Urban	88(75.9)	28(24.1)			
Level of education and anemia status					
Primary	31(79.5)	8(20.5)	21.04	3	0.001
Secondary	51(68.0)	24(32.0)			
Tertiary	2(22.2)	7(77.8)			
Quranic	154(81.9)	34(18.1)			
Spouse level of education and anemia status					
Primary	35 87.5)	5(12.5)			
Secondary	54(81.8)	12(18.2)	8.050	3	0.045
Tertiary	77(68.1)	36(31.9)			
Informal	74(77.1)	22(22.9)			
Spouse Occupation and anemia status					
Farming	34(82.9)	7(17.1)			
Fishing	4(40)	6(60)	11.94	4	0.018
civil servant	70(72.2)	27(27.8)			
Business	117(80.1)	29(19.9)			
Others	12(63.2)	7(36.8)			
Tribe and anemia status					
Hausa	189(75.3)	58(24.7)			
Fulani	41(77.4)	12(22.6)	24.8	4	0.001
Yoruba	0	2(100)			
Igbo	0	5(100)			
Age at first pregnancy and anemia status					
10-14	9(75)	3(25)	10.6	4	0.031

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15-19	168(80.4)	41(19.6)			
20-24	54(66.7)	27(33.3)			
25-29	6(50)	6(50)			
30-34	1(100)	0			
Birth interval and anemia status					
1	11(68.8)	5(31.2)			
2-3	168(79.6)	43(20.4)	2.14	2	0.343
>3	13(68.4)	6(31.6)			
Use of IPT and anemia status					
Use IPT	203(76.9)	61(23.1)	1.02	1	0.311
Do not use IPT	30(69.8)	13(30.2)			
Trimester and anemia status					
1st trimester	10(58.8)	7(41.2)			
2nd trimester	68(74.7)	23(25.3)	6.4	2	0.040
3rd trimester	89(84)	17(16)			
Malaria status using RDT and anemia status					
RDT positive	46(82.1)	10(17.9)			
RDT negative	191(74.6)	65(25.4)	1.43	1	0.232
Type of family and anemia status					
Monogamous	135(73.8)	48(26.2)	1.03	1	0.304
Polygamous	104(79.4)	28(20.6)			
Parity and anemia status					
0-1	97(73.4)	37(27.6)			
2-3	75(77.3)	22(22.7)	1.694	2	0.429
4 and more	67(79.8)	17(20.2)			

4. Discussion

This study has shown that anemia in pregnancy still constitutes a major health problem in northern Nigeria, and this could explain the high maternal mortality rate in this part of the country. The prevalence of anemia in this study was high (75.7%), this prevalence is close to the WHO range for developing countries (33%-75%) (WHO, 1993), and it is similar to the finding in another study in northern Nigeria by Oladipo et al. where the prevalence ranged between (61.2%) and (88.7%).

This relatively high prevalence may be attributed to the fact that majority (63%) of the respondents reside in rural areas, and had a low level of education, majority (59%) of them had informal (Quranic) education while very few (2.8%) had tertiary education. Also, age at first pregnancy could be a factor, as the majority (74.4%) of those that were anemic had their first pregnancy at less than 20yrs of age. The high prevalence of anemia in pregnancy among women of Hausa/Fulani and the absence of anemia

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among the other tribes in this study may be due to the fact that the study was conducted in a predominantly Hausa/Fulani LGA. Prevalence of anemia was higher among multiparous women (78.5%) compared to primiparous women, this is similar to the findings in a study in Jos where the prevalence of anemia among multiparous women was (61.2%) (Paul et al., 2016) suggesting that recurrent exposure to pregnancy reduces the iron store in the body. About half of the respondents 162(50.8%) booked for antenatal care in the third trimester, while few 23 (7.2%) of them booked in the first trimester, suggesting that women in the study area do not begin antenatal care early in pregnancy, this is similar to the findings in other studies conducted in Azare and Abeokuta where (2.5%) and (9.9%) of the women respectively booked in the first trimester (Dattijo, Daru, & Umar, 2016; Idowu, Mafiana, & Sotiloye, 2005). Also, the prevalence of anemia was highest in women that booked in third trimester, and lowest in those that booked in first trimester, this was statistically significant (p= 0.040) suggesting that booking for antenatal care early in pregnancy could reduce the occurrence of anemia in pregnancy. This study showed that pregnant women with informal education were more likely to have anemia in pregnancy when compared to those with formal education, and among those with formal education, the proportion of women with anemia in pregnancy reduces as the level of education increases, with less than a quarter of those with tertiary education being anemic. This shows that when women are educated, the likelihood of them having anemia in pregnancy reduces, therefore reducing maternal mortality.

5. Conclusion

The prevalence of anemia in pregnancy is high among pregnant women in Bunza, Nigeria, with the factors associated with it being the levels of education of the woman and that of her spouse, spouse's occupation, having the first pregnancy before the age of 19 years, and late booking.

6. Recommendations

Nutritional education should be intensified during antenatal care (ANC) visits by the health care providers at the health centers in the Kebbi state, also vocational training and adult education as for women in the rural areas as a long term preventive strategy for anemia in pregnancy in the LGA and state should be considered a priority.

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