Original Article

ANAEMIA AND ITS ASSOCIATED FACTORS AMONG PREGNANT WOMEN IN KOKO, KEBBI STATE, NIGERIA

Moses Adamgbe[1], Ahmed D. Balami[2], Hamza Bello[3]

[1]Benue State Ministry of Health, Nigeria
[2]Community Clinic, Federal Neuro-Psychiatric Hospital, Maiduguri, Borno State, Nigeria
[3]Department of Medical Physiology, College of Health Sciences, Federal University, Birnin Kebbi, Nigeria.

ABSTRACT

BACKGROUND: Anaemia in pregnancy remains a common problem affecting women in northern Nigeria. It is associated with several adverse consequences.

OBJECTIVE: The aim of this study was to determine the prevalence of anaemia and its associated factors among pregnant women in Koko/Besse local government area of Kebbi state, Northwest Nigeria.

METHODOLOGY: A cross-sectional study was conducted among women using a standardized questionnaire for data collection. Haematocrit level was determined using the centrifuge technique. Data was analysed descriptively in Statistical Package for Social Sciences (SPSS).

RESULTS: The prevalence of anaemia among our respondents was 23.5%. There were higher prevalence rates among those married in monogamous families, who did not attend antenatal care, unemployed, and those who were non-compliant with their prescribed antenatal care haematinics.

CONCLUSION: The prevalence of anaemia in pregnancy even though high, was relatively lower than findings from other studies in the sub-region. A well developed and implemented public health intervention is likely to further reduce this prevalence.

KEYWORDS: Anaemia, pregnancy, prevalence, associated factors, Koko, Kebbi

NigerJMed2017: 29-34

INTRODUCTION

The World Health Organisation defines anaemia in pregnancy as a haemoglobin concentration below 11g/dl.[1] However, in many African countries including Nigeria, a lower cut-off point of 10g/dl is used.[2] It is estimated that about 200,000 to 500,000 pregnant women in sub-Saharan Africa develop severe anaemia.[3] In Nigeria, the weighted relative risk of maternal mortality from severe anaemia was 3.51% (95% CI: 2.05-6.0).[4] High prevalences have been reported among women attending antenatal care clinics in northern Nigerian states like: Sokoto (55.6%);[5] Kano (17%); Kaduna[6,7] and Gombe (51.8%).[8] A number of factors have been associated with anaemia in pregnancy ranging from age; educational status; parity, birth intervals; contraception use;[9] infections like malaria[10,11] and hook worm infestation;[12] nutritional factors [13] and timing of antenatal care visit.[14]

There has been no similar study conducted in Kebbi state; as a result, this would serve as a guide for future researchers and/or policy makers in developing appropriate health interventions for this study population. The aim of this study is determine the prevalence of anaemia and its associated factors among pregnant women in Koko town, Kebbi state.

METHODOLOGY

Koko and Besse towns constitutes Koko/Besse, one of the 21 local government areas of Kebbi State with an estimated total population of 180,770. The predominant ethnicity is Hausa/Fulani, Practicing Islam there are other minority tribes such as Zabarmawa, Dakkarawa and others residing in Koko town. Koko town has one general hospital which serves as a referral hospital from other nearby villages, one primary health care centre and one private clinic. A

Corresponding Author: Dr. Ahmed D. Balami
Community Clinic, Federal Neuro-Psychiatric Hospital,
Maiduguri, Borno State, Nigeria
E-mail: ahdahiru@yahoo.com

cross-sectional study design was used for this study. All pregnant women residing in Koko town constituted the study population. One hundred and forty four (144) pregnant women were randomly selected from households in Koko town to participate in the study. Permission to carry out this community-based study was first obtained from the Sarki (Chief Traditional ruler) of Koko. Ethical clearance and approval was also obtained from the Director of Health, Koko-Besse local government area and informed consent was also obtained from each of the participants before being included into the study. A structured questionnaire was used for data collection which consisted of 6 sections including: socio-demography; obstetric history; ante-natal care history; dietary history; anthropometry and laboratory parameters. Other instruments for data collection included: weighing scale; syringes and EDTA bottles. It was a one-day exercise and data was collected by the researchers along with trained enumerators. The enumerators included nurses and other health workers from Koko General Hospital as well as some volunteer corps members. After the exercise, participants were given free mosquito nets, buckets and haematinics.

About 1 ml of venous blood was collected by the researchers and nurses from each participant and transferred to an EDTA bottle to prevent coagulation. Samples were then transferred immediately after the study to the General Hospital Koko laboratory for analyses. The capillary technique was used in which blood from the EDTA bottle was drawn into a micro-capillary tube and spun in a micro-haematocrit centrifuge for 5 minutes at 3000 rpm and then read using the Hewkly micro-haematocrit reader. A cut-off point of less than 30% was used to define anaemia.[15] The inclusion criteria were to be a pregnant woman permanently residing in Koko. Those who refused to give consent were excluded from the study.
Data collected was entered into Statistical Package for Social Sciences (SPSS) version 22. Following data cleaning, continuous data were converted to categorical forms. The data was summarized descriptively using proportion and percentage.

RESULTS

Data collection was done on the 1st of May, 2015. The response rate was 83%, as 144 women out of the 173 recruited, responded. Table 1, shows the characteristics of the respondents. Their ages ranged from 15 to 47 years of age and were normally distributed graphically with mean age of 26.76 and standard deviation of 6.32. Only ten (6.9%) out of the total respondents were of other ethnicities; all others being Hausa. All the respondents were married and mostly in monogamous settings (60.4%). Most were unemployed, and the few who had some work were self-employed (35.4%).

Table 1: Respondents' socio-demographic characteristics

Socio-demographic characteristics	Freq. (%) n = 144	
Age group	**n**	**%**
=<26	69	47.9
<26	75	52.1
Total	144	100
Ethnicity	**n**	**%**
Hausa	134	93.1
Fulani	3	2.1
Zabarma	2	1.4
Dakkare	2	1.4
Others	3	2.1
Total	144	100
Marital status	**n**	**%**
Married	144	100
Single	0	0
Widow	0	0
Divorced	0	0
Total	144	100
Family type	**n**	**%**
Monogamous	87	60.4
Polygamous	57	39.6
Total	144	100
Employment status	**n**	**%**
Government	6	4.2
Private	3	2.1
Self	51	35.4
None	84	58.3
Total	144	100

Table 2 shows the respondents' index maternal characteristics. Most of them had their first marriages before the ages of 18 years (67.4%). Most of them were multigravidae (86.1%) and a half of the respondents were not sure of the duration of their pregnancies. Only a few (65.3%) were booked, 92.56% of whom were regular with their ante-natal care visits. Table 3 presents the frequencies of medical conditions experienced by the respondents during their index pregnancies. A few had experienced per vaginal bleeding during their index pregnancy (12.5%); while 18.8% had even received blood transfusion during their index pregnancies. More than half (56.9%) had experienced a febrile illness during the pregnancy.

Table 2: Index maternal characteristics of the respondents

Variables	Freq. (%) n = 144	
Age at first marriage	**n**	**%**
Less than 18 years	97	67.4
18 years and above	47	32.6
Total	144	100
Gravidity	**n**	**%**
Primi gravida	20	13.9
Multi gravida	124	86.1
Total	144	100

Parity	n	%
Nulli para	24	16.7
Primi para	26	18.1
Multi para	55	38.2
Grand multi para	39	27.1
Total	144	100
Gestational age	**n**	**%**
3 months and below	20	13.9
Above 3 but less than 7 months	29	20.1
Above 7 months	23	16.0
Unsure of GA	72	50.0
Total	144	100
Booking status	**n**	**%**
Yes	94	65.3
No	50	34.7
Total	144	100

Table 3: History of medical events history in index pregnancy

Variables	Freq. (%) n = 144	
PV Bleeding in index pregnancy	**n**	**%**
Yes	18	12.5
No	126	87.5
Total	144	100
Transfusion in index pregnancy	**n**	**%**
Yes	27	18.8
No	117	81.3
Total	144	100
Febrile illness in index pregnancy	**n**	**%**
Yes	82	56.9
No	62	43.1
Total	144	100
Ever passed worms in stool	**n**	**%**
Yes	31	21.5
No	113	78.5
Total	144	100

The previous material conditions of the respondents are presented in Table 4. Around a third (31.3%) had ever experienced a pregnancy loss, 55.56% of which had occurred at home with the remaining 44.44% haven occurred at a health acre facility. Most of those deaths (87.88%) were reportedly associated with antepartum bleeding. Close to a quarter (22.9%) had ever experienced some per vaginal blood loss during previous pregnancies, 65.96% of which had occurred during the first six months of gestation. Less than a quarter (20.1%) had ever used any form of contraception before.

Table 4: Previous maternal histories of the respondents

Variables	Freq. (%) n = 144	
Birth intervals	**n**	**%**
Less than 1 year	10	6.9
1 to 2 years	61	42.4
More than 2 years	53	36.8
Nil	20	13.9
Total	144	100
History of pregnancy loss	**n**	**%**
Yes	45	31.3
No	99	68.8
Total	144	100
Previous History of eclampsia	**n**	**%**
Yes	9	6.3
No	135	93.8
Total	144	100
History of PV Blood loss in previous pregnancy	**n**	**%**
Yes	33	22.9
No	111	77.1
Total	144	100
Ever used contraception	**n**	**%**
Yes	29	20.1
No	115	79.9
Total	144	100

Table 5 shows the dietary habits and nutritional status of the respondents. Most of them eat thrice or more every day (69.4%), and eat meat and/or other animal products (45.1%) and fruits (58.3%) every other day. Almost all (92.4%) of them did not have any culture forbidding them from taking animal products. Only a few fell within the extremes of underweight (2.8%) and obese (9.7%).

Table 5: Respondents' dietary habits and nutritional status

Dietary history	Freq. (%) n = 144	
Frequency of eating in a day	**n**	**%**
Once	9	6.3
Twice	35	24.3
Thrice or more	100	69.4
Total	144	100
Frequency of meat and animal products consumption	**n**	**%**
Not at all	22	15.3
Daily	38	26.4
Every other day	65	45.1
Once per week	17	11.8
Once in a month	2	1.4
Total	144	100
Frequency of eating fruits and vegetables	**n**	**%**
Not at all	15	10.4
Daily	29	20.1
Every other day	84	58.3
Once per week	13	9.0

Once in a month	3	2.1
Total	144	100
Culture that forbids taking animal products during pregnancy	**n**	**%**
Yes	11	7.6
No	133	92.4
Total	144	100
Nutritional status	**n**	**%**
Underweight	4	2.8
Normal	82	56.9
Overweight	38	26.4
Obese	14	9.7
Missing	6	4.2
Total	144	100

Thirty one respondents (23.5%) were anaemic as shown in Figure 1. Table 6 shows the prevalence of anaemia across the various factors studied. The twelve with missing haematocrit data were excluded from this analysis. The prevalence of anaemia was higher among those married in polygamous settings (26.4%) compared to those in monogamous families (21.5%). Higher prevalence was seen among those with formal education compared to those without any formal education. Higher prevalences were also found among those who used contraception and those with higher birth intervals. Lower prevalences were found among those who were compliant with haematinics and those who consumed meat and vegetables more frequently.

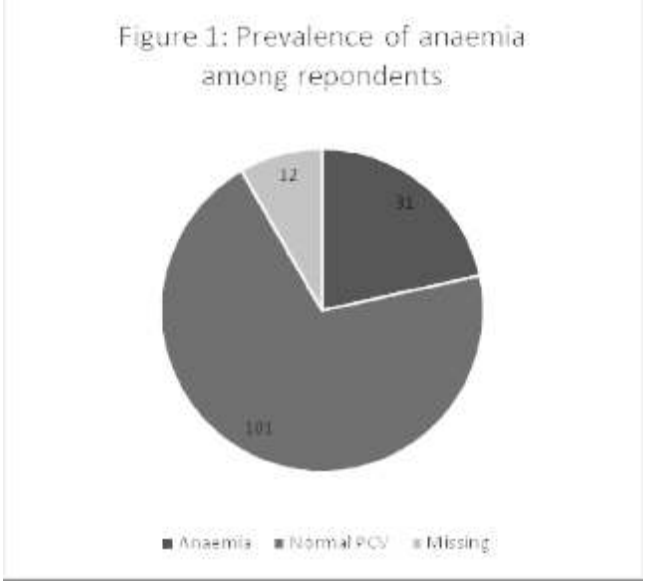

Table 6: Anaemia and associated factors among the respondents

Factors	Anaemia	
	Yes Freq. (%) n = 31	No Freq. (%) n = 101
Family type		
Monogamous	17 (21.5)	62 (78.5)
Polygamous	14 (26.4)	39 (73.6)
Employment status		
Employed	13 (22.8)	44 (77.2)
Un-employed	18 (24.0)	57 (76.0)
Birth intervals		
2 years and less	13 (19.7)	53 (80.3)
Above 2 years	16 (31.4)	35 (68.6)
Booking status		
Yes	20 (22.2)	70 (77.8)
No	11 (26.2)	31 (73.8)
Compliance with haematinics		
Yes	9 (15.3)	50 (84.7)
No	12 (34.3)	23 (65.7)
Contraception use		
Yes	9 (31.0)	20 (69.0)
No	22 (21.4)	81 (78.6)
Passage of worms in stool		
Yes	9 (32.1)	19 (67.9)
No	22 (21.2)	82 (78.8)
Gravidity		
Primi-gravida	4 (25.0)	12 (75)
Multi-gravidae	27 (23.3)	89 (76.7)
Trimester		
First	3 (10.0)	27 (90.0)
Second	9 (18.8)	39 (81.2)
Third	14 (38.9)	22 (61.1)
Meat consumption		
Daily or once in 2 days	21 (21.4)	77 (78.6)
Weekly or more	8 (47.1)	9 (52.9)
Vegetable consumption		
Daily or once in 2 days	25 (23.8)	80 (76.2)
Weekly or more	5 (33.3)	10 (66.67)

DISCUSSION

According to the Nigeria Demographic and Health Survey (NDS) of 2013, the overall proportion of women in monogamous marriages in Kebbi state was 60.4% which is comparable to findings from this research. However, our respondents in this study demonstrated a better adoption of maternal health practices like contraception (20.1% versus 1.2%); antenatal care visit (65.3% versus 24.3%); taking haematinic supplements (70.1% versus 21.4%) compared to overall figures from the state.[16]

The prevalence of anaemia in pregnancy in this study was relatively low compared to other studies in the same sub-region.[5, 6, 7, 8] The high level of adherence to health promoting behaviours among this group could be a possible explanation of this relatively low prevalence among women in a sub-urban area. The distribution of anaemia across the various characteristics of the respondents seems in keeping with findings from previous researches. Contrasting findings like a higher prevalence among those with wider birth intervals and those who use contraception is likely as a result of other factors associated with anaemia confounding these other factors. For example, it is likely that those on contraception were high risk persons who were placed on such following adverse events like abortions or stillbirth. It is also possible that the wide birth intervals were not as a result of planning but could also result from early pregnancy losses.

As was seen, a half of the respondents were unsure of their gestational age and it is also likely that not all of the other half who reported theirs, were accurate. There is the need to intensify community health education activities in the region on the need for women to monitor their menstrual cycles closely. Personal monitoring of their menstrual cycles will ensure prompt commencement of antenatal care and will also enable prompt detection of any menstrual abnormalities. A limitation of this study was the inability to perform inferential data analyses due to inadequate sample size.

CONCLUSION

The prevalence of anaemia in pregnancy in Koko is relatively low compared to findings from other areas in the sub-region. A public health intervention among this group has high chances of being successful in further reducing its prevalence.

REFERENCES

1. WHO (2001). Iron Deficiency Anaemia: Assessment Prevention and Control. A guide for programme managers. World Health Organisation, Geneva, 2001.
2. Abudu, O. O. Anaemia in pregnancy. In: Agboola A (Ed). Textbook of Obstetrics and Gynaecology for medical students. University Services Education Publ 1988; Vol. II: 72-78.
3. Sketekee RW, Nahlen BL, Parise M E, Menendez C. The Burden of Malaria in Pregnancy In Malaria-Endemic Areas. American Journal of Tropical Medicine and Hygiene 2001; 64(1,2):28-35.
4. Brabin BJ, Hakimi M, Pelletier D. An Analysis of Anaemia and Pregnancy-Related Maternal Mortality. JNutr.2001; 131:604S-615S.
5. Zama I, Argungu IB, Yakubu A, Taylor JR, Osaro E, Suzette U. Socio-Demographic and Obstetric Factors Associated with Anaemia among Pregnant Women in Sokoto, North Western Nigeria. Health Sciences Research 2014; 1(5):119-126.
6. Nwabueze US, Chukwuemeka OA. Rate of Malaria-Typhoid co-infection among Pregnant women attending Antenatal Clinics in Anambra State South- East Nigeria. International Journal of Tropical Medicine Public Health. 2013; 2(1): 1-11.
7. Nwizu EN, Iliyasu Z, Ibrahim SA, Galadanci HS. Socio-Demographic and Maternal Factors in Anaemia in Pregnancy at Booking in Kano, Northern Nigeria. African Journal of Reproductive Health. 2011; 15(4):33-41.
8. Bukar M, Audu BM, Sadauki HM, ElnafatyA U, Mairiga AG. Prevalence of Iron Deficiency and Megaloblastic Anaemia at Booking in a Secondary Health Facility in North Eastern Nigeria. Nigerian Medical Journal.2009; 50(2): 33-37.
9. Jufar AH, Zewde T. Prevalence of Anemia among Pregnant Women Attending Antenatal Care at Tikur Anbessa Specialized Hospital, Addis Ababa Ethiopia. J Hematol Thromb Dis. 2014; 125 doi: 10.4172 / 2329-8790.1000125.
10. Adam I, Khamis AH, Elbashir M I. Prevalence and risk factors for Plasmodium falciparum malaria in pregnant women of eastern Sudan. Malaria Journal 2005; 4:18.
11. Rogerson SJ, Van den broek NR, Qongwane ECC, Mhango CG, Molyneux ME. Malaria and anemia in antenatal women in Blantyre, Malawi: A twelve-month survey. American Journal of Tropical Medicine and Hygiene 2000; 62(3):335-340.

12. Alem M, Enawgaw B, Gelaw A, Kena T, Seid M, Olkeba Y. Prevalence of anemia and associated risk factors among pregnant women attending antenatal care in AzezoHealth Center Gondar town, Northwest Ethiopia. Journal of Interdisciplinary Histopathology 2013;1(3):137-144.
13. Vander Jagt DJ, Brock H S, Melah GS, El-Nafaty AU, Crossey MJ, Glew RH. Nutritional Factors Associated with Anaemia in Pregnant Women in Northern Nigeria. Journal of Health Population and Nutrition 2007;25(1):75-81.
14. Nganda RY, Drakeley C, Reyburn H, Marchant T. Knowledge of malaria influences the use of insecticide treated nets but not intermittent presumptive treatment by pregnant women in Tanzania. Malaria Journal 2004;3:42.
15. Ogbeide O, Wagabtsoma V,Orhue A. Anaemia in pregnancy.EastAfri Med J.1994;71: 671-673.
16. National Population Commission (NPC) [Nigeria], ICF International: Nigeria Demographic and Health Survey 2013. Abuja, Nigeria: NPC and ICF International; 2014