Research Article

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20150492

Maternal knowledge, food restriction and prevention strategies related to anaemia in pregnancy: a cross-sectional study

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Received: 01 July 2015 Revised: 21 July 2015 Accepted: 26 July 2015

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ABSTRACT

Background: Anaemia is a major cause of morbidity and mortality among pregnant women in developing countries including Nigeria, affecting about 33% - 75% of all pregnant women. The burden and predisposing factors varies even within countries.

Methods: A cross sectional descriptive was conducted; participants were recruited using consecutive sampling technique. Data were obtained from study consented participants using pretested self-administered questionnaire and analyzed using SPSS for Windows Version 17.0. Significant level was set at p < 0.05.

Results: A total of 121 pregnant women with a mean age of 25.69±4.51 years participated in the study. Majority had post-primary education. The women exhibited good knowledge of anaemia in pregnancy. However, restriction of food including those rich in carbohydrates, proteins and alcoholic beverages (27.3%, 14.9%, and 56.8% respectively) was a common practice. Customs and religious beliefs were a major influence on food restrictions (50.8% and 28% respectively). Iron and folate supplementation, balanced diet, use of long lasting insecticide net, regular ante natal clinic visits among others were strategies respondents believes could help mitigate against this condition.

Conclusions: The respondents had good knowledge of anaemia in pregnancy. However, restriction of nutritious food other than alcoholic beverages by significant proportion of the respondents is a cause for concern as this is a potential risk for anaemia in pregnancy. Nutrition education should be enhanced and sustained.

Keywords: Anaemia, Pregnancy, Food Restriction, Ante natal care, Custom, Religion

INTRODUCTION

Anaemia is a pervasive global public health problem. An estimated 2 billion people equivalent to about one third of the world's population are anaemic, the most vulnerable group being pregnant women and young children. Globally, it is estimated that more than 50% of pregnant women and 30% of all women suffer from anaemia. The prevalence however may be as high as between 33% - 75% in developing countries and as low as 15% in developed countries.

World Health Organization defines anaemia in pregnancy as haemoglobin concentration below 11g/dl.² This clinical condition often results from increase demand for iron and other nutrients necessary for blood formation during pregnancy. The inability to meet this increased demand either due to poor dietary intake or infection results in anaemia.²

Iron deficiency is the major cause of anaemia in pregnancy and indeed the major cause of anaemia worldwide.³ A study conducted among pregnant women in Northern Nigeria reported a prevalence of 64%,⁴ a much higher prevalence of 95% was reported in Ghana.⁵

Other significant causes of anaemia include deficiencies of other nutrients and a variety of other diseases.³ The common predisposing factors such as folate and vitamin B_{12} to anaemia in pregnancy especially in our clime include; multiparty, low socio-economic status, inadequate child spacing, late booking, HIV infection, helminthes infections and malaria.⁶⁻⁸ Indeed malaria induced anaemia is the leading cause of morbidity and mortality among pregnant women in Sub-Sahara Africa.⁹

Also worthy of note is the role of food restriction in the predisposition to anaemia in pregnancy. This practice is hinged on certain traditional, cultural and/or religious beliefs which could either be beneficial or harmful. A study in Pakistan showed that 12% of adult women in a community health centre in Pakistan believed in restricting some food item during pregnancy. A similar study conducted in a local community in Nigeria reported a 15% adherence to traditional beliefs and food taboo by pregnant women and 38% of them were malnourished. It his cultural and/or religious beliefs and practices are often adhered to because of the premium and respect for tradition especially in our environment.

The consequence of anaemia in pregnancy is 2 fold; the effect on the developing foetus and the effect on maternal health. The former effects include; prematurity and low birth weight, infant anaemia and increase risk of mortality, impaired mental and motor cognition. ¹²⁻¹³ On the other hand, women with severe anaemia in pregnancy have 3.5 times greater risk of death from obstetric complications including spontaneous abortion, postpartum haemorrhage, stressed labour, puerperal sepsis among others compared with non anaemic pregnant women. ¹³

The effect of anaemia in pregnancy could be substantially reduced through the adoption of simple interventions such as iron and other nutrient supplementation, strategies to control malaria and hook worm infestation i.e. use of insecticide impregnated mosquito net, regular de-worming and appropriate birth spacing among others.¹⁴

Therefore, the objectives of this study were to assess the level of knowledge, the practice of food restriction and strategies for preventing anaemia among pregnant women receiving ante natal care (ANC) in a semi-urban health facility in Akwa Ibom.

METHODS

Study site

The study was conducted in Akwa Ibom state; an oil rich state in South-South Nigeria, with a population of about 4 million people. ¹⁵ The state has 3 senatorial districts one of which is Uyo Senatorial district with 9 local government areas (LGA).

The Primary Health Care Centre (PHC) West Itam was purposefully selected from Itu, a LGA in Uyo senatorial districts. The PHC is sited at a semi urban area bordering Uyo, the capital city of the state and Ibiono LGA and draws clients and patients from these three LGAs.

Study design

A descriptive cross-sectional study designed was used to achieve the set objectives.

Study population

The study population were pregnant women who consecutively attended the ante-natal care (ANC) clinic in the PHC until the sample size was obtained. Only pregnant women who had at least 3 ANC clinic visits were enrolled in the study.

Sample size determination:

A pilot study on the knowledge of the causes of anaemia was conducted among pregnant women in another but similar PHC in the same Local Government Area (Itu LGA), within the same study area where the final study was done to avoid recruiting same respondents or influencing the participants in the final study in anyway.

The proportion with good level of knowledge on the causes of anaemia of pregnant women obtained was 92%. This was used to determine the sample size of the study using the formula for descriptive study

 $n = Z2pq/d^2$, where:

n = desired sample size, p = prevalence of factor under study (derived from our pilot study as 92% = 0.92). q = 1- p = 1 - 0.92 = 0.08, Z = 95% confidence interval = 1.96; Degree of precision = 0.05.

Therefore:

 $n = 1.962 \times 0.92 \times 0.08/0.05^2 = 113.$

The minimum sample size of the study was 113. However, the figure was increases to 121, also taking into account a non-response rate of 5%.

Sampling method

A total of 121 subjects were enrolled in the study using consecutive sampling technique.

Data collection

Data was collected using a pre-tested well-structured and self-administered questionnaire. The questionnaire was administered to the subjects during ANC visits and collected as soon as it was completed.

Data analysis

The data was analyzed using SPSS for Windows Version 17.0 (SPSS Inc., Chicago, IL, USA) and presented in simple tables. Descriptive statistics was done for continuous variables while categorical variables were compared using Chi-Square. Level of significance was set at 5% (p<0.05).

There were 6 sections each with different number of questions that assessed the respondents on their knowledge of anaemia. A score of one was awarded for a correct response and zero for a wrong response. A score of less than half in each section was regarded as poor level of knowledge on that section and vice versa. There were 25 questions from all the 6 sections constituting a total of 25 points. A score of less than 13 was regarded as poor level of knowledge while 13 and above was regarded as good level of knowledge.

Ethical consideration

Ethical approval was obtained from the Local Health Authority in the LGA before the commencement of the study. Also, an informed consent was obtained from each respondent before the questionnaire was administered.

RESULTS

A total of 121 women at different gestational ages were enrolled in this study. The mean ages of the women were 25.69±4.51. More than 50% of the women were within the age bracket 18-25 years. Majority (89.3%) had post-

primary education and a good number were traders (39.7%) and public servants (26.4%) (Table 1).

The women generally exhibited good knowledge of anaemia in pregnancy with respect to simple layman definition of the term anaemia, common signs of the disorder, the vulnerable group, common causes in our environment and the effect on the mother and foetus (Table 2).

Diet restriction during pregnancy (97.3%) was practiced by almost all the women studied. Custom/Tradition (50.8%) played a vital influence on dietary restriction among these women followed by health education/personal experiences (28.0%). Alcoholic beverages (56.8%) were the major food items restricted followed by certain carbohydrate, protein and fat containing food items (27.3%, 14.9% and 3.3% respectively). Fruits and vegetables were very rarely restricted (Table 3).

Association between the level of education of the respondents and their knowledge of anaemia in pregnancy showed no statistical significant differences (Table 4).

A substantial proportion of the respondents believed that nutritional supplement such as iron and folate supplementation, eating of balanced diet, regular ANC check-up visits, de-worming and use of LLIN among others are important strategies that could help mitigate anaemia in pregnancy (Table 5).

Table 1: Socio- demographic characteristics of respondents.

Characteristics	Frequency	Percentage
Age Groups (yrs.)		
18-25	65	53.7
26-33	49	40.5
41-43 Mean ages:25.6±4.51	7	5.8
Marital Status		
Married	116	95.9
Single	4	3.3
Divorced	1	0.8
Level of Education		
No formal Education	3	2.5
Primary	10	8.3
Post-Primary	108	89.3
Occupation		
Public servants	32	26.4
Traders	48	39.7
Hairdressers/ Seamstress	18	14.9
Unemployed	23	19.0

Table 2: Knowledge of anaemia among respondent.

Characteristic	Frequency	Percentage
Knowledge of what Anaemia is		
Shortage of blood	109	90.1
High Blood level	7	5.8
Low PCV or Hb	94	77.7
Groups Vulnerable to Anaemia		
Pregnant women	113	93.4
School Age Children	100	82.6
Old women	65	53.7
Non Pregnant Women	21	17.4
Common Symptoms of Anaemia		
Pale Palms	118	97.5
Pale Conjunctiva	113	93.4
Dizziness	107	88.4
Tiredness/weakness	81	66.9
Shortness of breath	57	47.1
Blurred vision	3	2.5
Causes of Anaemia		
Poor Diet	119	98.3
Malaria Infection	119	98.3
Deficiency in Iron and folate	118	97.5
Too frequent Pregnancies	112	92.6
Worm Infestation	107	88.4
Effects of Anaemia		
Miscarriage	106	87.6
Premature baby	106	87.6
Low Birth Weight	84	69.4
Deaths	81	66.9
Persons affected by Anaemia in Pregnancy		
Mother alone		
Foetus Alone	11	9.1
Mother and foetus	21	17.4
	89	73.6

^{*}PCV-Pack cell volume

Table 3: Respondents beliefs about anaemia.

Characteristics	Frequency	Percentage
Change Dietary Pattern in Pregnancy	118	97.5
Factors that inform food Restriction		
Religious Beliefs	25	28.0
Health Education/Personal experiences	33	21.2
Customs/Tradition	60	50.8
Foods Restricted during Pregnancies		
Alcohol	67	56.8
Carbohydrates (Pap, bread, buns, fufu, custard, rice)	33	27.3
Proteins(Egg, beans products, fish)	18	14.9
Fats& oil (fried plantain, melon,)	4	3.3
Non-alcoholic beverages(tea, Lipton)	3	2.5
Fruits(pawpaw)	1	0.8

^{*}Hb - Haemoglobin

Table 4: Association between some level of education and knowledge of anaemia among respondents.

Knowledge of anaemia in pregnancy	Education	al Level	Total	Statistical Tests (χ²) and Values
	Primary and less	Post-primary		
Knowledge of what Anaemia is Poor Good	3 (9.7) 10 (11.1)	28 (90.3) 80 (88.9)	31 (100.0) 90 (100.0)	χ ² =0.049 Df=1 P=1.00*
Knowledge of signs and symptoms of anaemia Poor Good	3 (33.3) 10 (8.9)	6 (66.7) 102 (91.1)	9 (100.0) 112 (100.0)	$\chi^2 = 5.174$ Df=1 P=0.056*
Knowledge of Preventive Strategies of anaemia in pregnancy Poor Good	2 (40.0) 11(9.5)	3 (60.0) 105 (90.5)	5 (100.0) 116(100.0)	χ ² =4.655 Df=1 P=0.089*
Knowledge of vulnerable groups to anaemia Poor Good	2 (15.4) 11 (10.2)	11 (84.6) 97 (89.8)	13(100.0) 108 (100)	χ ² =0.327 Df=1 P= 0.631*

^{*} Fisher's Exact P

Table 5: Strategies on prevention of anaemia in pregnancy known by respondents dents.

Strategies	Frequency	Percentage
Taking Iron and Folate supplements	119	98.3
Eating Balanced diet	117	96.7
Attending Antenatal Care	114	94.2
De-worming	97	80.2
Use of LLIN	95	78.5
Squeezed pumpkin leaves	84	69.4
Eating some special meals(raw eggs, milk, malt with milk, fish, snail, shellfish)	7	5.8

LLIN: Long lasting insecticidal net

DISCUSSION

Anaemia in pregnancy remains a major public health problem in developing countries and calls for urgent action among all concerned. This study was thus designed to assess the level of knowledge, pattern of food restriction and prevention strategies concerning this perennial health problem among pregnant women in a semi-urban health facility in Itu LGA, AKS.

The mean age of the respondents was 25.6 ± 4.51 years with a range of 18–43 years. Majority of the women were between 18-25 years age bracket. This finding closely approximates those of similar studies in Nigeria and other climes with similar socio-demographic characteristics. ¹⁴. ¹⁶⁻¹⁷ Also, majority of the women had post-primary level of education. This finding is similar but much higher than

that reported in other studies.¹⁷ A study in Orissa, India, reported an illiteracy rate of 16.91%, ¹⁸ this figure grossly contrast that from our study which was less than 3%. Perhaps, the semi-urban nature of our study site may have accounted for the high level of post primary educated clients using the health facility given its close proximity to Uyo, the capital city of AKS.

Evidently, this study has shown that majority of the women had good knowledge regarding the definition, common signs and symptoms, vulnerable groups, causes and the effect of anaemia in pregnancy. Majority of the women defined anaemia as 'shortage of blood' while an equally good proportion (77%) defined it as low PCV. This definitions somewhat satisfy the WHO definition of anaemia in pregnancy as haemoglobin concentration less than 11g/dl.² Understandably so, majority of the women

recognised pale palms, pale conjunctiva and dizziness as common symptoms of anaemia among others. These symptoms and signs are well documented features of anaemia in standard medical literature¹⁹ and similar observation have been reported in other studies.¹⁴

Also, almost all the women (over 90%) were able to correctly identify the causes of anaemia. This finding is similar to that reported in a similar study. ²⁰ Furthermore, documented evidences from WHO shows that pregnant women and pre-school children are the most vulnerable group to anaemia. ² This assertion was corroborated in this study as significant proportion of the respondents alluded to this fact. Bentley et al. ²¹ reported a huge burden of anaemia among women of reproductive age in India irrespective of their socio-economic strata. However, respondents from a similar study in Ghana singled out children as the most vulnerable to anaemia. ¹⁴

The consequences of anaemia in pregnancy have been well documented both on the mother and the foetus. An 8 to 10 fold increase in maternal mortality rate have been reported when the Haemoglobin falls below 5g/dl.²² Maternal anaemia on the other hand is associated with poor intrauterine growth and increased risk of preterm birth and low birth weight babies.^{22,23} The perception of our respondents clearly agrees with the documented reports on effects of anaemia in pregnancy.

While these results appear encouraging, it is pertinent to note that not all knowledge results in appropriate behavioural change. Hence, there is need to maintain and sustain this relatively high level of knowledge of anaemia among these women as this may ultimately influence positive changes.

Studies on maternal nutrition in pregnancy have gained prominence in recent years due to the recognition of increased physiologic, metabolic and nutritional demand placed on the pregnant woman by the developing foetus.²⁴ This is particularly important in our clime where food restrictions or taboo does exist during pregnancy. A study to assess the dietary practices and nutrient intake among pregnant women assessing ANC at Korle Bu Teaching Hospital and OSU maternity home in Ghana reported 48.8% food restriction among the respondents.²⁵ A similar observation was reported among pregnant women in Hounde district, Burkina Faso.²⁶ In Nigeria, similar observations have been reported. A study among pregnant women attending ANC clinic in UNTH Enugu revealed that 29% of the respondents acknowledged the existence of food taboos or restrictions during pregnancy while 19% admitted they still engage in this practice.²⁷ In another related study, a food restriction of 16.1% and 19.4% was reported among pregnant women in rural and Urban Communities in Ogun-East senatorial zone in Ogun state, Nigeria.²⁸

The above findings are quite similar to that obtained in this study though a much higher proportion of our respondents practice dietary restrictions during pregnancy (97.5%).

Every social group has their unique Customs/ traditional beliefs which guide and influences their way of life. These cultural / traditional beliefs are based on learned behaviour acquired partly through instructions from the parents and subconsciously through observations of relatives and other members of the community.²⁹ Some of these traditional practices especially food restriction / taboos are known to contribute significantly to maternal malnutrition during pregnancy. The above assertion was corroborated in this study. Half of the respondents were influenced by their custom and traditional beliefs regarding food restrictions during pregnancy. Maduforo and Kuzma et al.³⁰ also reported same among pregnant women in a south eastern state of Nigeria and Papua New Guinea respectively. It is important to note that Africans generally give a lot of premium to their customs and traditional/cultural beliefs and practices.

This study has also shown that apart from the alcoholic beverages, most of the foods restricted by the pregnant women are rich sources of carbohydrates, proteins and fat and oil. These findings confirm similar outcomes of studies from other parts of Nigeria and other developing countries with similar socio- demographic characteristics. Communities from Nigeria (South-Eastern and South-Western) regions and those from Southeast Asia restrict proteins and fatty foods for pregnant and lactating women. 11,28,3 While the diet in many developing countries is deficient in nutrients particularly protein and vitamins, food restriction through traditional beliefs and practices could further aggravate malnutrition.

However, it is encouraging to note that a significant proportion of the women restrict all forms of alcoholic beverages. The health education received during ANC may account for this observation. Also, certain aspects of traditional practices are known to be beneficial and promote good health. Perhaps this may be one of such. Alcohol consumption during pregnancy is known to cause irreversible mental and physical retardation of the foetus- Fatal alcohol syndrome (FAS). This condition is completely preventable; hence, pregnant women are urged to refrain from drinking alcohol in any form.³²

Association between the level of education of the respondents and their knowledge of anaemia in pregnancy showed no statistical significant differences, perhaps because less than 3% of the respondents lack any form of formal education. A Study by Baby et al.³³ also showed no association between the respondents knowledge regarding anaemia in pregnancy and their level of education. However, Mohannad et al.³⁴ and Gadallah et al.³⁵ reported significant association between the educational status of the respondents and their knowledge of anaemia in pregnancy.

Among the strategies for preventing anaemia in pregnancy, most respondents reported the use iron/folate supplementation, eating of balanced diet, attending of ANC clinics among others as crucial in preventing this disorder. These simple interventions are well documented in literature and noted to be very effective in combine forms. 14,20,36 For example, routine iron and folate supplementation in pregnancy have been reported to be of immense benefit for both mother and child because of the high physiological demand which in most cases cannot be met by diet alone. 14,36 Also, WHO recommends the use of LLIN as an integral part of ANC especially in Sub-Sahara Africa where malaria infection is endemic and a major cause of severe anaemia in pregnancy.^{37,38} Though a good proportion of the respondents consider the use of LLIN as a strategy to prevent anaemia in pregnancy, this awareness should be sustained and effort toward achieving 100% awareness and use of this strategy encouraged.

CONCLUSION

The level of knowledge of anaemia in pregnancy among the respondents is good and independent of the maternal educational status. However, restriction of food other than alcoholic beverages by a significant proportion of the respondents is a cause for concern as this is a potential risk for anaemia in pregnancy. Therefore, more emphasis on nutritional education should be advocated for during ante-natal clinic visit.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: Obtained from the Local Health

Authority in the LGA

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Cite this article as: Ekwere TA, Ekanem AM. Maternal knowledge, food restriction and prevention strategies related to anaemia in pregnancy: a cross-sectional study. Int J Community Med Public Health 2015;2:331-8.