Knowledge and Attitude towards Prevention of Iron Deficiency Anaemia among Pregnant Women in Selected Antenatal Clinics in Akinyele Local Government Area, Ibadan

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ABSTRACT

Background: *Nutrition is important for proper development; adequate amount of nutrients in its right proportion is needed by all humans. Iron is needed in significant amount to support maternal and fetal growth. Deficiency results when there is significant decrease of iron store in the body. Iron deficiency anaemia (IDA) has been identified as a global health problem with high prevalence among pregnant women and a major risk factor for maternal death and neonatal complications. Hence, the need to assess knowledge and attitude towards prevention of IDA among pregnant women*

Methods: *Descriptive cross-sectional study was adopted for the study. It was conducted using 200 pregnant women in three Primary Healthcare Centers (PHCs). Multistage sampling technique was utilized. Structured self-administered questionnaire was used to collect data from 22nd November, 2022 to 13th December, 2022. Data were analyzed using descriptive and inferential statistics of chi-square test at P< 0.05% level of significance*

Results: *More than one-third (41.5%) are between 27-32 years with mean age 29.48 ±5.156, 183(91.5%) are legally married, 117(58.5%) attended secondary school, 114(57.0%) are traders, 163(81.50%) make an average income of #30000-#60000 per month, 137(68.5%) are primigravida with planned pregnancies in their third trimester 160(80%). More than half (53.0%) have high knowledge of IDA in pregnancy and its preventive strategies, 73.50% showed positive attitude towards the preventive strategies of IDA and good compliance to the preventive strategies (51.0%). Knowledge of preventive strategies of IDA in pregnancy and compliance were significantly associated (p= 0.037), attitude towards preventive strategies of IDA in pregnancy and compliance with preventive strategies were significantly associated (p = 0.000)*

Discussion: *High level of knowledge, positive attitude and good compliance to preventive strategies of IDA was demonstrated among participants. Therefore, regular health education on health promotion strategies is needed to sustain positive attitude and promote compliance.*

Keywords: Anaemia, Attitude, Compliance, Iron-deficiency, Knowledge, Pregnant women

INTRODUCTION

Appropriate amount of nutrient is needed by all humans for proper growth and development. This means that nutrition is basic for proper development.[1] The amount of nutrient we take varies among individuals and is also based on developmental stage. Deficiencies of essential nutrients within the first 1000 days of life may lead to poor pregnancy outcome such as cognitive impairment, congenital malformations and intra uterine death. Various studies have observed that low birth weight from anaemia contributes to 800,000 neonatal deaths yearly.[2]

Anaemia is defined as a condition that results when the oxygen carrying capacity of the blood is inadequate to meet physiological demands in the body.[3]Anaemia in pregnancy results when the haemoglobin is less than 11g/dl. Iron deficiency anaemia (IDA) has been recognized as the most common type of anaemia in pregnancy which results due to deficient iron stores in the body. However, many factors have been attributed to iron deficiency anaemia (IDA) in pregnancy such as: increased demand during pregnancy, lactation, inadequate nutrient intake in the diet, chronic kidney disease.[4] During pregnancy, there is increased demand for iron by the body due to physiological changes in maternal red blood cell mass and demand of the developing fetus.[5] There is higher risk of iron deficiency anaemia during pregnancy than in non-pregnant state due to physiological changes in pregnancy and is associated with decreased cognitive index, low birth weight and increased neonatal mortality.[6] Compliance of iron supplement during pregnancy is an effective strategy towards preventing IDA. IDA is the most common type of anaemia of anaemia globally affecting 1.62 million people, and 41.8% of pregnant women are affected.[7] There is global effort to eliminate malnutrition where iron deficiency anaemia is a major concern.

In Africa, anaemia is a severe public health problem affecting more than 40% of pregnant women. A systematic review on IDA in pregnancy in Nigeria reported a high prevalence of IDA among pregnant women and the associated risk factors include high parity, pregnancy in the third trimester, poverty, noncompliance to iron and folic acid, poor antenatal clinic visit, low level of education, distance to health facilities, among others.[8] In addition, malaria, pica, digestive and urinary parasites have been observed to be risk factors of IDA.[9] Studies conducted in Ghana, Ethiopia, Rural area of Lahore, and Tabuk Region showed high level of knowledge of IDA and positive attitude towards the preventive strategies of IDA which could be attributed to their high level of education. [11-15] However, systematic review by Ugwu and Uneke in Nigeria showed high prevalence of IDA among the pregnant women.[8] Despite that this anaemia can be prevented during pregnancy by eating iron rich foods, taking iron absorption enhancer (ascorbic acid) and by taking iron supplements as recommended by the WHO.[16]

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Despite anaemia having been identified as a global public health problem for several years, no rapid progress in its reduction has been observed; the prevalence of the disease has continued to be high globally. Although, the burden of anaemia among pregnant mothers has reduced from 43% to 38% over the past decades, it still showed that the World Health Assembly (WHA) target of 50% reduction of anaemia by 2025 is far to be achieved and countries need to focus on achieving this target in near future.[17]

Studies have shown that the risk for anaemia is higher among women and especially in pregnancy.[18 19] Anaemia during pregnancy is considered a major risk factor of maternal deaths directly or indirectly through preeclampsia, cardiac failure, antepartum hemorrhage, postpartum hemorrhage and puerperal sepsis. [20]

The complications associated with IDA in pregnancy cannot be over emphasized. Several pregnant women with IDA were observed to have poor pregnancy outcomes; including neonatal outcomes such as: low birth weight, intrauterine growth retardation, prematurity, birth asphyxia and intrauterine death.[20]

Pregnant women attending antenatal clinics are routinely put on iron supplementation throughout their pregnancy. They are also taught the importance of taking iron rich diet during pregnancy. Yet, the prevalence of IDA among pregnant women continues to be high.[8] Therefore, IDA in pregnancy ought to be a major health concern among healthcare workers in Nigeria, especially at the primary care level because of possible health implications to the mothers and babies. Healthcare workers have to ensure compliance to iron supplement during pregnancy. Hence, the aim of the study is to assess knowledge and attitude towards prevention of iron deficiency anaemia among pregnant women in selected antenatal clinics in Akinyele local government area, Ibadan.

Research Questions and Hypotheses

1. What is the level of knowledge of IDA in pregnancy and its preventive strategies among pregnant women?

2. What is the attitude towards preventive strategies of IDA in pregnancy among pregnant women?

3. What is the level of compliance with preventive strategies of IDA in pregnancy among pregnant women?

METHODS

The research was a descriptive cross-sectional survey, conducted among pregnant women attending antenatal clinics in Moniya PHC, Ojoo PHC, and Ajibode PHC in Akinyele

L.G.A. Ibadan, Oyo state. Out of the entire population of 335 pregnant women attending antenatal clinic, 200 were selected using a multi stage sampling. The study utilized a structured self-administered questionnaire which was developed by the researchers from reviewed literatures. Ethical clearance was obtained from University and Hospital Ethical Review Board and approval number obtained. Data collection process lasted for three weeks from 22nd November, 2022 to 13th December, 2022.The data obtained were properly screened for errors and completeness. The data were coded into computer using Statistical Package for Social Sciences (SPSS) version 25. The analysis was done using descriptive and inferential statistics of chi-square test at 0.05% level of significance.

RESULTS

Socio-demographic and Obstetric Data

Table 1 shows the socio-demographic and obstetric data of the pregnant women from the three PHCs in Akinyele L.G.A., Ibadan.

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Table 1: Socio-demographic and obstetric data of the pregnant women (N=200).

Variables	Frequency	Percent
Age group Mean 29.48 ± 5.156		
20-26 years	69	34.5
27-32 years	83	41.5
33-40 years	48	24.0
Marital status		
Married	183	91.5
Single	13	6.5
Divorced	4	2.0
Pregnancy planned		
Yes	160	80.0
No	40	20.0
Age of pregnancy		
Second trimester	40	20.0
Third trimester	160	80.0
Number of times pregnant		
1-3 pregnancies	180	90.0
4-6 pregnancies	20	10.0
Parity		
0-1 child	137	68.5
2-4 children	63	31.5
Level of Education		
Primary	6	3.0
Secondary	117	58.5
Tertiary	77	38.5
Occupation		
House wife	19	9.5
Trading	114	57.0
Student	31	15.5
Civil servant	36	18.0
Average income		
₦30,000 - ₦60,000	163	61.5
₦61,000 - ₦90,000	34	17.0
₦91,000 - ₦120,000	3	1.5

Knowledge of IDA in pregnancy and its preventive strategies

Table 2 reveals the result of the mothers' knowledge of IDA. The participants demonstrated high level of knowledge of IDA in pregnancy and were able to identify different foods that can be taken to build the iron stores in the body including iron fortified foods. (See table 2). The mean score is 13.71 ± 3.445, more than half (53.0 %) of the respondents demonstrated high knowledge of IDA in pregnancy and its preventive strategies.

Table 2: Knowledge of IDA in pregnancy and its preventive strategies (n=200)

Variables	Yes F (%)	No F (%)
IDA is decrease of iron store in the body	158(79.0)	42(21.0)
IDA is common among pregnant women	164(82.0)	36(18)
Hemoglobin level of< 11g/dl indicates IDA	130(65.0)	70(35.0)
Signs and symptoms of IDA		
Paleness of the skin and the conjunctiva	160(80.0)	40(20.0)
Shortness of breath	135(67.5)	65(32.5)
Dizziness	129(64.5)	81(35.5)
Numbness or coldness in the hands and feet	137(68.5)	63(31.5)
Ways of preventing IDA in pregnancy		
Increasing consumption of iron-rich foods	180(90.0)	20(10.0)
Increasing intake of vitamin C	171(85.5)	29(14.5)
Taking foods enriched with iron	186(93.0)	14(7.0)
Taking prenatal vitamins containing iron during pregnancy	180(90.0)	20(10.0)
Avoids cultural forbidden foods e.g. snail during pregnancy	101(50.5)	99(49.5)
Engaging in intermittent preventive treatment of malaria	138(69.0)	72(31.0)
Dietary sources of iron		
Lean red meat	146(77.0)	54(27.0)
Poultry	154(70.0)	46(23.0)
Fish	182(91.0)	18(9.0)
Iron-fortified breakfast cereals	161(80.5)	39(19.5)
Unripe plantain	152(76.0)	48(24.0)

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Attitude towards preventive strategies of IDA in pregnancy

Table 3 reveals the result of the mothers' attitude towards preventive strategies of IDA. Participants demonstrated positive attitude towards preventing IDA. They were able to identify foods rich in iron, various iron supplements that can be taken during pregnancy, and the need for checkup during pregnancy (more details in table 3). The mean score is 26.93 ± 2.799, 147 (73.50 %) of the respondents have positive attitude towards the preventive strategies of IDA in pregnancy.

Table 3: Attitude towards preventive strategies of IDA in pregnancy (n=200)

Variables	SA	A	D	SD
	F (%)	F (%)	F (%)	F (%)
Iron supplement can affect mother & fetus health	84 (47.0)	30 (15.0)	44 (22.0)	32 (16.0)
Drinking coffee, tea or milk affect iron absorption	84 (42.0)	42 (21.0)	50 (25.0)	24 (12.0)
Iron rich diets taken regularly is important to prevent IDA during pregnancy	137 (68.5)	50 (25.0)	7(3.5)	6 (3.0)
Iron supplement can prevent anaemia in pregnancy	140 (70.0)	51 (25.5)	3 (1.5)	6 (3.0)
Pregnant women should consume Iron tablets despite healthy diet	131 (65.5)	62 (31.0)	7 (3.5)	0 (0.0)
Proper child spacing can prevent IDA	112 (56.0)	58 (29.0)	20 (10.0)	10 (5.0)
IDA is part and parcel of pregnancy	98 (49.0)	53 (26.5)	23 (11.5)	36 (13.0)
Regular antenatal visit and check-up will help for early detection of IDA	135 (67.5)	56 (28.0)	7 (3.5)	2 (1.0)
Any pregnant women can be affected by anaemia	78 (39.0)	59 (29.5)	23 (11.5)	40 (20.0)

SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree

Compliance to preventive strategies of IDA in pregnancy

Result of this study reveals high level of compliance to the preventive strategies of IDA in pregnancy among participants as majority of them go to antenatal clinics regularly, take their iron supplements including diets rich in iron (see table 4). Mean score is 31.28

± 5.955, 102 (61.0%) of the respondents showed good compliance to the preventive strategies of IDA in pregnancy.

Table 4: Compliance to preventive strategies of IDA in pregnancy (n=200)

Variables	SA	A	D	SD
	F (%)	F (%)	F (%)	F (%)
I go for antenatal clinic regularly	150 (75.0)	43 (21.5)	6 (3.0)	1 (0.5)
We were taught IDA and its preventive strategies by nurses	134 (67.0)	57 (28.5)	5 (2.5)	4 (2.0)
I take my iron supplement as prescribed to prevent anaemia	144 (72.0)	43 (21.5)	11(5.5)	2 (1.0)
I eat foods containing iron such as unripe plantain, red meat, poultry, fish	136 (68.0)	41(20.5)	21(10.5)	0 (0.0)
I take a lot of fruits containing vitamin C such as apple, mango, orange	154 (77.0)	36 (18.0)	10)5.0)	0 (0.0)
I avoid drinking tea and coffee after eating	89 (44.5)	67 (33.5)	28(14.0)	16 (8.0)
I take at least 4 tablets of prenatal vitamins (iron and folic acid) per week	118 (59.0)	53 (26.5)	21 (10.5)	8 (4.0)
I grow vegetables in my garden	97 (48.5)	43 (21.5)	45 (22.5)	15 (7.5)
I have poultry where I raise chicken	82 (41.0)	43 (21.5)	46 (23.0)	29 (14.5

SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree

There is a statistically significant association between the level of knowledge of preventive strategies of IDA in pregnancy and compliance with preventive strategies (χ^2 = 0.241[a], p-value = 0.037). Similarly, attitude towards preventive strategies of IDA in pregnancy is significantly associated with compliance to preventive strategies (χ^2 = 14.866[a], p-value = 0.000).

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DISCUSSION

Study reveals the mean age of the respondents to be 29.48 ±5.156 and a modal age of 30 years belonging to the age group of 27-32 years. Majority are married with just less than 10% single, more than half attended secondary school. A little above half are into trading; majority make an average income of ₦30,000 - ₦60,000 per month. More than two-third of the respondents are pregnant for the first time and most of the pregnancies were planned. Majority of them were in the third trimester and attends ANC regularly. This is in line with study among Pregnant Women Attending Antenatal Care Facilities in Juaboso District in Western-North Region, Ghana where most of the participants are in their late twenties and are legally married.[11] However, their study observed that more than half of their study participants have had one child before. This could be attributed to early marriage as 18.2% of the women never went to school and were involved in non-formal jobs.[11] Similarly, study among pregnant women in Riyadh, Saudi Arabia observed that 42.3% of the respondents were in the age group 21 to 30 years old and were pregnant for the first time and in their third trimester. [21]

More than half of the respondents have high knowledge of IDA in pregnancy and its preventive strategies especially in areas of type of diet to eat and the use of intermittent preventive therapy (IPT) for treatment of malaria. This could be attributed to high level of education among the study participants. The result of this study is in line with the with study among Pregnant Women Attending Antenatal Care Facilities in Juaboso District in Western-North Region, Ghana where higher level of knowledge was observed among educated mothers than the uneducated ones[11]. Similarly, study among pregnant women attending antenatal clinic in Adeoyo Maternity Teaching Hospital, Ibadan observed that majority of the study participants have adequate knowledge of IDA in pregnancy and its preventive strategies.[10]

Furthermore, the result of this study is in line with the study conducted among pregnant women in Ethiopia were more than half of pregnant women had high level of knowledge on prevention strategies of IDA as majority of the participants indicated that IDA in pregnancy can be prevented by eating good or healthy food, using iron supplement & drinking or eating fruits.[12] Similarly, study among pregnant women attending ante-natal care unit at public Hospitals of Harar town, eastern Ethiopia noted that more than half of the participants had high knowledge of the preventive strategies of IDA.[13] Most of them demonstrated that IDA in pregnancy can be prevented by eating healthy diet rich in iron, taking iron supplement during pregnancy irrespective of dietary status, by drinking or eating fruits rich in vitamin C for easy absorption of the iron, and proper child spacing which were also observed in this present study.[13] Furthermore, study among pregnant

women in a Rural Area of Lahore observed high level of knowledge about prevention of IDA among the participants.[14]
Contrary to the result of this study, study to explored knowledge, attitude and practices regarding prevention of IDA among pregnant women attending primary health centers in Tabuk region observed low level of knowledge of preventive practices of IDA among the participants.[15] In addition, study among pregnant mothers attending ANC in Government hospitals at west Shoa Zone, Ethiopia observed low level of Knowledge regarding prevention of anaemia during pregnancy among the participants.[24]

The result of the study among Females Attending Primary Health Care Centers in Baghdad revealed fair level of knowledge on Iron deficiency anaemia in Pregnancy was observed among participants, and the Younger age mothers with low educational level displayed worst level of knowledge.[22] This could be attributed to low level of educational attainment by study participants. Meanwhile, the participants of the current study were relatively young and most of them displayed high level of knowledge of IDA and its preventive strategies. Being young and educated exposed them to more opportunities to acquire information of how best to take care of their pregnancies. However, study to assess knowledge and attitude of pregnant women about iron deficiency anaemia in Egypt observed poor knowledge of IDA among pregnant women.[23]

More than two-third of the study participants showed positive attitude towards preventive strategies of IDA in pregnancy, as many indicated that Iron rich diets taken regularly is important to prevent IDA during pregnancy. The result of this study is in accordance with the study conducted among pregnant women in Ethiopia where it was observed that the pregnant women had positive attitude towards preventive strategies of IDA especially in the areas of family planning and use of supplements and folate.[12, 13]. On the contrary, study among pregnant women in a Rural Area of Lahore observed revealed that majority of the pregnant women have negative attitude towards preventive strategies of IDA.[14] Only less than half of the pregnant women showed positive attitude regarding antenatal checkup and prevention of anaemia through family planning.[14] Similarly, study to explored knowledge, attitude and practices regarding prevention of iron deficiency anaemia among pregnant women attending primary health centers in Tabuk region observed high level of negative attitude towards preventive strategies of IDA among the pregnant women.[15]

Good compliance to preventive strategies of IDA was observed among more than half of the study participants. Highest compliance was observed in the area of intake of the routine prenatal vitamins to prevent anaemia, neural tube defect and complications during pregnancy. This agrees with the study among pregnant women in Hawassa city, South

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Ethiopia were 85.8% took prenatal vitamins to prevention anaemia and neural tube defect, and to prevent subsequent complications in pregnancy.[25] More than two-third of the study participants demonstrated good compliance by taking their iron supplement as prescribed, consuming iron rich diets such as meat, poultry, fish and so on, taking a lot of fruits containing vitamin C and avoiding tea or coffee after meal. The level of compliance was found to be high among women who know the importance of iron and folic acid and those who developed complication during the previous pregnancy.[25] Similarly, study to assess adherence to iron and folic acid supplementation and prevalence of anaemia among pregnant women attending ANC at Tikur Anbessa Specialized Hospital Ethiopia observed that more than half of the pregnant mothers, demonstrated compliance to iron and folic acid supplement(IFAS), though, still low.[26] On the contrary, study among pregnant women in Ethiopia revealed that despite the high level of knowledge of the preventive strategies of IDA in pregnancy, majority of the pregnant women, showed poor compliance to preventive practices of IDA.[12] Similarly, study to assess the knowledge and practice towards prevention of anaemia among pregnant women attending ANC at Government hospitals in West Shoa Zone observed low compliance to the preventive strategies of IDA among the participants.[24]

There was a significant association between the level of knowledge of preventive strategies of IDA in pregnancy and compliance with preventive strategies. This implies that knowledge of preventive strategies of IDA was a major factor in determining their compliance to the preventive practices of IDA. This result is in line with the findings of Appiah et al. (2020) who observed a significant association between adherence to anaemia preventive strategies and their knowledge of anaemia (p=0.001).

Also, a statistically significant association between attitude towards preventive strategies of IDA in pregnancy and compliance with preventive strategies exists. This implies that positive attitude towards preventive strategies of IDA positively influenced their compliance. Study among pregnant women attending antenatal care unit at public hospitals of Harar Town, Eastern Ethiopia reported that positive attitude towards health promotion strategies promotes good compliance.[13] Similarly, studies have observed that good level of knowledge and positive attitude influences compliance.[11, 25]

Clinical implication of the study

Based on the study outcome, more efforts should be put in place to create more awareness on IDA in pregnancy and its preventive strategies and also to sustain the positive attitude as studies have shown that good level of knowledge and positive attitude influence compliance. This can be achieved through regular health education on health promotion strategies at various ANCs

At various PHCs and hospitals providing antenatal services, efforts should be put in place to establish policies and activities that will promote compliance among pregnant women. This may involve fixing a particular day as nutrition day during which all the pregnant women will be encouraged to come to the clinic with different fruits and a balanced diet rich in iron. This policy will help to reduce the burden of IDA in pregnancy and promote the health of the mother and the baby.

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