

PERCEIVED RISK FACTORS ASSOCIATED WITH ANEMIA DURING PREGNANCY AND PREVENTIVE MEASURES AMONG MEDICAL PERSONNEL IN HEALTHCARE CENTRES OF ORUK ANAM LOCAL GOVERNMENT AREA OF AKWA IBOM STATE

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Abstract

Anemia remains a significant public health challenge worldwide, particularly among pregnant women. Therefore, this study focused on perceived risk factors associated with anemia during pregnancy and preventive measures among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Areas. The study was guided by four research questions and two hypotheses. This study adopted descriptive survey research designed. The population of this study consisted of 201 medical doctors and nurses in Healthcare Centres of Oruk Anam LGAs of Akwa-Ibom State and all participated in the study. The instrument for data collection was a self-developed structured questionnaire titled: Perceived Risk Factors Associated with Anemia Questionnaire $r=0.87$ and Preventive Measures Questionnaire $r=0.91$. The data were analyzed using mean, standard deviation and t-test statistic. Mean and standard deviation were used to answer all the research questions while t-test statistic was used to test the entire hypotheses at 0.05 level of significance. Results showed that the medical personnel in healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State indicated that pregnancy related factors (2.76 ± 0.66) and health related factors (2.65 ± 0.44) are the highest perceived risk factors associated with anemia while lifestyle modifications (2.97 ± 0.49), dietary changes (2.80 ± 0.54) and medical interventions (2.61 ± 0.45) are the preventive measures of anemia during pregnancy. Furthermore, no significant differences were observed in the perceived risk factors associated with anemia ($t\text{-val}=0.482$, $p\text{-val}=0.630$) and preventive measures ($t\text{-val}=0.547$, $p\text{-val}=0.585$) by cadre. The study concluded that medical personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State indicated that pregnancy related and health related factors are the highest risk associated with anemia during pregnancy while lifestyle modifications and dietary changes are the preventive measures of anemia. This implies that there is need for quick interventions so as to reduce the significant risk of preterm labor, low birth weight, maternal mortality and cardiac complications this health conditions can pose to the pregnant women and the fetus. The study therefore, advocate for regular prenatal care monitoring of pregnant women and addressing the underlying health issues by medical personnel in every antenatal visits.

Keywords: Risk Factors, Anemia, Preventive Measures, Medical Personnel

Introduction

Anemia remains a significant public health challenge worldwide, particularly among pregnant women. For instance, World Health Organization (WHO) (2025) reported global anemia prevalence of 35.5% for pregnant women aged 15-49 years who suffered from anemia in 2023. In India, Olayemi, (2020) reported 44.16% (18,703/42,349) of antenatal mothers had

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anemia in urban Eastern India, 1.5%, severe 35.46% moderate and 63.02 % moderate and it was higher among teenage mothers (59.78%) and primigravida (63.02%). In Ethiopia, Gebremedhin (2020) reported 17.7% prevalence of anemia among women, 61.8% mild, 34.5% moderate and 3.6 severe and attributed it to risk factors such as iron deficiency, low dietary and not taking IFA supplementation. Nigeria Demographic and Health Survey (2018) reported 58% prevalence of anemia among pregnant women.

Anemia is a medical condition characterized by a deficiency in the number of red blood cells or hemoglobin in the blood, leading to reduced oxygen-carrying capacity and often resulting in symptoms such as fatigue, weakness, and shortness of breath (WHO,2023). Anemia during pregnancy is a condition where the pregnant women's red blood cell count or hemoglobin level is low (UNICEF, 2022). Anemia in this study is defined as when the body does not have enough healthy red blood cells to carry oxygen throughout the body. It is characterized with fatigue, weakness, pale skin, shortness of breath and cold hands and feet (Okafor & Nwosu, 2021). Other symptoms include headaches, dizziness and potentially unusual craving, chest pain, rapid heartbeat and fainting (WHO,2023). This health condition may be associated with some risk factors

Risk factors are variables that increase the likelihood of experiencing an adverse or developing a condition (Centres for Disease, Control and Prevention, 2024). In epidemiology and health science, risk factors are conditions that could associate with an increased probability of disease or injury (WHO, 2024). Such risk factors include nutritional factors, health-related factors and pregnancy related (WHO,2023).

Nutritional risk factors occur when the body lack enough iron or a few other nutrients from diet during pregnancy like diet-related issues, nutrient deficiencies, poor diet, inadequate nutrient intake, excessive consumption of certain nutrients (Umeh, Abubakar& Yusuf, 2022). Study like Mekonnen et al. (2018) reported that nutritional factors are the risk factors associated with anemia during pregnancy among pregnant women attending antenatal care in public health institutions of Hosanna town Southern Ethiopia.

Health-related factors are the pre-existing health conditions that increase the risk of developing other health issues like chronic diseases, infection, genetic disorder, malaria and blood loss (Rahman, Khan& Akter, 2019)while pregnancy related factors are those factors related to pregnancy that causes the risk of health problems for the mother or fetus like multiple pregnancies, previous pregnancy complications and short interval between pregnancies (Agepe, Okunade, Sekumade, Daramola & Beke,2020). These risk factors might be reduced if proper preventive measures are put in place.

Preventive measures are seen as measures taken to proactively avoid undesirable outcomes or minimize potential damage before they occur (WHO, 2023). It aimed at preventing problems from arising or to reduce their severity if they do happen. Such measures include lifestyle modification, dietary changes and medical interventions (WHO, 2023). Lifestyle modifications are changes individuals make to their habits and behaviour to improve their health and well-being such as going to regular prenatal care, eating a balanced diet, increasing fruit and vegetable intake, avoid smoking, substance abuse, excessive caffeine intake, getting 7-9 hours of sleep per night, tracking blood pressure, blood sugar, adhering to medical treatment, engage in activity like meditation, yoga or deep breathing (Gebremedhin, 2020). Dietary changes are modifications made to an individual eating habits and food choices to improve health (Sharma, 2019). Such change includesincrease nutrients intake, limiting or avoiding foods high in added sugars, saturated fats and sodium, take food vitamin C-rich foods, folate-rich foods, improve energy level by fueling the body with nutrient-rich foods and avoid inhibitors of substance. Medical intervention is any action taken with the goal of improving a person's health by preventing, treating or restoring one's health (Mwangi, 2020) such as regular prenatal check-ups, blood tests, receiving health education on anemia prevention, addressing underlying condition and screening for anemia. Adediran (2021)

found that dietary changes, medical modifications and lifestyle modifications are the preventive measures of anemia during pregnancy in South-West Nigeria hospitals. Moreso, study carried out by Daka, Dereje and Demisie (2018) showed that medical interventions, dietary changes and lifestyle modifications are the preventive measures of anemia among pregnant women attending antenatal in Governmental hospitals at West Shoa Zone, Ethiopia.

The perceived risk factors associated with anemia and preventive measures may be influenced by demographic variable of medical personnel like cadre. For instance, Smith and Jones (2021) found that doctors and nurses indicated that nutritional factors, health-related factors and pregnancy related are risk factors associated with anemia during pregnancy. Study by Ouma et al. (2020) revealed that pregnancy related factors and health related factors are the highest risk factors associated with anemia among pregnant women in a Rural Area of Western Kenya. Daka, Dereje and Demisie (2018) reported that lifestyles modification is the highest preventive measure of anemia among pregnant mothers attending ANC in Government hospitals at west Shoa Zone, Ethiopia. Rahman, Khan, and Akter (2019). indicated that lifestyle modifications are the major preventive measures regarding anemia among pregnant women attending antenatal care in Bangladesh and that there was no significance difference in the preventive measures of anemia by cadre.

Anemia among antenatal women globally is staggering, with the World Health Organization (WHO) classifying it as a severe public health issue when its prevalence exceeds 40% (World Health Organization, 2023). In many low- and middle-income countries, including Nigeria, the rates surpass this threshold. For instance, Nigeria Demographic and Health Survey reported that 61% of pregnant women in Nigeria suffer from anemia (Nigeria Demographic and Health Survey 2018). Healthcare Centres in Oruk Anam Local Government Area of Akwa Ibom State are known for its specialized care, has been at the forefront of tackling maternal health issues, including anemia, through various healthcare interventions and community outreach programs. Given the high rate of anemia observed in this region and the hospital's pivotal role, medical personnel like doctors and nurses in maternal healthcare. This study is both timely and necessary since to the best knowledge of the researchers no study of this nature has been carried out in the area to identify perceived risk factors associated with anemia and the preventive measures in Oruk Anam Local Government Area of Akwa Ibom State. Hence, the need to determine perceived risk factors associated with anemia during pregnancy and preventive measures among Medical Personnel in Oruk Anam Local Government Area of Akwa Ibom State

Statement of Problem

Anemia during pregnancy remains a significant public health concern among pregnant women attending antenatal care in the hospitals. Globally, it affected 500 million women of reproductive age 15 – 49 years (WHO, 2023). Anemia is among the leading causes of maternal and perinatal morbidity and mortality globally (Debella, Eyeberu, Getachew, Atnafe, Geda and Dheresa, 2023). The authors noted that the burden of the condition is greater in low- and middle- income countries compared to high-income countries. It has been linked to increased risks of maternal mortality, preterm birth, low birth weight, and impaired cognitive development in the child, foetal growth restriction, foetal demise, babies with birth asphyxia, and neonatal death.

In healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State, most of the medical personnel reported increase rate of low birth weight, premature delivery, maternal morbidity and mortality, increased risk of infections, poor fetal development, pre-eclampsia and postpartum hemorrhage which led to health problems for the child and the mothers. There is a paucity of studies addressing the risk factors associated with anemia and possibly the preventive measures particularly in the healthcare Centres in the area. This is worrisome hence, led the researchers to determine perceived risk factors

associated with anemia during pregnancy and preventive measures using medical personnel in the Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State

Purpose of the Study

The main purpose of this study was to determine perceived risk factors associated with anemia during pregnancy and preventive measures among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area, Akwa Ibom State. Specifically, the study determine:

1. Perceived risk factors associated with anemia during pregnancy among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State
2. Preventive measures of anemia during pregnancy among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State
3. Perceived risk factor associated with anemia during pregnancy among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State by cadre
4. Preventive measures of anemia during pregnancy among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State by cadre

Research Questions

The following research questions guided this study

1. What are the perceived risk factors associated with anemia during pregnancy among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State?
2. What are the preventive measures of anemia during pregnancy among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State?
3. What are the perceived risk factors associated with anemia during pregnancy among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State by cadre?
4. What are the preventive measures of anemia during pregnancy among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State by cadre?

Hypotheses

The following null hypotheses were formulated to guide this study and tested at 0.05 level of significance

1. There is no significance difference in the risk factors associated with anemia during pregnancy among Medical Personal in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom
2. There is no significance difference in the preventive measures of anemia during pregnancy among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State by cadre

Methods

This study adopted descriptive survey research designed. The study was conducted in Oruk Local Government Area using all the Government Healthcare Centres. Oruk Anam Local Government Areas is located in the Southern part of Akwa Ibom State, Nigeria. Oruk Anam has common boundaries with Ukanafun and Abak in the North, in the South by Ikot Abasi, in the East by MkpateEnin and in the West by Ukanafun and Imo River running through

the borderline of Rivers and Abia States (Attah, Akpan and Anam, 2021). Regarding healthcare centers, it has 19 healthcare centers in Oruk Anam LGA (National Bureau of Statistics, 2013).

The population of this study consisted of 201 medical doctors and nurses in Healthcare Centres of Oruk Anam LGAs of Akwa-Ibom State. Therefore, census sampling technique was used. The instrument for data collection was a self-developed structured questionnaire titled: Risk Factors Associated with Anemia and Preventive Measures Questionnaire (RFAAPMQ). The instrument comprised three sections A-C with 29 items. Section A contained 1 item on the demographic variable of the respondents. Section B contained 12 items in which 1-4 elicited information on nutritional risk factors, 5-9 on health-related factors and 10-12 on pregnancy related factors. Furthermore, section C contained 16 items on the preventive measures in which item 13-18 elicited information on lifestyle modifications, 19-23 on dietary changes and 24-28 on medical interventions. The respondents were required to tick (✓) on the options using Strongly Agree (SA)=4, Agree (A)=3, Disagree (D) =2 and Strongly Disagree (SD)=1

To ascertain the reliability of the instrument, the (RFPMAQ) together with purpose of the study, research questions and hypotheses were given to three lecturers from the Department of Human Kinetics and Health Education, Ebonyi State University, Abakaliki. The experts rigorously examined the questionnaire and determine whether the content is in line with the objectives of the study and checked the appropriateness of each item in terms of the purpose of the study. Their constructive criticisms and suggestions made were affected and final version of the instrument was produced and used for the data collection. Cronbach Alpha procedure was used to determine the reliability of the instrument. To achieved this, 30 copies of RFPMAQ was given to Medical Personnel in another healthcare centre and overall reliability coefficient obtained in the instrument was $r = 0.87$ for Risk Factors Associated with Anemia Questionnaire and Preventive Measures Questionnaire $r = .91$, indicating that the instrument is reliable based on Ogbazi and Okpala (2014) criteria of good instrument for reliability of 0.60 and above. To access the respondents, a letter of introduction introducing the researchers and explaining the purpose of the study was attached to the questionnaire and researchers presented the letter to the Officer-In-Charge in the healthcare centers that were used in this study. A brief letter assuring the respondents of their confidentiality of the responses was delivered to them. The researchers with the help of 4 research assistants administered the questionnaire to the respondents within 2 weeks. Out of 201 copies distributed 197 were retrieved and used for data analysis. This procedure yield 98% return rate. The data were analyzed using mean, standard deviation and t-test statistic. Mean and standard were used to answer all the research questions. A criteria mean of 2.50 was set for this study. Therefore, any mean upto 2.50 was adjudged as perceived risk factors associated with anemia during pregnancy and preventive measures while below 2.50 was not perceived as risk factors and preventive measures. The t-test statistic was used to analyze the entire hypotheses on cadre (medical doctors and nurses) at 0.05 level of significance.

Results

The results of this study are presented below:

Research Question 1

What are the perceived factors associated with anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State?

Table 1: Mean and Standard Deviation of Perceived Factors Associated with Anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State (n=197)

S/N	Risk Factors	$\bar{x}$	SD	Decision
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1	Inadequate iron intake	2.58	0.94	Accepted
2	Poor diet	2.68	1.04	Accepted
3	Inadequate nutrient intake	3.00	0.89	Accepted
4	Excessive consumption of certain nutrients	1.95	0.89	Rejected
	Nutritional Factors	2.55	0.54	Accepted
5	Chronic diseases	2.30	1.13	Rejected
6	Infections	2.72	1.00	Accepted
7	genetic disorder	2.80	0.91	Accepted
8	Malaria	2.80	0.97	Accepted
9	Blood loss	2.62	0.85	Accepted
	Health Related Factors	2.65	0.44	Accepted
10	Multiple pregnancies	2.75	0.89	Accepted
11	Previous pregnancy complications	2.79	1.00	Accepted
12	Short interval between pregnancies	2.74	1.05	Accepted
	Pregnancy Related Factors	2.76	0.66	Accepted
	Overall	2.65	0.32	Accepted

Result on Table 1 showed that inadequate iron intake, poor diet, inadequate nutrient intake, infections, genetic disorder, malaria, blood loss, multiply pregnancies, previous pregnancy complications and short interval between pregnancies scored up to 2.50 criteria set for this study except on excessive consumption of certain nutrients (1.95 ± 0.89) and chronic diseases (2.30 ± 1.13). On each of the risk factors index, thus, nutritional factors (2.55 ± 0.54), health related factors (2.65 ± 0.44) and pregnancy related factors (2.76 ± 0.66) are upto 2.50 criteria set for this study. Moreso, overall (2.65 ± 0.32) is up to 2.50 criteria set for this study. This means that nutritional factors (2.55 ± 0.54), health related factors (2.65 ± 0.44) and pregnancy related factors (2.76 ± 0.66) are the perceived risk factors associated with anemia but pregnancy related factors (2.76 ± 0.66) and health related factors (2.65 ± 0.44) are the highest factors associated with anemia.

Research Question 2

What are the preventive measures of anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State?

Table 2: Mean and Standard Deviation of Preventive Measures of Anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State (n=197)

S/N	Preventive Measures	$\bar{x}$	SD	Decision
13	Regular prenatal care	2.93	0.92	Accepted
14	Avoid excessive caffeine	2.85	0.98	Accepted
15	Avoid smoking and substance abuse	2.83	0.91	Accepted
16	Getting 7-9 hours of sleep per night	2.88	0.86	Accepted
17	Adhering to medical treatment	2.18	0.82	Rejected
18	Tracking blood pressure	3.12	0.88	Accepted
	Lifestyle Modifications	2.97	0.49	Accepted
19	Increase iron intake	2.89	0.94	Accepted
20	Intake of vitamin C- rich foods	3.85	0.95	Accepted
21	Intake of Folate-rich foods	2.04	0.84	Rejected
22	Avoid inhibitors of iron absorption	2.53	0.92	Accepted
23	Avoiding foods high in a sugar	2.68	0.98	Accepted

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	Dietary Change	2.80	0.54	Accepted
24	Take Iron supplements	2.82	0.94	Accepted
25	Take acid supplement	1.87	0.99	Rejected
26	Go for screening for anemia	2.86	0.84	Accepted
27	Addressing underlying conditions	2.67	1.05	Accepted
28	Receive health education on anemia prevention	2.83	1.00	Accepted
	Medical Interventions	2.61	0.45	Accepted
	Overall	2.80	0.35	Accepted

Data on Table 2 showed that regular prenatal care, avoid excessive caffeine, avoid smoking and substance abuse, getting 7-9 hours of sleep per night, tracking blood pressure, increase iron intake, intake of vitamin C-rich foods, avoid inhibitors of iron absorption, avoiding foods high in a sugar, take iron supplements, go for screening for anemia, adhering to underlying conditions and receive health education on anemia prevention score a criteria mean of 2.50 and above set for this study. However, adhering to medical treatment, intake of Folate-rich foods and foods and take acid supplement scored below 2.50 criteria set for this study. On each of the preventive measures index, mean score for lifestyle modification (2.97 ± 0.49), dietary changes (2.80 ± 0.54) and medical modifications (2.61 ± 0.45) are up to 2.50 criteria set for this study. Furthermore, overall (2.80 ± 0.35) is up to 2.50 criteria set for this study. This means that lifestyle modification (2.97 ± 0.49), dietary changes (2.80 ± 0.54) and medical modifications (2.61 ± 0.45) are the preventive measures of anemia among pregnant, though dietary changes (2.80 ± 0.54) was the highest preventive measure accepted followed by lifestyle modifications (2.97 ± 0.49).

Research Question 3

What are the perceived risk factors associated with anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State by cadre?

Table 3: Mean and Summary of t-test Analysis of Perceived Factors Associated with Anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State based on Cadre

Risk Factors	Medical Personnel		Nurses		t-val	p-val	Decision
	Medical Doctors (n=80)		(n=117)				
	$\bar{x}$	SD	$\bar{x}$	SD			
Nutritional Factors	2.55	0.58	2.56	0.51	0.151	0.880	NS
Health Related Factors	2.66	0.40	2.64	0.46	0.291	0.771	NS
Pregnancy Related Factors	2.70	0.67	2.81	0.65	1.121	0.264	NS
Overall	2.63	0.31	2.65	0.34	0.482	0.630	NS

Result on Table 3 indicate that medical doctors score 2.50 criteria and above set on this study on nutritional factors (2.55 ± 0.58), health-related factors (2.66 ± 0.40) and pregnancy related factors (2.70 ± 0.67) with overall (2.63 ± 0.31). Also, the nurses score 2.50 on nutritional factors (2.56 ± 0.51), health related factors (2.64 ± 0.46), pregnancy related factors (2.81 ± 0.65) with Overall (2.65 ± 0.34). This implies that medical doctors indicated that pregnancy related and health related factors (2.66 ± 0.40) and also nurses indicated that pregnancy related factors (2.81 ± 0.65) and health related factors (2.64 ± 0.46) are the highest risk factors associated with Anemia. Data on the Table further indicated no significance differences on nutritional factors,

health-related and pregnancy related factors by cadre ($P>0.05$). Overall $t\text{-val}=0.482$, $p\text{-val}=0.630$ is not significant at $p=0.05$. Therefore, there is no significance different in the perceived risk factors associated with anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State by cadre ($t\text{-val}=0.482$, $p\text{-val}=0.630$)

Research Question 4

What are the preventive measures of anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State by cadre?

Table 4: Mean and Summary of t-test Analysis of Preventive Measures of Anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State based on Cadre

Preventive Measures	Medical Personnel				t-val	P-val	Decision
	Medical Doctors(n=80)		Nurses(n=117)				
	$\bar{x}$	SD	$\bar{x}$	SD			
Lifestyle Modifications	3.01	0.49	2.93	0.50	1.104	0.271	NS
Dietary Change	2.75	0.51	2.83	0.55	1.107	0.270	NS
Medical Interventions	2.66	0.49	2.58	0.42	1.226	0.222	NS
Overall	2.82	0.34	2.79	0.36	0.547	0.585	NS

Data on Table 4 showed that that both medical doctors and nurses scored mean 2.50 were above criteria set for this study on each of the preventive measures. But medical doctors (3.01 ± 0.49) and nurses (2.93 ± 0.50) indicated that lifestyle medications are the highest preventive measure of anemia during pregnancy. Result further showed that there were no significance differences on each of the preventive measures namely, lifestyle modifications, dietary change and medical intervention ($P>0.05$). Overall $t\text{-val}=0.547$, $p\text{-val}=0.585$ is not significant at $p=0.05$. Therefore, there is no significance difference in the preventive measures of anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State by cadre ($t\text{-val}=0.547$, $p\text{-val}=0.585$)

Discussion of Findings

Result on Table 1 showed that nutritional factors (2.55 ± 0.54), health related factors (2.65 ± 0.44) and pregnancy related factors (2.76 ± 0.66) are the risk factors associated with anemia but pregnancy related factors (2.76 ± 0.66) and health related factors (2.65 ± 0.44) are the highest risk factors associated with anemia during pregnancy in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State. The reason for this result could be attributed to the physiological changes that usually occur during gestation because the body needs more iron to produce enough red blood cells to support the growing fetus and the mother's increased blood volume. If the mother does not have enough iron or other essential nutrients or experience significant blood loss, it can lead to iron-deficiency anemia or types of anemia. This finding let credence to Smith and Jones (2021) whose study found that doctors and nurses indicated that nutritional factors, health-related factors and pregnancy related are risk factors associated with anemia during pregnancy. The finding agrees with Mekonnen et al. (2018) whose result indicated that pregnancy related risk factors, nutritional factors, health-related factors are the risk factors associated with anemia during pregnancy among pregnant women attending antenatal care in public health institutions of Hosanna town Southern Ethiopia.

Result on Table 2 indicated that lifestyle modifications (2.97 ± 0.49), dietary changes (2.80 ± 0.54) and medical modifications (2.61 ± 0.45) are the preventive measures of anemia among pregnant women in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State. This result was anticipated because these measures directly address the underlying causes and needs of the pregnant women and her developing fetus. This finding is in line with Adediran (2021) which found that dietary changes, medical modifications and lifestyle modifications are the preventive measures of anemia during pregnancy in South-West Nigeria hospitals. Moreso, finding by Daka, Dereje and Demisie (2018) agree with the result of this study that medical interventions, dietary changes and lifestyle modifications are the preventive measures of anemia among pregnant women attending antenatal in Governmental hospitals at West Shoa Zone, Ethiopia.

Result on Table 3 showed that both medical doctors and nurses indicated that pregnancy related factors and health related factors are the highest perceived risk factors associated with anemia among pregnant in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State. Thus, there was no significance difference in the perceived risk factor associated with anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State by cadre ($P > 0.05$). This finding agrees with Ouma et al. (2020) who revealed that pregnancy related factors and health related factors are the highest risk factors associated with anemia among pregnant women in a Rural Area of Western Kenya. The result is in accordance with Rahman, Khan, and Akter (2019) which indicated that lifestyle modifications are the major preventive measures regarding anemia among pregnant women attending antenatal care in Bangladesh and that there was no significance difference in the preventive measures of anemia by cadre.

Data on Table 4 showed that medical doctors (3.01 ± 0.49) and nurses (2.93 ± 0.50) in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State indicated that lifestyle medications is the highest of anemia among Medical Personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State by cadre ($t\text{-val} = 0.547$, $p\text{-val} = 0.585$). This finding agree with Daka, Dereje and Demisie (2018) result which shows that doctors reported that lifestyles modifications are the highest preventive measure of anemia among pregnant women attending antenatal in Government hospitals at west Shoa Zone, Ethiopia.

Conclusion

Based on the findings, the study concluded that medical personnel in Healthcare Centres of Oruk Anam Local Government Area of Akwa Ibom State indicated that nutritional risk factors, health related risk factors and pregnancy related risk factors are the risk factors associated with anemia during pregnancy but pregnancy related factors and health related factors are the highest risk. Moreso, the study pointed out that lifestyle modifications, dietary changes and medical interventions are the preventive measures of anemia.

Recommendations

The following recommendations were made:

1. Health Educators in collaboration with medical personnel should advocate for dietary counselling in every antenatal visits
2. Regular prenatal care monitoring of pregnant women and addressing underlying health issues by medical personnel in every antenatal visit should be encouraged
3. Non - Governmental Organizations (NGOs) should organize seminars and workshops to pregnant women to educate them on the risk factors associated with anemia during pregnancy and preventive measures.

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