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2. The LJN has the tripartite mission of:
  - (a) Promoting a culture of excellence in Nursing Research.
  - (b) Encouraging the exchange of profound and innovative ideas capable of generating creative practice in nursing research practise.
  - (c) Disseminating information on nursing related development that are not usually easily available to academics and practitioners.
3. The Journal will accordingly encourage the publication of the following categories of papers.
  - (a) Research papers that move away from orthodoxy and which really break new grounds in terms of methodology and findings.
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  - (c) Documents emanating from national and international conferences, as well as from largescale research work that emerging trends and thinking in nursing related development.
4. LJN is published biannually in any area of nursing interest or relevant to needs of academics and practitioners.

In this edition, eighteen (18) manuscripts scale through the eye of the needle of the Editor-in Chief. The title of the papers in this edition are: effect of cold compress on the reduction of musculoskeletal pain, swelling and hemarthrosis among orthopaedic patients in Lautech Teaching Hospital, Ogbomoso, Oyo State, Nigeria; Awareness of Prostate Cancer Screening Among Male Civil Servants In Egor Local Government Area, Edo State, Nigeria; Knowledge, Perception And Utilization Of Maternal And Child Health Care Among Women In Ogbomosho, Oyo State, Nigeria; Assessment Of Knowledge And Utilization Of Electronic Medical Records Among Nurses In Secondary Health Care Facilities In Jigawa State, Nigeria; Effect Of Midwife Led Educational Intervention On Knowledge Of Anaemia And Risk Factors Among Pregnant Women Attending Ante-Natal In Selected Primary Health Care Facilities In Osun State, Nigeria; Knowledge Of Health Implications Of Rape And Associated Factors Among Male Undergraduates In Ahmadu Bello University Zaria, Nigeria; Effectiveness Of Family Caregivers Centered Nursing On Knowledge Of Pressure Ulcer Prevention In A Tertiary Health Facility In Kano, Nigeria; Knowledge And Practice Of Malaria Prevention Among Expectant Mothers In Selected Primary Health Centers In Mushin Local Government Area, Lagos State, Nigeria; Prevalence Of Sexual And Psychological Abuse In Almajiri System Of Education In Zaria Local Government Area, Kaduna State, Nigeria; Assessment Of Male Involvement In Maternity Care In Selected Health Facilities In Ado Ekiti, Ekiti State, Nigeria; Educational Intervention On Knowledge Of Prevention And Self-Care Practices Of Selected Lifestyle Diseases Among Civil Servants In State Secretariat Oke-Mosan, Abeokuta Ogun-State, Nigeria; Nursing In An Age Of Change In Nigeria; Knee Replacement Surgery: The Role Of The Nurse In Patient Safety In The Operating Room, The Nigerian Perspective; Choice Of Places Of Delivery Among Women Attending Ante Natal Clinic At Ngwo Health Centre; Systematic Review On Adolescent Girls' Knowledge And Practice Of Menstrual Hygiene In Nigeria; Knowledge And Prevention Of Hypertension Among Patients Attending Medical Outpatient Department Of Garki Hospital, Abuja, Federal Capital Territory, Nigeria And Socio-Cultural Factors Influencing Nutritional Status In Under-Five Children In Akure North Local Government, Ondo State, Nigeria.

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Welcome to LAUTECH Journal of Nursing!

LAUTECH Journal of Nursing focus on but not limited to research findings in the different areas of Nursing: Nursing Care, Nursing Education, Medical Surgical Nursing, Maternal and Child Health Nursing, Community Public Health Nursing, and Psychiatric/Mental Nursing. This journal is published to promote quality scholarly writing and hence instigating and generating vibrant discourse in the different areas of nursing. Apart from providing an outlet for publications of research findings, it offers opportunities for professionals and students to disseminate their views or position on topical issues and emerging theories within the scope of the journal. The Journal is peered reviewed by seasoned scholar. Sixty two authors have contributed in one way or the other to the thirteenth edition of the journal.

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**Patent**

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# EFFECT OF MIDWIFE LED EDUCATIONAL INTERVENTION ON KNOWLEDGE AND RISK FACTORS OF ANAEMIA AMONG PREGNANT WOMEN ATTENDING ANTE-NATAL IN SELECTED PRIMARY HEALTH CARE FACILITIES IN OSUN STATE, NIGERIA

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## ABSTRACT

Anaemia in pregnancy is one of the commonest problems affecting women globally. Knowledge of prevention of anaemia in pregnant women can contribute to lowering the maternal mortality rate as a result of anaemia. Studies have shown high prevalence of anaemia and low knowledge among pregnant women in Osun state, Nigeria. Thus, this research assessed the effect of midwife-led educational interventions on knowledge of anaemia and risk factors in pregnancy at selected primary health care (PHC) facilities in Osun-state. This study adopted two group quasi-experimental design. A sample size of 241 registered pregnant women were selected through multi-stage sampling procedure in six PHCs in Osun State. The PHCs were divided into experimental (EG) and control groups (CG). A developed training module on prevention of anaemia was used for the intervention while a validated questionnaire was used for pre and post intervention data collection. The quantitative data were analysed using descriptive and inferential statistics to test the hypotheses at 0.05 level of significance. Findings showed that the socio-demographic characteristics in both the experimental and control groups exhibited similarities, providing a basis for comparative analysis in interpreting potential differences in study outcomes. This study observed that there is a significant difference in the pre and post intervention of the experimental group on the knowledge analysis of anaemia (56.2%) and there is no significant difference in the pre and post intervention of the control group on the knowledge analysis of anaemia (1.5%) also, there is a significant difference in the pre and post intervention of the experimental group on the knowledge of risk factors (49%) and there is no significant difference in the pre and post intervention of the control group on the knowledge analysis of anaemia (1.0%). Two hypotheses were tested and findings reveals that there is a significant difference in the post intervention of the experimental and control group on the knowledge of anaemia ( $P=$

0.000) and there is a significant difference in the pre and post intervention of the control and experimental group on the knowledge of risk factors (0.000). In conclusion, the midwife-led intervention had positive effect on participant's knowledge of anaemia and risks factors. It is recommended that midwife-led educational intervention on anaemia prevention among pregnant women be delivered periodically in all primary health care facilities in Osun-state.

**Keywords:** Anaemia in Pregnancy; Anaemia risk factors; Midwife-led educational intervention; Primary health care facilities

## INTRODUCTION

Anaemia is one of the topmost causes of disability around the world and represents a significant threat to the health of people all over the world (World Health Organization, (WHO, 2019). Anaemia is a medical condition characterized by a deficiency of red blood cells or haemoglobin in the blood, leading to a reduced ability of the blood to carry oxygen to various tissues and organs in the body (Coad & Pedley 2014). Haemoglobin is a crucial protein found in red blood cells that binds to oxygen and facilitates its transport throughout the body (Tembhare et al., 2015). Anaemia in pregnancy is a condition marked by a deficiency of red blood cells or haemoglobin in the blood, which can have serious effect on both the mother and the unborn child. While there are different types of anaemia, such as iron-deficiency anaemia, vitamin deficiency anaemia, and haemolytic anaemia, the focus in pregnancy is on the impact it has on maternal and fetal health. The risk of developing anaemia during pregnancy is quite high and should receive more attention

(Andriani et al, 2016; WHO, 2023). According to WHO (2022), anaemia in pregnancy is defined as a haemoglobin concentration of less than 11g/dl, classified into mild anaemia, moderate anaemia and severe anaemia. Developing anaemia during pregnancy has the potential to harm not only the mother but also the unborn child. Fatigue, poor work capacity, susceptibility to diseases, impaired immune function, increased risk of miscarriage (WHO, 2022), prematurity (Rai, et al., 2016), still birth, low birth weight, perinatal mortality (Mandy, 2020), impaired health and quality of life, and impaired development and learning (WHO, 2019), are some of the adverse health effects that can be seen in both the mother and the baby.

Globally, 500 million women of reproductive age 15-49 years of age and of these, 32 million were pregnant women estimated to be affected by anaemia (Nwizu et al., 2018). Studies shown that the region with the highest burden of anaemia in pregnancy are South-East and sub-Saharan Africa, where it affects 244 million and 106 million women of reproductive age respectively. Approximately 37% pregnant women suffered from anaemia worldwide and 57.1% in Sub-Saharan Africa contributing to 23% of deaths in underdeveloped nations, which in turn worsens maternal mortality rate (Kever et al., 2015; WHO, 2023). In Nigeria, about 57.5% of pregnant women are anaemic (Young et al., 2023). Anaemia in pregnancy remains a noteworthy health challenge worldwide, specifically in low- and middle-income countries. Efficient knowledge among pregnant women in regards to the preventive measures of anaemia in pregnancy is essential for significantly reducing its prevalence, ensuring early diagnosis, and establishing effective preventive strategies. Understanding methods of preventing anaemia in pregnancy is of utmost importance as it enable pregnant women to take anticipative measures to protect both their health and the health of their unborn child (Babah et al., 2024).

Developing effective interventions can help build up existing knowledge while filling the

remaining knowledge gaps and misconceptions associated with anaemia in pregnancy. Addressing anaemia is crucial to prevent complications and improving overall health and well-being. Awareness of anaemia among expectant mothers involves understanding its definition, causes, symptoms, and potential consequences. Healthcare providers play a crucial role in educating pregnant women about the importance of maintaining adequate iron levels and recognizing the signs of anaemia. Regular prenatal check-ups, including blood tests to monitor haemoglobin levels, are emphasized, alongside adherence to prenatal supplements such as iron and folic acid to prevent or treat anaemia (Cane et al., 2022). The review of many literatures has shown that there is limited data on the effect of midwife-led educational package in anaemia in pregnancy (WHO, 2019) hence, there is still need to assess the impact of midwife-led education intervention on risk factors of anaemia in pregnancy. Midwife-led education programs have been described as a medium of instruction in changing people's habits and practices. It is a low- cost intervention with proven significant benefits. It brings about information capable of acting on the empowerment of an individual by enabling them to learn new things to this acquisition of knowledge activates their potentials and facilitates the change in their behavior in order to develop health-promoting lifestyle that allows the detection and timely prevention of anaemia.

Separate studies in Osun and in Oyo revealed prevalence of 62.2%, and 58% respectively (Sholeye, et al., 2017). It was observed from the annual delivery report of Wesley Guild Hospital located in Ilesa East, Osun East senatorial district that 140 (46.3%) out of 302 pregnant women were anaemic within a year (2022). Also, a study done by Oladunjoye and Lawal (2020) in Osun State revealed that anaemia in pregnancy has a prevalence rate of 56% out of a population of 3,400 women who attended antenatal clinic at the hospital that year. This could be ascribed to the fact that the

women with no formal education had poor health-seeking behavior and a poor understanding of a balanced diet.

The burden of anaemia in pregnancy is still of great concern, despite concerted efforts by health authorities in Nigeria to address anaemia in pregnancy through multifaceted interventions, including education, iron supplementation, and infection control. Regardless of the diverse interventions aimed at addressing anaemia among pregnant women in Osun State, there is a noticeable gap in the incorporation of educational interventions led by midwives, specifically aimed at knowing the risk factors of anaemia within primary healthcare settings. Addressing the noticeable gap in knowing the risk factors of anaemia among pregnant women in Osun-State calls for a diverse approach that makes the integration of midwife-led educational interventions within primary healthcare settings a major priority.

## OBJECTIVES

The main objective was to assess the effect of midwife-led educational intervention on knowledge of anaemia risk factors in pregnancy in primary health care centres in Osun State. The specific objectives are to:

1. assess the pre and post intervention knowledge of anaemia among pregnant women in the experimental and control groups; and
2. assess the pre and post intervention knowledge of risk factors of anaemia among pregnant women in the experimental and control groups;

## METHODOLOGY

**Design:** This study adopted two groups quasi-experimental research design. It was used to assess the respondent's knowledge on anaemia in pregnancy, and its risk factors.

**Setting:** The researcher used six (6) selected health facilities which has highest number of registered pregnant women from six (6) local

government which is densely populated across the three (3) senatorial district in Osun State.

**Population:** The population for the study comprises of all the registered pregnant women attending antenatal clinic in selected primary health care facilities in Odo-otin, Ejigbo ifelodun, Ilesa-East, Ife central and Ola-Oluwa local government area. The inclusion criteria for the study were registered pregnant women between 1 to 32 weeks gestational age who are willing to participate in the study and signed consent form.

**Sampling Technique:** The sample size of the study was the intact size of registered pregnant women in the selected six (6) primary health care centres in Odo-otin, Ejigbo ifelodun, Ilesa-East, Ife central and Ola-Oluwa local government area who met the inclusion criteria and consented to participate in the study. Multistage sampling procedure was employed to ensure that the appropriate individuals are identified and selected for the study. The multistage sampling procedure was used which include:

**Stage 1:** Cluster sampling technique was used to select one local government (densely populated local government) from each senatorial district.

**Stage 2:** Cluster sampling technique was used to select one primary healthcare centres from each local government area making a total of six (6) primary health care centres which has highest patronage of registered pregnant women

**Stage 3:** Proportionate sampling was used to select the number of pregnant women selected in each facilities.

**Stage 4:** Randomization was done to group the local government areas into experimental and control groups. The experimental group were those that fell within even numbers while the odd numbers were control group.

**Stage 5:** The intact class of the pregnant women who met the inclusion criteria and consented to participate in the study were purposefully selected. A quasi-experiment does not rely on random assignment.

**Table 1: Summary of sampled respondents**

Selected Local Government	Selected Primary Health Care Centres	Intact size of the pregnant women who met the inclusion criteria and consented to participate in the study	Distribution into intervention and control group
Ilesa east	Irojo	53	Intervention Group
Ife central	Enuwa	59	Control Group
Odo-otin	Inisa	46	Intervention Group
Ifelodun	Ikirun	28	Control Group
Ejigbo	Opopo	25	Intervention Group
Ola-Oluwa	Oke-Aga	30	Control Group
		Total: 241 (Intervention - 124, Control - 117)	

**Instrument:** The instrument for data collection was questionnaire. It assess the pre and post-intervention knowledge on risk factors of anaemia. The questionnaire was divided into three sections (sections A-C). Section A sought for socio-demographic data of respondents comprising six questions. (Closed- ended questions). Section B consisted of 18 questions on the knowledge of anaemia. Each correct response was allotted one while incorrect answer allotted 0. The maximum possible score was 18 while the minimum possible score was 0. Poor knowledge score ranged from 0 to 8, average knowledge score from 9 to 12, while high knowledge score was from 13 to 18. Section C consisted of 24 questions on the knowledge of risk factors of anaemia. Each correct response was allotted 1 while incorrect answer was allotted 0. The maximum possible score was 24 while the minimum possible score was 0. Poor knowledge score ranged from 0 to 11, average knowledge score from 12 to 16, while high knowledge score was from 17 to 24.

The instrument was given to expert in the field of reproductive health and tests and measurement for face validity. Unclear and ambiguous items were reframed before using it for data collection. The test re-test was carried out in one of the primary health centers outside the sampled area

and 30 pregnant women were randomly selected. The reliability index of each construct on the instrument was calculated and the Cronbach's alpha level was found to be as follows: knowledge on anaemia 0.763, and knowledge of risk factors 0.761. Therefore the questionnaire was adjudged reliable.

**Permission and ethical approval:** Permission and ethical approval to carry out the study were obtained from Osun-state Primary Health Care Board. The approval certificates were taken to the study centers where data collection took place. The officer-in-charge of each clinic and pregnant women were contacted based on their ante-natal clinic days through cordial relationship. The participants were briefed about the study purposes, benefits and ethical principles guiding the study and the need for their support. The study was in 3 phases (Pre-intervention, intervention and post-intervention). The data collected were checked for completeness, coded using the coding guide which was designed before the data collection and this were entered into SPSS version 28. The computations involved frequency distributions, summaries of descriptive statistics and t-test was used to analyze the main hypotheses. All statistical tests were done at  $p=0.05$  of level of significance.

## RESULTS

The table delineated the socio-demographic profiles of respondents categorized into an experimental group consisting of 124 individuals and a control group comprising 117 participants. Examining marital status, the majority of respondents in both groups are married, constituting 83.1% in the experimental group and 82.1% in the control group. Conversely, the percentages for single individuals stand at 14.5% and 15.4%, respectively. A minor proportion of respondents are separated, with 2.4% in the experimental group and 2.6% in the control group.

At age distribution, the experimental group displayed a more balanced spread across different age brackets. The highest percentage within the experimental group is in the 30-39 age range, accounting for 39.5%, whereas the control group's largest cohort fell within the 40-49 age range, constituting 28.8%. Ethnicity distribution revealed that the Yoruba ethnic group predominates in both groups, with percentages of 75.8% in the experimental group and 76.9% in the control group. Minor variations are noted in the percentages of other ethnicities.

Regarding religious affiliation, a nearly equal distribution was observed between Christians and Muslims in both groups. In the experimental group, 43.5% identify as Christian, and 47.6% as Muslim, while the control group had 44.4% Christians and 44.4% Muslims. Traditional religion constituted 8.9% in the experimental group and 11.1% in the control group. Educational attainment revealed that a substantial proportion of respondents in both groups have obtained at least a secondary level of education. Percentages for each

educational category are similar between the two groups.

Occupational categories demonstrated comparable distributions, with trading and civil service being predominant in both groups. The monthly income distribution also showed similarity, with the majority falling within the 25,000 - 35,000 income range.

In the experimental group, the majority of participants (46.0%) were in the 12 weeks - 20 weeks range, followed by 27.4% in the 21 weeks - 25 weeks range, and 24.2% in the 26 weeks - 32 weeks range. A smaller proportion (2.4%) had pregnancies less than 12 weeks. In the control group, the most common age range was also 12 weeks - 20 weeks, accounting for 35.0% of participants. However, a higher percentage (45.3%) fell into the 21 weeks - 25 weeks range, and a smaller proportion (18.0%) was in the 26 weeks - 32 weeks range. Only 1.7% of participants in the control group had pregnancies less than 12 weeks.

Regarding other medical conditions, in the experimental group, 2.4% had diabetes, 14.5% had hypertension, 1.6% had sickle cell disease, and 0.8% had a bleeding disorder. No data was available for infections in the experimental group. In the control group, 3.4% had diabetes, 11.1% had hypertension, 0.9% had sickle cell disease, and 2.6% had a bleeding disorder. Additionally, 0.9% of participants in the control group had infections. In summary, the socio-demographic characteristics in both the experimental and control groups exhibited similarities, providing a basis for comparative analysis in interpreting potential differences in study outcomes.

**Table 2: Description of the Socio-demographic Characteristics of the Respondents**

Variables	Experimental Group (124)		Control Group (117)	
	Freq.	Percent (%)	Freq.	Percent (%)
<b>Marital Status</b>				
Married	103	83.1	96	82.1
Single	18	14.5	18	15.4
Separated	3	2.4	3	2.6
<b>Age</b>				
18 - 29 years	27	21.8	26	11.0
30 - 39 years	49	39.5	46	19.2
40 - 49 years	41	33.1	39	28.8
Above 49 years	7	5.69	6	9.6
<b>Ethnicity</b>				
Yoruba	94	75.8	90	76.9
Hausa	3	2.4	3	2.6
Igbo	6	4.8	6	5.1
Others	21	16.9	18	15.4
<b>Religion</b>				
Christian	54	43.5	52	44.4
Islam	59	47.6	52	44.4
Traditional	11	8.9	13	11.1
<b>Level of Education</b>				
No Formal Education	5	4.0	7	6.0
Primary	26	21.0	29	24.8
Secondary	53	42.7	48	41.0
Tertiary	40	32.3	33	28.2
<b>Occupation</b>				
Civil Service	37	29.8	35	29.9
Trading	42	33.9	40	34.2
Farming	13	10.5	12	10.3
Artisan	13	10.5	12	10.3
Full time House Wife	3	2.4	3	2.6
Apprentice	9	7.3	9	7.7
Others	7	5.6	6	5.1
<b>Monthly Income</b>				
5000 - 15,00068	4	3.2	3	2.6

15,000 - 25,000	16	12.9	16	13.7
25,000 - 35,000	54	43.5	49	41.9
35,000 - 50,000	37	29.8	37	31.6
50,000 and above	13	10.5	12	10.3
<b>Age of Pregnancy</b>				
Less than 12 weeks	3	2.4	2	1.7
12 weeks - 20 weeks	57	46.0	41	35.0
21 weeks - 25 weeks	34	27.4	53	45.3
26 weeks - 32 weeks	30	24.2	21	18.0
Total	124	100.0	117	100.0
<b>Other Medical Conditions</b>				
Diabetes	3	2.4	4	3.4
Hypertension	18	14.5	13	11.1
Sickle Cell Disease	2	1.6	1	0.9
Infections	-	-	1	0.9
Bleeding Disorder	1	0.8	3	2.6

Table 3 offered a detailed analysis of the knowledge levels regarding anaemia before and after an intervention in both the experimental and control groups. In the experimental group, prior to the intervention, the mean knowledge score was 5.83, representing 32.4% knowledge, with a standard deviation of 1.34. Following the intervention, there was a significant increase in knowledge, reflected in a post-intervention mean score of 15.95 and percentage increase to 88.6%. This signified an increase of 56.2% in knowledge from pre-intervention to post-intervention.

Conversely, in the control group, the mean knowledge score was 5.81, corresponding to a knowledge percentage of 32.3%, with a standard deviation of 1.36. Post-intervention, the mean knowledge score increased to 6.09, resulting in a knowledge percentage of 33.8%. The percentage increase in knowledge for the

control group from pre-intervention to post-intervention was 1.5%.

Comparatively, the experimental group demonstrated a considerably higher improvement in knowledge after the intervention compared to the control group. The substantial percentage increase post-intervention mean knowledge score in the experimental group suggested the effectiveness of the intervention in significantly enhancing awareness and knowledge of anaemia. These findings underscore the positive impact of the intervention in increasing knowledge levels, particularly in the experimental group. This study observed that there is a significant difference in the pre and post intervention of the experimental group on the knowledge analysis of anaemia (56.2%) and there is no significant difference in the pre and post intervention of the control group on the knowledge analysis of anaemia (1.5%)



**Table 3: Descriptive analysis of knowledge of anaemia pre and post intervention**

Group	Test	No of Items	Mean±S.D	Percent	% Gain
Experimental	Pre-intervention	18	5.83±1.34	32.4	56.2
	Post-intervention		15.95±1.35	88.6	
Control	Pre-intervention	18	5.81±1.36	32.3	1.5
	Post-intervention		6.09±1.36	33.8	

**Table 4** offered a detailed analysis of the knowledge of risk factors associated with anaemia before and after an intervention in both the experimental and control groups. In the experimental group, prior to the intervention, the mean knowledge score was 8.92 with a standard deviation of 1.59, represented a knowledge percentage of 37.2%. Following the intervention, there was a substantial increase in knowledge, reflected in a post-intervention mean score of 20.69 with a standard deviation of 1.49. This marked increase resulted in a post-intervention knowledge percentage of 86.2%, signified an increased percentage of 49.0% from the pre-intervention level.

Conversely, the control group exhibited a minimal change in knowledge. Pre-intervention, the mean knowledge score was 8.89 with a standard deviation of 1.67, represented a knowledge percentage of 37.0%. Post-intervention, the mean knowledge score increased to 9.12, with a standard deviation of 1.75, resulting in a post-intervention knowledge percentage of 38.0%. The

percentage increase in knowledge for the control group from pre-intervention to post-intervention was 1.0%.

Comparatively, the experimental group demonstrated a significant increase in knowledge of anaemia risk factors after the intervention compared to the control group. The substantial percentage increase post-intervention mean knowledge score in the experimental group suggested the effectiveness of the intervention in significantly enhancing awareness and knowledge of risk factors associated with anaemia. These findings underscored the positive impact of the intervention in increasing knowledge levels, particularly in the context of anaemia risk factors, specifically within the experimental group. This study revealed that there is a significant difference in the pre and post intervention of the experimental group on the knowledge of risk factors (49%) and there is no significant difference in the pre and post intervention of the control group on the knowledge analysis of anaemia (1.0%)

**Table 4: Descriptive analysis of knowledge of risk factors of anaemia pre and post intervention**

Group	Test	No of Items	Mean±S.D	Percent	% Gain
Experimental	Pre-intervention	24	8.92±1.59	37.2	49.0
	Post-intervention		20.69±1.49	86.2	
Control	Pre-intervention	24	8.89±1.67	37.0	1.0
	Post-intervention		9.12±1.75	38.0	

**Test of Hypotheses**

**Ho1:** There is no significant difference in the pre and post intervention knowledge of anaemia between pregnant women in the experimental and control group.

Table 5 revealed the results of a t-test analysis examining the disparity in post-intervention knowledge of anaemia among pregnant women in both the intervention and control groups. The t-test yielded a highly significant t-value of 56.491 with a p-value less than 0.05 ( $P < 0.05$ ). This implied a substantial difference in the post intervention knowledge of anaemia between pregnant women in the experimental and control group, and the mean difference of 9.87 underscored a significant increase in knowledge following the intervention. Hence, the null hypothesis was rejected. Therefore,

there was significant difference in the post intervention knowledge of anaemia between pregnant women in the experimental and control groups

Overall, the findings suggested that the intervention had a significant impact in increasing knowledge on anaemia among pregnant women. The observed difference in post-intervention knowledge scores indicated the effectiveness of the intervention, underscored its potential in enhancing awareness and knowledge among the targeted population. This study revealed that there is a significant difference in the post intervention of the experimental and control group on the knowledge of anaemia ( $P = 0.000$ )

**Table 5: t-test of difference between knowledge of anaemia among pregnant women in the intervention and control group**

Group	N	Mean	SD	Df	t <sub>cal</sub>	P	Mean Difference
Control	117	6.09	1.36	239	56.491*	0.000	9.87
Experimental	124	15.95	1.35				

\* $P < 0.05$

**Ho2:** There is no significant difference in the pre and post intervention knowledge of risk factors of anaemia between pregnant women in the experimental and control group

Table 6 illustrated the outcomes of a t-test analysis examining the difference in post-intervention knowledge of risk factors of anaemia among pregnant women in the experimental and control groups. The calculated t-value (t-cal) is remarkably high at 55.280, indicating a significant difference in post-intervention knowledge between the experimental and control group. The associated p-value is reported as 0.000, denoting statistical significance at  $P < 0.05$ . The mean difference in knowledge scores between

the control and experimental groups is reported as 11.57 in favor of the experimental group. Hence, the null hypothesis was rejected. Therefore, there was a significant difference in the post intervention knowledge of risk factors of anaemia between pregnant women in the experimental and control group. Overall, these findings suggested that the interventions have significant impact on increasing knowledge about anaemia's risk factors among pregnant women in the study. This study revealed that there is a significant difference in the pre and post intervention of the control and experimental group on the knowledge of risk factors (0.000).

**Table 6: t-test of difference in knowledge of risk factors of anaemia among pregnant women in the experimental and control group**

Group	N	Mean	SD	Df	t <sub>cal</sub>	P	Mean Difference
Control	117	9.12	1.75	239	55.280*	0.000	11.57
Experimental	124	20.69	1.49				

\* $P < 0.05$

### Discussion of Findings

This research assessed the effect of midwife-led educational interventions on knowledge of anaemia and risk factors in pregnancy at selected primary health care (PHC) facilities in Osun-state. The socio-demographic characteristics in both the experimental and control groups exhibited similarities, providing a basis for comparative analysis in interpreting potential differences in study outcomes.

This study observed that there is a significant difference in the pre and post intervention of the experimental group on the knowledge analysis of anaemia and there is no significant difference in the pre and post intervention of the control group on the knowledge analysis of anaemia. This aligned with the results of Esmat and Hussein (2018) who found that a health education program led to considerable improvements in knowledge and practices related to dietary habits. This study also aligns with Asediran et al. (2021) who investigated the knowledge and practices of pregnant women in South-West Nigeria regarding the prevention of anaemia which revealed inadequate knowledge despite regular clinic visits, until after intervention. This study support the findings of Yesufu et al. (2019) in Lagos who observed a gap between awareness and understanding of anaemia between the the pre and post intervention on the knowledge analysis of anaemia among their respondents (56.5%: 95%).

This study revealed that there is a significant difference in the pre and post intervention of the experimental group on the knowledge of risk factors and there is no significant

difference in the pre and post intervention of the control group on the knowledge analysis of anaemia. This study is in alignment with Bhandari et al. (2018) studied women in Nepal, noted a relationship between incorrect food consumption patterns and anaemia risk among the experimental group's intervention to address dietary factors

This study revealed that there is a significant difference in the post intervention of the experimental and control group on the knowledge ofT anaemia The current findings are consistent with the literature Smith et al., (2019) and Xu et al., (2016), emphasizing the effectiveness of health education programs in improving knowledge levels, particularly in populations at risk for anaemia. This study is not in agreement with Dwumfour-Asare and Kwapong (2019) who noted a high level knowledge about anaemia, among participants in both experimental and control groups baseline survey in Ghana.

This study revealed that there is a significant difference in the pre and post intervention of the control and experimental group on the knowledge of risk factors (0.000). This study is consistent with Balasubranian et al. (2019) conducted a cross-sectional study in Kano, showing the relationship between the pre and post intervention on knowledge of factors on anaemia.

In summary, the literature supported the notion that awareness alone does not guarantee a deep understanding of anaemia and its risk factors. The experimental group's substantial improvement post-intervention is consistent with the literature, emphasizing the effectiveness of targeted interventions in

enhancing knowledge. Education, socio-economic factors, and cultural beliefs emerge as key considerations in addressing anaemia awareness and prevention, providing valuable insights for future interventions.

### Conclusion

The comprehensive examination of the findings of this study established the conclusion that the midwife-led intervention enhanced participant's knowledge on anaemia and its risk factors in all selected PHCs facilities in Osun State. The study revealed a significant improvement in knowledge scores among participants in the experimental group post-intervention, showcasing high mean knowledge scores and a substantial percentage increase compared to the control group. Statistical analyses, particularly t-test results, further reinforced the intervention's effectiveness, indicating highly significant differences in post-intervention knowledge scores and knowledge of risk factors between the experimental and control groups.

### Recommendations

It is recommended that educational training module and Information Education Communication (IEC) materials be adopted by the midwives as an evidence based care approach to facilitate long term learning and behavioral changes towards knowledge of anaemia and risk factors among pregnant women. This should be delivered periodically in all PHCs across Nigeria towards reduction of maternal morbidity and mortality rate. The followings should also be considered towards its effectiveness.

Health professionals, including midwives and nutritionists, should collaborate to integrate personalized nutrition counselling into antenatal care services. This recommendation aims to address the diverse dietary needs of pregnant women, emphasizing the importance of a balanced diet rich in iron and other essential nutrients. Implementation falls under

the purview of healthcare facilities and nutrition experts.

Community health workers, under the supervision of midwives, should be incorporated into the dissemination of anaemia prevention information within communities. Training programs and resource allocation for community health workers fall under the responsibility of health departments and non-governmental organizations.

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