



# International Journal of Advance Research in Community Health Nursing

E-ISSN: 2664-1666

P-ISSN: 2664-1658

[www.communitynursing.net](http://www.communitynursing.net)

IJARCN 2024; 6(1): 100-106

Received: 09-01-2024

Accepted: 27-02-2024

Published: 5 -4-2024

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## Assessment of knowledge, attitude and practice among pregnant women regarding anemia at primary health care centers in AL-Suwaira city

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DOI: <https://doi.org/10.33545/26641658.2024.v6.i1b.172>

### Abstract

**Background and Objectives:** Anemia during pregnancy remains an important problem in the world because it is one of the leading causes of maternal death. The aim of this research was to assess the level of knowledge, attitude, and practice among pregnant women regarding anemia at primary health care centers and to find out the association between sociodemographic characteristics of pregnant women and their level of knowledge, attitude, and practice.

**Methods:** A cross-sectional study included 300 pregnant women. The research was conducted at the three primary health care centres in Wasit, Iraq, in the primary health care sector / AL-Suwaira, 100 participants were chosen from each of the primary health care centres using a simple random sampling technique.

**Results:** The mean age of respondents were  $26.48 \pm 5.973$  years of age. The participants' answers to knowledge questions revealed that the most correct answers had the highest percentage (82.0%) for the question that says regular medical check-ups are essential during pregnancy. Responses to the attitude statements showed that a high percentage of respondents agreed that pregnant women should have regular medical exams throughout their pregnancy (75.3). Regarding the participants' responses to practice questions, the majority of positive responses (76.7%) were to the question do you eat legumes (Chickpeas, lentils, and beans). A highly statistically significant association between knowledge, attitude, and practice with socio-demographic characteristics of pregnant women ( $p$  value  $< 0.05$ ).

**Conclusion:** Most of the respondent's responses were correct about knowledge. According to the mean score, all the items were affected. Most of the participant's answers in relation to attitude were agree, and the items were moderately affected and not affected. Regarding practice, half of the responses of participants were positive, and all the items were affected. There is a significant association between knowledge, attitude, and practice and the sociodemographic characteristics of pregnant women.

**Keywords:** Anemia, knowledge, attitude, practice, pregnant women

### Introduction

Anaemia is a major public health problem throughout the world. Roughly one-third of the world's population suffers from anemia, a condition in which hemoglobin (Hb) concentration and/or red blood cell (RBC) levels are below normal and insufficient to support an individual's physiological needs [1]. A common problem with general health, anemia in pregnancy (AIP) affects close to half of all pregnant women globally. Additionally, it is a typical pregnancy issue in which any increase in red cell mass is not equivalent to an increase in plasma volume due in part to physiologic adaptation [2]. The main factor contributing to sickness, death, and poor birth outcomes around the world is anemia during pregnancy. Anemia is substantially beyond the target of the fifth Millennium Development Goal, even with control programs [3]. Dietary iron deficiency is the primary cause of anemia, with research indicating that it may be responsible for up to 90% of maternal anemia cases. On the other hand, other aspects such as having been infected with HIV, worms infestation, and genetic defects can play a role in the illness's progression [4]. The main causes of the high incidence of anaemia in pregnancy include inadequate eating habits, a lack of information about the threats, and a lack of adherence to iron prescription. Anemia harmed a total of 56 million pregnant women internationally, or 41.8% of the overall population [5]. The World Health Organisation (WHO) reports that there are 1.62 billion individuals nationwide who

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are anemic, representing an estimated incidence of 24.8% of the world's people (95% confidence interval: 22.9-26.7%)<sup>[6]</sup>, and a 51% anemia rate was predicted for pregnant women<sup>[7]</sup>. Sub-Saharan Africa is the most afflicted region, with an estimated frequency of 57% among pregnant women. This number correlates to approximately 17.2 million affected women, which has major implications not only for human health but also for the social and economic development of the region. It is estimated that in highly developed countries, 38 percent of pregnant women have iron depletion. Iron deficiency is the most prevalent cause of anemia around the world. It is responsible for roughly half of all episodes of anemia that occur during pregnancy<sup>[8]</sup>. According to estimates, anemia is thought to be responsible for 7.26% of deaths in Asia. The frequency was 57.1% in Africa, 48.2% in South East Asia, 2.1% in Europe, and 30.7% and 41.8%, respectively in the Western Pacific. 30.5% of pregnant women in Iraq had anemia, according to studies<sup>[9]</sup>.

Anemia during pregnancy is linked to dangers such as preterm birth, prenatal mortality, low birth weight, and impaired mental development in children. Both the mother and the fetus need iron during pregnancy for the creation of blood, which raises the requirement for iron above that of non-pregnant women. Therefore, it's crucial for pregnant women to understand anemia and exercise healthy nutritional habits that will help them achieve and maintain normal hemoglobin levels during their pregnancy<sup>[10]</sup>. Anemia is a serious health hazard and a silent epidemic. Pregnant women can afford and easily adhere to preventive and therapeutic measures<sup>[11]</sup>. Significant anemia in pregnancy is classified into three severity levels: Mild anemia (Hb level, 9 -10.9 g/dl), Moderate anemia (Hb level, 7-8.9 g/dl), and Severe anemia (Hb level 7-4.5 g/dl). Significant anemia is defined as an Hb level of <11 g/dl in the first trimester or <10 g/dl in both the second and third trimesters<sup>[12]</sup>. Healthcare workers must take anemia in pregnant women seriously, even when sufficient iron treatment is readily available at all healthcare facilities, particularly at the primary care level, because of possible health consequences for both mothers and newborns. Due to their increased susceptibility, pregnant women should be provided with additional attention, and as a component of a health promotion plan, healthcare practitioners should prioritize educating pregnant women about the need of adopting healthy long-term eating habits<sup>[13]</sup>. Pregnant women possess a very limited amount of information on anemia, and this deficiency in understanding might result in severe complications related to pregnancy. Hence, educational programs focusing on nutrition and lifestyle might effectively reduce the occurrence of anemia in pregnant women by enhancing their understanding of this issue<sup>[14]</sup>.

Pregnant women in many underdeveloped nations have a wide range of knowledge and practices about the prevention of anemia, depending on their level of education<sup>[15]</sup>. If pregnant women are well-informed about anaemia prevention, their attitudes towards it will be more positive. On the contrary, recent research shows that pregnant women, regardless of their degree of education, have quite different knowledge of and practices for preventing anaemia<sup>[2]</sup>. The study aimed to assess pregnant women's knowledge, attitudes, and practices regarding anaemia in primary

healthcare centres and investigate any correlations between sociodemographic characteristics of pregnant women and their levels of knowledge, attitudes, and practices.

## Methods

### Data collection and Study population

A cross-sectional study included 300 pregnant women aged 16-40. In Wasit, Iraq, three primary health care centres (PHCCs) in the primary health care AL-Suwaira sector were studied. From the primary health care sector (AL-Suwaira), three PHCCs (Al-Razi, Al-Zahraa, and Al-Suwaira PHCCs) were chosen, and 100 participants were then chosen from each of the PHCCs using a simple random sampling technique. A researcher used a direct interview sheet to gather the data over the course of five months, from January 2023 to May 2023, from each pregnant woman participant.

### Research Tools

A questionnaire used to assess level of knowledge, attitude, and practice among pregnant women regarding anaemia. A questionnaire format was used for data collection which consisted of three major parts; the first part is concerned with socio-demographic characteristics of (age, residence, educational level, occupational status, economic status, gestational week, No. of children, abortion, family size, and sources of information. The second part is concerned with knowledge of pregnant women regarding anaemia (24) items. Third part is concerned attitude of pregnant women regarding anaemia (17) items. Fourth part is concerned practice of pregnant women regarding anaemia (18) items.

### Ethical Considerations

The Wasit Health Directorate and the primary health care sector/AL-Suwaira provided their ethical approval. In addition, each respondent was verbally asked if they would be willing to participate in the study before any information from study participants was collected. It was made clear that participants had the right to decline or end the interview.

### Statistical Analysis

The statistical package (SPSS) version (26) was used to examine and evaluate the study's findings using the following data analysis techniques: Tables were used to display the frequencies and percentages for categorical variables. Continuous variables were shown as means and  $\pm$ SD. For comparing categorical variables, a Chi-square test was performed. Statistical significance was defined as a P-value less than 0.05. For knowledge and practice, the mean score ranged from (1 to 3), with affected ( $\leq$  1) and not affected ( $>$ 1) scores, whereas for attitude, the mean score ranged from not affected (1-1.66) to moderately affected (1.67-2.33) to affected (2.34-3).

### Results

Out of (300) pregnant women, The demographic characteristics revealed that 96 (32.0%) of the respondents were among the ages of 20-25, with a mean age of  $26.48 \pm 5.973$  years, 230 (76.7%) of them were residence in urban, 77 (25.7%) of them were secondary education of educational level, 148 (49.3%) of them were housewife of occupational status, 165 (55.0%) of them were medium of economic status, 126 (42.0%) of them were second trimester of gestational week, 134 (44.7%) of them were have No. of children 1-2, 187 (62.3%) of them was answer no about

abortion, 171 (57.0%) of them were family size (<5), and 129 (43.0%) of them were sources of information from primary health centers (Table 1).

Results of participants' answers to knowledge questions revealed that the most correct answers had the highest percentage (82.0%) was to the question that says regular medical check-ups are essential during pregnancy, followed by (74.7%) and (74.3%) toward the question about pale face or tongue is a sign of anaemia and pregnant women can avoid anemia by consuming an iron-rich diet respectively. The highest proportion of incorrect answers (62.3%) was recorded when the participants were asked about anemia may result from a worm infection, followed by (56.7%) toward anaemia is defined as hemoglobin (HB) levels in the blood that are less than 11 gL<sup>-1</sup>. All the participants' responses according to mean score were affected (Table 2). Responses to the attitude statements showed that the high percentage of agree recorded for question pregnant women should have regular medical exams throughout their pregnancy, pregnant women who have anemia feel too exhausted to work, and it's essential for anemia pregnant women to take daily iron pills were (75.3%), (72.7%) and (71.7%) respectively. The highest proportion of not sure

answers (42.0%) was recorded when the participants were asked iron pills will not make the baby in the womb grow in size, followed by (38.3%) toward all pregnant women will have anaemia. Regarding to disagree responses (48.3%) and (43.3%) were to the question that says It might be hard to prepare foods that are high in iron content and anaemia is difficult to treat respectively. According to mean score, most of the participants' responses were not affected (Table 3).

Regarding the participants' responses about practice questions showed that the majority of positive responses (76.7%) and (71.7%) were to the questions do you eat legumes (chickpeas, lentils, and beans) and do you vomit in early pregnancy respectively. The highest proportion of negative answers were (67.7%) for both do you consume pica during pregnant, such as ice, mud, or charcoal and do you take iron pills before eating. All the participants' responses according to mean score were affected (Table 4). Findings of the table 5, show that there is a highly statistically significant association between knowledge, attitude and practice with socio-demographic characteristics of pregnant women about anaemia at (p value < 0.05).

**Table 1:** Distribution Socio-Demographic characteristics of pregnant women (n=300)

Age	Frequency	Percentage (%)	Gestational week	Frequency	Percentage (%)
15-20	48	16.0	First trimester	85	28.3
20-25	96	32.0	Second Trimester	126	42.0
26-30	83	27.7	Third Trimester	89	29.7
35 - 31	47	15.7	No. of Children		
≥ 36	26	8.7	0	82	27.3
Mean ± SD	26.48 ± 5.973		2 - 1	134	44.7
Residence			≥ 3	84	28.0
Urban	230	76.7	Abortion		
Rural	70	23.3	Yes	113	37.7
Educational level			No	187	62.3
No read and write	48	16.0	Family Size		
Read and write	44	14.7	5 >	171	57.0
Primary education	68	22.7	10 - 5	102	34.0
Secondary education	77	25.7	> 10	27	9.0
College and above	63	21.0	Sources of information		
Occupational status			Internet	77	25.7
Housewife	148	49.3	Television	18	6.0
Government Employee	67	22.3	Friends	19	6.3
Self- employed	37	12.3	Family	57	19.0
Student	48	16.0	Primary health center	129	43.0
Economic status					
Good	108	36.0			
Medium	165	55.0			
Weak	27	9.0			

**Table 2:** Knowledge of pregnant women about anaemia (n=300)

Items	Correct		Incorrect		M.S	S.D	Assess.
	F	%	F	%			
Anaemia is a disorder that develops when there are not enough red blood cells in the body	200	66.7	100	33.3	1.33	0.472	Affected
Anaemia is defined as hemoglobin (HB) levels in the blood that are less than 11 gL <sup>-1</sup>	130	43.3	170	56.7	1.57	0.496	Affected
Pregnant women require more iron than non-pregnant women do	201	67.0	99	33.0	1.33	0.471	Affected
Anemia may result from a worm infection	113	37.7	187	62.3	1.62	0.485	Affected
Anaemia during pregnancy may result from inadequate dietary iron intake	189	63.0	111	37.0	1.37	0.484	Affected
One of the causes of anemia during pregnancy is a gap between pregnancies of less than two years	146	48.7	154	51.3	1.51	0.501	Affected
Pale face or tongue is a sign of anaemia	224	74.7	76	25.3	1.25	0.436	Affected

Anaemia makes you feel tired and weak	219	73.0	81	27.0	1.27	0.445	Affected
Anaemia pregnant women who are in danger of dying during or after pregnancy	138	46.0	162	54.0	1.54	0.499	Affected
Pregnant women with anemia will have babies with low birth weights (less than 2.5 kg)	143	47.7	157	52.3	1.52	0.500	Affected
Pregnant women can avoid anemia by consuming an iron-rich diet	223	74.3	77	25.7	1.26	0.438	Affected
A food that is high in iron is liver	154	51.3	146	48.7	1.49	0.501	Affected
Meat comes from animal sources and is a good source of iron	211	70.3	89	29.7	1.30	0.458	Affected
Vegetable sources that are high in iron include green leafy vegetables like spinach	219	73.0	81	27.0	1.27	0.445	Affected
Consuming citrus fruits like lemons with your main meal can help your body absorb iron	140	46.7	160	53.3	1.53	0.500	Affected
When consumed with a main meal, coffee and tea reduce the absorption of iron	182	60.7	118	39.3	1.39	0.489	Affected
To avoid anemia, pregnant women should take iron tablets daily	219	73.0	81	27.0	1.27	0.445	Affected
During pregnancy, the health facility provides free iron pills to pregnant women	186	62.0	114	38.0	1.38	0.486	Affected
Regular medical check-ups are essential during pregnancy	246	82.0	54	18.0	1.18	0.385	Affected
Anaemia is not caused by prolonged abstinence from red meat, fish, and poultry	135	45.0	165	55.0	1.55	0.498	Affected
Excessive consumption of tea can cause anemia	195	65.0	105	35.0	1.35	0.478	Affected
Anaemia does affect pregnancy outcome	202	67.3	98	32.7	1.33	0.470	Affected
Anaemia can affect fetal growth	190	63.3	110	36.7	1.37	0.483	Affected
Chronic diseases, such as high blood pressure and diabetes, can cause anemia	131	43.7	169	56.3	1.57	0.503	Affected

F = Frequency, % = Percentage, M.S = mean of score, S.D = standard deviation

**Table 3:** Attitude of pregnant women about anaemia (n=300)

Items	Agree		Not sure		Disagree		M.S	S.D	Assess.
	F	%	F	%	F	%			
Anaemia is a serious health problem	210	70.0	55	18.3	35	11.7	1.42	0.691	Not affected
All pregnant women will have anaemia	87	29.0	115	38.3	98	32.7	2.04	0.786	Moderately affected
Anaemia causes the pregnancy to be difficult	166	55.3	88	29.3	46	15.3	1.60	0.741	Not affected
Pregnant women who have anemia feel too exhausted to work	218	72.7	48	16.0	34	11.3	1.39	0.682	Not affected
Anaemia complicates the birthing process	147	49.0	97	32.3	56	18.7	1.70	0.766	Moderately affected
Treatment of anaemia during pregnancy is beneficial to the baby	189	63.0	71	23.7	40	13.3	1.50	0.720	Not affected
Preventing anaemia during pregnancy is impossible	88	29.3	103	34.3	109	36.3	2.07	0.809	Moderately affected
The time between pregnancies is crucial for preventing anemia	150	50.0	88	29.3	62	20.7	1.71	0.789	Moderately affected
Anaemia is difficult to treat	83	27.7	87	29.0	130	43.3	2.16	0.829	Moderately affected
It might be hard to prepare foods that are high in iron content	80	26.7	75	25.0	145	48.3	2.22	0.840	Moderately affected
Despite their low iron levels, it's crucial for pregnant women to consume whatever they want during their pregnancy	141	47.0	93	31.0	66	22.0	1.75	0.793	Moderately affected
Anaemia during pregnancy can be treated with a balanced diet and iron supplements	186	62.0	78	26.0	36	12.0	1.50	0.701	Not affected
It's essential for anemia pregnant women to take daily iron pills	215	71.7	49	16.3	36	12.0	1.40	0.694	Not affected
Iron pills will not make the baby in the womb grow in size	102	34.0	126	42.0	72	24.0	1.90	0.756	Moderately affected
Pregnant women should have regular medical exams throughout their pregnancy	226	75.3	35	11.7	39	13.0	1.38	0.705	Not affected
Even if they follow a balanced diet during pregnancy, pregnant women still need to take iron supplements	176	58.7	82	27.3	42	14.0	1.55	0.727	Not affected
It is possible I will have anemia	207	69.0	56	18.7	37	12.3	1.43	0.703	Not affected

F = Frequency, % = Percentage, M.S = mean of score, S.D = standard deviation



**Table 4:** Practice of pregnant women about anaemia (n=300)

Items	Positive		Negative		M.S	S.D	Assess.
	F	%	F	%			
Have you changed your normal dietary patterns during pregnancy?	208	69.3	92	30.7	1.31	0.462	Affected
Are you a vegetarian during pregnancy?	114	38.0	186	62.0	1.62	0.486	Affected
Do you vomit in early pregnancy?	215	71.7	85	28.3	1.28	0.451	Affected
Do you consume pica during pregnant, such as ice, mud, or charcoal?	97	32.3	203	67.7	1.68	0.469	Affected
Do you consume poultry, fish, and meat daily during pregnancy?	175	58.3	125	41.7	1.42	0.494	Affected
Do you consume citrus fruits or fruit juice with your main meal daily while pregnant?	198	66.0	102	34.0	1.34	0.475	Affected
Do you eat a daily diet that includes green leafy vegetables while you are pregnant?	203	67.7	97	32.3	1.32	0.469	Affected
Do you have coffee or tea with your major meals when pregnant?	114	38.0	186	62.0	1.62	0.486	Affected
Do you skip meals during pregnancy?	146	48.7	154	51.3	1.51	0.501	Affected
Are you consuming daily iron pills prior to entering a health clinic?	127	42.3	173	57.7	1.58	0.495	Affected
Do you use any supplements or traditional medications while pregnant?	197	65.7	103	34.3	1.34	0.476	Affected
Do you take iron pills with orange juice?	117	39.0	183	61.0	1.61	0.489	Affected
Do you take iron pills with milk or with its derivatives?	115	38.3	185	61.7	1.62	0.487	Affected
Do you eat breakfast daily?	202	67.3	98	32.7	1.33	0.470	Affected
Do you take iron pills before eating?	97	32.3	203	67.7	1.68	0.469	Affected
Do you take iron pills after eating?	179	59.7	121	40.3	1.40	0.491	Affected
Do you eat legumes (chickpeas, lentils, and beans)?	230	76.7	70	23.3	1.23	0.424	Affected
Have had hemoglobin levels checked in the past?	143	47.7	157	52.3	1.52	0.500	Affected

F = Frequency, % = Percentage, M.S = mean of score, S.D = standard deviation

**Table 5:** Association between knowledge, attitude and practice with socio-demographic characteristics of pregnant women (n=300)

Characteristics	Knowledge score		Attitude score		Practice score	
	X <sup>2</sup>	Sig.	X <sup>2</sup>	Sig.	X <sup>2</sup>	Sig.
Age	0.000	HS	0.000	HS	0.000	HS
Educational level	0.000	HS	0.000	HS	0.03	S
Occupational status	0.002	S	0.07	NS	0.002	S
Residence	0.01	S	0.000	HS	0.02	S
Gestational week	0.000	HS	0.000	HS	0.003	S
No. of Children	0.001	S	0.01	S	0.28	NS
Abortion	0.009	S	0.06	NS	0.04	S
Economic status	0.005	S	0.000	HS	0.002	S

Sig. = Significance, X<sup>2</sup>= Chi-square value, S= Significance, HS= Highly Significance, NS=Non-Significance

**Discussion**

Anemia is believed to be a sign of nutritional deficiencies, which can contribute substantially to adverse birth and maternal obstetric outcomes [16]. In the present study, the highest proportion (32.0%) of the respondents were in the age group of 20-25 with a mean age of 26.48 ± 5.973 years, had secondary education (25.7%), while nearly half of the respondents (49.3%) were housewives with medium economic status. The findings of this study are similar to what was reported by Abdallah *et al.* [17], which revealed that (31.7%) among age group 20-24, while another study was inconsistent who done in Nigeria 2020 [8], indicated that most of the respondents were (33.3%) among age group 26-30, had tertiary education (53.3%), more than half of respondents were (53.9%) government employed, and had low economic status (43.3%). A difference in sociodemographic characteristics between countries, perhaps due to differences in customs and traditions in those countries.

In regard to the participants' responses to knowledge questions in our study, most of the response answers were correct. The highest percentage of participants response answers were correct for questions pale face or tongue is a sign of anaemia and regular medical check-ups are essential during pregnancy, (74.7%), (82.0%), respectively, while the highest proportion of respondent response answers were

incorrect for questions anemia may result from a worm infection and anaemia is defined as hemoglobin (HB) levels in the blood that are less than 11 gL-1, (62.3%), (56.7%) respectively. The findings of this study disagree with those of the study done by Ifeanachor *et al.* [10] who revealed that all respondents answered questions of knowledge correctly. In addition to that, They found that responders' knowledge about anemia was at a good level; the vast majority of participants responses were correct for questions about regular medical check-ups are essential during pregnancy and pregnant women can avoid anemia by consuming an iron-rich diet (97.0%), (94.1), respectively. The reason for the differences could be that they receive health education on specific issues in pregnancy related to anaemia during PHCC visits.

The current study indicated that the responses of participants about attitude were the highest percentage recorded for questions (75.3%), (72.7%), and (71.7%) indicate the respondents were aware that pregnant women should have regular medical exams throughout their pregnancy, pregnant women who have anemia feel too exhausted to work, and it's essential for anemia pregnant women to take daily iron pills, respectively. However, the questions that obtained a lower score were those in which the respondents agreed that It might be hard to prepare foods that are high in iron content, anaemia is difficult to treat, and all pregnant women will have anaemia, (26.7%),

(27.7%), and (29.0%) respectively. This result is in opposition to the report by Adznam *et al.* [18], they showed higher rates of respondents registered for questions anaemia is a serious health problem, treatment of anaemia during pregnancy is beneficial to the baby, and the anaemia during pregnancy can be treated with a balanced diet and iron supplements, (87.8%), (85.4%), and (85.4%) respectively, while the lower proportions of responses indicated for questions iron pills will not make the baby in the womb grow in size, it is possible I will have anemia and preventing anaemia during pregnancy is impossible (20.3%), (45.4%), and (48.6%) respectively. This may be because pregnant women find it harder to understand concepts linked to anemia attitudes, such as prevention and treatment, when their educational level declines.

On the other hand, this study has shown that a majority of respondents answered positively about the practices of pregnant women were (76.7%), do you eat legumes (chickpeas, lentils, and beans), and (71.7%), were answered vomit in early pregnancy; however, the majority of respondents answered negative were (67.7%) for both questions do you consume pica during pregnancy, such as ice, mud, or charcoal, and take iron pills before eating. Half of participants' answers were negative. These findings are consistent with those of Adediran *et al.* [2] which found that the majority of the participant's answers were negative. Another study that is in contrast with our results conducted in Malaysia 2018 [18], found the highest percentage of participant respondents answers positive were (97.6%) consuming poultry, fish, and meat daily during pregnancy and (91.4%) eating a daily diet that includes green leafy vegetables while you are pregnant, while, the majority of respondents answers negative were (26.8%) vomit in early pregnancy. The majority of respondent's answers were positive. The social and cultural disparities between the current study and earlier studies could be the cause of this discrepancy. Therefore, focus should be placed on educational programs and ongoing evaluation of their knowledge, attitude, and practices in order to increase the awareness of pregnant women and improve their practices to prevent anemia.

Moreover, the findings from this study show that there was a highly significant association between knowledge, attitude, and practice and sociodemographic characteristics of pregnant women ( $p$ -value < 0.05), which increased with (age, educational level, occupational status, gestational week, and economic status. This discovery coincides with the research performed by AlAbedi *et al.* [19], which found that the practices and knowledge of pregnant women about anemia have a significant relationship with sociodemographic characteristics ( $p$  value > 0.01). Another study by Minakshi *et al.* [20], also revealed a significant association between knowledge, attitude, and practice about anemia and the sociodemographic characteristics of pregnant women. There may be a similarity in the demographic characteristics of the study participants, and this indicates that the demographic characteristics have an impact on pregnant women in relation to anaemia.

### Conclusion

Our data demonstrate that most of the respondent's responses were correct about knowledge. According to the mean score, all the items were affected. Most of the participants answers in relation to attitude were agreeing, and according to the mean score, they were moderately affected and not affected. Regarding practice, half of the responses of participants were positive, and according to the

mean score, all the items were affected. There is a significant association between knowledge, attitude, and practice and the sociodemographic characteristics of pregnant women.

### Acknowledgements

The author would like to thank all staff in PHCCs and pregnant women for their cooperation in completing this work.

### Funding

Not applicable.

### Competing interests

The author declares that he has no competing interests.

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**How to Cite This Article**

Jawad AK. Assessment of knowledge, attitude and practice among pregnant women regarding anemia at primary health care centers in AL-Suwaira city. *International Journal of Advance Research in Community Health Nursing.* 2024;6(1):100-106.

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