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Prevalence and severity of anemia among pregnant: cross-sectional study

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Abstract

Anemia is considered a major public health problem; playing an important contributor to mortality and morbidity among pregnant women globally, especially in developing countries. This study was conducted to estimate the prevalence of anemia among pregnant women who attended antenatal care in Al-Samawa maternity hospital, Al Muthanna province during the period July / 1st/ 2018 to September/ 30th / 2018. A cross sectional study was conducted on 318 pregnant women attending the antenatal clinic in Al-Samawa maternity hospital. Data was collected using a questionnaire about socio-demographic characteristics and obstetric history. The prevalence of anemia among pregnant women was 58.2% of which 52.97% mild anemia. Anemia was more prevalent in pregnant women within age between 25-29 years and with a significant association with education level and income. However, the prevalence of anemia was not significant associated with obstetrical factor, trimester and gravidity, but significantly associated with birth spacing.

Keywords: Anemia; Al Muthanna; Pregnant women

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Introduction

Anemia during pregnancy is defined by the Centers of Disease Control and Prevention (CDC) and World Health Organization (WHO) as a hemoglobin concentration less than 11 g/dL. Also, anemia is considered as a condition in which the number and size of red blood cells, or the hemoglobin concentration, falls below an established cut-off value, as a result lead to impairment of the capacity of the blood to transport oxygen around the body [1]. Globally anemia affected 1.62 billion people, of these, 56 million anemia cases were found in pregnant women [2]. Also, anemia is estimated to contribute to more than 115000 maternal deaths and 591000 prenatal deaths globally per year [3]. Various studies confirmed that until recent time, anemia in pregnant women remains one of the most unresolved public health problems in developing countries because of various socio cultural problems like illiteracy, poverty, lack of awareness, cultural and religious taboos, poor dietary habits, and high prevalence of parasitic infestation, for instance, current estimates from (WHO) put prevalence of anemia at 41.8% among pregnant women, with

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the highest prevalence rate (61.3%) found among pregnant women in Africa and 52.5% among South East Asia. This report revealed that sub-Saharan Africa is the most affected region, with anemia prevalence among pregnant women estimated to be 17.2 million, which corresponds to approximately 30% of total global cases [4]. Estimates from (WHO) report showed that from 27% to 61% (40% on average) of pregnant women in the EMR countries are anemic [5]. Like other developing countries the magnitude of problem associated with anemia is unquestionably high in Iraq. Maternal mortality is the prime health indicator in any society. Therefore, health service in a country should lower the incidence of anemia to improve the health status of the community. It is fact that the availability of local information on the magnitude and associated factors has a major role in the management and control of anemia in pregnancy contributing to reduction in maternal morbidity and mortality. Despite the wider scope of the problem, unclear research data has been explored about severity of anemia at antenatal care (ANC) in this study area.

Patients and Method

A cross- sectional study was conducted among pregnant women who attended antenatal care in Al-Samawa maternity hospital, during the period July / 1st/ 2018 to September/ 30th / 2018. Face to face interview method and filling a designed questionnaire after taking permission & explanation.

The objectives of the study to the mother's the questionnaire sought information about sociodemographic characteristics that included age, educational level for women and monthly income. Data about obstetrical characteristics included gravidity, parity, and interpregnancy interval (defined as the time in months between the woman's last delivery and the date of the last menstrual period for the index pregnancy. Blood hemoglobin level was measured to assess severity of anemia. Severity of anemia is determined according to Alene & Dohe as the following: Mild (hemoglobin level between 10.0- 11 gm/dl), Moderate (hemoglobin level between 7.0- 9.9 gm/dl), sever (hemoglobin level less than 7 gm/dl) [6].

Data analysis was performed using SPSS software version 20. Descriptive statistics, including percentages, mean, and standard deviations, were calculated for all variables. Proportions were compared using Chi- square tests and P-value less than 0.05 was considered statistically significant. Mothers who had the following criteria were included: pregnant woman who were pregnant spontaneously and in 1^{st}, 2^{nd},3^{rd} trimester of pregnancy and those who accept to participate in the study.

Results

The highest percentage (34%) of the study sample aged between 25-29 years old, while the lowest percentage (0.2%) aged more than 40 years old. In the present study the prevalence of anemia during pregnancy was 58.2%, regarding severity of anemia the highest percentage

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52.97% of the study sample had mild anemia, followed by moderate anemia 45.94% while the lowest percentage 1.08% of the study sample had severe anemia, (Table1). The results also indicated that there was a highly statistically significant association between severity of anemia with education level ($p < 0.001$), also there was significant association with family income p-value (0.007) (Table 2). A significant association between severities of anemia with birth interval (pregnancy spacing) was found in the present study, while there was no significant association between severity of anemia with trimester and gravida (Table 3).

Table 1.
Prevalence and severity of anemia among study

Prevalence	F	%
anemic	185	58.2
Non anemic	133	41.8
total	318	100%
Severity of anemia		
mild	98	52.97
moderate	85	45.94
sever	2	1.08
total	185	100%

Table 2.
Sociodemographic characteristics of pregnant women and severity of anemia

Women characteristics		Normal	Mild anemia	Moderate anemia	Severe anemia	P value
Age group	15-19	9	8	5	0	0.13
	20-24	39	25	18	1	
	25-29	50	31	27	0	
	30-34	21	21	12	1	
	35-39	13	12	17	0	
	> 40	1	1	6	0	
Education level						
	Illiterate	46	57	49	2	0.001
	Primary	41	23	20	0	
	Secondary	22	10	13	0	
	University	24	8	3	0	
Income						
	low	83	74	71	2	0.007
	medium	49	24	14	0	
	High	1	0	0	0	

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Table 3.
The prevalence of anemia according to the obstetrics factors

Variables		Normal	Mild anemia	Moderate anemia	Severe anemia	P value
Trimester	1st	18	13	11	0	0.5
	2nd	54	29	26	1	
	3rd	61	56	48	1	
Gravida						
	1	41	19	14	1	0.1
	1-2	22	14	14	0	
	>3	70	65	57	1	
Birth interval (spacing)						
	short	32	48	49	0	0.001
	medium	82	39	31	2	
	long	19	11	5	0	

Discussion

According to WHO, prevalence of anemia that exceeds 40% in any population is an indicator of a public health problem. The result of the present study shows the prevalence of anemia among pregnant women 58.2%, According WHO classification it indicates a severe public health problem. The prevalence estimate of anemia in this study was higher to the overall prevalence of anemia among pregnant women in the world which was 38.2% and in South-East Asia and in Eastern Mediterranean which was 44.2% by WHO 2005 and in Iraq (33.5 %) in 2011[7-10]. this finding is higher to the overall prevalence found among pregnant women than other studies in the Middle East and North Africa, 26.2% in Bahraini, 27.1% in East Anatolian Province, Turkey, Jordan (34.7%) and (39%) in Makkah, Saudi Arabia and 40.08 % in Algeria [11-13]. Prevalence of anemia during pregnancy in the present study also was higher than the results of other studies done in in Nablus, Palestine was 21.7% in 2007 and in Americas 24.1%, in Europe was 25.1% this may explained by lower socioeconomic factor, but the result is lower than in eastern Sudan which was 62.6% in 2005,in rural population of Kolar district of India was 64% in 2015, in a Malaria Endemic Area in Benin was 68.3% in 2012, in an urban area of Pakistan was 90.5% in 2008 and this may be explained by high prevalence of malaria and other infectious diseases in these areas [14-15].

Regarding severity of anemia, in current study, 52.97% had mild anemia and 45.94% had moderate anemia and there was 1.08% had severe anemia which is comparable with that in Southeast Ethiopia in which 55%, 32.5%, 12.5 of study sample had mild, moderate and severe anemia respectively [16], Gedefaw *et al*, found in their study that 30.34% of the study sample had mild anemia, 60% had moderate anemia and 9.66% had severe anemia which was in contrast to results of the present study [17]. Naz & Begum found these rates regarding severity

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of anemia in their study: 23.18% mild anemia, 37.7% moderate anemia, 27.27% severe anemia and 11.8% very severe anemia [16] which contrasted with the results of the present study.

A study done by Morsy & Alhady, that conducted descriptive study among 400 pregnant women to determine the prevalence of anemia and the influence of some factors associated with anemia during pregnancy in Egypt, they mentioned that maternal age has strongly associated with anemia level and, the findings of Mahfouz *et al*. who found that the prevalence of anemia in Saudi women was highest among those who were less than 20 years old [18-19]. The results of the present study showed that there was a highly significant association of severity of anemia with education level and income (p-values 0.001 and 0.007 respectively) these results agreed with results of Aikawa *et al*, mentioned that there was a highly significant association of Hb levels with maternal education [20-21] Khapre *et al*, results agreed with results of the present study regarding education which indicated that there was a significant relation of severity of anemia with maternal education [22]. The prevalence of anemia in this study increased with increased trimester of pregnancy. This finding is consistent with the findings of Haniff *et al* [23], where most anemic cases were found to be in the second and third trimesters. This may be due to an increased demand for micronutrients during the last trimester. Bekele et al, conducted a cross-sectional study to assess the prevalence and factors associated with anemia among pregnant women attending antenatal care in health institutions of Arba Minch town, Gamo Gofa zone, Southern Ethiopia, who mentioned that birth spacing was independent predictors of anemia in pregnancy, which was agree to the results of present study [24] Also regarding Interpregnancy intervals (spacing), our results showed that there was significant association with anemia. This finding is in contradiction with that obtained by other authors [25] which showed no association between anemia and spacing of pregnancies.

Competing interests

The authors declare that they have no competing interests.

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