

Prevalence of Severe Anemia among Pregnant Females and Factors Associated With Anemia in Pregnancy

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ABSTRACT

Background: According to World health organization anemia is most common among females during pregnancy and child birth. Maternal and fetal morbidity and mortality is high due to anemia in pregnancy as it is a contributing factor in poor pregnancy outcome. It is the main cause of maternal death, almost 29% of women die due to anemia in pregnancy. Half of the maternal mortality causes are related to anemia in pregnancy either directly or indirectly. What so ever is the cause of anemia in pregnancy, its management is important for mother and child health. The consequences of anemia have serious health implications especially among pregnant females.

Methodology: The cross-sectional study was conducted to find prevalence of anemia during first, second and third trimester of pregnancy and factors related to cause of anemia. A total of 340 pregnant females of government and private hospitals of Lahore city during the period from February 2017 to August 2018 were included in study after sample size calculation through convenient sampling. Sociodemographic, economic status, education level, number of children born to females and gestational period were the factors that were studied among anemic pregnant females. Data analysis was done and frequencies of continuous variables and descriptive analysis for categorical variables were determined. Prevalence of anemia was determined by multinomial logistic regression.

Results: Our study showed females were with mean age 27.9 (\pm SD=5.4) and in age group 31-39 years (53.8%) were more anemic during pregnancy as compared to females <30 years of age. Most of the females (67.1%) were housewives and had primary level of education (49.1%). Among these females (30%) were with mild anemia, (53.5%) were with moderate anemia and (16.5%) were with severe anemia. The mean hemoglobin level was 9.8g/dl (SD= \pm 1.6). Among pregnant females 152(45%) were anemic during third trimester of pregnancy. Result showed 167(48.8%) females were anemic having children > 3. Sociodemographic factors, education level, number of children born to female, economic status all were significantly associated with moderate anemia during pregnancy ($p=0.00$).

Conclusion: Our study showed that although the prevalence of anemia is more among pregnant females but the severe anemia was less. So, it is a preventable health problem which can be controlled by different public health approaches to reduce the burden of disease on the health system. The strategies to control anemia in reproductive age women is important to prevent it among pregnant women. The early diagnosis and immediate correction of anemia is important to reduce the complications of pregnancy and its poor outcome. Early identification of factors is significantly important in managing the problem.

Keywords: anemia, pregnancy, prevalence of anemia, gestational period.

INTRODUCTION

Public health fundamental nutritional problems are arising from mother and child health. The most important among them is anemia among females and children. About 1.2 billion people are effected with anemia in developed and developing countries.(1) Nutritional deficiencies in children leads to iron deficiency anemia. As children and young are forming major bulk of population so problems prevailing among them are influencing health system. When the female children are entering into reproductive age group, they are at increased risk of iron deficiency anemia. Health of female is important as females have to bear children in their life. Health of mother effects the health of upcoming children, as healthy female grows healthy children.

According to World health organization anemia is most common among females during pregnancy and child birth. Maternal and fetal morbidity and mortality is high due to anemia in pregnancy as it is a contributing factor in poor pregnancy outcome.(2) It is the main cause of maternal death, almost 29% of women die due to anemia in pregnancy. Half of the maternal mortality causes are related to anemia in pregnancy either directly or indirectly.(3)

A women is said to be anemic when hemoglobin concentration falls below 11g/dl and severe when Hb is <9 g/dl.(4) the diagnosis of anemia can be made by laboratory investigation of CBC and serum ferritin level during first trimester of pregnancy.(5) Anemia during pregnancy is caused by nutritional deficiencies most specifically due to iron deficiency. But other causes like hemoglobinopathies must be ruled out for differential diagnosis and management.(6) Causes of nutritional anemia other than iron deficiency include deficiency of folic acid, vitamin C, copper, and

vitamins B2 and B12. Genetically determined haemoglobinopathies such as thalassemia are other causes of anemia in some people. As the fetal demand is increased during last trimester of pregnancy so it results in physiological anemia.(7) What so ever is the cause of anemia in pregnancy, its management is important for mother and child health. The consequences of anemia have serious health implications specially among pregnant females.(8)

A study in America shows increase in prevalence of moderate-severe anemia in pregnancy in one decade is 1% to 1.9%.(9) Prevalence of moderate anemia was found to be 9.8% in Saudi Arabia as it is associated with age of women, socioeconomic factors and family size.(10) In Bangladesh the prevalence of anemia was found more in government hospitals as compare to private hospital due to difference in socioeconomic status of pregnant females.(11) in Pakistan a study conducted in Lahore showed 57.1% pregnant women visiting hospital were anemic.(12) Similarly the prevalence of anemia in pregnant and lactating women is at a level which is high enough to cause considerable concern.

METHODOLOGY

The cross-sectional study was conducted to find prevalence of anemia during first, second and third trimester of pregnancy and factors related to cause of anemia. The study was conducted in government and private hospitals of Lahore city during the period from February 2017 to August 2018. The sample size was calculated using the WHO sample size calculator. The values of confidence level, anticipated population proportion and acceptable difference were 95%, 67% and 5% respectively, a sample size of

340 was calculated. Convenient sampling technique was used. Age of female, education, economic status (self-reported), income per month were considered as sociodemographic factors. Numbers of children born, parity, gravidarum, mode of previous delivery, history of iron supplements, any chronic or underlying disease were asked from each female. Hemoglobin level was determined by laboratory through complete blood count. Hemoglobin level was divided into three categories: 10–10.9 g/dl mild anemia, 7–9.9 g/dl moderate anemia and < 7g/dl severe anemia. Pregnancy was considered as first trimester from 0-12 weeks, second trimester 13-24 weeks and third trimester as >24 weeks of gestation.

The statistical analysis was done on SPSS 26. Descriptive analysis was done for continuous variables described as mean and standard deviation. Frequencies of categorical variables were presented in percentages. The prevalence was shown by odds ratio between first, second and third trimester of pregnancy with mild, moderate and severe anemia. Logistic regression analysis was done with $p < 0.05$ as level of significance.

RESULTS

Our study showed females were with mean age 27.9 (\pm SD=5.4) and in age group 31-39 years (53.8%) were more anemic during pregnancy as compared to females <30 years of age. The characteristics of pregnant females are shown in table 1. Most of the females (67.1%) were housewives and had primary level of education (49.1%). Among these females (30%) were with mild anemia, (53.5%) were with moderate anemia and (16.5%) were with severe anemia. The mean hemoglobin level was 9.8g/dl ($SD = \pm 1.6$). Among pregnant females 152(45%) were anemic during third trimester of pregnancy. Factors related to anemia during pregnancy are given in table 2. Result showed 167(48.8%) females were anemic having children > 3. Sociodemographic factors, education level, number of children born to female, economic status all were significantly associated with moderate anemia during pregnancy ($p = 0.00$).

Regression analysis of factors related to the cause of anemia showed that the odds of mild anemia in first trimester is 1.22 times greater than odds of severe anemia in third trimester of pregnancy. The odds of moderate anemia were 1.896 times greater than odds of severe anemia in third trimester. The odds of anemia without iron intake were 2.33 times more in causing anemia than iron intake.

Table 1: Sociodemographic characteristics of pregnant females

Variables	Frequency (N=340)	Percentage
Age		
20-30	112	32.9
31-39	140	58.3
40-49	88	25.9
Education		
Illiterate	95	27.9
Primary	167	49.1
Secondary	42	12.4
Masters	36	10.6
Occupation		
House wife	228	67.1
Business	35	10.3
Field worker	47	13.8
employee	30	8.82
Economic status		
Low	134	39.4
middle	182	53.5
high	24	7.06

Table 2: Frequency of factors related to anemia in pregnancy

Variables	Anemia n(%)
Trimester of pregnancy	
First	76 (21.9)
Second	112 (33.1)
Third	152(45)
Economic status	

Low	134(39.1)
Middle	182(53.8)
high	24(7.1)
Gravidity	
<3	80(23.1)
3-6	164(48.5)
>6	96(28.4)
Level of education	
Illiterate	95(27.2)
Primary	167(49.7)
Secondary	42(12.4)
Masters	36(10.7)
Iron supplements	
Yes	144(51.4)
no	196(42.6)

DISCUSSION

This study was conducted to determine the prevalence of anemia in developing country of Pakistan. It shows the current situation of highly prevailing cause of poor health status of pregnant females and also gives information of conditions leading to it. It also brings to attention the factors related to the cause of anemia. The high prevalence of anemia among pregnant female was observed in various studies along with leading causes among them with its fetal outcomes. (13) Anemia in pregnancy is the greater public health problem as it is increasing the burden of disease in health system. There are certain studies that showed prevalence of moderate anemia was high among pregnant females. (11) In our study prevalence of severe anemia is less but it is prevailing in females which indicate that whatever is the level of anemia it is affecting pregnant females. Those females who are taking iron supplementation they have developed less anemia as compare to females with no intake of iron supplementations. So, females with no iron supplementations are at more risk of developing anemia as compare to females who are taking iron supplementations.(14)

Iron deficiency is the major cause of anemia in pregnancy, it was identified by determine various factors that may lead to anemia in pregnancy. Other factors that were may also be due to increase fetal consumption, dietary factors and parasitic infestations. More work is to be done to find out any abnormality in blood cells like haemoglobinopathy. (8) Anemia among females who were illiterate was more in our study. Prevalence of anemia can be decreased by awareness and health education at primary level. As anemia is a preventable condition so it can be controlled effectively with proper planning during antenatal care of women and also in reproductive age women. (15) Like change in dietary habits, food fortification with nutrients, providing iron supplementation, and public health awareness programs.(16) Adherence to the plan can lead to reduction in prevalence of anemia. (14) As we found that anemia is more due to iron deficiency so another study showed that intake of iron supplements is important to reduce the prevalence of anemia.(17) women of reproductive age group also those who are pregnant and lactating require more iron intake to prevent anemia in target population. All these strategies are beneficent for mother and child health. It has been determined that iron intake will significantly reduce the burden of disease among pregnant females. (7) The anemia in children can be controlled by proper breastfeeding among newborns. (15) In Pakistan, food fortification can reduce and control iron deficiency anemia. Further, strategies at the community level are very important for prevention and control of preventable problem of anemia among pregnant females. Community reach health care provider can play their role in health education of reproductive age women for control of all risk factors including sociodemographic, family size, health education and antenatal care.

CONCLUSION

Our study showed that although the prevalence of anemia is more among pregnant females but the severe anemia was less. So, it is

a preventable health problem which can be controlled by different public health approaches to reduce the burden of disease on the health system. The strategies to control anemia in reproductive age women is important to prevent it among pregnant women. The early diagnosis and immediate correction of anemia is important to reduce the complications of pregnancy and its poor outcome. Early identification of factors is significantly important in managing the problem.

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