

Anaemia among pregnant women: A review of African pregnant teenagers.

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Abstract

In pregnancy, anaemia is when haemoglobin concentration is less than 11 g/dL in the first and the third trimester or a haemoglobin concentration of less than 10.5 g/dL in the second trimester. Globally, anaemia is public health problem since ancient years. During pregnancy, eradication of anaemia is a key component of safe motherhood. Prevalence of anaemia among pregnant teenagers is high. Microcytic anaemia remains the most common morphological type affecting pregnant teenagers. No formal education and poor antenatal care attendance are associated with an increased risk of anaemia among pregnant teenagers.

Keywords: Anaemia, Pregnancy, Pregnant teenagers, Women.

Introduction

In pregnancy, anaemia is defined as a haemoglobin concentration of less than 11 g/dL (haematocrit of less than 33%) in the first and the third trimester or a haemoglobin concentration of less than 10.5 g/dL (haematocrit less than 32%) in the second trimester [1-4].

Globally, anaemia is public health problem since ancient years as results of the analysis of a sample of skeletons from the 4,000 years old site of Khok Phanom Di on the coast of central Thailand identified some individuals with skeletal evidence suggestive of severe anaemia [5, 6]. People have been treating anaemia for thousands of years, too. Perhaps most notably, Hippocrates (c.460BC to c.370BC), the Father of Western Medicine, is said to have regularly used supplemental iron to cure the diseases [7].

During pregnancy, the World Health Organization suggests that eradication of anaemia is a key component of safe motherhood as its attributable to 6.37%, 7.26%, and 3.0% deaths for Africa, Asia, and Latin America, respectively [8]. Geographically, those living in Asia and Africa are at the greatest risk. Nevertheless, there is a large variation in the incidence of pregnancy anaemia due to changes in socio-economic conditions, lifestyles, and health-seeking behaviors of various individuals across different countries and cultures and obstetrics and gynaecological related situation of pregnant mothers [9].

Prevalence of anaemia in pregnant teenagers

In a [10] study about anaemia among teenage pregnancy in northwestern Malaysia, a prevalence of 53.1% among

pregnant teenagers was reported. Among African countries, a cross-sectional study conducted in Ethiopia among 443 pregnant teenagers found the prevalence of anaemia to be 11.1% [11]. While facility-based cross-sectional study among 384 pregnant women attending Najo General Hospital, Northwest Ethiopia found the overall anaemia prevalence among pregnant women was 37.8% with 24% having mild anaemia, 11% having moderate anaemia, and lastly, 2.3% had severe anaemia [12].

Among East African countries, a Tanzanian study found that anaemia prevalence among teenage pregnancy was 18.0% that is 2% of anemia in pregnant teenagers was severe requiring blood transfusions [13], while a cross-sectional study done in Bungoma South District, Western Kenya among 384 pregnant teenagers found the prevalence of anaemia to be 61% that is 20.5% had severe anaemia, (haemoglobin < 6 g/dL), 31.2% had moderate anaemia (haemoglobin < or = 9g/dL), and 48.3% had mild anaemia [14].

Classification of anaemia according to mean corpuscular volume

Mean Corpuscular Volume was first introduced by Wintrobe in 1929 (GREEN, 1950) and it is defined as a laboratory value that measures the average size and volume of a red blood cell [15]. Depending on Mean Corpuscular Volume, anemia can be classified as microcytic (MCV < 82 fL), normocytic (MCV = 82-98 fL) or macrocytic (MCV > 98 fL) [16]. However, the classification of anemia based on Mean Corpuscular Volume has been changing from one study to another.

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According to a descriptive study done among 120 pregnant teenagers in South Africa, when MCV < 80 fL anaemia was termed as microcytic and, when MCV = 80–100 fL anaemia was called normocytic, and finally anaemia when MCV >100 fL was termed as macrocytic [17]. A study done among 279 pregnant women in Cameroon classified anemia as microcytosis (MCV < 78 fL), and macrocytosis (MCV > 101 fL), and results showed that the distribution of red cell alterations was microcytosis (14.7%) and macrocytosis (1.1%) [18].

In a cross-sectional study done in Sudan among pregnant teenagers, termed anaemia as microcytic when MCV < 76 fL, when MCV = 76-96 fL anaemia was called normocytic and lastly when MCV > 96 fL anaemia was called macrocytic and results of the study showed that a total of 116 participants (58%) had a dimorphic pattern (microcytic and macrocytic), followed by 50 participants (25%) with a microcystic pattern, 20 participants (10%) with a macrocytic pattern and 14 participants (7%) with a normocytic pattern [19].

In Uganda, a cross-sectional study was carried out at Itojo hospital, Ntungamo district, among 163 pregnant women classified microcytic (MCV < 80 fL), normocytic (MCV = 80–100 fL), and macrocytic (MCV > 100 fL), and results showed that the morphological classification was 8.3% normocytic anaemia, 50% microcytic anaemia, and 41.7% macrocytic anaemia [20].

Factors associated with anaemia in pregnant teenagers

A hospital-based cross-sectional study done in Nepal found that educational levels lower than secondary level significantly increased the odds of being anaemic by 3 [21]. A study in Northern Tanzania found that education level was an independent predictor of anaemia among pregnant women [13]. A Ugandan study found that the primary level significantly reduced the risk of anaemia by 50% [22]. A study in Ethiopia found that family size was an independent predictor of anaemia among pregnant teenagers from families size more than five who were 7.74 times more likely to have anaemia as compared to those from family size less than five [23]. Another Ethiopian study showed that a family size of more than five significantly increased the likelihood of anaemia by 3.2 odds [11].

A study in Ethiopia found that income was an independent predictor of anaemia among pregnant teenagers having low income being six times more likely to have anaemia as compared to those having a high income [23]. A cross-sectional study conducted in Ethiopia found that earning an average monthly income of less than 500 Ethiopian birrs significantly increased the likelihood of being anaemic by 10 as compared to those who earned more than 1000 Ethiopian birr, and those who earned 501 Ethiopian birrs to 1000 Ethiopian birr were six times more likely to be anaemic as compared to who earned more than 1000 Ethiopian birr [11]. A facility-based cross-sectional study done in Ethiopia found that residence was significantly related to anaemia that is women from urban areas were two times more likely to be anaemic as compared to women from rural areas [12]. An Ethiopian study carried

out among 284 pregnant teenagers at St. Paul's Hospital Millennium Medical College found that not taking iron/folic acid supplements increased the odds of being anaemic by 4 as compared to taking iron/folic acid supplements [24]. Similarly, a study carried out in rural Uganda revealed iron/folic acid supplementation was a contributing factor to anaemia in pregnancy at 13.2% [25].

Whereas, a study done in Nepal indicated less than four antenatal visits increased the chances of being anaemic by 2 when compared to attending ANC more than four times. A study done in Malaysia among pregnant teenagers found that late ANC attendance significantly increased the risk of being anaemic by 16 in comparison to early ANC attendance [10]. Similarly, a study carried out in Ghana found that ANC visits were significantly related to anaemia among pregnant teenagers [26]. A hospital-based cross-sectional study done in Afghanistan found that parity was significantly associated with anaemia that is multipara women were 3 times more likely to be anaemic than primipara women [5]. Similarly, findings in a study in Ethiopia found that parity was an independent predictor of anaemia among pregnant teenagers that is multipara were 3 times more likely to have anaemia as compared to the primipara [23].

A study in Ethiopia found that gravidity was an independent predictor of anaemia among pregnant teenagers that is multigravida was 3 times more likely to have anaemia as compared to the primigravidae [23]. Another Ethiopian study indicated that anaemia risk increased by 11.37 among pregnant teenagers in third trimesters as compared to those in the first trimester [23]. Another study done in Ethiopia among 284 pregnant women at St. Paul's Hospital Millennium gestational age was significantly associated with anaemia that pregnant women in the second trimester were 6.72 times more likely to have anaemia as compared to those in the first trimester while those in the third trimester were 8.31 times more likely to have anaemia as compared to those in the first trimester [24].

A study in Ethiopia found that history of excess menstrual bleeding was an independent predictor of anaemia among pregnant teenagers that is women with a history of excess menstrual bleeding were ten times more likely to have anaemia as compared to those with no history of excess menstrual bleeding [23]. A facility-based cross-sectional study done in Ethiopia found that the history of abortion was significantly related to anaemia that is women with a lack of history of abortion are 53.1% less likely to be anaemic as compared to women with a history of abortion [12]. A facility-based cross-sectional study done in Ethiopia found that a history of anaemia was significantly related to anaemia that is women with the absence of a history of anaemia 77.3% less likely to be anaemic as compared to women with a history of anaemia [12].

In Ghana, it was shown that malaria is a significant factor associated with anaemia among pregnant teenagers [26]. A facility-based cross-sectional study done in Ethiopia found that malaria infection was significantly related to anaemia that is women without malaria infection were 80.5% less likely to

be anaemic as compared to women with malaria infection [12]. Intestinal parasitic infection was found to be an independent predictor of anaemia among pregnant teenage women since a study done in Ethiopia found that women with intestinal parasitic infection were 2.41 times more likely to have anaemia as compared to those with no intestinal parasitic infection [23]. Another study was done in Bungoma South District; Western Kenya among 384 pregnant teenagers found parasitic infestation was associated with anaemia [14]. These results make deworming a favorite intervention for the prevention of anaemia. As outcomes of a hospital-based cross-sectional study done in Nepal revealed undewormed pregnant women were three times more likely to be anaemia as compared to their counterparts [21]. While a cross-sectional study was done in Bungoma South District, Western Kenya among 384 pregnant teenagers showed that de-worming with correction of anaemia should be encouraged [14].

Conclusion

Prevalence of anaemia among pregnant teenagers is high. Microcytic anaemia remains the most common morphological type affecting pregnant teenagers. No formal education and poor antenatal care attendance are associated with an increased risk of anaemia among pregnant teenagers.

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