

ANAEMIA IN PREGNANCY;

A STUDY OF PREVALENCE AND RISK FACTORS IN ANTENATAL CARE ATTENDEES AT ABSH GUJRAT

Dr. Shabana Kalsoom, Dr. Shahida Hussain Tarar, Dr. Tahmina Naz

ABSTRACT... Background: Anaemia in pregnancy is an important public health problem especially in developing countries. It is a major cause of maternal morbidity and mortality, and also has a significant impact on health of foetus. The causative factors vary in different communities. **Objectives and Methods:** The purpose of study was to determine the prevalence and risk factors of anaemia among pregnant women receiving antenatal care at Aziz Bhatti Shaheed Hospital Gujrat. The attending doctor filled a Proforma at the first antenatal visit and blood sample was also drawn for complete blood counts. **Results:** Out of 560 women studied, 419 (74.8%) women were anaemic. Anaemia was more prevalent in multigravidae (77.6%) than in primigravidae (69.3%). Regarding severity 69.9% mild, 26.7% moderate and 3.3% cases were of severe anaemia respectively. The severity increased with increasing parity. The prevalence also increased with decreasing birth intervals ($p=0.001$) and late booking ($p=0.002$). Anaemia was more common among uneducated (78.6%) or those educated up to primary (72.7%). Intake of meat/chicken less than 2 times/week ($p=0.01$) and PICA ($p=0.005$) were also the risk factors for anaemia development in pregnancy. **Conclusions:** The prevalence of anaemia in antenatal care attendees of ABSH is very high. Frequent child birth with lack of birth spacing, late booking, low educational status and poor dietary habits are the major risk factors that need urgent attention of health care providers.

Key words: Anaemia, pregnant women, risk factors, prevalence.

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INTRODUCTION

Anaemia during pregnancy is a global problem affecting almost half of pregnant women. The WHO regions of Africa and South-East Asia have the highest risk¹. Anaemia prevalence during pregnancy differed from 18% in developed countries to 75% in South-Asia². The world health organization defines anaemia in pregnancy as haemoglobin concentration less than 11g/dl and a haematocrit below 33%³. It is further categorized according to severity into mild (9-10.9g/dl), moderate (7-8.9g/dl) and severe (<7g/dl) degree of anaemia. The complications increase with increasing severity.

Anaemia during pregnancy is associated with increased maternal morbidity and mortality. In India anaemia is directly or indirectly responsible for 40% of maternal deaths. There is 8-10 fold increase in maternal mortality rate when haemoglobin falls below 5g/dl⁴. Death from anaemia is the result of heart failure, shock or infection. Anaemic women do not tolerate the blood loss to same degree as healthy women⁵.

Maternal anaemia is associated with increased risk of adverse perinatal outcomes such as foetal anaemia, low birth weight; preterm birth and still-birth⁶⁻¹¹. Neonatal effects include low iron stores, poor cognitive development and low IQ.

The etiological factors for anaemia vary geographically. Nutritionally related iron deficiency is the main cause of anaemia throughout the world¹. Besides poor nutrition frequent child birth with close birth spacing, abortions, low educational status, late booking, poor socioeconomic status, parasitic infections and pica have been described as factors contributing to anaemia in pregnancy in various studies^{2,12,13,14}.

The management and control of anaemia in pregnancy can be enhanced by the availability of local prevalence statistics. This is the first study conducted in district Gujrat, aiming to determine the prevalence and various risk factors associated with maternal anaemia at the booking visit in Aziz Bhatti Shaheed teaching hospital.

The findings could be useful for the health policy makers, clinicians and other health care providers towards reducing the frequency of anaemia and its related complications.

MATERIALS AND METHODS

This was a descriptive study carried out at Aziz Bhatti Shaheed (DHQ) teaching Hospital Gujrat. It is a 322 bedded hospital established in 1963 and declared as teaching hospital in 2008 after establishment of Nawaz Sharif Medical College. It is the main referral hospital of district Gujrat which has a total population of 2.4 million.

A total of 560 patients who attended the antenatal clinic for booking from 1st Jan 2012 to July 31st 2012 were included in the study. Informed consent was obtained prior to commencement of interview. A detailed questionnaire was filled by the attending doctor during patient history taking. Gestational age was calculated from the date of last menstrual period and in patients who were unsure of dates symphysiofundal height or ultrasound scan was used for estimation of gestational age. Blood samples were taken for complete blood counts at the same visit. Patients with multiple pregnancies, those who were booked somewhere else and referred due to some complication or who refused investigation at first visit were excluded from the study.

Anaemia was labeled when haemoglobin was <11g/dl and was further categorized as mild (Hb=9-10.9g/dl), moderate (Hb=7-8.9g/dl) and severe (Hb<7g/dl) degree. Stool and urine examinations were done where indicated. Further investigations like haemoglobin electrophoresis, serum ferritin, serum iron and TIBC were done in few cases only due to non-affordability of patients.

Statistical analysis was performed using the computer software Statistical Package for social Sciences (SPSS) for windows version 16. Statistical

significance was set at p value <0.05.

RESULTS

Out of 987 pregnant women seen in outpatient department 560 women fulfilled the inclusion criteria. Among these 141 women were non-anaemic and 419 were anaemic giving a 74.8% prevalence of anaemia. The mean age of anaemic and non-anaemic women was 27.6yr and 25.6 year respectively. A total of 189(33.7%) primi-gravidae and 371(66.2%) multi-gravidae were enrolled in the study. Anaemia was present in 131 primi-gravidae and 288 multi-gravidae giving a prevalence of 69.3% and 77.6% in primi-gravidae and multi-gravidae respectively (p=0.032). (Table-I).

Table II shows that among the anaemic women prevalence of mild, moderate and severe anaemia was 69.9%, 26.7% and 3.3% respectively. Majority of primigravidae (75%) had mild anaemia as compared to multigravidae (67.7%), showing an increased severity of anaemia in multigravidae (p=0.028) No case of severe anaemia was noted in primigravidae. The anaemia was more prevalent in those women who had birth interval <1year (84.7%) or between 1-<2years (85.7%) compared to those who had birth interval of 2-<3years(68.8%) or >3years(66.1%) showing an inverse relationship that was statistically significant (P=.001) (Table-I).

A higher number 345(61.6%) of women registered for antenatal care in 3rd trimester compared to 72(12.8%) in 1st and 143(25.5%) in 2nd trimester. Prevalence of anaemia was 44 (61.1%), 101 (70.6%) and 274 (79.4%) in those who were booked in 1st, 2nd and 3rd trimesters, reflecting an increased prevalence with late booking (p=0.002). (Table-I)

Regarding education status out of 560 women 305 (54.46%) had no formal education, 187 (33.4%) and 68(12.40%), were educated up to primary and secondary school and higher secondary school. The

anaemia was higher among those who were uneducated 240 (78.6%) or educated up to primary 135 (72.2%). The difference was statistically significant ($p=0.033$) (Table-I).

The factors studied other than these sociodemographic factors were dietary habits regarding frequency of intake of chicken/ meat, pica

and history of blood loss (menorrhagia, haemorrhoid, antepartum haemorrhage and postpartum haemorrhage). (table-III) overall 309(55.2%) women took meat ≥ 2 times per week. The anaemia was more prevalent in those who took chicken/meat < 2 times per week 201(80%) than those who took it ≥ 2 times per week 218 (70.6%). ($p=0.01$). There was history of pica intake in 128(22.8%) women, 108(19.2%)

Characteristics	Non-anaemic	Anaemic	Total	P-value
Parity				
Primigravidae	58 (30.6%)	131 (69.3%)	189 (100%)	0.032
Multigravidae	83 (22.4%)	288 (77.6%)	371 (100%)	
Total	141 (25.2%)	419 (74.8%)	560 (100%)	
Gestational age at booking				
1 st trimester	28 (38.9%)	44 (61.1%)	72 (100%)	0.002
2 nd trimester	42 (29.45%)	101 (70.6%)	143 (100%)	
3 rd trimester	71 (20.6%)	274 (79.4%)	345 (100%)	
Total	141 (25.2%)	419 (74.8%)	560 (100%)	
Birth interval				
<1 yr	9 (15.3%)	50 (84.7%)	59 (100%)	0.001
1 - <2 yr	21 (14.3%)	126 (85.7%)	147 (100%)	
2 - <3 yr	34 (31.2%)	75 (68.8%)	109 (100%)	
≥ 3 yr	19 (33.9%)	37 (66.1%)	56 (100%)	
Total	83 (22.4%)	288 (77.6%)	371 (100%)	
Education				
No formal education	65 (21.3%)	240 (78.6%)	305 (100%)	0.033
Primary	52 (27.8%)	135 (72.2%)	187 (100%)	
Secondary and High secondary school	24 (35.3%)	44 (64.7%)	68 (100%)	
Total	141 (25.2%)	419 (74.8%)	560 (100%)	

Table-I. Prevalence of anaemia in pregnancy by maternal characteristics

anaemic and 20 (3.6%) non-anaemic ($p=0.005$). (table-III). History of blood loss was present in 66 (11.7%) women, 53 (9.5%) were anaemic and 13 (2.3%) were non-anaemic, but the difference was not statistically significant ($p=0.275$).

DISCUSSION

The high prevalence of anaemia (74.8%) revealed in this study is pin indication that anaemia during pregnancy is a major health problem in district Gujrat. Baig-Ansari N and Rohra DK have also shown a high prevalence (91%) of anaemia in their studies at Hyderabad, Karachi and Nawab Shah^{12,15}. In contrast

study of Ayub R at shifa International Hospital Islamabad has shown that 42.5% pregnant women were anaemic¹⁶. The difference may be because that study was conducted in capital city of Pakistan where the level of awareness and education of antenatal clinic attendees varies. A similar high rate of 76.5% of anaemia was found in a study by Idowu OA in Nigeria at booking visit¹⁷.

Anaemia in majority (70%) of our women was mild while only 3.3%) had severe anaemia. WHO also reports an expected range of 1-5% of severe anaemia¹⁸. Study of Baig-Ansari has also shown that

Gravida	Mild	Moderate	Severe	Total	P-value
Primigravidae	98 (75%)	33 (25%)	-	131 (100%)	0.028
Multigravidae	195 (67.7%)	79 (27.4%)	14 (4.8%)	288 (100%)	
Total	293 (69.9%)	112 (26.7%)	14 (3.3%)	419 (100%)	

Table-II. Comparison of severity of anaemia between primigravidae and multigravidae

Risk factor	Non-anaemic	Anaemic	Total	P-value
Intake meat or chicken				
≥ 2 Times / Wk	91 (29.4%)	218 (70.6%)	309 (100%)	0.01
< 2 Times / Wk	50 (19.9%)	201 (80.1%)	251 (100%)	
Total	141 (25.2%)	419 (74.8%)	560 (100%)	
Pica				
Yes	20 (15.6%)	108 (84.4%)	128 (100%)	0.005
No	121 (28%)	311 (72%)	432 (100%)	
Total	141 (25.2%)	419 (74.8%)	560 (100%)	
History of blood loss				
Yes	13 (19.7%)	53 (80.3%)	66 (100%)	0.275
No	128 (26%)	366 (64%)	494 (100%)	
Total	141 (25.2%)	419 (74.8%)	560 (100%)	

Table-III. Relationship of frequency of meat intake, pica and blood loss with anaemia

75% women had mild anaemia but incidence of severe anaemia in her study was only 0.7%¹². Nwizu EN had also noted no case of severe anaemia in Kano, Northern Nigeria¹⁴.

Anaemia was more prevalent among multigravidae as compared to primigravidae. In another study anaemia frequency was highest in those with four or more live births². More cases of moderate to severe anaemia were observed in multigravidae than in primigravidae concurrent to findings of Uche-Nwachi EO at Trinidad and Tobago¹⁹. Adequate birth spacing was also lacking in our women. Frequency of anaemic patients decreased from 84.7% to 66.1% with increasing birth interval from < 1 year to \geq 3 years in our study. GN Okuwu has also shown that pregnant women with birth interval of <1year and 1-1.5years has significantly lower mean Haemoglobin while parity did not effect prevalence of anaemia in his study. Prior births may deplete maternal iron stores due to increased nutritional requirement of pregnancy and puerperal blood loss. The short interval between pregnancies delays the mother's recovery from the effects of previous pregnancies thus increasing the risk of maternal depletion syndrome. Since the foetal requirements are met first the mother is left with further depleted iron stores and anaemia develops. It has been shown that exhausted maternal stores at the end of one pregnancy takes about 2 years to be replenished. Breast feeding further depletes the iron stores.

There was a trend of late booking among pregnant women. Total 61.6% were booked in 3rd trimester out of which 79.4% were anaemic. Late booking is recognized as a risk factor for anaemia in other studies as well^{14,19}. Late booking places the women and health care providers in a difficult situation due to limited time for optimum correction of any observed anaemia. The government and health care providers should use effective media to improve awareness of community about importance of early booking in pregnancy.

Only 45.6% of our pregnant women had any formal education and only 12.1% of them were educated above primary level. The anaemia prevalence of pregnant women decreased from 78.6% to 64.7% with increasing education level from no formal education to Matric and above. The finding is consistent with those of GN okuwu's study which showed a high prevalence of anaemia among the less educated women (no formal education and educated upto primary) ($p < 0.0136$)²⁰. The reason may be that educated women have better understanding of importance of balanced diet, hygiene and sanitation and thus have reduced risk of infections. They have more awareness of importance of birth spacing and the methods used for that.

The most common cause of anaemia in pregnancy is iron deficiency. Iron in the meat is in heme form, and is highly bioavailable so inadequate iron intake especially reduced access to heme iron can contribute to anaemia. Our study has shown a significant relationship of reduced frequency of intake of meat /chicken with increased risk of anaemia. Similarly a large survey in Vietnam had shown that meat consumption less than 3 times per week in women of reproductive age was associated with high prevalence of anaemia²¹. Abbassi RM found nutritional deficiency in 76.4% of anaemic gravidas¹³. Baig-Ansari N had also shown significant relationship of reduced frequency of meat intake and low mean haemoglobin concentration in pregnancy¹².

Pica, the craving and purposive consumption of substances that the consumer does not define as food, is a widespread phenomenon that has been documented in nearly all cultures. In our study 22.8% women gave history of pica (soil eating, raw rice, peanut shells), out of which 19.2% were anaemic, showing a strong relationship of anaemia with pica intake. In a study of Young SL pica was seen in 41.6% of patients and had a strong association with low mean haemoglobin concentration and iron deficiency

anaemia²².

We were unable to investigate other causes of anaemia like worm infestation and beta thalassaemia in all anaemic cases due to non-compliance and non-affordability of majority of our patients. The incidence of beta thalassaemia minor is around 5% in Pakistan and its carriers present with mild anaemia. Further studies are required for these factors.

CONCLUSIONS

Anaemia is a major health problem in pregnant women. High parity, lack of birth spacing, late booking, lack of education, low protein intake and unhealthy eating habits are all contributing factors. Health education will lead to increased awareness and utilization of antenatal care and family planning services. Women should be educated about importance of early booking, use of iron pills during pregnancy and healthy eating habits through mass media and health workers to improve the current situation. Husbands are very powerful in decision making process in our culture so they need to be educated on the importance of providing permission, support and actual involvement in maternal health care including antenatal care and family planning.

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AUTHOR(S):

1. **DR. SHABANA KALSOOM**
Senior Registrar Obst & Gynae
Nawaz Sharif Medical College Gujrat
2. **DR. SHAHIDA HUSSAIN TARAR**
Assistant Professor Obst. & Gynae
Nawaz Sharif Medical College Gujrat
3. **DR. TAHMINA NAZ**
Senior Registrar Obst & Gynae
Nawaz Sharif Medical College Gujrat

Correspondence Address:

Dr. Shabana Kalsoom
H.No. C-674 Lane No.16, Lalarukh
Wah Cantt
shabanakalsoom@hotmail.com

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