INTRODUCTION

Anemia during pregnancy is a major health problem especially in the developing world. Prevalence rate ranges from 35 to 75% in different countries of the third world \[1\]. In Pakistan 70-80% of pregnant population is suffering from iron deficiency anemia.\[2\] Iron deficiency anemia (IDA) is the most common types of anemia at the global level. It is a public health problem for pregnant women in all countries of the world which urgently needs to be addressed. On the gravity of public health significance World Health Organization has classified anaemia prevalence (%) into four Categories of, severe (≥ 40%), moderate (20-39.9%), mild (5-19.9%) and normal (≤ 5%). Pakistan falls in the moderate category.\[6,17,22\] Anemia in pregnancy may result in considerable morbidity and mortality not only among the mothers but also in infants of these women.\[9,16, 18\]. If left untreated it may cause iron deficiency anemia in the infant that might result in undesirable behavioural and cognitive development in the child\[9\].  

Most common cause of this type of anemia in the developing world is attributed to nutritional deficiency. Iron and folic acid generally contribute to this problem. In south Asia several factors may cause this problem, diet in this region is primarily cereal based and is low in iron, low in animal products and high in fiber and phytate, that suppress iron absorption from gut \[5,13\]. Lack of vitamin B-12 in diet is also considered to be a reason for anemia in pregnancy \[7\]. Deficiency of vitamin C, riboflavin and vitamin E can also cause anemia by inhibiting erythropoiesis. Besides these causes parasites have also been attributed as a possible reason for anemia among the females of the developing countries. These parasites include Plasmodium, Entamoeba histolytica, Ancylostoma duodenale and Necator americanus and shistosoma \[8\]. Mild anemia was defined as haemoglobin ranging between 9.0-10.0g/dl, moderate anemia was defined as having haemoglobin ranging between 7.0-8.0g/dl and severe anemia was classified as having haemoglobin of less than 7.0g/dl \[10\]. It is necessary to understand the etiology of anemia during pregnancy, if this problem is to be treated and managed properly. Few studies in the region of rural Sindh, Pakistan have explored this problem in detail. Possible reason for this lack of research could the fact that the diagnostic facilities are usually inadequate in the rural areas and the etiology of anemia is complex, comprising of deficiency in diet, parasitic infestation and chronic
infection. This makes it very difficult to investigate the reasons of this problem in the rural areas. The purpose of this study was to determine prevalence of anemia among pregnant women registered for antenatal care at the rural health centre taluka hospital Sobhodero, district Khairpur Mir's, Sindh, Pakistan.

Khairpur is the 12th largest district of the Sindh province and is situated in the southeast of Pakistan. The estimated population of the city is around 130,000. Sobhodero is a town in the Khairpur district with an estimated population of 15,347. The taluka hospital is a major source of health care for about 50,000 people living in the nearby villages. Most of the population visiting the hospital are poor and belong to low socioeconomic class.

MATERIAL AND METHODS

This was a retrospective study of pregnant women visiting taluka hospital at Sobhodero, Khairpur for antenatal check up. The data was collected from the patients visiting the hospital from between December, 2009 to January, 2010. Sample size of 310 patients for this study was estimated and the sample was selected using simple random sampling method. Every second patient was included in the research. Pregnant ladies of any age group were included in the study. Pregnant ladies having diabetes mellitus, systemic hypertension, pregnancy induced hypertension and those suffering from chronic systemic illnesses were excluded from the study. Data was obtained from the file records kept at the hospital. These records are compiled and kept by trained record keepers at the hospital. Information extracted included age, parity, gestational age, trimester, education and household income. Haemoglobin concentration was determined by qualified pathologists and trained technicians. Data was analyzed using Statistical Package for the Social Sciences (SPSS) version 16.0. For continuous variables summary statistics were produced by calculating means (± SD) and frequencies were computed for categorical variables.

RESULTS

Data contained 310 cases of pregnant women aged between 30-35 years, mean being 32 years. 205 (66.12%) were from rural areas and 105 (33.87%) were from peri-urban areas. Nearly a quarter (25.16%) of the cases were nulliparous, 150 (48.38%) cases were multiparous where as 82 (26.45%) were grand multi-parous .71% of the study population was found to be anemic, out of which 180 (58.%) were mild anemic, 31 (10%) had moderate anemia and 9 (2.90%) were noted as having severe anemia. The prevalence of anemia on booking in OPD was higher in those who registered for antenatal care in the third trimester as compared to the patients who registered in the second trimester.

DISCUSSION

In this study we found that anemia is more common among the ladies who registered for antenatal in the third trimester. This finding compares favourably with several studies done before. This phenomenon can be explained from the fact that the requirement of iron by the body during pregnancy is not evenly spread over the whole gestational time. This requirement is higher in the last trimester of pregnancy. In the developing countries anemia during pregnancy is mostly due iron deficiency. Although serum ferittin is a good indicator for measuring stored iron in the body a more accurate measurement of this would be from the stained bone marrow aspirate for hemosiderin. But bone marrow is an invasive procedure that requires technical skill and facilities for the analysis, which are not present in most centers in the rural areas in the developing regions. Instead a more complete estimation may be achieved by using mathematical model that takes into account different biochemical variables.

Folic acid (vitamin B9) deficiency may also result in anemia among pregnant ladies but it is not certain that whether folate deficiency is a primary cause of anemia in this population or is associated with other micronutrient deficiency. Malaria during pregnancy may also result in folic acid deficiency. This study was carried out at the peak of winter season when the malaria transmission is generally low. This low transmission is due to the fact the because of cold weather the mosquito population decreases. Vitamin B6 deficiency may also be related to anemia in pregnancy. A study done by Hisano et al in 2009 found out that vitamin B6 level fell particularly in the third trimester of pregnancy and this led to anemia that was nonresponsive to iron supplements but when vitamin B6 supplements were added these patients recovered. This study suggests that in patients who do not respond to iron supplements, vitamin B6 levels should also be checked and in needed vitamin B6 should be added in the treatment regimen. Sometimes the problem of anemia in pregnancy is
compounded by chronic inflammation. These chronic infections may include urinary tract infection, sexually transmitted infections, Helicobacter Pylori infection and tuberculosis, which is highly prevalent in Pakistan. In a similar study in which causes of anemia during pregnancy were evaluated nearly 10% of the patients had high C-reactive protein without any deficiency of iron, folate, vitamin B-12 or vitamin A, suggesting chronic inflammation [10, 14]. Helicobacter Pylori infection has been found to be associated with anemia of pregnancy especially in the developed world [14]. Since this infection is also common in South East Asia so it may also be related to anemia in pregnancy in Pakistan.

Malaria is a common parasitic infestation in this part of the world that may lead to anemia among the pregnant ladies. Besides causing destruction of red blood cells malaria may also contribute to anemia by causing folate deficiency [21]. Besides malaria other important parasitic infestation include hookworm (Nacator americans or Ankylostoma duodenale), Trichris trichuria Schistosoma mansoni and Schistosoma haematobium and Antamoeba histolytica. All of these organisms can lead to chronic hemorrhage and iron deficiency anemia.

CONCLUSION

Prevalence of anemia in pregnancy in Taluka Sobhodero Khairpur hospital is still high. Pregnancy care, iron and folic acid supplementation should be encouraged to reduce this problem. Early detection of cases and cause of anemia in this population is necessary and good treatment with antenatal care must also be encouraged.

REFERENCES


