

Anaemia in pregnancy: a pilot study

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Abstract

Anaemia in pregnancy is a common health problem. According to the last national nutrition survey of Bangladesh (1981-1982), about 47% of the pregnant and lactating women had anaemia. Since then, a few community-based studies were done to investigate the anaemia prevalence. The present study aimed to investigate the anaemia prevalence in two rural locations of Bangladesh. The data were collect in March 1997 on 90 pregnant women from 6 villages of Saturia and another 6 villages of Fulbaria Thana in Manikgonj and Mymensingh District respectively. All the identified pregnant women in the 12 villages who were willing to participate were included in the study. The result shows that 54% of the women had anaemia according to the WHO definition. Area of residence, literacy, iron tablet intake and length of BRAC membership were significantly associated with a lower prevalence of anaemia ($p < 0.05$). BRAC's rural development and health programmes should find ways to increase coverage, compliance and effectiveness of its iron supplementation programme.

Introduction

Anaemia is a common health problem presumably affecting mainly children and pregnant and lactating women. It was estimated that worldwide 2150 million people are anaemic, with the majority in South Asia and Africa (1). According to the World Health Organisation (WHO), anaemia in pregnancy is not only a public health problem in developing countries, but also a problem in the developed world. In developing countries, 55-60% women are anaemic and in the developed world the figure drops to 18%. The same source indicates that about 75% of all the pregnant mothers in large areas of South Asia are at an increased risk of maternal death due to anaemia (2).

WHO defines anaemia in pregnancy as a haemoglobin concentration level less than 110 g/L (3). The major causes of anaemia in pregnancy are iron deficiency, folate deficiency, hookworm infection, malaria, and haemoglobinopathies (4). Various studies have also shown that there are variations in these factors in relation to prevalence and severity of anaemia between and within countries (5). The adverse consequences of anaemia in pregnancy includes high maternal and peri-natal mortality, morbidity and delayed physical recovery following pregnancy (6).

Reports based on community based studies on the prevalence of anaemia during pregnancy in rural Bangladesh are limited. According to the latest National Nutrition Survey (1981-1982), in a sample of 279 rural pregnant and lactating women, 47% of the pregnant women had haemoglobin less than 110 g/L (7). In Bangladesh, both the government and NGOs have taken curative and preventive approaches to reduce the anaemia prevalence. BRAC provides iron supplements to rural pregnant women through its community-based ante-natal care centres (ANCCs). BRAC's Essential Health Care (EHC) programme also supplies iron tablets and provides nutrition and health education to the programme participants through the community-based voluntary health workers.

Objective

In preparation for a iron supplementation trial, this pilot study was designed to determine the prevalence of anaemia among pregnant women in a rural community of Bangladesh. The study also examined risk factors for anaemia which may be used for planning preventive strategies to enhance the effectiveness of anaemia control programmes.

Materials and methods

Study population

The study was conducted in 6 villages of Saturia and 6 villages of Fulbaria thanas of Bangladesh in March 1997. March is considered as a post-harvest period for the major rice crop. The villages were selected based on the presence of BRAC rural development programmes and accessibility by rickshaw. Saturia thana is located about 50 km east and Fulbaria thana about 110 km north of Dhaka city. Both the thanas represent typical rural Bangladesh community with plain agricultural land and high population density. BRAC's rural development programmes have been in operation for about 15 years in both the thanas. Essential Health Care (EHC) is an integral part of the development intervention which provides basic curative and preventive services to the participants. Through EHC, the village-based voluntary health workers identify pregnant women and motivates them to take iron tablets regularly.

A list of reported pregnant women was prepared through home visits with the help of village-based voluntary health workers and BRAC Programme Organisers (POs). Sixty four such women were identified in Saturia and 58 in Fulbaria. Informed consent was obtained from each woman for the collection of blood samples. Fifty women in Saturia and 40 women in Fulbaria agreed to participate in the study.

Data collection

Trained interviewers collected information using questionnaires. The interview was conducted through household visits to collect information on age, parity, history of menstruation, last menstrual period (LMP), current intake of iron tablet, literacy, land ownership, occupation of the major earner, perceived economic status and organisational membership. Data on LMP was based on the respondent's memory. The interviewers used a calendar of local events to help in recalling the dates. Respondents who did not receive any formal or non-formal education were categorised as illiterate. Individuals whose household owned less than 50 decimals of land were categorised as landless. Occupation of the major earner of a household which involved mostly manual work was categorised as 'manual' and the rest as 'not manual'. To collect information on perceived economic status, each respondent was asked about her perception of the preceding one year's household economic condition which was categorised into four groups - surplus, balance, occasional deficit and always deficit. Individuals who categorised themselves as surplus were grouped into 'surplus' and the rest were grouped into 'not surplus'.

Haemoglobin concentration was determined immediately after the interview on the spot using fingerprick capillary blood by a portable HemoCue photometer. The cyanomethhaemoglobin method is the basic principle used by HemoCue system (8). This system consists of a battery operated photometer and a disposable cuvette which is coated with dried reagent (sodium azide) and serves as a blood collection device. Using a cuvette without wet reagent makes the system uniquely suited for rapid field surveys.

Data analysis

Contingency tables were generated from the compiled data. Anaemia was defined as haemoglobin concentration <110 g/L (9). Gestational age was calculated from the LMP. Odds ratios were calculated and statistical significance was ascertained by the Chi-square test and p values less than or equal to 0.05 were considered significant.

Result

The mean age of the 90 pregnant women was 24 years (ranged 14 to 41). Mean parity was 3 (range 0-11) and mean gestational age was 5 months (range 1-9 months).

Figure 1. Cumulative percent distribution of haemoglobin concentration of the study women (n=90)

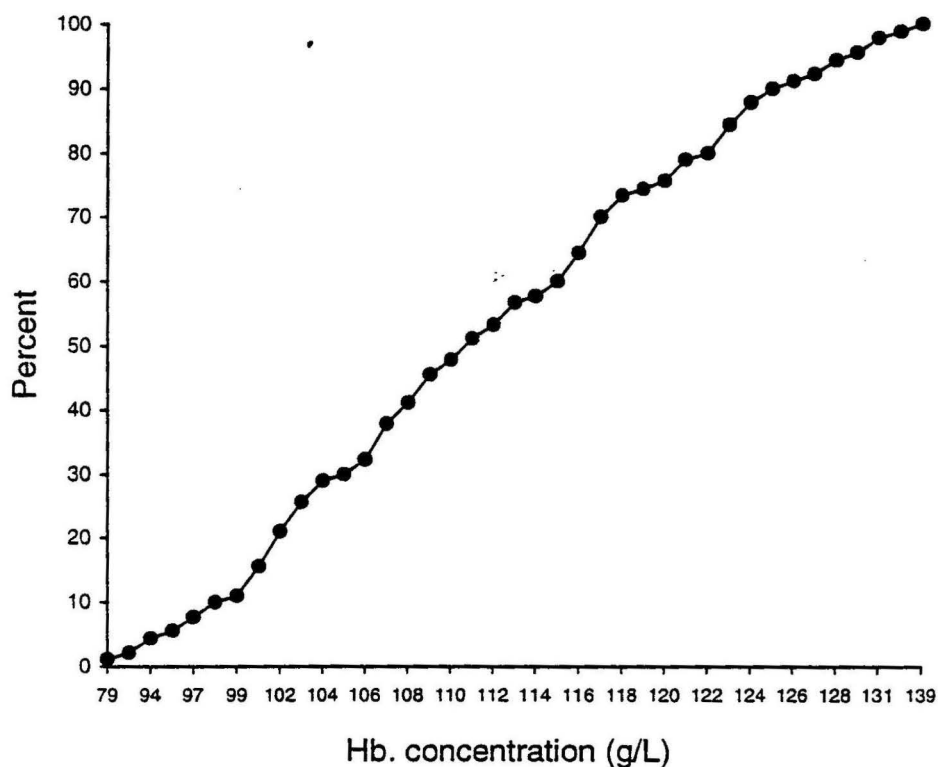


Figure 1 shows cumulative percent distribution of haemoglobin concentration of the study women. Mean haemoglobin concentration was 112 g/L (range 79-139 g/L) and 54% (95% CI: 44-64%) of the women had anaemia. The prevalence of severe anaemia, haemoglobin concentration <80 g/L, was only 1%.

Anaemia during pregnancy is still a major public health problem in Bangladesh which is a contributory factor to low birth-weight and stillbirths. Hence, regular review of the factors which may contribute to the prevention of anaemia is very important. Anaemia in pregnancy is a socioeconomic as well as a medical problem. Preventive measures need, therefore, to be directed at both the community and clinic level. At the community level, long term measures such as poverty reduction and improved nutritional status are needed to tackle the underlying causes of the problem. At the clinic level early diagnosis and treatment, health education and provision of iron supplements will help reduce the prevalence of anaemia (10).

During the past 15 years, there has been no documented significant decrease in the prevalence and severity of anaemia in Bangladesh. The present study documents a prevalence of 54% which is higher than the earlier findings. Despite the limitations regarding sample selection and size, the study shows association between anaemia and some socioeconomic factors.

In this study, there was a strong association between literacy and less anaemia. Literacy rate in Sauria is 50% compared to only 25% in Fulbaria thana. Lower anaemia prevalence in Sauria compared to Fulbaria thana may partially be explained by higher literacy rate. Literate mothers possibly gain more benefit from the existing health and nutrition education programmes channeled through interpersonal communications or through mass media. They may have a greater willingness to adopt new behaviour or methodologies. Studies show that increased maternal education contributed significantly to improve health status of infants and children (11). This is, however, further evidence of the need to enhance women's participation in both formal and non-formal education programmes. As shown in the earlier studies, iron tablet supplementation has been found to be effective in reducing anaemia prevalence during pregnancy (12-13). However, further efforts are needed to increase effectiveness of the existing iron supplementation programmes by enhancing both the programme coverage and dose compliance.

A higher proportion of women in the lower socioeconomic groups had anaemia due to the small sample size, however, a significant association was not evident. In yet another study on non-pregnant healthy women of Fulbaria thana, a significant association between socioeconomic condition and anaemia prevalence was demonstrated (14). Interestingly, women who were involved in BRAC's rural development activities for one-year or more (1+ year) had a significantly lower prevalence of anaemia. The effect remained significant after controlling for the literacy and iron tablet intake of the mothers, demonstrating the importance of the length of BRAC membership to reduce anaemia prevalence. Within BRAC, women receive continuous health and nutrition education through attending issue-based group meetings, they also have access to iron tablets. The membership also exposes women to different media and thus enhances general health and nutritional awareness. Initiatives must be taken to reinforce women participation in the regular group meetings and to improve their earning capacity by taking active part in the appropriate income generating activities.

In conclusion, anaemia in pregnancy is still a serious public health problem in the rural areas of Bangladesh. Causes of anaemia are not only related to biology but also deeply rooted in socioeconomic and cultural factors. Credit-based poverty alleviation programmes involving women with strong education and health components may play a significant role in reducing the prevalence of anaemia.

Policy implications for BRAC

1. Nutrition and health education should be given more emphasis in the Rural Development Programme (RDP) by incorporating **low cost and realistic nutritional indicators** in the regular programme monitoring activities.
2. A regular **supply of good quality iron tablets** should be ensured through the Essential Health Care (EHC) and Reproductive Health and Disease Control (RHDC) programmes to all pregnant women in the programme area irrespective of BRAC membership status.

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