Original Research Article

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Prevalence of anaemia and its epidemiological correlates among women of reproductive age group in an urban slum of Mumbai

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ABSTRACT

Background: Anaemia is a major public health problem affecting children, adolescent, women of reproductive age groups and lactating mothers worldwide. As per NFHS-IV data, prevalence of anaemia in India is 53%. This study was done to assess the prevalence of anaemia and its epidemiological correlates among women in reproductive age groups in an urban slum of Mumbai.

Methods: This community based cross-sectional study was carried out in an urban slum in Mumbai. Total 315 women in the reproductive age groups (15-49 years) were enrolled in the study. Samples were selected by stratified random sampling from various sectors. All respondents were interviewed and haemoglobin estimation was done with Sahli's method. Data was analysed using SPSS version 20.0 and chi-square test was used to find out the association between two qualitative variables.

Results: The prevalence of mild, moderate and severe anaemia was 37.1%, 9.5% and 2.9% respectively. The factors associated with anaemia were education (p value=0.0001), socio-economic status (p value=0.001), consumption of iron rich food (p value=0.0001) and interval between two successive pregnancy in years (p value=0.0001).

Conclusions: The findings of the present study revealed that education, socioeconomic status, consumption of iron rich food, interval between successive pregnancies affect the overall blood haemoglobin level on a long run. Community awareness regarding education and schooling of girls will help to increase the education level of women and would indirectly help to increase the health awareness and decrease the prevalence of anaemia.

Keywords: Anaemia, Urban slum, Prevalence, Women of reproductive age

INTRODUCTION

Nutritional anaemia occurs in all age group however, it is a major public health problem worldwide particularly in developing countries among women of reproductive age. National Family Health Survey-IV data shows that more than half of the women (53.0%) in India in reproductive age group (15-49 years) are anemic and its prevalence in Maharashtra is 48.0%. WHO defines anaemia as a condition in which the number of red blood cells or their oxygen-carrying capacity is insufficient to meet

physiologic needs, which vary by age, sex, altitude, smoking, and pregnancy status. The most common cause of anaemia is thought to be iron deficiency anaemia although other conditions, such as folate, vitamin B12 and vitamin A deficiencies, chronic inflammation, parasitic infections, and inherited disorders can all cause anaemia.³

The groups who are at a higher risk to for anaemia are women of reproductive age group, children of age 6-59 months, pregnant women and lactating mothers. Anaemia

has enormous consequences in women as the condition adversely affects both their productive and reproductive capabilities. Severe anaemia affects normal intra-uterine growth, resulting in intrauterine growth retardation, stillbirth, LBW and neonatal deaths.⁴

Considering all these facts, this study was conducted to find out the prevalence of nutritional anaemia and associated epidemiological factors in an urban slum of Mumbai.

METHODS

This community based cross-sectional study was carried out in an urban slum in Mumbai which is attached to the urban health Centre of Department of Community Medicine of Topiwala National Medical College. It has extended campus which is divided into 11 sectors. The population consists of people who have migrated from different parts of India. Most of the women were house wives, maid servants or vegetable vendors contributing economically towards their families.

The sample to be taken was stratified sector wise as per the proportion of population of women in reproductive age group (15-49 years). Out of 11 sectors, one sector was selected by random sampling method. From that selected sector, houses were selected by stratified random sampling method. Women who were residing in the study area from past 6 months and willing to participate in the study were included in the study. Women staying in the area on temporary basis for less than 6 months and pregnant women less than 18 years of age were excluded from the study. If there were more than one female in the house within the inclusion criteria of the study then sample was selected by random sampling (by using lottery method). The prevalence of anaemia in women of reproductive age is 56%.5 Using this prevalence, with 95% confidence interval and 10% relative error the minimum sample size calculated was 315. The study was approved by Institutional Ethics Committee of T. N. Medical College Mumbai. The base line data was collected during the period of January 2014 to December 2014.

Data was collected using a pretested and predesigned questionnaire. The data collection tool included socio demographic variables like age, education, type of family, socio economic status, dietary pattern and obstetric information (wherever applicable). Socio economic status was classified using the modified B G Prasad Classification. Blood haemoglobin examination was done with the Sahli's Method in the urban health centre and participants were classified as anaemic or non-anaemic based on WHO guidelines. Iron folic acid tablets were given to all the participants.

Statistical analysis

The collected data was entered and analysed using SPSS version 20.0. Descriptive statistics were obtained for

different parameters and the association between two qualitative variables was estimated by chi square test with p value less than 0.05 was considered statistically significant.

RESULTS

Table 1 showed, maximum number of women were in the age group of 15-25 years (44.4%) and belonged to Muslim religion (61.0%). Most of the women were married (70.2%). Majority of them were studied secondary and above (75.9%) and 90.8% were belonged to socioeconomic class III and IV as per modified B G Prasad classification.

Table 1: Distribution of women according to sociodemographic variables.

Variables	Frequency	Percent (%)
Age group (in years)		
15-25	140	44.4
26-35	97	30.8
36-49	78	24.8
Religion		
Hindu	91	28.9
Muslim	192	61.0
Christian	20	6.3
Others	12	3.8
Marital status		
Married	221	70.2
Unmarried	86	27.3
Divorced	4	1.3
Widow	4	1.3
Education		
Illiterate	13	4.1
Primary	63	20.0
Secondary	126	40.0
Higher secondary	75	23.8
Graduate	38	12.1
Socio-economic classes		
Class I	10	3.2
Class II	17	5.4
Class III	160	50.8
Class IV	126	40.0
Class V	2	0.6

Table 2 showed, 85.7% women consumed mixed diet, 64.1% women consumed iron reach food, 37.1% women had irregular menstrual cycle, 15.2% women were pregnant during the study period, 43.5% women had three or more gravidity status and half of the women had interval of two years between two successive pregnancies.

Table 3 showed that, the prevalence of anaemia among reproductive age women was 49.5%. Table 4 shows significant association of education, socio-economic

status, consumption of iron rich food and interval

between two successive pregnancies with anaemia.

Table 2: Distribution of women according dietary pattern, menstrual and obstetric information.

Variables	Frequency	Percent (%)	
Type of diet			
Vegetarian	45	14.3	
Mixed	270	85.7	
Consumption of iron rich food			
Yes	202	64.1	
No	113	35.9	
Iron folic acid tablet consumed.			
Yes	140	64.8	
No	76	35.2	
Pregnancy status			
Non pregnant	267	84.8	
Pregnant	48	15.2	
No. of pregnancies in the past excluding single, adolescent and primigravida women)			
1	46	21.3	
2	76	35.2	
≥3	94	43.5	
Interval between two pregnancy in years (excluding primigravida and adolescent girls)			
≤1	67	31.0	
2	108	50.0	
≥3	41	19.0	

Table 3: Distribution of women according to their haemoglobin grade (WHO classification).

Haemoglobin grade	Frequency	Percent (%)
Mild	117	37.1
Moderate	30	9.5
Severe	9	2.9
No anaemia	159	50.5

Table 4: Association between various factors and haemoglobin grade.

Variables	Anaemia number (%)	Non anaemic number (%)	Total number (%)
Age group in years			
15-25	76 (54.3)	64 (45.7)	140 (100.0)
26-35	48 (49.5)	49 (50.5)	97 (100.0)
36-49	32 (41.0)	46 (59.0)	78 (100.0)
Chi-square=3.523 df=2, p value=0.1717			
Education			
Illiterate and primary	53 (69.7)	23 (30.3)	76 (100.0)
Secondary and Higher secondary	95 (47.3)	106 (52.7)	201 (100.0)
Graduate	8 (21.1)	30 (78.)	38 (100.0)
Chi-square=25.15 df=2 p value=0.0001			
Socioeconomic class			
I and II	7 (25.9)	20 (74.1)	27 (100.0)
III	62 (38.8)	98 (61.2)	160 (100.0)
IV and V	87 (68.0)	41 (32.0)	128 (100.0)
Chi-square=30.86 df=2 p value=0.0001			
Type of Diet			
Mixed	128 (47.4)	142 (52.6)	270 (100.0)
Vegetarian	28 (62.2)	17 (37.8)	45 (100.0)
Chi-square=4.478 df=1 p value=0.065			

Consumption of iron rich food				
Yes	51 (25.2)	151 (74.8)	202 (100.0)	
No	105 (92.9)	8 (7.1)	113 (100.0)	
Chi-square=132.8 df=1 p value=0.0001				
Pregnancy status				
Non pregnant women	130 (48.7)	137 (51.3)	267 (100.0)	
Pregnant women	26 (54.2)	22 (45.8)	48 (100.0)	
Chi-square=0.488 df=1 p value=0.484				
Interval of pregnancies in years (exclu	Interval of pregnancies in years (excluding primigravida and adolescent girls)			
≤1	52 (77.6)	15 (22.4)	67 (100.0)	
2	68 (63.0)	40 (37.0)	108 (100.0)	
≥3	14 (34.1)	27 (65.9)	41 (100.0)	
Chi-square=20.48 df=2 p value=0.0001				
No. of pregnancies in the past (excluding single, adolescent and primigravida women)				
1	24 (52.2)	22 (47.8)	46 (100.0)	
2	48 (63.2)	28 (36.8)	76 (100.0)	
≥3	62 (65.9)	32 (34.1)	94 (100.0)	
Chi-square=2.554 df=2 p value=0.2789				

DISCUSSION

This community based cross sectional study inferred that the prevalence of anaemia among reproductive age women (15 to 49 years) was 49.5% with 37.1%, 9.5% and 2.9% women had mild, moderate and severe anaemia respectively.

In a study conducted by DEY et al to determine the prevalence of anaemia in women of reproductive age in Meghalay had shown that prevalence of anaemia among women of reproductive age was 49.6%. Similar findings were observed by a study conducted by Patavegar et al in rural areas of Maharashtra (51.92%). This was lower than study conducted by Pande et al in an urban slum of Indore city where prevalence was 61%. 10 Pattanshetty et al found that, out of 55.8% anaemic women in a tribal area, 3.5% were severely anaemic, 19.4% were moderately anaemic 32.9% were mildly anemic. 11 This is in concordance with the study by Pande et al where 33.25%, 24.75% and 3% women in reproductive age groups had mild, moderate and severe anaemia respectively. So, it can be said that depending upon the study area and study population the prevalence of anaemia varies.10

Anaemia was more common in younger age group (15-25 years) as compare to other age group and the association between anaemia and age group was not statistically significant (p=0.171). Similar findings were observed by Ahmad N et al among pregnant women where anaemia is more common in <20 years (88.7%) and 20-24 years (66.7%) age group as compared to 25-29 years (58.5%) and >30 years (57.1%) age group. ¹² Similar findings were observed by Patavegar et al where the association between age group and gender was not statistically significant. ⁹

Anaemia was more common in women who studied up to primary education (69.7%) as compared to graduate

mothers (21.1%) and the difference was statistically significant (p=0.001). Similar finding were observed by Panigrahi et al where illiterate women (74.6%) were more anaemic as compared to those studied HSC and above (41.2%). ¹³

In our study, the association between lower socioeconomic status and anaemia was statistically significant (p=0.001). Studies conducted by Panigrahi et al and Bentley et al came up with similar inferences. ^{13,14} Lower socio economic conditions are associated with less financial resources, lesser access to a wide variety of food and nutrients limited education and higher rate of getting infections etc.

In our study, women taking mixed diet (47.4%) were less anaemic as compared to those who were vegetarian (64.4%) but the difference was not statistically significant. Similar findings were observed by Viveki et al among pregnant women found that the prevalence of anaemia was 87.2% in those consuming vegetarian diet as compare to non-vegetarian or mix diet 12.8% and their association was not statistically significant. 15 Similar results were found in a study conducted by Ahmad et al. 12 There was significant association of intake of iron rich food and with that of anaemia indicating its direct role in reducing the prevalence of anaemia. Similar findings were observed by Patavegar et al and Panigrahi et al where the association between inadequacies of green leafy vegetables with anaemia was found to be statistically significant. 9,13

In this study the prevalence of anaemia was higher among pregnant women (54.2%) as compare to non-pregnant women (48.7%). Similarly, Pattanshetty et al found that anaemia was more prevalent in pregnant women (71.4%) as compare to lactating mothers (57.1%) and non-pregnant mothers (54.7%). In contrary to the above study, Mishra et al found that prevalence of

anaemia among non-pregnant women (96.8%) and pregnant women were almost equal (96.4%). ¹⁶

Anaemia was significantly more in women where the interval between two successive pregnancies was less than or equal to one year (77.6%) as compared to women where spacing is more than three years (34.1%). Similar findings were reported by Raghuram et al and Cheema et al for association of anaemia and interval of pregnancy. 17,18 We found that prevalence of anaemia was more in women had parity 3 or more (65.9%) as compared to women who all had parity 1 (52.2%) and the difference was not statistically significant. On contrary, Viveki et al where women who had having parity 2 or more (92.3) had significantly higher prevalence of anaemia as compared to those having parity one(74.4%) or zero (35.9%). 15 Similar findings were observed by Mirzaie et al and Kavak et al. It can be said that the prevalence of anaemia increases as the no of pregnancies increases. 19,20

This study had limitations like other variables like nutritional status, menstrual history, physical activity etc. were not included.

CONCLUSION

It is concluded that anaemia to be a major public health problem among women of reproductive age group of urban slums. Further we found that education, socioeconomic status, consumption of iron rich food, interval between successive pregnancies affect the overall blood haemoglobin level on a long run. Community awareness regarding education and schooling of girls will help to increase the education level of women and would indirectly help to increase the health awareness and decrease the prevalence of anaemia. Iron folic acid supplementation and service delivery by ANM/ASHA to the pregnant and lactating women in the regime dose will improve the haemoglobin status. Community participation should be there to organise for mass screening session for anaemia also for de worming and nutritional supplementation activities.

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