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Original Research Article

A study to assess the prevalence of anaemia amongst adolescent girls residing in selected slum of Bhopal city

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ABSTRACT

Background: Adolescence has been defined by the WHO as the period of life spanning the ages between 10 to 19 years. This is a vulnerable period in the human life cycle for the development of nutritional anaemia. The prevalence of anaemia among adolescents is 27% in developing countries and 6% in developed countries. The study was done with the objective to study the prevalence of anaemia among adolescent girls of selected urban slum of Bhopal.
Methods: A cross sectional study was conducted for a period of 3 months on adolescent girls residing in selected urban slum of Bhopal. 98 adolescent girls who were registered in Anganwadi and present at time of study were interviewed. The data regarding their socio-demographic profile, anthropometric measurements were collected using a semi-structured questionnaire. Hemoglobin level was also estimated using Hemocue (Hb 201) and participants were classified as having no, mild, moderate and severe anaemia based on WHO grading of anaemia. Data was compiled using MS Excel and analysed using Epi info 7.
Results: Anaemia was present in 57.65% girls. Out of which 34.7% had mild, 44.9% had moderate and 20.4% had severe anaemia. 29.4% knew improper diet as a cause of anaemia followed by Vitamin deficiency (25.8%) and iron deficiency (22.3%). 29.4% girls did not know any cause of anaemia. Similarly 29.4% and 51.7% of study participants did not know of any symptoms and treatment of anaemia respectively.
Conclusions: The overall prevalence of anaemia was high among study participants. Knowledge regarding anaemia, its symptoms, causes and treatment was very poor among study participants.

Keywords: Anaemia, Adolescent girls, Slums, Bhopal

INTRODUCTION

According to WHO adolescent age group is defined as life span between 10-19 years.[1] This period is characterized by rapid physical, psychological and cognitive development. This is a vulnerable period in the human life cycle for the development of nutritional anaemia. Adolescents make nearly one tenth of Indian population and form a crucial segment of the society.[2] Their current nutritional status will decide the wellbeing of the present as well as the future generations. As adolescent age is the formative years for development, anaemia at this stage of life has some long term consequences, such as stunted growth, poor school performance, reduced immunity, menstrual irregularities, later on poor pregnancy outcomes such as intrauterine growth restriction, low birth weight, increased perinatal morbidity and mortality.

Anaemia is the most common nutritional disorder worldwide. Anaemia is common during adolescent girls due to demands of increased growth and menstrual blood

loss. WHO estimates that anaemia prevalence among adolescent girl is 27% in developing countries and 6% in developed countries.[1] According to NFHS 4 53% of women aged 15-49 years are anaemic in India.[2] The prevalence of anaemia in pregnant and non pregnant females aged 15-49 years is 50.3% and 53.1% respectively in India.[2] Similarly the prevalence of anaemia in women aged 15-49 years in Madhya Pradesh is 52.5% and that in pregnant and non pregnant women is 54.6% and 52.4% respectively as per NFHS 4.[2] In a study conducted by Kakkar et al, prevalence of anaemia among adolescent school girls was 58.4% in Bhopal.[3] Mild to moderate anaemia usually appear in the early life and if proper intervention is given in adolescent age, majority of maternal and perinatal mortalities and morbidities can be prevented.[3] The study was conducted with the objective to study the prevalence of anaemia among adolescent girls residing in selected urban slum of Bhopal.

METHODS

After taking ethical clearance from the institute, a brief introduction about the study topic was discussed with the anganwadi workers, and ANM. Details about the study and regarding blood collection, and importance of the present study were explained to them.

It was a cross sectional study conducted in selected urban slum of Bhopal city. There are 380 slums in Bhopal as per city profile, Bhopal Municipal Corporation, 2012.[4] One of the slum was selected randomly. The population of selected slum is 12,000(census 2011). 3 out of 8 Anganwadis of selected urban slum were selected randomly. Inclusion criteria were all the girls aged 10-19 years registered in Anganwadi and giving consent for haemoglobin estimation. Out of 98 girls who were registered, 85 participants gave consent for haemoglobin estimation and hence were included in study. In this study, hemoglobin level was estimated using Hemocue (Hb 201). Hemocue has a sensitivity range of 75–91%, specificity range of 88–100%.[5] Prevalence of anaemia was assessed by measuring haemoglobin. The study was conducted for a period of 3 months i.e. 1 March 2017 to 30 May 2017.

Study subjects selected were contacted with the help of AWW and information about the concept of the study was conveyed to parents of study subjects. The study subjects were asked to assemble at anganwadi center with the help of AWW on specified date for the ease of blood collection. Informed consent was taken from the parents of study participants.

The data regarding their socio-demographic variables, menstrual pattern, nutrition habits, knowledge about anaemia, its causes, symptoms and treatment was assessed using semi structured questionnaire. Weight was measured using portable manual weighing machine after eliminating zero error with minimal clothing and without shoes to the nearest 100 grams. Height was measured in centimeters using measuring tape fixed in the wall. Hemoglobin level was also estimated using Hemocue (Hb 201). For classification of anaemia, reference range of haemoglobin was used as per WHO classification i.e Mild (11-11.9 g/dl); Moderate (8-10.9 g/dl); Severe (<8 g/dl).[6] Data was compiled using MS Excel and analysed using Epi Info 7.

RESULTS

A cross-sectional study was conducted to find out the prevalence of anaemia and its associated factors among adolescent girls. A total of 85 girls gave consent for haemoglobin estimation and hence were included in the study.

Table 1: Distribution of adolescent girls according to severity of anaemia.

S no.	Anaemia	Frequency	Percentage (%)
1	Anaemia (≥12) absent	36	42.35
2	Anaemia (<12) present	49	57.65
3	Total	85	100
	Severity of Anaemia (n=49)		
1	Mild (11-11.9)	17	34.7
2	Moderate (8-10.9)	22	44.9
3	Severe(<8)	10	20.4

Prevalence of anaemia among study participants was found to be 57.65%. In the present study, prevalence of moderate anaemia was higher i.e. 44.9% and that of mild and severe anaemia was 34.7% and 20.4% respectively.

The mean age of the study participants was 15.2±2.5 years. Most of the girls 31 (36.4%) belonged to the age group of 14-16 years. Majority of the study subjects belonged to lower middle class 47 (55.2%) followed by lower class 27 (31.7%) according to modified BG Prasad classification. Mean age of menarche was 10.23 years. 68 (80%) study participants have attained menarche and out of them 25 (37.7%) were found to be anaemic.

Table 3 shows knowledge regarding anaemia, its causes and treatment among study participants. 29.4% knew improper diet as a cause of anaemia followed by Vitamin deficiency (25.8%) and iron deficiency (22.3%). 29.4%

girls did not know any cause of anaemia. Similarly knowledge regarding symptoms and treatment of anaemia was also poor as shown in Table 3.

Table 4 shows knowledge regarding food item rich in Iron. 54.1% study participants did not know while 45.8% knew green leafy vegetables followed by pomegranate (27%).

Table 2: Distribution of anaemia according to various risk factors.

Risk factors		Anaemia present (%)	Anaemia absent (%)	P value
Age group (in years)	10-13 (early adolescence)	17 (60.7)	11 (39.3)	>0.05 NS
	14-16 (middle adolescence)	19 (61.2)	12 (38.8)	
	17-19 (late adolescence)	13 (50)	13 (50)	
Education	Primary	7 (77.8)	2 (22.2)	>0.05 NS
	Middle	25 (62.5)	15 (37.5)	
	Secondary	12 (44.4)	15 (55.6)	
	College	5 (55.6)	4 (44.4)	
Dietary Habits	Veg	15 (55.6)	12 (44.4)	>0.05 NS
	Non Veg	34 (58.6)	24 (41.4)	
Socioeconomic status	Upper middle	3 (75)	1 (25)	> 0.05 NS
	Middle	5 (71.4)	2 (28.6)	
	Lower Middle	28 (59.6)	19 (40.4)	
	Lower	13 (48.1)	14 (51.9)	
Menarche	Attained	37 (54.4)	31 (45.6)	>0.05 NS
	Not attained	12 (70.6)	5 (29.4)	
BMI	<18.5	27 (52.9)	24 (47.1)	>0.05 NS
	18.5-24.99	20 (62.5)	12 (37.5)	
	>25	2 (100)	0 (0)	

Table 3: Knowledge of the study participants regarding anaemia.

S no.	Knowledge about	Frequency	Percentage (%)
1	**Heard about anaemia**	56	65.8
2	**Causes of Anaemia**		
	Iron deficiency	19	22.3
	Vitamin deficiency	22	25.8
	Underlying infection	6	7.05
	Improper diet	25	29.4
	Excessive blood loss	7	8.2
	Don’t know	25	29.4
3	**Symptoms of Anaemia**		
	Fatigue	25	29.4
	Weakness	52	61.7
	Dizziness/vertigo	32	37.6
	Headache	17	20
	Pallor	8	9.4
	Others	5	5.9
	Don’t know	20	23.5
4	**Treatment of Anaemia**		
	IFA supplementation	33	38.8
	Vitamin Supplementation	18	21.1
	Balanced diet	32	37.6
	Treatment of underlying illness	8	9.4
	Don’t know	44	51.7

Table 4: Knowledge among study participants regarding food item rich in iron.

Food item	Frequency	Percentage (%)
Green Leafy Vegetable	39	45.8
Pomegranate	23	27
Chakundar	5	5.8
Jaggery	4	4.7
Carrot	1	1.1
Others	7	8.2
Don't know	46	54.1

DISCUSSION

The overall prevalence of anaemia among adolescent girls in our study was found to be 57.65%, of which 34.7% girls had mild anaemia, 44.9% girls have moderate and 20.4% girls had severe anaemia; while in a study to assess prevalence of anaemia among adolescent girls in urban area of central Madhya Pradesh by Shinde et al on 267 school girls, the overall prevalence of anaemia was found to be 52.06%, of them 70.5%, 28.06% and 1.44% girls have mild, moderate and severe anaemia respectively.[7]

In our study, anaemia was present in 42.8%, 45.2% and 23% girls in early, middle and late adolescence and p value was found to be significant; while in a study conducted by Shinde et al, 11.6% girls in early adolescence, 52.1% girls in middle adolescence and 36.3% girls in late adolescence were found to be anaemic. Also significant association was found between anaemia and dietary factors. In this study no association of anaemia was found with socio-economic status, attainment of menarche and BMI while significant association of anaemia was found with socio-economic status and mean weight and height in a study conducted by Chaudhary et al on 296 adolescent girls in Nagpur.[8]

CONCLUSION

Prevalence of anaemia by this study came out to be 37.6%. Knowledge regarding anaemia, its symptoms, causes and treatment was very poor among study participants. Also, knowledge regarding food rich in iron was also very poor among study participants.

The high prevalence of mild and moderate anaemia demands due emphasis on iron and folic acid supplementation, iron rich food intake, health education regarding personal hygiene and periodical deworming to reduce the burden of anaemia among adolescent girls.

Limitations

Sample is not representative of the population. Only hemoglobin estimation was done. Other haematological parameters could not be estimated due to economic constraints.

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