

Prevalence of Anaemia in View of Socio-Demographic Profile of Adolescent Girls in Urban Area of Patna District, Bihar, India.

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Abstract

Objectives: Anaemia is a major health problem of adolescent girls in developing country. In this present study, we evaluate the prevalence of anaemia in view of Socio-demographic profile of adolescent girls in urban area.

Methods: A detailed history was performed which included socio demographic details, history of any chronic illness, socio-demographic characters, menstrual history and presenting complaints. By venipuncture of anti cubital vein, 2 mL of venous blood was drawn and collected in ethylenediaminetetraacetic acid (EDTA) vacutainers under aseptic precautions. The collected blood samples were analysed in the Department of Pathology by five-part automated cell counter (Beckman Coulter AC T diff 2). For interpretation of anaemia, the cut-off point for haemoglobin (Hb)gm% was taken as < 12 g/dL, moderate (7 to < 10 g/dL), and severe (<7 g/dL) [6]. Sociodemographic status was estimated by modified B. G. Prasad's classification. Socio-economic status classified as: class II-upper middle class, class III- lower middle class, class IV- upper lower class, class V- lower.

Results: Out of 200 adolescent girls, anaemia was found in 148(74%) girls. most of the anaemic girls 55(78.57%) were in age of 10-12 years. Most of the anaemic girls 64(32%) belonged to lower middle socio-economic status. 64(32%) anaemic girls belonged to lower middle socioeconomic classes. Majority of anaemic girls 111(75.51%) lived in nuclear family. Parents [fathers: 79(77.45%) and mothers: 78(68.42%)] of most of the anaemic girls had primary education. BMI of most of the anaemic girls 83(73.45%) was <18.5. Menarche was seen in 136(68%) girls. Most of the anaemic girls 119(87.5%) had attained menarche.

Conclusions: Prevalence of anaemia is high in adolescent girls who belongs to a lower middle and lower socioeconomic status. Anaemia is more common in age 10-15 years followed by girls with menarche, lower BMI and family illiteracy. Thus, anaemia is a major health issue in adolescent girls. Hence, regular health check-up camp must be organised in school and Mohalla, in urban as well as rural area for awareness and prevention of anaemia in adolescent girls. So that, proper diagnosis and prompt treatment can be made.

Keywords: Anaemia, adolescent girls, socio-demographic profile

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Introduction

Nutritional deficiency anaemia is a globally prevalent condition; however, it is more perturbing in the developing nations. NFHS 4 estimates anaemia in approximately 53% women aged 15-49 years in India [1]. The impact of anaemia among adolescent girls is still public health problem globally although specific actions are being taken by the government like encouraging consumption of iron-rich foods through dietary change, nutritional education, treatment and prevention of parasitic infections, weekly iron supplementation to prevent iron-deficiency anaemia and improving iron status among adolescent girls [2, 3].

Anaemia can be observed in individuals of all age group but is commonly observed in adolescent girls. The higher prevalence of anaemia in adolescent girls has been attributed to rapid growth and increased demand of iron during menstruation [2]. Also, in a family with limited resources, the female child is more likely to be neglected. She is deprived of good food and education and is utilized as an extra working hand to carry out the household chores. The added burden of menstrual blood loss, normal or abnormal, precipitates the crises too often [4].

Different researchers have conducted studies on anaemia among adolescent girls from different part of the world. However, the age range which these scholars considered as adolescent differs among the studies and they were not the standard age category between 10 and 19 years. Since using the finding of studies that use different age ranges can negatively affect the impact of interventions, we argue that the studies should be conducted by selecting the appropriate age group [5,6]. Objectives of our study was to evaluate the prevalence of anaemia in view of Socio-economic status of adolescent girls in urban area of Patna district, Bihar, India.

Material & Methods

This present study was conducted in Department of Community Medicine, Patna Medical college and Hospital Patna, Bihar during a period from March 2021 to February 2022. Entire subject signed an informed consent approved by ethical committee of PMCH, Patna was sought.

All the girls aged 10-19 years residing in selected ward and willing to participate in the study were included whereas girls not available for interview on account of absence or door locked, girls suffering from chronic and systemic disease, girls with behavioural problem and not willing to participate in the study were excluded from the study. A total of 200 adolescent girls were enrolled in this study.

A detailed history was performed which included socio demographic details, history of any chronic illness, socio-demographic characters, menstrual history and presenting complaints.

By venipuncture of anti cubital vein, 2 mL of venous blood was drawn and collected in ethylenediaminetetraacetic acid (EDTA) vacutainers under aseptic precautions. The collected blood samples were analysed in the Department of Pathology by five-part automated cell counter (Beckman Coulter AC T diff 2). For interpretation of anaemia, the cut-off point for haemoglobin (Hb)% was taken as < 12 g/dL), moderate (7 to < 10 g/dL), and severe (<7 g/dL) [6].

Sociodemographic status was estimated by modified B. G. Prasad's classification. Socio-economic status classified as: class I- Upper class, class II-upper middle class, class III- lower middle class, class IV- upper lower class, class V- lower class.

Statistical Analysis

Data was analysed by using SPSS software. Mean \pm Standard deviations were observed. P value was taken less than or equal to 0.05 ($p \leq 0.05$) for significant differences.

Observations

This present study was enrolled a total of 200 adolescent girls with age group of 10 to 20 years. Anaemia was found in 148(74%) girls. Most of the girls 50(25%) were in age 13-15 years. Out of 200, 148(74%) girls were anaemic. Among them, most of the anaemic girls 55(78.57%) were in age of 10-12 years. Most of the anaemic girls 64(32%)

belonged to lower middle socio-economic status. 64(32%) anaemic girls belonged to lower middle socioeconomic classes. Majority of anaemic girls 111(75.51%) were living in nuclear family. Parents [fathers: 79(77.45%) and mothers: 78(68.42%)] of most of the anaemic girls had primary education.

Table 1: Sociodemographic profile of anaemia (N=200).

Age (Years)		No. of girls (N=200)	No. of anaemic [148(74%)]	No. of non-anaemic [52(26%)]
10-12		70(35%)	55(78.57%)	15(21.43%)
13-15		50(25%)	37(74%)	13(26%)
16-18		44(22%)	32(72%)	12(27.27%)
19-20		36(18%)	24(66.67%)	12(33.33%)
Religions				
Hindu		144(72%)	107(74.31%)	37(25.69%)
Muslim		46(23%)	35(76.08%)	11(23.91%)
Others		10(5%)	6(60%)	4(40%)
Socioeconomic status				
Lower		22(11%)	15(68.18)	7(31.81%)
Upper lower		55(27.5%)	43(78.18%)	12(21.81%)
Lower middle		64(32%)	54(84.37%)	10(15.62%)
Upper middle		49(24.5%)	29(59.18%)	20(40.81%)
Upper		10(5%)	3(30%)	7(70%)
Type of family				
Nuclear		147(73.5%)	111(75.51%)	36(24.49%)
Joint		53(26.5%)	35(66.03%)	18(33.96%)
Father's occupation	Illiterate	11(5.5%)	8(72.72%)	3(27.27%)
	Primary	102(51%)	79(77.45%)	23(22.55%)
	Intermediate	67(33.5%)	48(71.64%)	19(28.36%)
	Graduate	21(10.5%)	13(61.90%)	8(38.09%)
Mother's occupation	Illiterate	15(7.5%)	11(73.33%)	04(26.67%)
	Primary	114(57%)	78(68.42%)	36(31.58%)
	Intermediate	68(34%)	51(75%)	17(25%)
	Graduate	18(9%)	8(44.44%)	10(55.56%)
BMI	<18.5	113(56.5%)	83(73.45%)	30(26.55%)
	18.5-24.99	60(30%)	39(65%)	21(35%)
	≥25	27(13.5%)	15(55.56%)	12(44.44%)
Diet	Vegetarians	36(18%)	29(80.55%)	07(19.44%)
	Mixed	164(82%)	119(72.56%)	45(27.44%)
Menarche	No	64(47.05%)	29(45.31%)	35(54.68%)
	Yes	136(68%)	119(87.5%)	17(12.5%)

BMI of most of the anaemic girls 83(73.45%) was <18.5. Majority of girls 164(82%) were taking mixed diet and 36(18%) were vegetarian. Anaemia 29(80.55%) was greatly seen in vegetarian girls. Menarche was seen in 136(68%) girls out of which 119(87.5%) girls were anaemic.

Discussions

Adolescence is a particularly unique period in life because it is a time of intense physical, psychosocial, and cognitive development. Caloric and protein requirements are maximal. Increased physical activity, combined with poor eating habits and other considerations, e.g., menstruation and pregnancy, contribute to accentuating the potential risk for adolescents of poor nutrition [8].

Menarche further calls for special attention because of the physical and emotional problems associated with it. Though the menstrual cycle is a normal monthly function of a healthy female body, the main concern is delayed menstruation, irregular cycles pertaining to hormonal fluctuations and pain during menses. Unfortunately, the assessment of the nutritional status of adolescent girls has been the least explored area of research, particularly in rural India [9].

In this present study, adolescent anaemic girls were mostly seen in lower middle socioeconomic status. They lived in nuclear family. Most of the adolescent had attained menarche. Mostly were taking mixed diet.

In our study, findings regarding prevalence of anaemia among adolescent girls was almost consistent with studies done by Kaur et al and Binay et al where they have observed prevalence of anaemia found to be 59.8% and 68.8% respectively [10,11]. Vitull et al, Meenal et al and Sharda et al have reported higher prevalence of anaemia with figures of 87%, 90.1% and 70.57% respectively [12,13]. 6-8 Rawat et al and Rajaratnam et al have observed low

prevalence of anaemia with figures 34.5% and 40.7% respectively [14,15].

Aggarwal et al. in their study conducted among adolescent girls in the Northeast Delhi showed 45% prevalence of anemia [16]. Our study findings showed higher prevalence rate, when compared with other similar studies conducted in various rural parts of India, which showed prevalence rate between 46% and 68.8%.

Different researchers have conducted studies on anemia among adolescent girls from different part of the world. However, the age range which these scholars considered as adolescent differs among the studies and they were not the standard age category between 10 and 19 years. Since using the finding of studies that use different age ranges can negatively affect the impact of interventions, we argue that the studies should be conducted by selecting the appropriate age group [5,6].

Age-wise distribution of anaemia in our study where in highest prevalence was found in age-group of 10 to 12 years and lowest prevalence in 19 to 20 years was not consistent with the studies done by Sharda et al and Binay et al [11,13]. Sharda et al reported that highest prevalence of anaemia was found in 15 to 16 years [13]. Binay et al reported maximum prevalence in the age group 11 to 12 years and least prevalence in the age group 14 to 16 years [11].

In the study, a majority of the adolescent girls (83.92%) belonged to socioeconomic lower and upper. These findings were concordant with other similar studies conducted to study anemia among girls belonging to Uttar Pradesh, Nagpur, Chandigarh, and Delhi, showing high prevalence rate among lower socioeconomic groups [17,18].

Among various risk factors, our study observed statistically significant association of anemia with higher birth order, lower BMI, heavy menstrual flow and a greater number of days of bleeding.

Adolescent girls who had menstrual flow for ≥ 5 days were 3 times more likely to be anaemic as compared to those adolescent girls with menstrual flow < 5 days per each cycle. This finding was in agreement with similar findings reported in Tangail region of Bangladesh, Guntur, Andhra Pradesh of India, Khordha rural district, Odisha of India, and Western Kenya [19, 20]. This may be due to the fact of blood loss during the menstruation.

Similar findings were documented in a study by Sachan et al where overall prevalence of anaemia was highest (60.9%) among girls of birth order three or four, but the association was not significant [21]. This could be due to dilution of the household resources and also the poor attention given by the mothers. Pattnaik et al in their study in two villages of Odisha, found that 49% of the girls were below the 5th percentile and 51% of the girls were in the normal range of BMI i.e. 5th to 85th percentile for girls. Anaemia was found to be significantly higher in girls with under nutrition i.e. less than 5th percentile of BMI for girls ($p=0.024$) [17].

Anaemia is significantly associated with low BMI for age. Adolescent girls who had a low BMI for age were 5.53 times more likely to be anaemic as compared to those who have a BMI for age. Similar findings were also reported in Bonga Town; those with low BMI for age were 2.12 times more likely to develop anemia compared to those with high BMI for age [22]. It was also parallel with the finding in Tangail region of Bangladesh and Chennai, Tamil Nadu of India [19, 22]. Since this study used cross-sectional design the cause-effect relationship was not addressed. Additionally, the study period which is fasting time might have affected the real dietary diversity practice of school adolescent girls. [23,24]

Conclusions

The present study concluded that the prevalence of anaemia is high in adolescent girls who belong to a lower middle and lower socioeconomic status. Anaemia is more common in age 10-15 years followed by those with menarche, lower BMI and family illiteracy. Thus, anaemia is a major health issue in adolescent girls. Hence, regular health check-up camp must be organised in school and Mohalla, in urban as well as rural area for awareness and prevention from anaemia in adolescent girls. So that, proper diagnosis and prompt treatment can be made.

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