International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Original Research Article

A Cross Sectional Study on Socio Demographic Factors Associated With Anaemia in Adolescent Girls in an Urban Slum Area of Mumbai

Jogdand M.S.[1], Kazi Y.K.[2], Suryawanshi S.R.[3]

[1]Assistant Professor, Dept of Preventive and Social Medicine, S.R.T.R.G.M.C, Ambajogai
[2]Assistant Professor, [3]Professor & Head,
Dept. of Preventive and Social Medicine, T.N.M.C. & B.Y.L. Hospital, Mumbai.

Corresponding Author: Jogdand M.S.

Received: 11/04/2015 *Revised: 11/05/2015* *Accepted: 18/05/2015*

ABSTRACT

Introduction: Adolescence is a vulnerable period in the human life cycle for the development of nutritional anemia, which has been constantly neglected by public health programs. The prevalence of anaemia ranges from 33% to 89% among pregnant women and is more than 60% among adolescent girls. Iron deficiency anaemia is known to affect the health, physical work capacity & cognitive functions of children and adolescents. The anaemia is again widely prevalent in urban slum area .So the present study was conducted to find out the prevalence of anaemia in adolescent girls of urban slum area and to study various socio demographic factors associated with it.

Materials and methods: The present study was carried out in the urban slum area of Mumbai, Maharashtra. The sample size is calculated using the formula 4 PQ/L [2.] The sample size was thus determined as 327. All adolescent girls residing in the cheetah camp for minimum of 2 years and willing to participate in the study were included in the study. Before the start of the study permission was taken from Hospital Ethical Committee. The girls were selected from cheetah camp by systematic random sampling.

Results: In the present study, 221(67.58%) study subjects were in 10 - 14 years age group. Most of study subjects i.e. 215(65.95 5%) were educated upto high school level. Majority of girls i.e. 191(58.40%) were living in joint family. The overall prevalence of anaemia was 42.20%. Anaemia was found to be significantly associated with age of adolescent girls, mothers education and mothers occupation. Anaemia was significantly associated with history of worm infestation, type of diet and intake of iron rich food.

Conclusion: The present study indicated the importance of including adolescents in the risk group to improve their iron status and the need for planning intervention programs that would increase the haemoglobin levels among the adolescent girls through prophylaxis treatment, dietary modification.

Key words: Anaemia, adolescent girls, urban slum, socio-demographic factors.

INTRODUCTION

Adolescence is a period of transition between child hood & adult hood, a time of profound biologic, intellectual, psychosocial and economic changes.[1] This is a vulnerable period in the human life cycle for the development of nutritional anemia, which has been constantly neglected by public health programs. Girls are more likely to be a victim due to various reasons. 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. The low iron stores in these young women of reproductive age will make them susceptible to iron deficiency anaemia during pregnancy. [2] The prevalence of anaemia ranges from 33% to 89% among pregnant women and is more than 60% among adolescent girls. The National Family Health Survey (NHFS-3) conducted in 2005-2006 presents the statistics that 56% of adolescents are anaemic.

Under the anaemia prevention and control program of the Government of India, iron and folic acid tablets are distributed to pregnant women, but no such program exists for adolescent girls.[3] Despite the magnitude of the problem few strategies exist in Indian public health programs to tackle iron deficiency anaemia in adolescent girls. In India, adolescent girls, who constitute a sizable segment of its population, form a vulnerable group and are at a greater risk of morbidity and mortality. Iron deficiency anaemia is known to affect the health, physical work capacity & cognitive functions of children and adolescents. The anaemia is again widely prevalent in urban slum area .So the present study was conducted to find out the prevalence of anaemia in adolescent girls of urban slum area and to study various socio demographic factors associated with it.

MATERIALS AND METHODS

The present study was carried out in the urban slum area of Mumbai, Maharashtra, which is the field practice area of P.S.M department affiliated to a tertiary teaching institute in Mumbai from January 2011 to December 2011.It is divided into 11 sectors namely A,B,C,D,E,F,G,H,I,J and K.The prevalence of iron deficiency anaemia among adolescent girls in India is 55% according to NFHS III data. The sample size is calculated using the formula 4 $PQ/L^{2.}$

$N=4*P*Q/L^2$ ('L' is the 10% allowable error for"p")

$=4*55*45/ (5.5)^2$

$=9900/5.5*5.5$

$=327$

The sample size was thus determined as 327. All adolescent girls residing in the cheetah camp for minimum of 2 years and willing to participate in the study were included in the study. Before the start of the study permission was taken from Hospital Ethical Committee. The girls were selected from cheetah camp by systematic random sampling. As the slum is divided in 11 sectors, 30 girls were selected from each sector. Total number of houses in cheetah camp is 14,467 with average number of houses per sector is 1315. Average houses divided by sample size i.e. (1325/327) is 4.So, every 4^{th} house in the sector was selected and adolescent girls in the house were selected for the study. Such collection was done till required sample size (327) was obtained.

The necessary information such as socio demographic profile is collected with the help of semi-structured, pre tested questionnaire and after taking verbal

consent. Blood haemoglobin examination was done with the Sahli's method in an urban health centre. After testing Haemoglobin levels of all the participants, those with Hb level less than 12 were labelled as anaemic. The collected data was numerically coded and entered in Microsoft excel 2007 and then transferred to SPSS version 16. Added data was analyzed with appropriate test.

RESULTS

Table 1: Distribution of Study Subjects According To socio-Demographic Factors (N=327)

Socio-demographic factors	Number (%)
Age	
10-14 yrs	221(67.58%)
15-19 yrs	106(32.42%)
Education	
Illiterate	17(5.21%)
Primary	51(15.64%)
High school	215(65.95%)
Intermediate	34(10.39%)
Graduate and above	10(3.07%)
Type of family	
Nuclear	191(58.41%)
Joint	136(41.59%)
Mothers education	
Illiterate	24(7.33%)
Primary	38(11.62%)
High school	79(24.15%)
Intermediate	137(41.89%)
Graduate and above	49(14.98%)
Fathers education	
Illiterate	33(10.09%)
Primary	53(16.21%)
High school	129(39.45%)
Intermediate	87(26.61%)
Graduate and above	25(7.65%)
Mothers occupation	
Working	113(34.55%)
Housewife	214(65.45%)
Fathers occupation	
Labour	81(24.78%)
Private service	98(29.97%)
Govt service	61(18.65%)
Business	63(19.26%)
Professional	24(7.34%)
Socio-economic status	
I	13(3.98%)
II	16(4.89%)
III	139(42.51%)
IV	153(46.79%)
V	6(1.83%)

In the present study, 221(67.58%) study subjects were in 10 - 14 years age group. 106(32.42%) were in 15 - 19 years age group. Most of study subjects i.e. 215(65.95 5%) were educated upto high school level. 51(15.64%) and 34 (10.39 %) study subjects were educated up to primary and secondary education, respectively. Majority of girls i.e. 191(58.40%) were living in joint family. Most of the mothers' education was upto intermediate level i.e. 137(41.89%). Most of the fathers had education up to high school level i.e. 129(39.45%). Regarding occupation of girl's mother, 214 (65.44%) mothers were housewives and 113(34.56%) were working mothers. Regarding father's occupation, 81(24.78%) were working as labourers. 98(29.97%) were working in private services whereas 61(18.65%) were working in govt. services. Out of the 327 adolescent girls, a majority, 153(46.79%) belonged to the socio-economic class IV, whereas, 139 (42.51%) of them belonged to class III. (Table 1)

The overall prevalence of anaemia was 42.20%. Out of the 138 anaemic adolescent girls, 94 (68.12%) were mildly anaemic, 31(22.46%) were moderately anaemic and 13(09.42%) were severely anemic.(Table 2).

Table 2: Distribution of study subjects according to type of anaemia(n=138)

Type of anaemia	No(%)
Mild	94(68.12%)
Moderate	31(22.46%)
Severe	13(9.42%)
Total	138

Table 3 shows association between various sociodemographic factors and prevalence of anaemia. Anaemia was found to be significantly associated with age of adolescent girls, mothers education and mothers occupation

Table 3: Association between socio-demographic factors and anaemia

Socio-demographic factors	Anaemic (n=138)	Non anaemic (n=189)	Total (n=327)	$\chi 2$ value	p value
Age					
10-14 yrs	60(27.15%)	161(72.85%)	221(67.58%)	63.33	P < 0.001
15-19 yrs	78(73.58%)	28(26.42%)	106(32.42%)		Signi.
Mothers education					
Illiterate	14(58.33%)	10(41.67%)	24(7.33%)	11.2	P < 0.05
Primary	18(47.37%)	20(52.63%)	38(11.62%)		Signi.
High school	36(45.57%)	43(54.43%)	79(24.15%)		
Intermediate	59(43.07%)	78(56.93%)	137(41.89%)		
Graduate and above	11(22.45%)	38(77.55%)	49(14.98%)		
Mothers occupation					
Working	61(53.98%)	52(46.02%)	113(34.55%)	9.82	P < 0.0002
Housewife	77(35.98%)	137(64.02%)	214(65.44%)		Signi.
Fathers occupation					
Labour	39(48.15%)	42(51.85%)	81(24.78%)		
Private service	41(41.84%)	57(58.16%)	98(29.97%)	7.73	P > 0.05
Govt service	26(42.62%)	35(57.38%)	61(18.65%)		Not Signi.
Business	28(44.44%)	35(55.56%)	63(19.26%)		
Professional	4(16.67%)	20(83.33%)	24(7.34%)		
Socio-economic status					
I					
II	3(23.08%)	10(76.92%)	13(3.98%)		
III	5(31.25%)	11(68.75%)	16(4.89%)	6.91	P > 0.05
IV	69(49.65%)	70(50.35%)	139(42.51%)		Not Signi.
V	59(38.56%)	94(61.44%)	153(46.79%)		
	2(33.33%)	4(66.67%)	6(1.83%)		

Table 4 shows that anaemia was significantly associated with history of worm infestation, type of diet and intake of iron rich food.

Table 4: Association of study subjects with history of worm infestation, type of diet and habit of eating iron rich food

Variable	Anaemic (n=138)	Non Anaemic (n=189)	Total (n=327)	Chi square test
History of worm infestation				
Present	46(68.66%)	21(31.34%)	67(20.48%)	$\chi 2$ value=29.2
Absent	92(35.38%)	168(64.62%)	260(79.51%)	p< 0.001 Signi.
Type of diet				
Non vegetarian	62(31.47%)	135(68.53%)	197(60.24%)	$\chi 2$ value=23.4
Vegetarian	76(58.46%)	54(41.54%)	130(39.75%)	p< 0.001 Signi.
Intake of iron rich food				
Yes	17(19.10%)	72(80.90%)	89(27.21%)	$\chi 2$ value=26.8
No	121(50.84%)	117(49.16%)	238(72.78%)	p< 0.001 Signi.

DISCUSSION

In the present study, 221(67.58%) study subjects were in 10 - 14 years age group and 106(32.42%) were in 15 -19 years age group. This was similar to study conducted in adolescent girls of rural Wardha.[4] Most of study subjects i.e. 215 (65.95 5%) had completed high school education .51(15.64%) and 34 (10.39 %) were educated up to primary and secondary education, respectively. In a study conducted in rural Wardha, more than 50% girls had completed secondary level education. [4] Majority of girls, 191(58.40%) were living in joint family and 136(41.59%) in nuclear family. The reason for this may be high cost of housing. This was in contrast to study conducted in rural area of Meerut, 63.10% girls belongs to nuclear family whereas 36.90% girls belongs to joint family. [5] In the present study, education of mother was up to intermediate school in

majority i.e.137 (41.89%) and 24(7.33%) mothers were illiterate. In a study conducted in urban slum area of Nagpur, 13.97% mothers were illiterate whereas 43.38% were educated up to primary level. [6] Regarding father's education, father had education up to primary level in 53(16.21%), intermediate in 87 (26.61%), high school in 129(39.45%) and graduate in 25(7.65%) and 33 (10.09%) fathers were illiterate. In a study conducted in urban area of Pune, 13.57% fathers were illiterate whereas 86.45% fathers were literate. [7] Regarding mother's occupation, 214(65.44%) mothers were housewives and 113(34.56%) were working mothers. In a study conducted in urban area of Nagpur, 59.93% mothers were housewives. [6] Out of the 327 adolescent girls, 153(46.79%) girls belonged to the socio-economic class IV whereas, 139(42.51%) belonged to class III and only 6(1.83%) belonged to class V. In a study conducted in North India, 84.2% girls belonged to class IV. Whereas, only 11.5% belonged to class III. [8]

The prevalence of anaemia was 42.20% in adolescent girls which is higher than 35.1% among adolescent girls of urban slum of Nagpur reported by Choudhary et al. [9] This indicated that it was a public health problem of high magnitude as per the WHO guidelines (40 % and above prevalence-high magnitude). [3]

In a multi-country study on the nutritional status of adolescents, which was carried out by the International Centre for Research on Women (ICRW), anaemia was found to be the most widespread nutritional problem and its prevalence ranged from 32-55%. [8] A study which was conducted in the rural areas of Tamilnadu revealed that the prevalence of anaemia among the adolescent girls was 44.8%. [10] Another study which was conducted among girls belonging to the low income families in Vadodara, revealed that 67% of the adolescent girls were anaemic. [11] Thus, the results of various studies which have been mentioned above, demonstrated that the prevalence of anaemia in this study was high as in other parts of the country. This indicated the importance of including adolescents in the risk group to improve their iron status and the need for planning intervention programs that would increase the haemoglobin levels among the adolescent girls through prophylaxis treatment, dietary modification.

Out of the 138 anaemic adolescent girls, 94 (68.12%) were mildly anaemic, 31(22.46%) were moderately anaemic and 13(09.42%) were severely anaemic. In a study carried out in urban sum area of Pune, Majority of them were having mild anaemia (52.1%) and only5.1% had severe anaemia, rest of (42.7%) girls were with moderate anaemia. [7] In a study conducted in Shimla district among adolescent girls, overall prevalence of mild, moderate and severe anaemia was 161 (42.3%), 167 (38.9%)12 (3.2%) respectively. [12]

The present study showed h/o worm infestation in 67(20.48%) subjects. In a study conducted in rural Wardha, history of worm infestation was present in only 10.3% girls. [4] In a study conducted in urban area of Pune, history of worm infestation was present in 7.24% girls. [7] The type of diet was non- vegetarian in majority of subjects, 197(60.24%) and vegetarian in 130(39.76%) subjects. In a study conducted in urban area of Pune, 14.74% girls were vegetarian. [7] Habit of taking iron rich food was present in only 89(27.21%) subjects and was absent in 238(72.78%) subjects. This was similar to study conducted in urban area of Pune. [7]

The association between prevalence of anaemia and age group was found to be statistically significant. This was similar to study conducted in Haryana. [13] The association between prevalence of anaemia

and mother's education was found to be statistically significant. Rawat et al detected high prevalence (76%) of anaemia among girls of illiterate mothers and low (62%) among girls of literate mother's. [5] The association between prevalence of anaemia and mother's occupation was found to be statistically significant. This may be due to the fact that working mothers are not able to pay proper attention towards girl's nutrition. This was similar to study conducted in urban area of Pune where prevalence of anaemia was high in girls of working mother, 54.9% as compare to housewife mother i.e. 36.8%. [7]

The association between prevalence of anaemia and h/o of worm infestation was found to be statistically significant. This was similar to study conducted in urban area of Pune. [7]

CONCLUSION

The present study shows that the overall prevalence of anaemia was 42.20% in adolescent girls. This indicated that it was a public health problem of high magnitude as per the WHO guidelines (40 % and above prevalence-high magnitude). This indicated the importance of including adolescents in the risk group to improve their iron status and the need for planning intervention programs that would increase the haemoglobin levels among the adolescent girls through prophylaxis treatment, dietary modification.

ACKNOWLEDGEMENTS

We would like to thank the study participants for their co-operation.

REFERENCES

1. World Health Organization. Programming for adolescent health and development. WHO Tech Rep .Geneva; 2003 : 34-37.
2. Verma M, Chhatwal J, Kaur G. Prevalence of anaemia among urban school children of Punjab Ludhiana, Indian paediatrics 1998;35:1181–6.
3. Kishore J. Editor. National Health Programs of India. 6th ed. New Delhi: Century Publications; 2006; 82-84.
4. Kaur SS, Deshmukh PR, Garg BS. Epidemiological correlates of nutritional anaemia in adolescent girls of Rural Wardha.Indian J Community Medicine.2006; 31(4):255-58.
5. Rawat CM, Garg SK, Singh JV, Bhatnagar M, Chopra H, Bajpai SK.Socio-demographic correlates of anaemia among adolescent girls in rural area of district Meerut.Indian Journal of Community Medicine.2001;26(4):173-75 .
6. Kulkarni MV, Durge PM, Kasturwar NB.Prevalence of anemia among adolescent girls in an urban slum. National Journal of Community Medicine.2012; 3(1):108-11.
7. Vankudre AJ, Bhosale NA, Madkar SS. Prevalence and Socio-demographic factors related to Anaemia amongst Adolescent school girls in an urban slum and the effect of oral iron therapy.Indian Journal of Maternal and Child Health. 2011;13(3):19.
8. Basu SS, Basu SB, Hazarika RK, Parmar VK. Prevalence of anemia among school going adolescents of Chandigarh. Indian Paediatric 2005; 42(17):593-97.
9. Chaudhary SM, Dhage VR. A study of anemia among adolescent females in the urban area of Nagpur. Indian J Community Med. 2008 ; 33:243-45.
10. Rajaratnam J, Rajaratnam A, Asokan JS, Jonathan P. Prevalence of anaemia among adolescent girls of rural Tamilnadu. Indian Pediatrics.2000; 37(3):532-36.
11. Sen A, Kanani SJ. Deleterious Functional impact of anaemia on young adolescent school girls. Indian Paediatr.2006; 43 (3): 219-26.

12. Thakur A Bhardwaj AK Parashar A Sharma D. Epidemiological correlates of Nutritional Anaemia among Adolescent Girls of a Hilly state. Indian journal of maternal and child health. 2011; 13 (3): 2-7.

13. Gupta N, Kochar G. Pervasiveness of anaemia in adolescent girls of the lower socio-economic groups of the district of Kurukshetra, Haryana. The Internet Journal of Nutrition and Wellness.2009; 7(1): 1-5.

How to cite this article: Jogdand M.S., Kazi Y.K., Suryawanshi S.R. A cross-sectional study on socio demographic factors associated with anaemia in adolescent girls in an urban slum area of Mumbai. Int J Health Sci Res. 2015; 5(6):10-16.

****