



A Study to Assess Pattern of Morbidities among Adolescents under School Health Program from Arural Block of North India

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ABSTRACT

Introduction: Timely identification of different type of morbidities among school going adolescents under school health programme is necessary to take targeted interventions and revision of existing programmes in order to prevent them. Morbidity survey of school going adolescent is one such method.

Methods: A cross sectional morbidity survey was conducted among adolescent attending two schools of a rural block of Haryana, North India with help of a structured Performa. The morbidities were identified using standard methods by trained community physicians.

Results: Overall, 87.2% of the adolescents were found to have one or the other morbidity. A total of 65.8% were anaemic, 37.8% were wasted, 34.1% were stunted and 26.8% were having uncorrected refractive errors. Further, 6% of the children were found to have signs of vitamin A deficiency (VAD) in form conjunctival xerosis (3.6%) and bitot's spots (2.4%).

Conclusion: Prevalence of anaemia, under nutrition and refractive errors are still quite high among adolescents despite presence of various programmes to address them. Higher prevalence of Vitamin A deficiency is alarming which requires further investigation in its cause and necessary corrective actions.

Key words: Adolescents, Anaemia, Wasting, Stunting, School Health Program, World Health Organization

INTRODUCTION

The World Health Organization (WHO) defines adolescence as the period from 10 to 19 years of age characterized by physical, psychological, and social changes. It is also period of transition from childhood to adulthood¹ In India, adolescents constitute 21.4 percent of the total population.²

Health is a key factor in entering, continuing and performing in school. To attain effective learning, adolescents need to have good health.³Where as there are concerted efforts to provide care to the children below six years of age through various national maternal and child health programmes (e.g., ICDS, RCH programmes), the adolescent age group remains a neglected lot. Early identification

of childhood illnesses through regular school health check-ups help prevents complications.⁴ School Health Programme promoting basic checkup of school children for a variety of conditions is a systemic effort of raising awareness and promoting good health among school children and their family.⁵The adolescents are on threshold of adulthood. If they are to reach adulthood in a healthy state, then it's necessary to assess the common morbidities prevalent in this age-group so that targeted and concerted services could be provided to them.

With this background, the current study was carried out to assess health status and morbidity pattern among school going adolescents.

MATERIAL & METHODS

The present study was done as a part of school health services provided by department of Community Medicine, PGIMER, Chandigarh in Raipur Rani Block of district Panchkula, Haryana. The study was carried out in two middle schools of Raipur Rani Block of district Panchkula, Haryana, in month of May & June, 2015. All the children above 10 years (adolescents) studying in class VI to VIII present at school during the health check up were included in the study. The purpose of the study was explained and consent was taken from the principle /headmasters of the two schools. Parents were also informed of the health check up by the school authorities. The morbidity survey was conducted by a health team consisting of a Senior and Junior Resident, one Multi-Purpose Health Worker (MPHW) and one ANM under guidance of a senior professor from the department of Community Medicine, PGIMER.

For conducting the study, a semi structured Performa was developed having three sections. The first section contained information on socio-demographic variables of the adolescents like age, sex, religion etc. The second section contained anthropological details like weight, height and BMI and third section contained details on various common ailments/morbidities affecting the different organ systems. Socio-demographic information including the date of birth was noted from the school registers. Weight of the adolescents was measured in minimal clothing with the help of digital weighing scale. Height was measured with the help of calibrated metallic tape fixed to the wall with children standing erect against the wall bare-foot. Wasting was defined by weight for height criterion and stunting was defined by height for age criterion and their classification was done according to WHO cut off levels according to z-scores. Anaemia was diagnosed by clinical signs such as pallor of conjunctiva/tongue and was categorized accordingly as mild, moderate or severe. Confirmation of the pallor was done with the help of blood tests by Sahli's method of haemoglobin estimation. Worm infestation was diagnosed based on the basis of history and asking specific questions. Otoscope was used to diagnose ear problems. Hearing was assessed by Rinnie's test using Tuning Fork. Snellen's chart was used to assess the visual acuity. Oral cavity was examined for any abnormal pigmentation of teeth suggesting of caries, cavities and missing teeth.

Data collected and recorded in the survey Performa was entered in Microsoft excel sheets, coding was done and analysed with SPSS ver 16.0.

All the adolescents found to have the various morbidities and illnesses were given treatment and

medications by the Rural Health Training Centre (RHTC) of department of Community Medicine located in one of the village. For correcting anaemia, For e.g., IFA tablets were prescribed and given, for correcting vitamin A deficiency, Vitamin A Syrups were procured and therapeutic doses of Vitamin A was given on day 0, 1 and 14 days, each dose containing 2,00,000 IU of vitamin A. Adolescents found to have uncorrected refractive error were referred to Community Health Centre(ChC), Raipur Rani and linkage with the teams of Rastriya Bal Suraksha Karyakaram (RBSK) was made for free provision of spectacles to the affected children. Similarly for other morbidities, linkages with the respective programmes were done to ensure that the adolescents receive the necessary and timely medical care.

RESULTS

A total of the 82 adolescents present in the schools consented and participated in the study out of which 42 (51.2%) were males and 40 (47.8%) were females (Table 1). The mean age of the adolescents' was 12.5 ± 5.3 years ranging from 10 to 15 years. The mean ages of boys was 12.3 ± 5.7 years whereas that of girls was 12.7 ± 4.9 years respectively without any statistically significant difference ($p=0.34$).

Overall 87.2% (71) of the school children were found to have one or the other morbidity.

A total of 38.1% of the boys and 35.0% of the girls were found to be wasted as per weight for height cuts off levels of WHO (Z score $< -2SD$) (Table 2). Among these, two boys (4.8%) and two girls (5.0%) each were severely wasted (Z score $< -3SD$). Similarly, 35.7% of the boys and 32.5% of the girls were found to be stunted assessed by height for age standards of WHO (z score $< -2SD$) (Table 3). Out of these, 2(4.8%) boys and 3(7.5%) of the girls were severely stunted (z score $< -3SD$).

With respect to other morbidities, 65.8% of the adolescent examined had anaemia with girls being more affected than boys (75% girls v/s 57.1% boys) (Table 4).

Table-1 Age and sex wise distribution of the studied adolescents

Age (in completed years)	Male (%)	Female (%)	Total (%)
10	06 (7.3)	05 (6.1)	11 (13.4)
11	08 (9.7)	09 (11.0)	17 (20.7)
12	11 (13.4)	10 (12.2)	21 (25.6)
13	08 (9.7)	08 (9.7)	16 (19.5)
14	06 (7.3)	05 (6.1)	11 (13.4)
15	03 (3.6)	03 (3.6)	06 (7.3)
Total	42 (51.2)	40 (48.8)	82 (100.0)

Table 2- Nutritional status of studied adolescents for wasting (underweight for height*)

Sex	Moderately wasted adolescent (-3SD<z<-2SD)	Severely wasted adolescent (z<-3SD)	Total wasted adolescents (z<-2SD)
Boys (n=42)	14 (33.3)	02 (4.8)	17 (38.1)
Girls(n=40)	12 (30.0)	02 (5.0)	14 (35.0)
Total(n=82)	26 (31.7)	04 (4.9)	30 (36.6)

*Assessed by weight for height standards of World Health Organization (WHO) & signifies acute malnutrition/undernutrition; chisquare 0.26, p value 0.60

Table 3- Nutritional status of studied adolescents for stunting (short for age)**

Sex	Moderately stunted adolescent (-3SD<z<-2SD)	Severely stunted adolescent (z<-3SD)	Total stunted adolescents (z<-2SD)
Boys(n=42)	13 (30.9)	02 (4.8)	15 (35.7)
Girls(n=40)	10 (25.0)	03 (7.5)	13 (32.5)
Total(n=82)	23 (28.0)	05 (6.1)	28 (34.1)

**Assessed by height for age standards of World Health Organization (WHO) & signifies chronic malnutrition/under nutrition; chisquare 0.09, p value 0.75

Table 4- Pattern and distribution of morbidities among the studied adolescents

Morbidities	Boys (n=42)	Girls (n=40)	Total (n=82)	P-value
Anemia	24 (57.1)	30 (75.0)	54 (65.8)	0.08
Vit. A Deficiency				
Bitot's spots	1 (2.4)	1 (2.5)	2 (2.4)	0.58
Conjunctival xerosis	2 (4.8)	1 (2.5)	3 (3.6)	0.93
Eye morbidities				
Conjunctivitis	2 (4.8)	2 (5.0)	04 (4.9)	0.93
Refractive errors	12 (28.6)	10 (25.0)	22 (26.8)	0.71
Squint	1 (2.4)	1 (2.5)	2 (2.4)	0.93
Ear				
Otitis Externa	01 (02.4)	00 (00.0)	1 (1.2)	0.32
Wax	25 (59.5)	15 (37.5)	40 (48.7)	0.31
Deafness	01 (02.4)	00 (00.0)	01 (1.2)	0.32
Skin				
Scabies	2 (4.8)	1 (2.5)	3 (3.6)	0.58
Eczema/ Dermatitis	4 (9.5)	2 (5.0)	6 (7.3)	0.43
Gastrointestinal				
Worm infestation	5 (11.9)	3 (7.5)	8 (9.7)	0.34
Recent Diarrhoea(within a week)	6 (14.2)	3 (7.5)	9 (11.0)	0.28
Rheumatic fever	0 (0)	0 (0)	0 (0)	-
Convulsion	0 (0)	0 (0)	0 (0)	-
Respiratory				
Upper Respiratory Tract Infections(URTIs)	8 (19.0)	6 (15.0)	14 (17.1)	0.62
Lower Respiratory Tract Infections(LRTIs)	1 (02.4)	0 (00.0)	01 (01.2)	0.32
Dental				
Missing teeth	06 (13.6)	7 (17.5)	13 (15.8)	0.76
Dental caries	08 (19.0)	7 (17.5)	15 (18.3)	0.71

Around 6% of adolescents had signs of Vitamin A deficiency (VAD) in form of conjunctival xerosis (3.6%) and bitot's spots (2.4%). Refractive error was seen in 26.8% of the adolescents (28.6% of the boys and 25% of the girls).

DISCUSSION

In the present study, the overall prevalence of wasting (underweight for height) and stunting (short for age) in the studied adolescents were 36.6% and 34.1% respectively. A study by Damb-

hare et al⁶ found that 51.7% of adolescents were underweight and 34.5% were stunted similar to our findings. The prevalence of stunting and underweight among adolescents in the study carried out in Bangladesh by Rahman et al⁷ were 46.6% and 42.4% respectively. The corresponding figures of underweight and stunting in the study by Ghosh et al⁸ from Nepal were 49.5% and 44.5% respectively and another study from Assam by Medhi et al⁹ reported rates of 49.5% and 50.4% respectively. The difference in prevalence rates of

under nutrition among adolescents reflects the regional variations with respect to under nutrition.

Prevalence of anaemia in our study was higher among girls (75.0%) than boys (57.1%), the difference being statistically insignificant ($P=0.08$). Similar findings were reported by Bhattacharya et al¹⁰ in their study on school going adolescents where clinical anaemia among girls (75.9%) was higher than boys (42.9%). A study by Ananthakrishnan et al¹¹ reported 57% of the adolescents as anaemic while the study by Kakkar et al¹² also reported clinical anaemia to be higher among girls (46.7%) than boys (34.1%).

Eye signs of vitamin A deficiency (VAD), known as Xerophthalmia, were found in 6% of the adolescents in our study. The prevalence of conjunctival xerosis (3.6%) and bitot's spots (2.4%) in our study is high and well above the WHO cut-off levels for declaring it as a public health problem. However, the indicators of VAD for declaring it as a public health problem are usually assessed in pre-school children in the age group of 6 to 71 months.¹³ VAD still exist as a public health problem in many regions of world with the WHO regions of Africa and South-East Asia having the highest burden of VAD.¹⁴

Prevalence of skin diseases (scabies and dermatitis combined) was 11.1% in our study while it was 6.9% in study by Dambhare et al⁶, 6.2% in study by Joice et al¹⁵ and 8.7% in the study by Ananthakrishnan et al¹¹. Prevalence of skin morbidities was 13.0% in the study by Dey et al¹⁶ and 16.3% in the study by Kakkar et al¹² somewhat higher than ours findings.

The problem of wax was present in around 49% of the adolescents in our study. In contrast to this, study from Wardha by Dhambare et al⁵ reported only 2.6% and study from Pondicherry by Ananthakrishnan et al¹¹ reported 3.1% prevalence of wax in adolescents. The reasons for higher prevalence of wax may be due to rural settings of our study where hygiene practices are generally poor.

Refractive errors were present in 26.8% of the adolescents in our study which is similar to those reported by Kakkar et al¹² (22.5%) in their study. In the study by Thekdi et al¹⁷, refractive errors were present in 37% of the school children and it was the most common morbidity among them. In contrast to this, it was 13.8% in study by Dambhare et al⁶, 20.9% in Joice et al's¹⁵ study and 2.7% in Ananthakrishnan et al's¹¹ study.

The prevalence of worm infestation was 9.7% in our study which is similar to those reported to by Dambhare et al⁶ (7.7%) and Thekdi et al¹⁷ (13.2%).

The prevalence of dental caries was found to be

15% in a study by Dey et al¹⁶, 25% by Joice et al¹⁵, 27.9% by Anantha krishnan et al¹¹, 35.3% by Dambhare et al⁶ and 53.1% by Kakkar et al¹², while it was 18.3% in our study.

A distinctive finding emerging from our study is persisting high prevalence of anaemia among adolescents despite reportedly receiving weekly iron and folic supplementation under WIFS program. Under WIFS, with aim of preventing anaemia in children and adolescents, the studying in class 6th to 12th are given a single tab of IFA containing 100 mg of elemental iron and 500 micrograms of folic acid every week on a fixed day.¹⁸

The study had few limitations. As only two schools from a single block were selected purposively, study findings may not be generalizable to whole of school going adolescents in the state. However, as the block selected for the study was totally rural, the study findings may be generalizable to rural adolescents. Larger studies with bigger sample size are required to describe the true burden of various morbidities in adolescents.

CONCLUSION

Anaemia is the most commonly seen morbidity among adolescents. Despite the weekly Iron & folic acid supplementation programme (WIFS) being there for a while in all the states of India, such a high prevalence of anaemia is a cause of concern and asks for review of the programme. Another area of concern is high prevalence of refractory error, for which timely correction and health education should be imparted. High prevalence of vitamin A deficiency found in the study needs further investigation in its cause. Continuous surveillance and monitoring through periodic health check-up may help to prevent and control these morbidities for better health of the future generation.

RECOMMENDATIONS

All the adolescents should be periodically assessed for various common morbidities. Problem of anaemia, refractive errors and vitamin A deficiency needs to be addressed through review of existing programmes and specific interventions for them.

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REFERENCES

1. World Health Organization. Adolescent Health at a glance in South East Asia Region 2007. Factsheet. New Delhi: WHO

- Regional Office for South East Asia, Adolescent Health and Development Unit: 2007.
2. UNFPA (United Nations Population Fund) for UN system in India. Section One: Situational Analysis of Adolescents in India. Adolescents in India: A profile 2011.
 3. Kishore J. National Health Programs of India. New Delhi: 2nd ed. Century Publications; 2007. p. 441-7.
 4. Panda P, Benjamin AI, Singh S, Zachariah P. Health status of school children in Ludhiana city. *Indian J of Community Medicine*. Oct - Dec 2000; 25(4):150-155
 5. Ministry of Health and Family Welfare. Guidelines of the School Health Programme. New Delhi. Available from: <http://www.mohfw.nic.in/WriteReadData/1892s/2099676248file5.pdf>. [Last accessed on 2011 Mar 18; Last accessed on 2016 November 14].
 6. Dambhare DG, Bharambe MS, Mehendale AM, Garg BS. Nutritional Status and Morbidity among School going Adolescents in Wardha, a Peri-Urban area. *Online J Health Allied Sci* 2010; 9:3.
 7. Rahman MA, Karim R. Prevalence of stunting and thinness among adolescents in rural area of Bangladesh. *J Asian Sci Res* 2014; 4: 39-46.
 8. Ghosh A, Adhikari P, Chowdhury SD, Ghosh T. Prevalence of under nutrition in Nepalese children. *Ann Hum Biol* 2009; 36:38-45.
 9. Medhi GK, Hazarika NC, Mahanta J. Nutritional status of adolescents among tea garden workers. *Indian J Pediatr* 2007; 74: 343-7.
 10. Bhattacharya A, Basu M, Chatterjee S, Misra RN, Chowdhury G. Nutritional status and morbidity profile of school-going adolescents in a district of West Bengal. *Muller J Medical Sciences & Research* 2015.6:10-15.
 11. Ananthakrishnan S, Pani SP, Nalini P. A comprehensive study of morbidity in school age children. *Indian Pediatr* 2001; 38:1009-17.
 12. Kakkar R, Kandpal SD, Aggarwal P. Health Status of Children under School Health Services in Doiwala Block, Dehradun. *Indian J Community Health* 2012; 24:45-8.
 13. WHO. Indicators for assessing Vitamin A deficiency and their application in monitoring and evaluating intervention programmes. World Health Organization Micronutrient Deficiency Information System MDIS. WHO/NUT/96.10, Geneva, World Health Organization, 1996.
 14. WHO. Global prevalence of vitamin A deficiency in populations at risk 1995-2005. WHO Global Database on Vitamin A Deficiency. Geneva, World Health Organization, 2009.
 15. Joice S, Velavan A, Natesan M, Singh Z, Purty AJ, Hector H. Assessment of nutritional status and morbidity pattern among school children of rural Puducherry. *Acad Med J India* 2013;15:32-5
 16. Dey I, Biswas R, Ray K, Bhattacharjee S, Chakraborty M, Pal PP. Nutritional status of school going adolescents in a rural block of Darjeeling, West Bengal, India. *Health* 2011;2:75-7
 17. Thekdi K, Kartha G, Nagar SS. Assessment of nutritional and health status of the school students of 5th to 9th standard (11 to 15 years age group) of Surendranagar district, Gujarat state, India. *Healthline* 2011; 2:59-61.
 18. WIFS-Government of India- National Health Mission nrhm.gov.in/nrhmcomponnets/reproductive-child-health/.../wifs.html