Original Article:

Nutritional Status and Morbidity among School going Adolescents in Wardha, a Peri-Urban area

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Abstract:
Objectives: To assess the nutritional status and morbidity among the school going adolescents in peri urban area Wardha. **Materials and Methods:** The present study was conducted in the year 2008. 116 children in the age group of 10 to 19 years studying in high school of peri urban area Wardha were examined. Nutritional status of the adolescents was assessed through weight for age (wasting) and height for age (stunting) according to WHO criteria. Data was entered and analyzed by using Epi Info 6.04 software package. Chi- square value was used for testing statistical significance. **Results:** Mean age of the adolescents was 13.16 ± 1.99. 48.3% of the adolescents were found to be normal and 51.7% were underweight. Early adolescents were at highest risk of underweight significantly more 73.3% ($p < 0.05$) as compared to late adolescents 26.7%. Overall 34.5% of the adolescents were stunted with boys suffering more 72.5% as compared to girls 27.5%. 28.45% of the school going adolescents had anaemia with girls suffering significantly more 38.89% ($p < 0.05$) as compared to boys 23.75%. 35.34% adolescents had dental caries. 13.79% adolescents were found to be suffering from refractive error. 7.76% adolescents had worm infestation. 6.9% adolescents had skin problems. 2.59% adolescents had tonsillitis and 2.59% had wax in the ear. **Conclusion:** The study shows the poor health and nutritional status among the adolescents. A periodical and regular health check-up with concerted efforts towards their nutrition along with focused health education will improve the health and nutritional status of these school going adolescents in peri urban area Wardha.
Key Words: Adolescents, Anthropometry, Nutritional status. Morbidity

Introduction:

Adolescence is a significant period of human growth and maturation. In India, adolescents (10-19 years) constitute 21.4 percent of the population, comprising one fifth of the total population.[1] The health and nutritional status of the children is an index of the national investment in the development of its future manpower.[2] Therefore comprehensive health care of this section will fulfils the health need of 1/5 population. Achievement of optimum growth during this period is of utmost importance in maintaining good health thereafter. Poor nutrition among adolescents resulting in short stature and low lean body mass is associated with many concurrent and future adverse health outcomes. School health services provide an ideal platform to detect the health problems early and treat them. Early detection of the morbidities through regular survey helps in prompt treatment and prevention of serious complications.[3]

Therefore this study was carried out with the objective to assess the nutritional status and morbidity pattern among school going adolescents in Peri urban area Wardha.

Materials and Methods:

The present study was conducted in the year 2008 in a peri urban school which is the field practice area of department of community medicine, Mahatma Gandhi Institute of Medical Sciences, Sewagram.116 children in the age group of 10 to 19 years[4] studying in high school of peri urban area Wardha was examined by the team comprising of doctor, social workers and school teachers through a scheduled visit. Informed consent of the head of the institution was taken before the study. Information was collected regarding any health complaints in the past or at present. Body weight was measured (to the nearest 0.5 kg) with the subject standing motionless on the weighing scale and with the weight distributed equally on each leg. Height was measured (to the nearest 0.5 cm) with the subject standing in an erect position against a vertical scale and with the head positioned so that the top of external auditory meatus was level with the inferior margin of the bony orbit. Nutritional status of the adolescents was assessed through weight for age (underweight) and height for age (stunting) according to WHO criteria.[5] General examination of all the students was carried out in good natural light. Anaemia was diagnosed from clinical signs such as presence of pallor on the conjunctiva, tongue and palm. Wherever any health problem was detected, the teachers were met and explained the problem and guided about the further course of action. Referral was made for further management. Data thus generated was entered and analyzed using Epi Info 6.04 software package. Chi- square value was used for testing statistical significance.

Results:

A total of 116 adolescents participated in the study. Out of them 80 (68.97%) were boys and 36 (31.03%) were girls between the age of 10 to 19 years. Mean age of the

adolescents was 13.16 ± 1.99. 48.3% of the adolescents were found to be normal and 51.7% were malnourished as per their weight for age. Early adolescents age group in which the growth spurt takes place, were observed to be at highest risk of underweight significantly more 73.3% ($p < 0.05$) as compared to late adolescents 26.7% (Table 1). Overall 34.5% of the adolescents were stunted with boys suffering more 72.5% as compared to girls 27.5%. 67.5% early adolescents were stunted as compared to 32.5% late adolescents (Table 2). Various disorders observed among the adolescent are given in Table 3. 86.21% adolescents were suffering from one or more illness at the time of examination. 28.45% of the school going adolescents had anaemia with girls suffering significantly more 38.89% ($p < 0.05$) as compared to boys 23.75%. 35.34% adolescents had dental caries. 13.79% adolescents were found to be suffering from refractive error. 7.76% adolescents had worm infestation (on history). 6.9% adolescents had skin problems. 2.59% adolescents had tonsillitis and 2.59% had wax in the ear.

Table 1: Nutritional status of adolescents (underweight)

Variables	Nutritional Status				Total	Percentage
	Underweight	Percentage	Normal	Percentage		
Sex						
Boys	45	75	35	62.5	80	69
Girls	15	25	21	37.5	36	31
Adolescents						
Early adolescent	44	73.3	43	76.8	87	75
Late adolescent	16	26.7	13	23.2	29	25
Total	60	51.7	56	48.3	116	100

Significant difference $x^2 = 0.83$, df = 1, $p<0.05$

Table 2: Nutritional status of adolescents (stunting)

Variables	Nutritional Status				Total	Percentage
	Stunting	Percentage	Normal	Percentage		
Sex						
Boys	29	72.5	51	67.1	80	69
Girls	11	27.5	25	32.9	36	31
Adolescents						
Early adolescent	27	67.5	60	78.9	87	75
Late adolescent	13	32.5	16	21.1	29	25
Total	40	34.5	76	65.5	116	100

Table 3: Morbidity pattern among adolescents

Diseases		Boys (n=80)		Girls (n=36)		Total (n=116)	
		No	%	No	%	No	%
Nutrition	Anaemia	19	23.75	14	38.89	33	28.45
	Vit A deficiency	0	0	1	2.78	1	0.86
	Vit B complex deficiency	10	12.5	7	19.44	17	14.66
ENT	Tonsillitis	3	3.75	0	0	3	2.59
	Pharyngitis	4	5	5	13.89	5	4.31
	CSOM	1	1.3	0	0	1	0.86
	Wax in ear	2	2.5	1	2.78	3	2.59
Eye	Refractive error	9	11.25	7	19.44	16	13.79
	Conjunctivitis	2	2.5	0	0	2	1.72
Skin	Pyoderma	4	5	1	2.78	5	4.31
	Fungal infection	2	2.5	1	2.78	3	2.59
Dental	Caries	32	40	9	25	41	35.34
Abdomen	Worm infestation	5	6.25	4	11.11	9	7.76
Respiratory	Bronchial Asthma	1	1.3	0	0	1	0.86

Discussion:

Adolescence is a period of increased nutritional requirements and adolescent anthropometry varies significantly world-wide.[4,6,7] Undernutrition is documented public health problem contributing substantially to children's survival.[8] All the school going adolescents in the age groups of 10 – 19 years were examined in this study. There is a significant difference ($P < 0.05$) between in the age of boys and girls. The mean age of boys (13.40 years) was significantly higher than the girls (12.61 years).

The mean height of the adolescents of the present study was higher but the mean weight and mean BMI of the adolescents was lower than those reported by Mukhopadhyay et al, among urban adolescents of Kolkata.[9] The mean height and mean body weights in the present study (in different ages and sexes) was far lower than the median values of NCHS standards.[10] Saha Sudip Kumar et al[11] reported 32.3% urban school girls were in the normal range while 65.3% were overweight or obese. In the present study 48.3% of the adolescents were nor-mal, nobody was overweight or obese and 51.7% were under-nourished. The extent of undernutrition was higher than those among Nepali refugees reported by Woodruff et al,[12-14] but lower than those reported by one Indian study (53%)[13] and two Kenyan studies (61%)[15] and (57%).[16]

Nutritional deficiency related health problems were strikingly high in the present study. Overall 28.45% of the school going adolescents had anaemia with girls suffering significantly more 38.89% ($p < 0.05$) as compared to boys 23.75%. Panda et al[3] also observed the similar results for anaemia among ad-olescents. Several studies had reported anaemia almost similar to the present study.[3,17-19]

Avitaminosis manifested by adolescents was also high in the present study but notably absent in the urban girls.[7] 35.34% adolescents in the present study had dental caries as compared to that in Ludhiana city.[3,19] These problems can be solved by school based programs, health education, and food fortifica-tion. The problem of anemia needs to be tackled with educa-tion, food fortification, routine antihelminthic, iron therapy

and treatment of other chronic infections. Otherwise these problems would have long-term ill effects on the nutritional status and morbidity pattern of school going adolescents in peri -urban area Wardha.

Conclusions:

The health and nutritional status among the adolescents was found to be low, more so in girls than boys. The prevalence of underweight 51.7% and stunting 34.5% in these adolescent was high. Overall 28.45% adolescents had anaemia, more in girls 38.89% as compared to boys 23.75%. Malnutrition and anaemia make the children more susceptible to infection.

The study shows the poor health and nutritional status among the adolescents. A periodical and regular health check-up with concerted efforts towards their nutrition along with focused health education will improve the health and nutritional status of these school going adolescents in peri urban area Wardha.

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