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Personal Hygiene & Nutritional Status of Early Adolescent Students in a Government School of Sub-Urban Kolkata, West Bengal.

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Abstract: Introduction: *Personal hygiene and nutrition are important determinant of adolescent health which is generally neglected and early adolescence would be better suited for inculcating healthy habits of personal hygiene and nutrition.* ***Objectives:*** *Objectives of the study were assessing status of personal hygiene and nutrition among early adolescent students, examining relationship between personal hygiene and nutritional status, and to observe status of Healthful school environment.*

Methodology: *It was a descriptive epidemiological study, cross-sectional in design, conducted in April 2017 at Sagore Dutta Free High School, Kamarhati involving 147 early adolescent students of class V to VIII, selected by applying inclusion and exclusion criteria. A pre-designed, pre-tested data collection form was used for collecting data by interview and clinical examination. CDC stature-for-age and weight-for-age percentiles chart for 2-20 years boys were used. To determine personal hygiene, scoring method was used. Data compilation and analysis was done in excel worksheet in computer.*

Result: *147 early adolescent students with mean age 12.23 years participated in the study. On composite scoring for overall personal hygiene status, 91.16% students scored good (Score 11-15), 8.84% found average (score 5 – 10) and no students were found with poor score (score 0 – 4). 25.85% students were underweight ((BMI<5th Percentile), 55.78% were normal (BMI 5th to < 85th Percentile), 10.88% were at risk of overweight (BMI 85th to 95th Percentile) and 7.48% were found overweight (BMI >95th Percentile). Statistically no significant relationship was found between type of family, type of house, latrine at home, drinking water of the family, parent's occupation and personal hygiene status of students; also no significant relationship found between nutritional status and personal hygiene of the students under study. Other than absence of canteen, separate room for eating and non-supply of mid-day meal the school is compliant with all other aspects of healthful school environment.*

Conclusion: *Overall the personal hygiene status of the students was satisfactory. Nutritional status, 55.8% students were of normal nutritional status. Based on these findings, students have to be given advice on general hygiene, diet & cleanliness and should be supervised by parents and teachers. School teachers can be given training for creating awareness and supervision.*

Key words: *hygiene, nutrition, early adolescent, West Bengal.*

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I. Introduction

The term 'Adolescence' is defined as persons belonging to the age group of 10 – 19 years. Traditionally in countries like India, this particular population group has not received adequate attention compared to other age groups. Parental supervision and social support systems seem to act less effectively in this age group. The adolescent people themselves are shy and avoid medical intervention. All these culminate into questionable health of the adolescents. One of the most important health problems of this age group is under-nutrition. As this age group forms the platform becoming a healthy adult capable of taking various social and physical responsibilities, it is important that we inculcate in them various habits which are proven to be worthy of attaining and maintaining good health in future. It has been conclusively documented in scientific literature that personal hygiene is important determinant of adolescent health which is generally neglected.[1, 2, 3, 4, 5, 6)]

It is always better to initiate any process early in the course of life especially to change the behaviour of the person. Early adolescence, defined as the age group of 10 – 14 years,[7] would be better suited for inculcating healthy habits of personal hygiene. The present study was conducted in a municipal school in the suburbs of North Kolkata which caters to a population of mixed religious, economic and socio-cultural characteristics. Along with assessment of personal hygiene, nutritional status of the students also assessed. Such endeavour may prove to be a small but precious step in ensuring positive health of the adolescents.

II. Materials And Methods

It was a descriptive epidemiological study, cross-sectional in design, conducted in April 2017 at Sagor Dutta Free High School, Kamarhati. Nearly 600 boys are enrolled in this school in class V to XII. Objectives of the study were to assess the status of personal hygiene and nutrition among the early adolescent students of class V to VIII; to elicit the relationship of personal hygiene with the nutritional status of the students, if any and assessing status of healthful school environment.

Early adolescents aged 10 to 14 years of class V to VIII were invited to participate in the Study. Among 192 students of class V to VIII, 163 were present on the day of data collection. 16 students were excluded by age criteria to include a total of 147 students under the study.

A pre-designed, pre-tested data collection form was used for collecting data by interview and clinical examination method. Data collected on Socio-demographic-economic & environmental status, personal hygiene, and anthropometric attributes. School Identity card, weighing scale with precision 100gm, stadiometer with precision 0.1 cm., CDC stature-for-age and weight-for-age percentiles chart for 2-20 years boys were used.[8] Nutritional status was categorized as: Underweight/Thinness: BMI-for-age < 5^{th} percentile, Normal: 5^{th} - <85^{th} percentile, At risk of overweight: 85^{th} - 95^{th} percentile, and Overweight: > 95^{th} percentile BMI value.

To determine personal hygiene, scoring method was used.[5] There were 5 questions on practice of personal hygiene and 5 components for physical examination. Scoring for practices related to personal hygiene was: score 0=never practicing, 1=sometimes/ occasionally practicing and 2= practicing most of the times/always. Scoring for examination of personal hygiene was: score 1=favorable, 0=unfavorable; with total scoring range being 0 – 15. Based on total score, personal hygiene was categorized as: score 0-4=poor, 5-10= average and 11-15=good.

Data compilation and analysis was done in excel worksheet in computer.

III. Result

A total of 147 students of age 10-14 years studying in class V to VIII were participated in the study. Mean age of the participants was 12.23 years. Among students 48(32.65%) were of age 10-11 years, 79(53.74%) had age 12-13 and 20(13.61%) were of age 14 years. Class-wise, 34(23.12%) students were studying in class V, mean age being 10.9 years, range 10-13 years, class VI – 35(23.80%), mean age – 11.1 years, range – 10-14 years, class VII – 28(19.04%), mean age – 12.66 years, range – 12-14 years, class VIII – 50(34.04%), mean age – 13.43 years, range – 12-14 years. Religion-wise 114(77.56%) were Hindu students, 30(20.40%) were Muslim and 3(2.04%) were from other religion. Among students, 79(53.75%) were from joint family and 68(46.25%) from nuclear family.

Father of 3 participants died; among other 144 fathers 41(28.47%) were in service and business each, 37(25.69%) were labourer, 16(11.11%) were driver and 9(9.25) were in other occupation. Among mothers of participants, 129(87.76%) were home-maker, 4(2.72%) were in service and 7(4.76%) were housemaid and self-employed each.

16(10.88%) students lived in kutcha house, 99(67.35%) in pucka house and 32(21.77%) in mixed house. Among kutcha, pucka and mixed house dweller students 2(12.50%), 6(6.06%) and 9(28.13%) respectively did not had latrine facility in their house. Overall 17(11.56%) students did not have latrine in their house.

Regarding water supply 126(85.71%) students use tap water, 18(12.24%) use tube-well and 3(2.04%) use packaged drinking water for drinking purpose. For other domestic purposes, 129(87.76%), 13(8.84%), 2(1.36%) and 3(2.04%) use tap water, tube-well, well and pond respectively.

Among students 126(85.71%) had clean/combed hair, 88(59.86%) had trimmed/ clean nails, 114(77.55%) found with clean school uniform, 125(85.03%) had clean hands/ feet/ skin and 117(79.59%) students had clean oral cavity. (Table 1)

Among students 123(83.67%) practice regularly, 20(13.61%) sometimes or occasionally wash their hands before eating and 4(2.72%) do not practice it. Regarding practice of hand washing with soap after using toilet, 135(91.84%) always, 10(6.80%) occasionally and 2(1.36%) never practice. 144(97.96%) students regularly and 3(2.04%) students sometimes or occasionally brush their teeth with toothbrush; 139(94.56%) bath daily, 8(5.44%) bath occasionally; 72(48.98%) regularly and 75(51.02%) sometimes use soap/ shampoo during bathing. (Table 2)

On composite scoring for overall personal hygiene status, 134(91.16%) students scored good (Score 11-15) with mean score 13.30, 13(8.84%) found average (score 5 – 10) with mean 9.83 and no students were found with poor score (score 0 – 4). (Table 3)

Nutritional status of the study participants were assessed as per CDC 2000 growth chart for boys age 2 -20years:BMI-for age percentiles. 38(25.85%) students were underweight ((BMI<5th Percentile), 82(55.78%) were normal (BMI 5th to < 85th Percentile), 16(10.88%) were at risk of overweight (BMI 85th to 95th Percentile) and 1(7.48%) were found overweight (BMI >95th Percentile). (Diagram 1)

Relationship between different grades of personal hygiene and various socioeconomic, demographic & environmental factors of the study population was examined with chi-square test. Statistically no significant relationship (p>0.05) was found between type of family, type of house, latrine at home, drinking water of the family, parent's occupation and personal hygiene status of study participants. (Table 4) Statistically no significant relationship (p>0.05) also found between nutritional status and personal hygiene of the students under study. (Table 5)

Healthful school Environment of the school: The school is located on highway with good communication and the area is bounded with high boundary wall having a big playground and free from hazards. Regarding site of the school, it is located on high land with draining facility. The building is pucca, two storied with adequately thick exterior walls. Classrooms are attached with verandah, white washed interior wall, well ventilated with provision of cross ventilation, good natural light, each are of 400 sq. ft area and have capacity of approximately 40 students. Minus type desk and bench without backrest are there. Both tube well and continuous tap water supply are there. There is no canteen, no separate room for students for eating and outside vendors are restricted within the premises. There are adequate numbers of urinal and privy obeying the norm of one urinal for 60 students and one privy for 100 students. Mid-day school Meal is not provided.

So, majority of the important aspects of healthful school environment like water supply, lavatory, classrooms, natural lighting, ventilation, playground etc. which are directly related to personal hygiene status of students are as per the recommended guidelines of School health services .

IV. Discussion

A total of 147 early adolescent students participated in the study. Among them, 85.71% had clean/combed hair, 59.86% had trimmed/ clean nails, 77.55% found with clean school uniform, 85.03% had clean hands/ feet/ skin and 79.59% students had clean oral cavity.

Among students 83.67% regularly, 13.61% sometimes or occasionally wash their hands before eating and 2.72% do not practice it. Regarding practice of hand washing with soap after using toilet, 91.84% always, 6.80% occasionally and 1.36% never practice. 97.96% students regularly and 2.04% students sometimes or occasionally brush their teeth with toothbrush; 94.56% bath daily, 5.44% bath occasionally; 48.98% regularly and 51.02% sometimes use soap/ shampoo during bathing.

Similar study at urban school by Deb S, Dutta S et al shown that 7.77% have clean/combed hair, 49.51% had trimmed/clean nails 16.5% had clean uniform, 31.07% had clean hand & feet/skin and 28.16 % had clean oral cavity. 59.2% use soap for hand washing in school, 7.6% use soap after toilet, 29.1% use soap for hand washing at home; 24.3% use tooth paste with tooth brush.[5] Another interventional study of Dongre A R et al has revealed that before inter education intervention status of personal hygiene were: 27.6% had clean & combed hair, 29.7% had clean and cut nail, 42.8% weared clean clothes and 33.8% were with clean teeth; whereas after intervention the figures were 52.7%, 48.2%, 64.3% and 50% respectively. Changes in personal hygiene found statistically significant.[1] A more elaborate study on oro-dental hygiene among indigenous school children of Nepal found that 24 % not brushing teeth twice daily and 31% suffered from dental pain and decay.[2]

In the present study, statistically no significant relationship was found between type of family, type of house, latrine at home, drinking water of the family, parent's occupation and personal hygiene status of study participants; whereas study of Polk DE, Weyant RJ,Manz MC among adolescents in Pennysylvia revealed that low socioeconomic factors was associated with lower rate of brushing of teeth.[4]

In the present study, 25.85% students were underweight ((BMI<5th Percentile), 55.78% were normal (BMI 5th to < 85th Percentile), 10.88% were at risk of overweight (BMI 85th to 95th Percentile) and 7.48% were found overweight (BMI >95th Percentile).

Similar study by Dasgupta A, Butt A et. al., among adolescent residing in urban slum of Kolkata, 47.9% of the adolescents were malnourished as per BMI and 60.3% malnourished as per MUAC.[12] Urban school based study by Deb S, Dutta S et al shown that 54.37% boys were normally nourished, 40.78 % were under weight, 1.94 at risk of overweight and 2.91 % overweight as per CDC Growth Chart.[5] Study among early adolescent school girl in Paschim Medinipur of West Bengal state by Maity S, chatterjee K, Monjur K et al revealed that 28.2% subject belonged to normal category of nutrition as per weight for age; 25.7% in Grade I, 30.4% in Grade II, 13.7% in grade III and 1.9% in Grade IV malnutrition.[9] Urban institution based study among early adolescent girls of Andhra Pradesh by Wasnik V, Rao B S, Rao D shown that 56.4% girls were found

undernourished, 40.7% normal nourished and 2.9% over weight as per WHO reference standard.[11] A study of Nutritional status among adolescent school children in rural north India by Anand K, Kant S, Kapoor SK shown 43.8 % boys were thin (<5th percentile).[6] Hospital based study of Singh J P, Kariwal et al. among adolescents in Uttar Pradesh shown that prevalence of underweight, stunting and thinness were at the extent of 32.8%, 19.5% and 26.7% respectively. Malnutrition was more prevalent among early adolescents (285 – 47%).[10] Study among South Indian early adolescent school girls done by Yerpude P N, Jogdand K S and Jogdand M found that as per weight for age criteria 46.67% were malnourished. Among the study subjects dental caries were prevalent in 41.9% girls.[3] Prevalence of obesity and overweight among adolescents in India was found 11.1% and 14.2% respectively in study of Jugesh C et al.[13] Interventional study of Dongre A R, Deshmukh P R Garg BS has revealed In this study 56.6% children found with BMI less than 5th percentile before which did not showed significant changes after intervention.[1] 14% of students were estimated to be overweight or obese were found by a study on body weight perception and weight control behaviour among adolescents in Hong Kong by Patrick CH Cheung, Patricia LS Ip, Lam ST, Bibby H.[14]

V. Conclusion

Regarding personal hygiene status, it was found that most of the students take good care of their hair & skin (85% & above). They were slightly less careful in maintaining a clean uniform & clean oral cavity (less than 80%). Importantly every two out of five students were not concerned in keeping the nails clean & trimmed which may be due to lack of awareness.

Regarding practices of personal hygiene, it was found that more than 90% students regularly use of soap & shampoo during bathing.

Finally, most of the students (91%) scored 'Good', rest of them scored 'Average'. Overall the personal hygiene status of the students was satisfactory.

Regarding nutritional status, 55.8% students were normal category as per CDC growth chart for boys age 2-20 years BMI-for-age percentile. One fourth of the students were underweight. Almost 11% and 8% of the students belong to category at risk of overweight and Overweight respectively.

Based on the findings of the present stud, students have to be given advice to wash hands with soap & water before & after taking meals and also after defecation; regular bathing & trimming of nails; proper brushing of teeth with toothpaste twice a day and washing of mouth after meals. General hygiene & cleanliness should be supervised by parents. At school level measures can be included are - annual school health check-ups should be conducted by experienced physician, health awareness camp can be organised at regular intervals to promote healthy practices, training of teachers regarding basic health and hygiene for monitoring and motivating students to have good hygienic and nutrition practices.

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Tables & figures:

Table 1. Distribution of students according to sate of personal hygiene. (n=147)

State of personal hygiene	Unfavourable(Score=0) No.(%)	Favourable (score=1) No.(%)
Hair clean/combed	21(14.29)	126(85.71)
Nail trimmed/ clean	59(40.14)	88(59.86)
School uniform clean	33(22.45)	114(77.55)
Clean hands, feet, skin	22(14.97)	125(85.03)
Clean oral cavity	30(20.41)	117(79.59)

Table 2. Distribution of study population according to practices related to personal hygiene.

(n=147)

Practice of personal hygiene	Most of the time/ Always/ Regularly(Score=2) No.(%)	Sometimes/ Occasionally (Score=1) No.(%)	Never(Score=0) No.(%)
Hand washing before eating	123(83.67)	20(13.61)	4(2.72)
Hand washing with soap after use of toilet	135(91.84)	10(6.80)	2(1.36)
Use toothpaste with tooth brush	144(97.96)	3(2.04)	--
Bathing	139(94.56)	8(5.44)	--
Use soap/shampoo during bathing	72(48.98)	75(51.02)	--

Table 3. Distribution of students under study according to overall personal hygiene score.

(n=147)

Overall personal hygiene Status/Score	Students No.(%)	Mean Score
Good (11-15)	134 (91.16)	13.30
Average (5-10)	13 (8.84)	9.83
Poor (0-4)	0 (0.00)	--
Total	147 (100.00)	12.99

Table 4. Relationship between different grades of personal hygiene and various socioeconomic, demographic & environmental factors of the study population.

(n= 147)

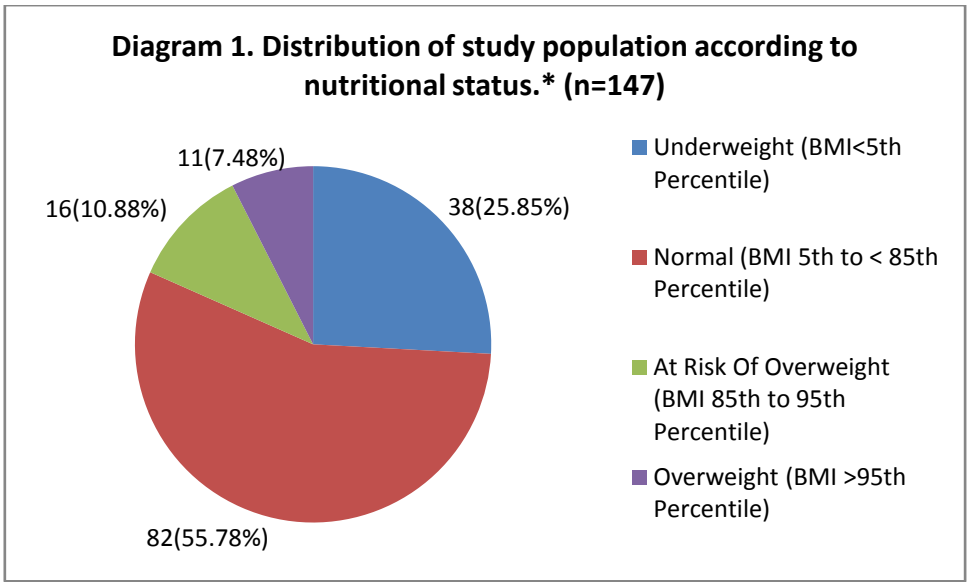
Influencing Factors		**Personal Hygiene status**		**Total**	**Statistical tests**
		Good	Average		
Type of Family	Joint	72 (91.13)	7 (8.87)	79 (53.74)	X^2=0.0001 df=1 p>0.05
	Nuclear	62 (91.17)	6(8.83)	68 (46.26)	
Type of House	Pucca	90 (90.9)	9 (9.1)	99 (67.35)	X^2=0.023 df=1 p>0.05
	Mixed/Kutcha	44 (89.58)	4 (10.42)	48 (32.65)	
Latrine at Home	Present	119 (91.54)	11 (8.46)	130 (88.44)	X^2=0.203 df=1 p>0.05
	Absent	15 (88.24)	2 (11.76)	17 (11.56)	
Drinking water	Tap/ Tube well	131 (90.97)	13 (9.02)	144 (97.96)	Not done
	Packaged drinking water	3 (100)	0	3 (2.04)	
Mother's occupation	Wage earner	16 (88.89)	2 (11.11)	18 (12.24)	X^2=0.130 df=1 p>0.05
	HW	118 (91.47)	11 (8.53)	129 (87.76)	
Father's occupation (3 died)	Service	38 (92.68)	3 (7.32)	41 (28.47)	X^2=0.678 df=1 p>0.05
	Business	38 (92.68)	3 (7.32)	41 (28.47)	
	Others	55 (88.70)	7 (11.3)	62 (43.06)	

Table 5. Relationship of personal hygiene status of the study population with their nutritional status.

(n=147)

Personal Hygiene Status	Nutritional Status		Total
	Underweight	Normal / overweight	
Good (11-15)	34 (23.88)	100 (76.22)	134
Average (5-10)	04 (30.76)	09 (69.24)	13
Total	38	109	147

The chi-square test with Yates correction is done, Chi-square = 0.93, df = 1, p>0.05



***** As per CDC stature-for-age and weight-for-age percentiles chart for 2-20 years boys.

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