

A Study on Morbidity And Assessment of Nutritional Status Among Adolescent Population in A Peri-Urban Area of Agartala, Tripura.

*Anjan Datta¹, Kaushik Nag¹, Nabarun Karmakar¹, Shib Sekhar Datta², Partha Bhattacharjee³, Simul Singha⁴

¹ Assistant Professor. ² Professor,

³ Professor & Head, Department of Community Medicine,
Tripura Medical College & Dr. B.R.A.M. Teaching Hospital.

⁴ Lady Medical Officer (LMO), Urban Health Training Centre, Dukli, Department of Community Medicine,
Tripura Medical College & Dr. B.R.A.M. Teaching Hospital.

Corresponding Author's : Dr. Kaushik Nag

Abstract

Introduction: India is a country with more than one fifth of its population being adolescents and its only after RMNCH+A programme has been launched, specific focus on health related issues of this vulnerable age group has been addressed.

Objective: of this study is to assess the morbidity profile and nutritional status and their associated factors of adolescent boys and girls in a peri-urban area of Tripura.

Materials and Methods: A community based cross-sectional study was conducted among adolescent boys and girls living in the filed practice area of Urban Health Training Centre, Dukli under Department of Community Medicine, Tripura Medical College & DR. BRAM Teaching Hospital, Hapania for a period of four months. Three hundred and sixty participants were selected using simple random sampling technique and data was collected using a pre-designed pretested questionnaire and analyzed using SPSS version 20.0 software.

Results: Majority of the participants (88.1%) were from 15-19 years age group with male predominance (58.6%). High literacy rate (91.7%) was seen among mothers of participants, but only 27.5% mothers were employed. Among them, 23.6% were still having kaccha house and 4.7% using insanitary latrine. Undernutrition was found among 32.2% and 1.9% were overweight with prevalence of weekly IFA tablet supplementation and bi-annual deworming being 29.4% and 36.1% respectively. Mother's literacy status was found as significant predictor of morbidity among adolescents.

Conclusion: High morbidity among adolescents with predominance of communicable diseases and poor nutritional status are matter of serious concern. Also low performance at IFA supplementation and deworming needs to be addressed locally.

Keywords: Adolescent, morbidity, nutrition, urban, Tripura.

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I. Introduction

The World Health Organization (WHO) has defined adolescence as the period from 10 to 19 years of age, characterized by physical, psychological, and social changes. Adolescence is classified into two different stages by WHO: early adolescence between 10 and 14 years and late adolescence between 15 and 19 years. Adolescence is considered as a period of transition from childhood to adulthood. About one fifth (21.4%) of Indian population and roughly one sixth population of the world are adolescents.^{1,2} Health of an adolescent girl impacts her health during reproductive life and pregnancy outcome as well. Many-a-times interventions for children are focused on younger age group leaving adolescents as 'aged out' from pediatric care. Thus health care at various stages of life is essential to maintain continuum of care. Reiterating the life cycle approach under RCH programme, adolescent health component was also focused under RMNCH+A by Government of India.^{3,4} India is a country with substantial variations in its population depending on geographical distribution, socio-cultural beliefs and practices and standard of living. Therefore to have an objective assessment of disease burden and factors related to higher morbidity among adolescents, estimation at various population levels is necessary.⁵ Tripura, being a north eastern state in India with difference in population, difficulty to reach out the community as compared to many other states, especially while interviewing adolescent girls, warrants need of similar studies to identify the current morbidity pattern among them.

II. Objective

1. To assess the morbidity profile of adolescent boys and girls living in a peri-urban area of Tripura.
2. To assess the nutritional status of the adolescent boys and girls.
3. To find out the factors associated with morbidity and nutritional status of adolescent boys and girls.

III. Materials And Methods

A community based cross-sectional study was conducted among adolescent boys and girls living in Dukli Municipal area, the filed practice area of Urban Health Training Centre (UHTC), Dukli under Department of Community Medicine, Tripura Medical College & DR. BRAM Teaching Hospital, Hapania. The duration of the study was three months (October to December 2015). The total population covered under Dukli block is 17,914 (males being 8810 and females 9104) as per UHTC records. Sample size was calculated using the formula of $N = \frac{4pq}{l^2}$, for cross-sectional studies and p was considered as 55.18%⁶ and l was considered as 10% relative precision (i.e. 10% of $p = 5.518$) giving a minimum sample size of 325 approximately. Considering additional 10% of sample size as non-response rate the finally 360 samples were collected for the purpose of the study. Sampling Technique used was simple random sampling for selection of study subjects considering the UHTC family health survey records as the sampling frame. If more than one person in a family were found to have any morbidity during household survey and all willing to participate, than again lottery method was used to select the study participant. Inclusion criteria for the study subjects were adolescent boys and girls, who were resident of Dukli area for more than 6 months and those who gave their consent to participate in the study. A pre-designed pre-tested structured questionnaire was developed to collect the information. The questionnaire consisted of two parts, the first part consisted of questions related to socio-demographic information of the participants and history of any present and past illness and the second part consisted of details related to individual health examination. Bathroom weighing scale for measuring weight and measuring tape for measurement of height were used. Data was collected by trained health workers of UHTC under direct supervision of investigators. Data so collected was analyzed using computer software SPSS version 20.0 and represented in percentages with the help of tables and pie charts. A written informed consent form translated in Bengali (local language) was obtained from all the participants before they were interviewed or examined. Ethical clearance was obtained from Institutional Human Ethics committee before commencement of data collection.

IV. Results

The present study among 360 adolescent study participants revealed that, majority (88.1%) were from 15-19 years age group with male predominance (58.6%). High literacy rate (91.7%) was seen among mothers of participants, but only 27.5% mothers were employed. Majority (43.6%) of the study participants belonged to SES Class II, followed by 32.2% in Class I socio-economic status as per updated B G Prasad's Socio-economic Status (SES) classification 2014⁶ and most of them (60%) were from nuclear families. Distribution of housing condition showed that 41.1% of the participants lived in semi-pucca, 35.3% pucca and 23.6% lived in kaccha house, whereas most of them (95.3%) used sanitary latrine as shown in Table No. 1. Figure No.1 showed that 47.8% adolescents had morbidity. Majority (65.8%) adolescents were well-nourished followed by 32.2% undernourished, only 1.9% was overweight as per ICMR guidelines 2009.⁷ Most of them (84.4%) had complete immunization and 15.6% had partial immunization. Very low rate (29.4% and 36.1% respectively) of weekly IFA supplementation and bi-annual de-worming was found among the study population. (Table 2) Table No. 3 showed distribution of various morbidities. Dental morbidities were most common (39.72%) followed by respiratory disorders (29.44%), Gastro-intestinal and ENT problems (25.83% each), Non-communicable diseases (24.72%) and orthopedic problems to be least common (0.83%). Menstrual abnormalities (e.g, dysmenorrhea, oligomenorrhoea etc.) were found in 26 girls out of total 109 girls (23.85%) who attained their menarche. Table No. 4: Morbidity was more commonly observed in 15-19 years age-group (48.3%), male (51.2%) and Hindu religion (48.6%) but, difference this distribution was not statistically significant ($p > 0.05$). Education status of mother had association with morbidity; 49.4% morbidity was seen in adolescent of literate mothers ($p < 0.05$). Again, difference in morbidity between adolescent of unemployed and employed mothers (45.2% vs 54.5% morbidity respectively) was not statistically significant ($p > 0.05$). Almost, similar morbidity profile (50%, 49% and 48.1% respectively) was found among adolescents belonging to Social class I, II and IV as well as nuclear and joint families (48.6% vs 46.5% morbidities respectively) while those in social class III had 33.3% morbidity but this difference was not significant ($p > 0.05$). More morbidity was seen among undernourished (50%) than well-nourished (46.8%) and overweight (42.9%) but this difference was not significant ($p > 0.05$). Maximum (48.7%) morbidity were seen in age appropriate immunized adolescent, while almost equal morbidity prevalence was seen among recipient and non- recipient of

weekly IFA and bi-annual deworming, both this association was found to be statistically not significant ($p > 0.05$) (Table 4).

Table No. 1: Socio- demographic variables of the study population (n = 360).

Variables	Frequency (percentage)
Age (years)	
Age 10 to 14 years	43 (11.9%)
Age 15 to 19 years	317 (88.1%)
Sex	
Male	211 (58.6%)
Female	149 (41.4%)
Religion	
Hindu	333 (92.5%)
Muslim	27 (7.5%)
Education of mother	
Illiterate	30 (8.3%)
Literate	330 (91.7%)
Occupation of mother	
Unemployed	261 (72.5%)
Employed	99 (27.5%)
Socio-economic Status (as per modified B G Prasad's SES scale, May 2014)	
Class I	116 (32.2%)
Class II	157 (43.6%)
Class III	33 (9.2%)
Class IV	54 (15.0%)
Type of Family	
Nuclear Family	216 (60.0%)
Joint family	144 (40.0%)
Type of house	
Kaccha	85 (23.6%)
Semi-pucca	148 (41.1%)
Pucca	127 (35.3%)
Type of Latrine	
Sanitary	343 (95.3%)
Insanitary	17 (4.7%)

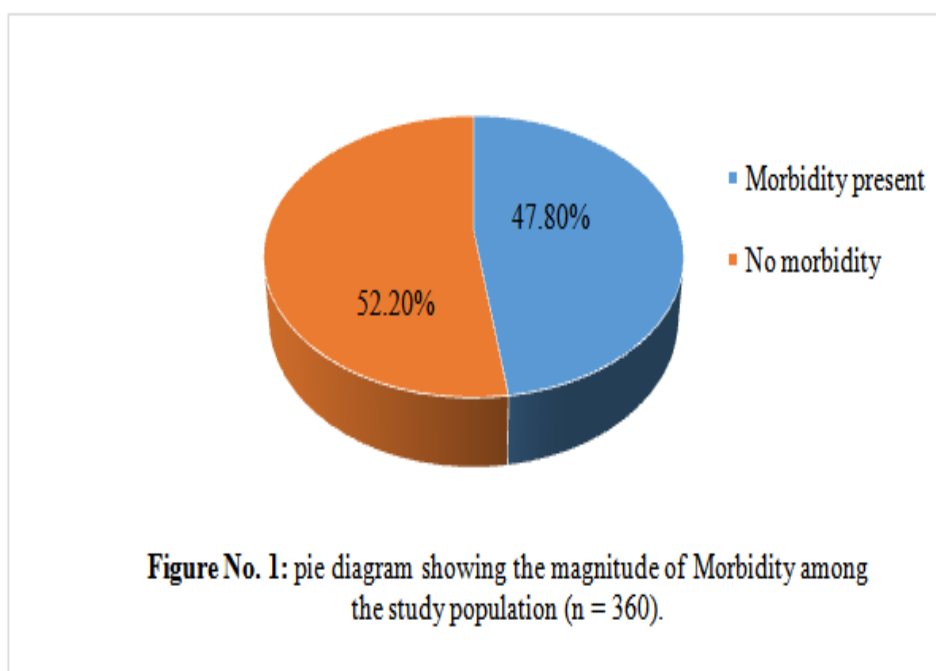


Table No. 2: Frequency distribution of nutritional status of the study population (n = 360).

Variables	Frequency (percentage)
Nutrition as per BMI (kg/m ²)	

Well nourished (BMI 18.5 to 22.9)	237 (65.8%)
Undernourished (BMI < 18.5)	116 (32.2%)
Overweight (BMI ≥ 23)	7 (1.9%)
Immunization status	
Complete immunization	304 (84.4%)
Partial immunization	56 (15.6%)
Weekly IFA supplementation	
Yes	106 (29.4%)
No	254 (70.6%)
Bi-annual deworming	
Yes	130 (36.1%)
No	230 (63.9%)

Table No. 3: Frequency distribution of different morbidities among the study population.*

Types of morbidity	Frequency (percentage)	
	Male	Female
Dental problems (n, % = 143, 39.72)		
Dental Caries	66 (46.15)	41 (28.67)
Gingivitis and Gum Bleeding	16 (11.19)	20 (13.99)
Respiratory disorders (n, % = 106, 29.44)		
Acute Respiratory Infections (ARI)	31 (29.24)	40 (37.74)
Bronchial Asthma	12 (11.32)	23 (21.7)
Gastro-intestinal disorders (n, % = 93, 25.83)		
Acute Gastroenteritis	25 (26.88)	18 (19.36)
Worm Infestation	33 (35.48)	10 (10.75)
Irritable Bowel Syndrome	2 (2.15)	5 (5.38)
ENT problems (other than ARI) (n, % = 93, 25.83%)		
Allergic Rhinitis	21 (22.58)	19 (20.43)
Ear ache, Otitis Media, Otitis externa	17 (18.28)	4 (4.3)
Oral Ulcers	2 (2.15)	9 (9.68)
Glossitis	7 (7.53)	4 (4.3)
Deviated Nasal Septum	5 (5.38)	3 (3.22)
Cleft Lip and Palate	2 (2.15)	-
Non-Communicable Disease (n, % = 89, 24.72)		
Anemia	11 (12.36)	69 (77.53)
Hypertension	1 (1.12)	-
Hypothyroidism	-	8 (8.99)
Ophthalmological disorders (n, % = 62, 17.22)		
Refractive Errors	33 (53.24)	22 (35.48)
Acute Conjunctivitis, Corneal Ulcer	4 (6.45)	-
Stye	1 (1.61)	2 (3.22)
Dermatological disorders (n, % = 53, 14.72)		
Eczema	21 (39.63)	28 (52.83)
Scabies	2 (3.77)	-
Vitiligo	-	2 (3.77)
Injuries (n, % = 28, 7.78)		
Sports related	17 (60.72)	1 (3.57)
Road traffic	7 (25.00)	-
Domestic	2 (7.14)	1 (3.57)
Menstrual abnormalities (n, % = 26, 23.85)	Not Applicable	26 (100)
Orthopedic problems (n, % = 3, 0.83)		
Arthropathy	-	2 (66.7)
CTEV	1 (33.3)	-

* Multiple responses considered.

Table No. 4: Association of different socio-demographic and nutritional factors with morbidity category of the study population (n = 360).

Variables	Morbidity		Significance (p value)
	Present	Absent	
Age (years)			
10 to 14 years	19 (44.2%)	24 (55.8%)	0.615
15 to 19 years	153 (48.3%)	164 (51.7%)	
Sex			
Male	108 (51.2%)	103 (48.8%)	0.124
Female	64 (43.0%)	85 (57.0%)	
Religion			
Hindu	162 (48.6%)	171 (51.4%)	0.245
Muslim	10 (37.0%)	17 (63.0%)	
Education of mother			
Illiterate	9 (30.0%)	21 (70.0%)	0.042
Literate	163 (49.4%)	167 (50.6%)	

Occupation of mother			
Unemployed	118 (45.2%)	143 (54.8%)	0.113
Employed	54 (54.5%)	45 (45.5%)	
SES class			
SES CLASS I	58 (50.0%)	58 (50.0%)	0.377
SES CLASS II	77 (49.0%)	80 (51.0%)	
SES CLASS III	11 (33.3%)	22 (66.7%)	
SES CLASS IV	26 (48.1%)	28 (51.9%)	
Type of family			
Nuclear	105 (48.6%)	111 (51.4%)	0.698
Joint	67 (46.5%)	77 (53.5%)	
Type of house			
Kaccha	37 (43.5%)	48 (56.5%)	0.617
Semi-pucca	71 (48.0%)	77 (52.0%)	
Pucca	64 (50.4%)	63 (49.6%)	
Type of latrine			
Sanitary	165 (48.1%)	178 (51.9%)	0.577
Insanitary	7 (41.2%)	10 (58.8%)	
Nutritional status			
Well nourished	111 (46.8%)	126 (53.2%)	0.826
Undernourished	58 (50.0%)	58 (50.0%)	
Overweight	3 (42.9%)	4 (57.1%)	
Immunization status			
Complete immunization	148 (48.7%)	156 (51.3%)	0.422
Partial immunization	24 (42.9%)	32 (57.1%)	
Weekly IFA supplementation			
Yes	51 (48.1%)	55 (51.9%)	0.934
No	121 (47.6%)	133 (52.4%)	
Bi-annual deworming			
Yes	63 (48.5%)	67 (51.5%)	0.845
No	109 (47.4%)	121 (52.6%)	

V. Discussion

In the present study among 360 adolescents males were predominant (58.6%) and majority of the participants (88.1%) were late adolescents. High literacy rate (91.7%) was seen among mothers of all the participants, but only 27.5% mothers were employed. Majority (43.6%) of participants belonged to Class II followed by 32.2% in Class I socio-economic status respectively and most of them (60%) were from Nuclear families. Similar findings were shown in a study in Burdwan by Bhattacharya A⁸ et al. Distribution of house showed that 41.1% lived in semi-pucca, 35.3% pucca and 23.6% lived in kaccha house; most of them (95.3%) used sanitary latrine. In this study 47.8% adolescents were having morbidity. Majority (65.8%) of the adolescents were well-nourished followed by 32.2% under-nourished, only 1.9% were overweight. A similar study by Wasnik et al.⁹ in Andhra Pradesh showed that 56.4 % of the participants were undernourished while 5.8 % was found to be overweight (BMI >23.5 kg/m²). Clinical anaemia was found among 30%, followed by 27.1% with dental caries, 16.7 having reproductive problem (Dysmenorrhoea), 16% with skin problem, 4 % Eye problem (defective vision & refractive error), 2.4 % were having URTI and 2.1 % ENT problems.

In a report of the working group on adolescents for the tenth five year plan it was showed that around 20% of adolescent boys and 45% adolescent girls in India were malnourished. Also it was found that around 40% of girls got married before their legal age of marriage. Poor outcomes of pregnancy due to anemia were also evident as per the report.¹⁰ In the present study 84.4% adolescents had complete immunization and 15.6% had partial immunization. Although weekly IFA supplementation and bi-annual de-worming was very poor (29.4% and 36.1% respectively) among our study population. Among morbidity profile this study revealed dental morbidities to be the commonest followed by respiratory disorders, orthopedic problems were found least common. Among dental morbidities, 46.15% males were suffering from dental caries which is higher than females (28.67%), while gingivitis and gum bleeding was more common (13.99%) in females. worm infestation was higher among males (35.48% male vs 10.75% female). More than half (52.83%) of the female adolescents had eczema. Menstrual abnormalities were reported among 23.85% of girls who attained menarche. In a study conducted by Srinivasan, et al. in Tirupati among 598 children aged 6-17 years, the common morbid conditions found were skin disorders 25.7%, dental caries 21.5%, history of passing worms in stool 21.6%, vitamin B deficiency 3.2%, ARI 1.7% and diarrhoea 1.2%.¹¹

In a study conducted by Geetha, et al. in Kaniyambadi Block of North Arcot district of Tamil Nadu, the leading general complaints were general fatigue, palpitations, backache and abdominal pain. The study was conducted in rural community; girls were not educated and were more involved in household chores leading to more musculoskeletal disorders.¹² Studies in Wardha¹³ revealed that 28.45% of school going adolescents had anemia, with girls suffering significantly more (38.89%) as compared to boys (23.75%). This finding is similar to the Dehradun study of

Kakkar et al.,¹⁸ where clinical anemia was higher in girls (46.7%) as compared to boys (34.1%), Puducherry study of Joice et al.¹⁴ (39.4%), Gujarat study of Thekdi et al.¹⁵ (25%), Puducherry study of Ananthkrishnan et al.¹⁶ (57.1%), and Darjeeling study of Dey et al. (40%).¹⁷ In contrast to our study much lower prevalence of Dental carries was found in the study of Dambhare et al.¹³ which was 35.34%, 25% in their study by Joice et al.,¹⁴ 27.9% in Ananthkrishnan et al.'s¹⁶ study, 15% in the study by Dey et al.,¹⁷ and 53.1% in study by Kakkar et al.¹⁸ In the present study mother's educational status was the only factor found to be significantly associated with morbidity status of adolescents in contrast to other studies in different parts of our country where gender(male), age group (late adolescence), per-capita income, nutritional status, sanitary condition etc. were significant predictors of morbid condition.^{8,14}

VI. Conclusion

This study showed adolescents having high morbidity, with communicable diseases prevailing more although non-communicable diseases are not rare. Poor health status of the adolescents were also marked by their poor nutritional status and dental carries being the commonest of all morbidities which also indicates lack of oral hygiene. Very low rate of weekly IFA tablets supplementation and bi-annual deworming indicates poor performance of government health programmes at local level which could be matter of serious concern.

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