

Comparative study of the nutritional and health status among adolescent students (boys and girls) in rural area, Chandragiri, Chittoor district. A.P.

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Abstract:

Back ground: Adolescents are the important part of our population. They need health awareness in many areas such as malnutrition, common preventable morbid conditions. Lack of sufficient knowledge make them vulnerable to many undesirable social problems. **Objectives:** To study the both nutritional and health status among rural adolescent students and comparing between both boys and girls. **Study design:** A cross sectional study was done in four government institutions of Chandragiri near Tirupati town A.P. where 300 boys and 300 Girls of 14-17 years are selected. **Material and Methods:** Nutritional Status was assessed by anthropometric measurement and the morbidity data is collected by individual clinical examination and any deviation from normal was recorded. Visual Acuity was assessed by using snellens chart. Blood pressure was measured with mercury sphygmomanometer. 20% subsample of students were examined for Hb estimation to know the prevalence of anaemia and the stool examination to know the prevalence of parasitic infestation. **Statistical Analysis:** The data is analysed by using X^2 test as when needed. **Results:** The Overall prevalence of malnutrition among adolescent was 42% the degree of malnutrition was higher among girls when compared to boys. Regarding morbidity 87.3% boys 96% of girls were having one (or) more morbid conditions. The prevalence of blood pressure was 3.7% where its was higher among boys than girls. The prevalence of anaemia was 57.4% as per Hb estimation in subsample. Parasitic infestation as per subsample of stool examination was 37.5% **Conclusion:** Adolescent students need periodical monitoring of both nutritional status and health status.

Key words: Nutrition, status, Morbidity status, and health seeking behavior.

I. Introduction:

The word “adolescence” comes from Latin meaning “to grow to maturity”. Adolescent period extends from onset of puberty to the time of complete sexual maturation. WHO includes the period in life aged between 10-19 years as adolescence. For the sake of research purposes, the period is further divided into early (10-13 years), middle (14-17 years) and late (18-20 years) adolescence, depending upon both physical and psychological maturity. Adolescence is crucial, stressful but yet fascinating period in an individual's life span. This is the formative period of life when profound physical, psychological and behavioural changes take place. Intelligence is at its peak, setting the permanent personality traits. The adolescent tries to cope with his own emerging sexuality against the social norms and parental expectations. It is also a period of transformation from dependence to independence. Curiosity, exploration, adventure and impulsive behaviour are some of the cardinal manifestations of this period. Barker's hypothesis now gaining momentum, states that by correcting undernutrition of adolescent girls, we can reduce early malnutrition and consequently development of adulthood diseases of childhood origin. It was in the year 1985 which was designated “International Year of Youth” by WHO that people began to pay attention to the health problems of youth¹.

Globally the number of adolescents is expected to reach 1.13 billion by 2025. i.e. an increase of 219 million or 24% rise. In the developing world, as a whole, the adolescent population is estimated at 914 million, about one fifth of all ages as per the study². The proportions of adolescents are high in Africa (23 percent) and in Asia (19.1 percent). Adolescents represent about 21.8 percent of India's population. There are about 207 million adolescents in our country whose reproductive health needs remain ill served. Age specific mortality rate in the 15-19 years age is 2.2/1000 for males and 3.4/1000 for females in rural areas and 1.3 and 1.7 respectively in urban areas. (IIPS,1995) Adolescents are generally considered to be healthier than the other age groups, and hence their health problems were not given much prominence. Only 17 percent of adolescents utilize health services. Their perception of health is different from that of adults. Acne is more concern than HIV for them. Most of the adulthood problems do have their origin during adolescence. The five major preventable risk factors of cardiovascular diseases such as hypertension, diabetes, dyslipidemia, obesity and rheumatic fever take roots during either childhood or adolescence.

In spite of vast technical advances, the enrolment in secondary schools in developing countries for boys is 41 percent and for girls is a meagre 28 percent. In India, 64 percent of girls in the age of 10-14 years and 56 percent of girls of 15-19 are literate compared to 81 percent boys of same age group (IIPS, 1995).

The problems specific to adolescence have to be emphasised. The social problems perceived by them are religious and cultural restrictions, gender discrimination, limited freedom of expression, peer pressures, illogical parental expectations and intergenerational conflicts. Substance abuse is on the rise. Sexual abuse has risen to alarming levels. 25 percent of rape victims are young adolescents under 16 years. With regard to physical problems of adolescents in India, several studies reported a high morbidity due to malnutrition (10-98%) dental ailments (40-70.0%), worm infestation (2.0-30.0%) skin diseases (5.0-10.0%), eye diseases (40-80%) and anaemia (40-50%) among High school children. However, systematic attempts to study the issues affecting our youth are not many; some of the studies giving quantitative information are handicapped by deficiency of adequate sample size.

This study is an attempt to understand the adolescent's Nutritional Status, physical health and health seeking behavior in a systematic manner in order to provide data, which will be useful for planning health interventions as well as providing a basis for future analytical studies.

II. Objectives:

To study the nutritional status of rural adolescent students. To compare the nutritional status between boys and girls. To study the health status (morbidity) of rural adolescent student. To compare the health status between boys and girls.

III. Materials and Methodology

A cross sectional and descriptive study was conducted in the village Chandragiri, a revenue village with a population of 10,500 located 15 km from Tirupati, Chittoor District in Andhra Pradesh from July 2001 to January 2002. The study was carried in four government institutions i.e. Junior College for Boys, Junior College for Girls, High School for Boys and High School for Girls, located at Chandragiri. These institutes cater to students from Chandragiri and surrounding 10-15 villages. The sample consisted of 600 students of both sexes, 300 boys and 300 girls of the adolescent age group i.e. 14-18 years studying tenth and intermediate classes. As the objective of this study is focused on growth and healthy life styles the middle age group of adolescence i.e. 14 - 17 years was chosen. The sample size was determined using the formula $n = 4PQ / L^2$. The assumed morbidity among adolescents was 40 percent; and the acceptable error was 10% of assumed morbidity. As the required number of students in the age group of 14-17 years were not available in Tenth and Intermediate classes, some students in the age group of 18 years of Intermediate classes had to be included in the study to make up the sample size of 600.

Necessary permission was obtained from heads of the educational institutions after explaining the objectives of the study. Plan of action was prepared in advance in consultation with teaching staff to minimize the dislocation to academic schedule. Socio demographic data was collected by using pretested proforma. Socio economic status is classified based on Udai Pareek classification. Nutritional status of children was assessed by anthropometric measurements, viz, height and weight. The grading of malnutrition was done using Indian Academy of Paediatrics classification. A portable weighing machine was used to record the weights of the adolescents with an accuracy of 0.5 kg. "Zero" adjustment was ensured every time before recording the weight of the student. The students were instructed to stand without footwear evenly on weighing machine and to look straight. The reading was recorded without parallax error. Accurately calibrated scale on graph paper stuck to one of the walls of the examination room was used for measuring the height. Subjects were made to stand against wall without footwear with their occiput, buttocks and heels touching the walls. They were made to look straight and the height was measured to the nearest 0.5 cm.

Data regarding morbidity status was collected using pretested proforma. Every student was examined physically from head to toe and any deviation from normal was recorded. Visual acuity was assessed by using Snellen's chart. Blood pressure was measured with a standard mercury sphygmomanometer. The child was made to rest for a while before recording. All readings were taken in sitting position on left arm. The point of appearance of Koratoff's sounds was taken as a measure of systolic blood pressure and complete disappearance of sounds taken to represent diastolic blood pressure. Haemoglobin estimation was done by Sahli's method on a sub sample of 20 percent of students, selected by systematic random sampling from among the main sample. The WHO cut - off levels were taken as standards to classify the haemoglobin status.

A 20% sub sample of students were subjected to stool examination to know the prevalence of parasitic infestations. The students were asked to collect stool sample in a clean bottle supplied to them and the samples were examined by a qualified laboratory technician on the same day of collection. Similarly the same sub sample of students also were subjected to urine examination for albumin and sugar done by a qualified lab technician.

For minor ailments detected during the study, necessary medical advice was given and appropriate treatment suggested. As and when required the students were instructed to bring the problems to the notice of their parents and to seek medical attention.

IV. Results:

Table – 1: Age and Sex Distribution of Children Studied

Age (In years)	Boys		Girls		Total	
	No	%	No	%	No	%
14	38	12.7	25	8.3	63	10.5
15	71	23.7	78	26.0	149	24.8
16	78	26.0	115	38.3	193	32.2
17	78	26.0	62	20.7	140	23.3
18	35	11.7	20	6.7	55	9.2
Total	300	100.0	300	100.0	600	100.0

Table – 2: Socio-economic status of the families of adolescents

Socio-economic status	Boys		Girls		Total	
	No	%	No	%	No	%
Upper	11	3.7	19	6.3	30	5.0
Middle	104	34.7	162	54.0	266	44.3
Lower	185	61.6	119	39.7	304	50.7
Total	300	100.0	300	100.0	600	100.0

It is observed that just more than 50% of students belong to lower socio-economic status. The nutritional status of both boys and girls was assessed by anthropometry as a part of clinical examination. The children were graded by Indian Academy of Paediatrics (IAP) classification and mean heights and weights were compared with National Centre for Health Statistics, USA (NCHS) standards. The findings are shown in Tables 3, 4A, and 4B.

Table – 3: Nutritional Status of adolescents as per IAP Classification

Children (n = 600)	Nutritional Status					Total (%)
	Normal > 80%	Grade-I 71-80%	Grade-II 61-70%	Grade-III 51-60%	Grade-IV <50%	
Boys	187 (62.3)	72 (24.0)	27 (9.0)	12 (4.0)	2 (0.7)	300 (100.0)
Girls	160 (53.3)	77 (25.7)	46 (15.3)	14 (4.7)	3 (1.0)	300 (100.0)
Total	347 (57.9)	149 (24.8)	73 (12.2)	26 (4.3)	5 (0.8)	600 (100.0)

- For statistical analysis III & IV grades was combined.
- $\chi^2 = 7.50$; $df = 3$; $p > 0.05$

The overall prevalence of malnutrition among adolescents was 42.1%. The prevalence of malnutrition of all degrees was higher among girls when compared to boys but the differences were not statistically significant ($\chi^2 = 7.50$; $df = 3$; $p > 0.05$).

Table – 4A: Mean Heights and Weights of boys in comparison with NCHS Standards

Age (Years)	No. of Children	Mean Heights with \pm SD	NCHS Standards	Statistical significance	Mean Weights with \pm SD	NCHS standards	Statistical significance
14	38	156 \pm 10.2	163.1 \pm 8.6	t = 5.08; p<0.001	40.6 \pm 9.1	50.8 \pm 11.9	t=5.28; p<0.001
15	71	158.8 \pm 6.8	169.0 \pm 8.1	t = 10.6; p<0.001	43.2 \pm 7.6	56.7 \pm 12.5	t=9.10; p<0.001
16	78	163.1 \pm 6.2	173.5 \pm 7.2	t = 12.7; p<0.001	45.4 \pm 9.2	62.1 \pm 12.9	t=11.4; p<0.001
17	78	165.5 \pm 7.9	176.2 \pm 6.6	t=11.9; p<0.001	49.8 \pm 7.7	66.3 \pm 13.5	t=10.8; p<0.001
18	35	167.6 \pm 8.5	176.8 \pm 6.6	t=8.24; p<0.001	51.0 \pm 7.3	68.9 \pm 14	t=7.84; p<0.001

The mean weights and heights of boys were uniformly lower than the NCHS standards for the corresponding age and the differences were statistically significant.

Table – 4B: Mean Heights and Weights of boys in comparison with NCHS Standards

Age (Years)	No. of Children	Mean Heights with \pm SD	NCHS Standards	Statistical significance	Mean Weights with \pm SD	NCHS standards	Statistical significance
14	25	150.3 \pm 6.8	160.4 \pm 6.6	t = 7.65; p<0.001	41.9 \pm 6.3	50.3 \pm 12.1	t=3.47; p<0.001
15	78	151 \pm 6.5	161.8 \pm 6.7	t = 13.4; p<0.001	44.5 \pm 6.7	53.7 \pm 12.3	t=6.60; p<0.001
16	115	152.4 \pm 6.4	162.4 \pm 6.7	t = 16.0; p<0.001	45.1 \pm 5.9	55.9 \pm 12.3	t=9.41; p<0.001
17	62	154.8 \pm 6.9	163.1 \pm 6.3	T=10.4; p<0.001	47.6 \pm 8.7	56.7 \pm 12.4	t=4.77; p<0.001
18	20	154.9 \pm 7.2	163.7 \pm 6.0	T=6.55; p<0.001	52.9 \pm 10.00	56.6 \pm 12.4	t=1.33; p<0.005

The mean heights and weights of girls were uniformly lower than the NCHS standards for corresponding age except in the age group of 18 years and the differences were statistically significant. Regarding health status the detailed finding regarding prevalence of morbidity by clinical examination in boys and girls are shown in Tables 5 and 6.

Table – 5: Morbidity Profile – Boys

Sl. No.	Morbidity	No. of Children	%
1.	Skin disorders	173	57.7
2.	E.N.T. Conditions	156	52.0
3.	Vitamin – A deficiency	142	47.3
4.	Vitamin – B deficiency	74	24.7
5.	Dental caries	72	24.0
6.	Pediculosis / Scabies	69	23.0
7.	Anaemia	32	10.7
8.	Respiratory infections	32	10.7
9.	Refractive errors	17	5.7
10.	Cardiovascular diseases	7	2.3
11.	Thyroid enlargement	2	0.7
12.	Physically handicapped	3	1.0
13.	Having one or more morbidity conditions	262	87.3

The major prevalent morbid conditions among boys were skin disorders (57.7%), E.N.T. Conditions (52.0%), Vitamin – A deficiency (47.3%), Vitamin-B deficiency (24.7%) and Dental caries (24.0%). The prevalence of pediculosis / scabies was 23.0% and defective vision was 6.0%. As many as 87.3% of the boys were having one or more morbid conditions. About 12.7% were free from any recognizable disorder.

Table – 6: Morbidity Profile – Girls

Sl. No.	Morbidity	No. of Children	%
1.	Skin disorders	191	63.7
2.	E.N.T. Conditions	136	45.3
3.	Vitamin – A Deficiency	114	38.0
4.	Pediculosis / Scabies	75	25.0
5.	Anemia	68	22.7
6.	Dental caries	63	21.0
7.	Vitamin – B deficiency	44	14.7
8.	Vaginal discharge	38	12.7
9.	Respiratory conditions	24	8.0
10.	Refractive errors	19	6.3
11.	Breast Conditions	8	2.7
12.	Thyroid enlargement	7	2.3
13.	Cardiovascular disorders	3	1.0
14.	Physically handicapped	4	1.3
15.	Having one or more morbidity conditions	288	96

The major prevalent morbid conditions among girls were skin disorders 67.7%; E.N.T. conditions 45.3%, Vitamin-A deficiency 38%; Pediculosis / Scabies 25%; and Anaemia 22.7%. The prevalence of Dental caries was 21.0% and Refractive disorders was 8.0%.

As many as 96% of the girls were having one or more morbid conditions. About 4% were free from any recognizable disorders. The blood pressure findings were graded as per the WHO guidelines. The prevalence of hypertension in adolescents by sex is shown in Table – 7.

Table – 7: Hypertension in Adolescents by Sex

Sex	Hypertension		Total
	Present %	Absent %	
Boys	14 (4.7)	286 (95.3)	300
Girls	8 (2.7)	292 (97.3)	300
Total	22 (3.7)	578 (96.3)	600

$x^2 = 1.69; df = 1; p > 0.05$

The overall prevalence of hypertension among adolescents was 3.7%. the prevalence was higher in boys (4.7%) than in girls (2.7%) which was however not statistically significant ($x^2 = 1.69; df = 1; p > 0.05$). Haemoglobin estimation of 20 per cent sub sample i.e. 120 adolescents was done. The prevalence of anaemia along with grading is shown in Table – 8.

Table – 8: Prevalence of Anaemia among adolescents

Anemia	Boys (n = 60)		Girls (n = 60)		Total (n = 120)	
	No	%	No	%	No	%
No anemia	35	58.4	16	26.7	51	42.6
Mild	15	25.0	28	46.7	43	35.8
Moderate	8	13.3	11	18.3	19	15.8
Severe	2	3.3	5	8.3	7	5.8
Total	60	100.0	60	100.0	120	100.0

For the calculation, moderate the service anaemia was combined.

$$x^2 = 1.69; df=2; p>0.05.$$

The overall prevalence of anaemia among adolescents was 57.4%. The prevalence of anaemia was higher in girls (73.3%) than in boys (41.6%) which was also statistically significant ($x^2 = 12.4; df=2; P<0.01$). Regarding parasitoses stool examination of 20 percent sub-sample i.e. 120 adolescents was done. The prevalence of different parasitic infestations is shown in Table – 9.

Table – 9: Prevalence of Parasitic infestation by stool examination

Anaemia	Boys (n = 60)		Girls (n = 60)		Total (n = 120)	
	No	%	No	%	No	%
E.histolytica	14	23.3	5	8.3	19	15.8
Giardia	6	10.0	5	8.3	11	9.2
Roundworm	10	16.7	8	13.3	18	15.0
Hookworm	5	8.3	2	3.3	7	5.8
Pinworm	4	6.7	4	6.7	8	6.7
Any worm	26	43.3	19	31.7	45	37.5

The overall prevalence of Parasitic infestation among adolescents was 37.5% and boys (43.5%) were having more prevalence compared to girls (31.7%)

While examining urine of sub-sample of 120 children (Boys 60, Girls 60) was examined for presence of albumin and sugar. No urine specimen was found to be positive for presence of Albumin and Sugar.Regarding health seeking behavior of adolescents during the year previous to the study was enquired on recall method and the details are shown in Table – 10.

Table – 10: History of illness during previous year

Sl. No.	Illness in previous year	Boys		Girls		Total	
		No	%	No	%	No	%
1.	Malaria	25	8.3	7	2.3	32	5.3
2.	Typhoid	27	9.0	20	6.7	47	7.8
3.	Jaundice	11	3.7	11	3.7	22	3.7
4.	Passing worms	85	28.3	71	23.7	156	26.0
5.	Chickenpx	18	6.0	17	5.7	35	5.8
6.	No illnss	134	44.7	174	58.0	308	51.3
	Total	300	100.0	300	100.0	600	100.0

Passing worms was leading (26.1%) followed by typhoid fever (7.8%), chicken pox (5.8%), Malaria (5.3%) and Jaundice (3.7%). The sources of treatment in respect of 147 students who had taken treatment for previous illness are shown in Table – 11.

Table – 11: Sources of Treatment regarding illness

Sl. No.	Source	Boys (n = 102)		Girls (n = 45)		Total (n = 147)	
		No	%	No	%	No	%
1.	Govt. Facility	36	35.3	14	31.1	50	34.0
2.	Private (Allopathy)	43	42.2	23	51.1	66	44.9
3.	Indigenous system of medicine	14	13.7	3	6.7	17	11.6
4.	Folk medicine	9	8.8	5	11.1	14	9.5
	Total	102	(100.0)	45	(100.0)	147	(100.0)

On the whole, adolescent students preferred treatment from private (Allopathy) source (44.9%) followed by Government sources (34.0%). 46 students did not take treatment from any source. The reasons for not taking treatment were shown in Table – 12.

Table – 12: Reasons for “not taking” treatment during illness

Sl. No.	Causes	Children (n = 46)	
		No	%
1.	Ignorance	8	17.4
2.	Negligence	17	36.9
3.	Poverty	13	28.3
4.	Lack of facility	8	17.4
	Total	46	(100.)

Negligence (36.9%) was found to be main cause for not taking treatment during illness followed by lack of money (28.3%) among adolescents.

V. Discussion:

In the present study, the prevalence of malnutrition (as per Indian Academy of Pediatrics Classification) among adolescents was 42.1% (boys 37.7% and girls 46.7%). In their study³ conducted in Bihar have found that boys were more malnourished than girls. The prevalence of malnutrition was 89.0% among girls reported by another study⁴. In Marathwada of Maharashtra, reported it to be 93.5% among the girls of rural Rajasthan⁵. The high prevalence of overall malnutrition particularly in girls in the current study may not only interfere with their physiological growth but also affect their scholastic performance. Studies^{6,7} among Children of South India reported that the mean heights and mean weights agree with those of NCHS standards. Study⁸ reported that the mean heights and mean weights of the adolescent children of both sexes in Bangladesh compare well with those of NCHS standards in Delhi⁹. In another study¹⁰ rural Tiruchy (district) of Tamilnadu have reported that the mean heights and mean weights were more or less tallying with those of NCHS standards.

In a study^{11,12} in Imphal and in Meerut have reported that the mean heights and mean weights were comparable to those of ICMR standards. In slum children of Delhi and Lala and Purohit (1990) among rural adolescents of Ahmedabad have reported lower figures for heights and weights when compared to ICMR averages. In the present study also the mean weights and heights in both boys and girls were lower compared to NCHS standards¹⁴. The prevalence of skin disorders was found to be 60.7% (57.7% in boys and 63.7% in girls). In a study¹⁵ reported a prevalence of 44.0% of skin disorders in rural Udaipur, including dandruff, acne and fungal infections. Another study¹³ reported a prevalence of 63.5% in rural children of Jodhpur which is comparable to the present study. In studies^{16,6} in rural children of Tamilnadu reported a lower prevalence of 7.8% and 8.7% respectively. The high prevalence of skin disorders in current study could be due to poor personal hygiene.

The prevalence of E.N.T. conditions in the study was found to be 48.7% (52.0% in boys and 45.3% in girls) which include middle ear infections, impacted wax, otomycosis, enlarged tonsils and symptomatic

Deviated Nasal Septum. In a study¹³ reported a prevalence 32.6% E.N.T. conditions in rural children of Jodhpur. Studies^{16,6} reported lower prevalence of 15.0% and 3.1% respectively. The high level of E.N.T. conditions in current study reflect the poor personal hygiene and lack of health education. The prevalence of vitamin-A deficiency in current study was 42.7% (47.3% in boys and 38.0%). Studies^{13,17} in rural area of Jodhpur and rural Sirur reported it as 42.7% and 64% respectively which will compare well with the present study. Studies^{18,4} in rural children of Orissa and in rural Marthwada of Maharashtra reported lower prevalence of 28.6% and 8% respectively. The high prevalence of vitamin – A deficiency suggests that the diet of these adolescents is deficient in vitamin – A rich foods like dark green leafy vegetables, fruits, milk and eggs.

The prevalence of vitamin-B deficiency in the present study was found to be 19.7% (24.7% in boys and 14.7% in girls). In in rural Sirur of Maharashtra¹⁷ and rural Marathwada reported an equal prevalence of 17.6% among adolescents which substantiate the findings of the present study⁴. High prevalence was reported by in rural area of Bangladesh – (73.0%); in Orissa – (42.9%) in ajasthan – (43.6%) and in rural Tamilnadu – (32.9%)^{19,18,5,6}. The prevalence of cutaneous parasitic infestation such as pediculosis and scabies in the present study was 24.0% (23.0% in boys and 25.0% in girls). A study¹⁸ in Chilmren of Orissa reportem the prevalence of scabies as 16.0%. In another study²⁰ reported 55.0% prevalence of Pediculosis among adolescent girls in Pune. The high prevalence of the Pediculosis among students. The prevalence of Dental caries in the present study was found to be 22.5% (24.0% in boys and 21.0% in girls). The prevalence studies^{13,6} reported by in Jodhpur (22%) and in Tamil Nadu (27.9%) were co parable with the observations of the present study. In another study²¹ in slum children of Delhi reported a higher prevalence (37.3%) whereas lower prevalence was reported in Umaipur (9.2%), in Orissa (8.5%) and in rural Bangladesh (11.0%)^{22,18,19}.

The prevalence of anemia in the present study was found to be 57.4% (73.3% in girls and 41.6% in boys). Which was co parable to that reported by the study²³ in children of rural China (61.8%). The prevalence of hypertension among students in the present study was found to be 3.7% (4.7% boys and 2.7% in girls), which will compare well with those reported by the study²⁴ among the students of Udaipur (2.67%) and high prevalence was reported by the study²⁵ among the students of rural area of Aligarh (6.6%). The prevalence of

refractive errors in the present study was 6.0% (5.7% in boys and 6.3% in girls). A study²⁶ reported a high prevalence of 13.2% among the adolescents of rural Haryana. The prevalence of intestinal parasitic infestations in the current study was found to be 37.5% (43.3% in boys and 31.7% in girls). Studies^{26,27,28} in adolescent children of Himachal Pradesh. In rural children of Varanasi and in students of Jodhpur reported the prevalence as 35.0%, 30.0% and 33.1% respectively. These figures compare well with the findings of present study. Relatively lower prevalence of parasitic infestation among girls could be due to less widespread habit of open air defecation among them because of age.

The prevalence of thyroid enlargement among students in the present study was 1.5% (boy 0.7%, girls 2.3%). In a study²⁹ reported a prevalence of 2.4% in Jodhpur with higher prevalence in girls (3.2%) than in boys (1.6%). The prevalence of respiratory infections in the present study was found to be 9.3% (10.7% in boys and 8.0% in girls). In a study¹² reported similar prevalence (7.8%) among urban children of Meerut. The prevalence of cardiovascular diseases in this study was found to be 1.6% (2.3% in boys and 1.0% in girls). The study¹⁵ reported a prevalence 0.35% among the children in rural area of Udaipur.

The vaginal discharge was prevalent among 12.7% of the girls in this study. The studies⁷ reported a prevalence of 19.4% among South Indian rural adolescent girls.

Urine analysis in respect of a sub sample of 120 Children revealed none positive for presence of albumin and sugar. Asha Bai et al (1995) reported a similar negative result among the children of slum areas in Chennai. Regarding history of illness during previous year, passing worms (26.0%) was found to be major illness followed by Enteric Fever (7.8%), Chickenpox (5.8%) Malaria (5.3%) and Jaundice (3.7%), in the present study. Ratna and Ganguli (2000) reported Chickenpox (51%) as leading recent illness followed by Enteric fever (10.7%) and Jaundice (7.8%) among the urban girls of Pune. Regarding the source of treatment for current illness it was found that majority (44.9%) preferred private (Allopathy) followed by government source (34.0%) in this study. Some of the students did not take treatment for the illness. The main causes for not taking treatment in the present study were found to be negligence (36.9%) and poverty (28.3%).

VI. Conclusions and recommendations:

As the occurrence of morbidity was found to be high among children of adolescent age group in the present study, contradictory to common impression, special attention has to be paid to reduce the disease burden, Periodic medical examinations have to be carried out in both high schools and junior colleges to detect morbidity-conditions in early stages and take remedial measures. School/College health clinics should be organised on sound lines, incorporating preventive, promotive, and curative services backed up by well designed referral system. It is essential that present system of annual health check up by medical officer which is very perfunctory in nature is to be reorganised by systematic school/college health programmes, Separate clinics may be run for girls providing services of a gynaecologist. The school/college environment shall be conducive for health promotion. Special attention is to be paid to drinking water, waste disposal, ventilation and lighting, etc. Provision of these facilities in the institution also serves as model and motivates the students for adoption of the same at their homes.

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