

**STUDY OF INFECTIOUS AND NON INFECTIOUS PROBLEMS IN ADOLESCENTS OF URBAN CITY**Manjunath<sup>1</sup>, Rajendra Kumar<sup>2</sup>, G. M. Kumar<sup>3</sup>, Keerthan N<sup>4</sup>, Chinthan<sup>5</sup>, Srinivas V. Y<sup>6</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT: BACKGROUND:** In adolescents there is a unique set of health problems due to more social contact, less immunity, increase in requirement for nutrition, pubertal growth spurt, behavior problems, so the present study is undertaken to find out infectious and non-infectious problems in the adolescents. **AIM & OBJECTIVES:** To know the extent of infectious and non-infectious problems in adolescents and also to compare among different socioeconomic groups. **METHODS:** Adolescents belonging to different socioeconomic groups selected. Three schools and one slum in urban area chosen of adolescents aging between 11-19yrs, their weight, height, blood pressure, clinical examination of face, eye, ear, lips, teeth, gum, nails, tongue, glands, subcutaneous tissue, Musculoskeletal system, CVS, RS, GIT, CNS and previous health record checked. **OBSERVATIONS:** Study group comprised of 437 adolescents aging between 11-19yrs consisting of 299 girls and 138 boys, In the present study, good habit of personal hygiene was observed in 12.4% of slum adolescents, 46.8% in lower middle class group (OFH+VVH) and 62.2% in upper middle class, 37.9% adolescents had falling hair. 34.5% adolescents had Dandruff. Pediculosis and hirsutism were present in 6.4% and 0.9% adolescents respectively, Acne was present in 33.9% of adolescents, 7.3% had white patches, Pyoderma and scabies 2% and 1% of adolescents respectively, 19.4% had Dental pain. It was also observed that Caries in 15.7%, Gum bleeding in 6.6%, Gingivitis in 4.1% and Malocclusion in 3.4% were present, 14.6% adolescents had Sinusitis, 8.6% had Tonsillitis and Rhinitis in 8% and Ear discharge in 0.9% was observed, 15% had Refractive error, 1.3% had Pterigium, 1.1% had Conjunctivitis, 0.7% had Stye and 0.6% had Squint, 6.8% adolescents had Asthma and 0.4% had Tuberculosis. Epilepsy, RHD, CHD, Hyperthyroidism and Goiter was observed in 0.2% adolescents. **DISCUSSION & CONCLUSION:** Socio economic status plays an important role in infectious and non infectious diseases. In slum dwelling adolescents' respiratory and skin infection are common, these can be prevented by improving health and education facilities.

**KEYWORDS:** Infectious problems, noninfectious problems, adolescents, socioeconomic class.

**INTRODUCTION:** Owing to substantial and rapid physical, psychosocial, emotional and reproductive development during adolescence and by virtue of their growth spurt, hormonal changes and excessive outdoor activities they are prone to many more infectious problems and alteration in disease pattern during adolescence.<sup>1</sup>

There are a unique set of health needs and problems due to, increased social contact of the adolescents with peers and strangers. Increased demand for nutrition, decreased immunity, pubertal growth spurt by the gonadal steroids, sex related behavior, adventurous attitude, rebellious and violent behavior prone to road side accidents, physiological changes seen in the skin such as acne and hirsutism.<sup>2,3</sup>

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In view of the above, the present study was undertaken amongst adolescents of high school and urban slum to find out the prevalence of medical problems.

**MATERIALS AND METHODS:** The study of infectious and non-infectious problems was conducted among adolescents belonging to different socio economic group. Three schools and one slum were chosen by purposive sampling. For upper middle class group students from MSS school were chosen. For Lower middles class girls from VVH School and boys from Old OFH School were selected. For lower socio-economic group, adolescents from slum were selected for the study.

**Study Design:** Comparative cross sectional descriptive study.

**Inclusion Criteria:** Children between 10–19years according to WHO definition constitute the adolescents. As studies on early and mid-adolescents (10 –16yrs) are scarce, it was decided to choose the high school students for the study. In the slum, all age groups (10 –19yrs) of adolescents were taken for the study.

One section from each standard 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> was randomly selected. After brief introduction regarding physical changes and health problems during adolescents, interview of the students was done in batches of 25 each by pre structured and pre tested questionnaire and was asked to answer the questions individually.

In MSS high school, total 157 students from 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> standard were examined. In OFH and VVH 141 adolescents from 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> were examined.

In a slum, 139 adolescent were selected for comparison by door to door visit.

Age was recorded as completed years and months after going through school record.

Socio-economic status of the families according to their income and occupation was recorded after going through the school records, recording was confirmed with some of the parents, per capita income was calculated and revised.

Height and weight were recorded as per standard pediatric practice. The weight was recorded by using portable weighing machine. BP was recorded; vision was tested by using Snellen's chart to find out refractory error. Tuning fork test was done to find out hearing problem.

Clinical examination of hair, face, eye, lips tongue teeth, gums, skin, nails, gland subcutaneous tissue, muscles skeletal system and other systems examination were made and data was recorded in the proforma designed for the purpose. Previous health record was also checked and considered for diagnosis.

**OBSERVATIONS:** Study conducted in 437 adolescents of different socio-economic classes in urban (Three schools and one slum), infectious and non-infectious problems were observed and analyzed as follows.

Majority of the adolescents are female 67%.

Majority of the adolescents are in the age group of 14-16 years (68.9%) (P <0.05).

Majority 356 (81.4%) of adolescents belong to nuclear type of family.

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Personnel hygiene	MSS (n=157)		OFH+VVH (n=141)		Slum (n=139)		Total (n = 437)	$\chi^2$	P Value
	Male n = 24	Female n = 133	Male n = 50	Female n = 91	Male n = 70	Female n = 69			
Daily Bath	19	110	32	69	8	17	260	151.5	<0.05
Rinsing mouth after food	11	116	10	31	3	7	178	177.6	<0.05
Hand wash after defecation	17	92	34	47	9	15	214	86.3	<0.05
Twice daily tooth brushing	8	18	8	33	4	6	121	51.7	<0.05

**Table 1: Distribution of adolescent according to their personal hygiene**

In the above table differences observed among different socio economic groups (Schools and Slum) with reference to all components of personal hygiene is statistically significant ( $P < 0.05$ ).

Problems	MSS (n=157)		OFH+VVH (n=141)		SLUM (n=139)		Total (n = 437)	$\chi^2$	P Value
	Male n = 24	Female n = 133	Male n = 50	Female n = 91	Male n = 70	Female n = 69			
Dandruff	9	53	10	38	17	24	151	3.18	>0.05
Falling Hair	10	89	9	38	8	12	166	76.1	<0.05
Pediculosis		2	2	4	8	12	28	22.75	<0.05
Hirsutism		2		1		1	4	0.40	>0.05

**Table 2: Distribution of adolescent according to their Hair problems**

Statistically significant difference was found in the three different socio economic -group (Schools and Slum) with respect to pediculosis and falling hair ( $p < 0.05$ ) where as no significant difference was found with respect to dandruff and hirsutism ( $P > 0.05$ ).

Problems	MSS (n=157)		OFH+VVH (n=141)		SLUM (n=139)		Total (n = 437)	$\chi^2$	P value
	Male n = 24	Female n = 133	Male n = 50	Female n = 91	Male n = 70	Female n = 69			
White patch	2	3	6	6	5	10	32	6.72	<0.05
Pyoderma			1		5	3	9		
Scabies					3	2	5		
Acne	6	62	13	43	13	11	148	25.51	<0.05

**Table 3: Distribution of adolescent according to their skin problems**

Differences observed with respect to skin problems of different socio economic groups (Schools and slum) was statistically significant ( $P < 0.05$ ).

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Problems	MSS (n=157)		OFH+VVH (n=141)		SLUM (n=139)		Total (n = 437)	$\chi^2$	P value
	Male n = 24	Female n = 133	Male n = 50	Female n = 91	Male n = 70	Female n = 69			
Dental Pain	3	20	8	18	15	21	85	9.6	<0.05
Gum bleeding	2	4	3	8	5	7	29	3.2	>0.05
Caries	1	10	8	16	11	23	69	17.1	<0.05
Malocclusion		3	5	2	4	2	16	2.21	>0.05
Gingivitis	1		3	3	7	4	18	9.9	<0.05

**Table 4: Distribution of adolescent according to their dental problems**

With respect to presence of dental pain, caries teeth and gingivitis between different socio-economic group (Schools and slum), statistically significant difference was noted ( $P < 0.05$ ), whereas gum bleeding and malocclusion were observed irrespective of socio-economic group and the difference was not statistically significant ( $P > 0.05$ ).

Problems	MSS (n=157)		OFH+VVH (n=141)		SLUM (n=139)		Total (n = 437)	$\chi^2$	P value
	Male n = 24	Female n = 133	Male n = 50	Female n = 91	Male n = 70	Female n = 69			
Sinusitis	1	13	4	17	11	18	64	8.43	<0.05
Tonsillitis		9	4	6	11	8	38	6.52	<0.05
Rhinitis	3	10	5	6	6	5	35	0.85	>0.05
Ear discharge				1	1	2	4		

**Table 5: Distribution of adolescent according to their ENT problems**

Statistically significant differences were noted with respect to sinusitis, tonsillitis and ear discharge ( $P < 0.05$ ) between different socio-economic groups (Schools and slum), whereas Allergic Rhinitis was found irrespective of socio-economic groups and was statistically not significant ( $P > 0.05$ ).

Problems	MSS (n=157)		OFH+VVH (n=141)		SLUM (n=139)		Total (n = 437)	$\chi^2$	P value
	Male n = 24	Female n = 133	Male n = 50	Female n = 91	Male n = 70	Female N = 69			
Squint			1		1	1	3		
Refractive errors	3	13	9	7	15	16	69	10.4	<0.05
Stye					2	1	3		
Pterigium		1	1	1	2	1	6	1.26	>0.05
Conjunctivitis				1	1	3	5		

**Table 6: Distribution of adolescent according to their eye problems**

The prevalence of eye problems such as squint, refractive error, stye and conjunctivitis were statistically significant in different socio-economic groups ( $P < 0.05$ ).

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Problems	MSS (n=157)		OFH+VVH (n=141)		SLUM (n=139)		Total (n = 437)
	Male n = 24	Female n = 133	Male n = 50	Female n = 91	Male n = 70	Female n = 69	
Asthma*		3	2	7	9	7	28
T B					1	1	2
Epilepsy					1		1
RHD						1	1
CHD			1				1
Hyper thyroidism				1			1
Goitre		1					1

**Table 7: Prevalence of various chronic diseases in different study population groups**

\* $p < 0.05$ ,  $\chi^2 = 9.27$ ,  $df = 2$

Among the chronic diseases Asthma was found in 6.8% of adolescents. More number of cases of Asthma was observed in adolescents of slum compared to adolescents from schools. This was statistically significant ( $p < 0.05$ ). Tuberculosis in 0.4% and 0.2% had Epilepsy, RHD, CHD, Hyperthyroidism and goiter respectively. This was not statistically significant in different socio economic groups ( $p > 0.05$ ).

**DISCUSSION:** A total number of 437 adolescents from MSS, OFH+VVH and slum, between the age group of 10 – 16 years in schools and 10 – 19 years in slums. Out of 437 adolescents 293 female and 144 were male. Sex distribution ratio of male to female is 1:2.

Adrea et al (1983)<sup>(4)</sup> reported prevalence of acne in 12% of their study group of middle to upper middle class sub urban adolescents.

In the present study of MSS adolescents 43.3% had acne. This difference of higher prevalence in the study of Adrea et al may due to inclusion of adolescents seeking medical health care only.

Parcel et al (1977)<sup>(5)</sup> reported prevalence of acne in 30% of their study group of urban lower middle socio-economic adolescents, which is more or less similar to the present study of OFH 39.7%.

In the present study, OFH group consisting of boys hailing from lower middle class was comparable with Despande et al.<sup>(6)</sup>

In the Deshpande et al (1982) study 8.5% had acne, 2.1% had Pyoderma and 4.9% had scabies where as in the present study 26% had acne, 3.4% had Pyoderma. These differences may be due to smaller group of boys represented in the present study.

MKC Nair et al (2000)<sup>(7)</sup> in their study of rural girls reported 39.2% had dandruff, which is comparable to the present study. 57.8% had falling hair and 22.3% had white patches. Where as in the present study 47% had dandruff and 6.4% had white patches.

This could be attributed to the study group comprising of rural adolescent girls as opposed to the present study comprising of the urban girls.

Parcel et al (1977)<sup>(5)</sup> in their study of urban school adolescents comprising lower middle class reported 21% prevalence of Caries which is comparable to the present study of OFH + VVH (17%).

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R V Deshpande et al (1982)<sup>(6)</sup> in their study of adolescent boys reported Caries in 12.2%, Malocclusion in 3.7% and Gingivitis in 3.7% where as in the present study of OFH+VVH Caries in 16%, Malocclusion in 10% and Gingivitis in 6%. These differences could be due to small number of boys in the presents study group.

In MKC Nair et al study Caries was observed in 9.7% of boys and 17.9% of girls where as in the present study 4.1% of boys and 7.5% of girls had Caries. These differences could be due to the fact that the present study population were day scholars who were under the supervision of their parents for better oral hygiene in contrast to residential school adolescents of MKC Nair et al.<sup>(8)</sup>

Michaud and Marin (1982) in their study of 930 adolescents reported caries in 10 %.<sup>(9)</sup>

Klein et al (1981) in their study of 247 adolescents reported Caries in 20%.<sup>(10)</sup>

Sternlieb J J et al (1972) in their study of 1400 of school, college and trade workers adolescents in the age group of 13 – 19 years reported Caries in 27%.<sup>(11)</sup>

MKC Nair et al (2000) observed Sinusitis in 4.7% and Tonsillitis in 2.1% where as in the present study adolescents had Sinusitis in 11.1% and Tonsillitis 10.4%. This could be due to the less number of boys in the present study as compared to Nair et al (612) and also MKC Nair et al studied rural adolescents. In whom these problems may be lesser due to less pollution and over-crowding.<sup>(12)</sup>

R V Deshpande et al (1982)<sup>(6)</sup> in their study of adolescent boys reported following eye problems. Refractive error in 8.3%, pterigium in 0.1%, squint in 0.5% and conjunctivitis in 0.42%. Where as in the present study of OFH 18.1% had Refractive error, 2% had Pterigium and squint respectively and none of the boys in the present study had Conjunctivitis. These differences could be due to the present study OFH included small number of boys.

MKC Nair et al (2000)<sup>(8)</sup> reported in their residential school study, reported refractive error in 14% boys and in 19.4% of girls where as in the present study 12.5% of boys and 9.7% of girls had refractive error.

The prevalence of refractive error in boys of present study is comparable with MKC Nair et al study, whereas prevalence of Refractive error amongst girls of present study is less than that reported by MKC Nair et al.

Chronic disease observed in the present study are Br. Asthma (6.4%), Tuberculosis (0.4%), Epilepsy (0.2%), RHD (0.2%), CHD (0.2%), Goitre (0.2%) and Hyperthyroidism in 0.2%.

MKC Nair et al (2000)<sup>(7)</sup> in their study of rural adolescent boys reported asthma in 2.9%, where as in the present study in boys 7.6% had asthma. These differences may be due to the fact that the present groups are from heavily populated industrialized city of Bangalore.

Asthma is one of the common problems in adolescents. Reasons for the increased prevalence in Asthma are increased allergy in adolescents, which include excessive outdoor activities and increased travel, industrialization, over-crowding houses and proliferation of house dust mites.<sup>13-15</sup>

M K C Nair et al (2000) observed CHD in 0.3% and epilepsy in 0.1%, where as 0.2% had CHD and epilepsy in the present study, which was comparable to the present study of boys.

### CONCLUSION:

1. In the present study, the prevalence of infectious problems decreased as socio-economic condition improved.
2. In slum dwelling adolescents it was observed that respiratory diseases like asthma, tuberculosis, skin infections like scabies, Pyoderma and white patches were more. This could be

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due to poverty, poor housing, over-crowding and lack of civic amenities like water, toilet, garbage disposal, scanty lighting and adequate health and education facilities.

Majority of the problems observed in higher and middle income groups related to skin, hair and dentition viz acne, dandruff, hirsutism and malocclusion. These problems in adolescents interfere with their appearance and may even contribute to personality disorders. These problems can be tackled effectively by proper health education.

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