Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies ***NLM ID:*** *101716117*

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr Index Copernicus value = 85.10

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Health Profile of Male Adolescents in District Amritsar - A Comparative Study Of Rural Urban Difference

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***ABSTRACT*:**
BACKGROUND and OBJECTIVES: Effect of outer world is clearly seen as maximum cases of drug addiction, suicides and violence are reported in adolescent age group. The 70% of the mortality in adulthood is linked to habits picked up during adolescence. **METHODS:** A Cross Sectional study was carried out among the adolescent males born in rural and urban areas of district Amritsar. 30 cluster sampling for rural and urban population was done. A self structured proforma was used to record the information obtained by interview. **RESULTS:** In rural area 91(30.3%) male adolescents are underweight (BMI <18.5) whereas in urban area it is 42(14.0%). Among total 600 male adolescents, 485(80.8%) were having waist hip ratio less than 0.85, 90(15.0%) were having waist hip ratio between 0.85-0.90, 16(2.7%) were having waist hip ratio between 0.90 and 0.95, and 9(1.5%) were having waist hip ratio more than 0.95. The history of past chronic illness is slight higher in urban area as compare to rural area. **CONCLUSION:** Among total 600 male adolescents, majority 570 were having no history of chronic illness, 1(0.2%) was having diabetes, 3(0.5%) were having hypertension and 8(1.3%) were having asthma.
Keywords: hypertension, cross sectional study, rural population.

Received: 12 December, 2020 Accepted: 29 December, 2020

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This article may be cited as: Gagan Preet Singh, Tejbir Singh, Shyam Sunder Deepti, Preeti Padda, Shamim Monga, Urvashi, Meenal Batta. Health Profile of Male Adolescents in District Amritsar - A Comparative Study Of Rural Urban Difference. J Adv Med Dent Scie Res 2021;9(1): 106-111.

INTRODUCTION

Adolescence is widely defined as the time in life when the developing individual attains the skills and attributes necessary to become a productive and reproductive adult. No longer children but not yet adults, adolescents struggle with issues of independence and self-identity.

Around 30% of world's population is aged 10-24 years and close to 90% of these young people live in low to middle income countries. A major chunk of this i.e. 66% is formed by age group 10-19 years of age (i.e. 20% of world population) According to World Health Organization, age group of 10-19 years is defined as 'Adolescence'[1].

In 2005, there were 1.21 billion adolescents across the world-the largest-ever number in the history of mankind. Population of this age group is estimated to continue to increase until the year 2040, to finally reach 1.23 billion[2]. It is not unusual for an adolescent to add more than 5 kg in body weight and to grow 10 cm in height in one year. The protein, vitamin, and mineral requirements of adolescents of both sexes are higher than for adults. This is the period in the life span of a person when he or she assumes the ability for reproduction.[3] Effect of outer world is clearly seen as maximum cases of drug addiction, suicides and violence are reported in this age group. The

70% of the mortality in adulthood is linked to habits picked up during adolescence. There are various health related problems of adolescents which includes nutritional problems like under nutrition, micronutrient deficiencies like iron deficiency anaemia, iodine deficiency, obesity, and various eating disorders such as anorexia nervosa. Consequences of risk taking behaviour leads to unintended injuries such as automobile and sports related accidents along with intended injuries violence, homicide and suicide.[4-6]

Adolescents are not only in large numbers but are the future citizens and work force of tomorrow. Our knowledge about health profile of adolescent males is limited as most of the studies are of western countries, urban areas or done in schools. So, most of the rural and school dropouts have been mostly left.[6] There is lack of community based study of health profile and problems in rural and urban areas in this age group. The age group of 18 years has passed through all the stages of adolescence and can provide lot of information regarding the entire adolescent period from their experience.

METHODOLOGY

Study Design: A Cross Sectional study was carried out among the adolescent males born between 1st January1991 to 31st December 1992 in rural and urban areas of district Amritsar

Study Duration: One year.

Study Area: Rural and urban area of Amritsar district.

For study in the rural areas, one Community Development Block Majitha was selected by draw of lots from three primary health centers attached to Govt. Medical college, Amritsar. For survey in urban areas, wards were taken as unit of study.

Population Covered:

Rural area - One Community Development Block

Urban area- Total population- 986765

Sampling technique: 30 cluster sampling for rural and urban population.

Sample Size: 600 male adolescents.

Study Tool: A self structured proforma was used to record the information obtained by interview.

Strategy: After serializing all the villages/wards, the total population was divided by the total number of clusters i.e. 30. This gives the sampling interval

Sampling Interval = Total Population / 30

To select the first cluster, a random number from a currency note was chosen and the last four digits of this random number were taken and the first cluster was that village/ward whose cumulative population corresponds with this number. Subsequently, to this four digit number obtained from a currency note, the sampling interval was added and village/ward whose population corresponds with this number was taken as next cluster. This procedure was repeated to select next 29 clusters respectively. So the total 600 male adolescents participated in the study. Before inclusion written informed consent was obtained from all the study subjects. The male adolescents were interviewed and physical parameters were measured.

Height and weight were recorded using standard techniques

The height was measured with the help of ISI marked measuring tape; calibrated upto 0.5 cm. The adolescent male was asked to stand against wall without shoes and in erect posture. A footruler was kept at the top of the head directed parallel to the floor to minimize any error on the part of the author (myself).

The weight of the adolescent male was measured with an ISI marked weighing machine, calibrated upto 0.5 kg; with minimum of clothes and without shoes. The adolescent was asked to stand still on the middle of the scale without leaning or holding on to anything. The zero mark was checked and the weight was standardized daily.

Classification of adolescent males on the basis of BMI (Body Mass Index) as per WHO guidelines:

BMI <18.50 Underweight BMI 18.50-24.99 Normal range

BMI >=25 Overweight BMI 25-29.99 Pre-obese

BMI 30-34.99 obese class I BMI 35-39.99bese class II

BMI >=40 Obese class III

Waist hip ratio:

Waist circumference was measured at the midpoint between the lower border of the rib cage and the iliac crest with a flexible measuring tape.

Hip circumference was measured at widest part of buttocks by a flexible measuring tape. Then waist hip ratio was taken. Waist hip ratio of >1 in males is considered as an indicator of obesity.

Haemoglobin: It was estimated by Sahli's method.

Assessment of Nutritional status:

For assessment of nutritional status among the respondents, two parameters i.e. calorie consumption and protein consumption. as per Food and Nutrition Board, National Academy of Science National Research Council, Recommended Dietary Allowances, 10th ed, Washington DC guidelines:

Adolescent males were classified according to their calorie intake as under:

1. Less than 50% of RDA(3000kcal) i.e. less than 1500 kcal
2. 50%-70% of RDA(3000kcal) i.e. 1500-2100 kcal
3. More than 70% of RDA i.e. more than 2100 kcal

Adolescent males were classified according to their protein intake as under:

1. Less than 50% of RDA(59gm) i.e. less than 30 gm
2. 50%-70% of RDA i.e. 30-42 gm
3. More than 70% i.e. more than 42 gm

The consent of each male adolescent was taken to

participate in the study. The male adolescent was interviewed. The information regarding knowledge, attitude and practices of adolescent males about physical, sexual and psychological changes occurring during adolescent period and health problems related to nutrition, reproductive and sexual health, behavioral problems & psychological problems during this phase was obtained. The physical parameters were measured and were recorded on the proforma.

Data Analysis: The data thus obtained was compiled and analysis was done using epi info and valid conclusions were drawn.

OBSERVATION AND DISCUSSION

Table 1: Distribution of male adolescents according to BMI

BMI(in kg/cm^2)	Rural		Urban		Total	
	No	%	No	%	No	%
<16(Severely underweight)	12	4.0%	1	0.3%	13	2.5%
16-18.5(Underweight)	79	26.3%	41	13.8%	120	22.6%
18.5-25(Normal)	194	64.7%	154	67.0%	348	65.7%
25-30(Pre-Obese)	12	4.0%	30	13.0%	42	7.9%
30-35(Obese Class I)	3	1.0%	4	1.3%	7	1.2%
Total	300	100.0%	300	100.0%	600	100.0%

Table 2: Distribution of male adolescents according to waist hip ratio

Waist Hip Ratio	Rural		Urban		Total	
	No	%	No	%	No	%
<0.85	246	82.0%	239	79.7%	485	80.8%
0.85-0.90	40	13.3%	50	16.7%	90	15.0%
0.90-0.95	9	3.0%	7	2.3%	16	2.7%
0.95-1	3	1.0%	4	1.3%	7	1.2%
>1	2	0.7%	0	0.0%	2	0.3%
Total	300	100.0%	300	100.0%	600	100.0%

Chi sq=2.463 df=4 p>0.05

Table 3: Distribution of male adolescents according to Blood Pressure

Blood Pressure(mm Hg)	Rural		urban		Total	
	No.	%	No.	%	No.	%
<120/<80	31	10.3%	64	21.3%	95	15.8%
120-139/80-89	261	87.0%	228	76.0%	489	81.5%
140-159/90-99	8	2.7%	8	2.7%	16	2.7%
Total	300	100.0%	300	100.0%	600	100.0%

Chi sq=14.050 df=2 p<0.05

Table 4: Distribution of male adolescents according to chronic illness

	Rural		Urban		Total	
	No.	%	No.	%	No.	%
No History	287	95.7%	283	94.3%	570	95.1%
Diabetes	1	0.3%	0	0.0%	1	0.2%
Hypertension	1	0.3%	2	0.7%	3	0.5%
Asthma	1	0.3%	7	2.3%	8	1.3%
Others	10	3.3%	8	2.7%	18	3%
Total	300	100.0%	300	100.0%	600	100.0%

Chi sq=11.662 df=4 p>0.05

Table 5: Distribution of male adolescents according to Hemoglobin

Hemoglobin (in gm %)	Rural		Urban		Total	
	No	%	No.	%	No.	%
Severe(<7)	3	1%	4	1.3%	4	0.7%
Moderate(7-10)	36	12.0%	30	10.0%	66	11.0%
Mild (10-12)	81	27.0%	70	23.3%	151	25.2%
Normal & above(>12)	180	60.0%	196	65.3%	379	63.2%
Total	300	100.0%	300	100.0%	600	100.0%

According to this table majority of rural and urban male adolescents have normal BMI (18.5-25) i.e. in rural 194(64.7%) and in urban 154(67.0%) male adolescents have normal BMI, but in rural area 91(30.3%) male adolescents are underweight (BMI <18.5) whereas in urban area it is 42(14.0%). Among rural male adolescents 12(4.0%) were having BMI between 25- 30 and 3(1.0%) were having BMI between 30-35. In urban area 30(13.0%) were having BMI between 25-30 and 4(1.3%) were having BMI between 30-35. Among total 600 male adolescents, 133(25.1%) were underweight, 348(65.7%) were normal, 42(7.9%) were pre obese and 7(1.2%) were falling in obese class I.

According to NFHS-3, among adolescents males aged 15-19 yrs, 40.2% were having normal BMI (18.5-25), 28.8% were having BMI 17-18.5, 29.3% were having BMI less than 17, 1.7% were having BMI more than or equal to 25.[4] The difference in distribution of male adolescents population according to BMI in rural and urban area was found to be statistically highly significant.

246(82.0%) of rural male adolescents and 239(79.7%) of urban male adolescents have waist hip ratio less than 0.85, which is excellent. In rural area 5(1.7%) male adolescents and in urban 4(1.3%) male adolescents have BMI more than 0.95. Among male adolescents of rural area 40(13.3%) were having waist- hip ratio between 0.85-0.90 and 9(3.0%) were having waist hip ratio between 0.9-0.95. Among male adolescents of urban area, 50(16.7%) were having waist hip ratio between 0.85-0.90 and 7(2.3%) were having waist hip ratio between 0.90 - 0.95. Among total 600 male adolescents, 485(80.8%) were having waist hip ratio less than 0.85, 90(15.0%) were having waist hip ratio between 0.85-0.90, 16(2.7%) were having waist hip ratio between 0.90 and 0.95, and 9(1.5%) were having waist hip ratio more than 0.95.

Among adolescents and young adults in Delhi, Misra et. al reported prevalence of 17%(age gp 14-18) and 14%(age gp 14-25) using criteria of WC> 79cm among males.[5] Recent studies done in Delhi during 2002, among adolescents show high rate of overweight-obesity (19%) using criteria (WHR: males>=0.87, female>=0.85).[6] The difference in distribution of male adolescents population according to waist-hip ratio in rural and urban area was found to be not statistically significant.

31 (10.3%) male adolescents from rural and 64(21.3%) male adolescents from urban have blood pressure less than 120/80. Majority of male adolescents from rural and urban i.e. 261(87.0%) from rural and 228(76.0%) from urban have blood pressure 120-139/80-89. only 8(2.7%) male adolescents from each group were having blood pressure more than 140/90. Among total 600 male adolescents, 489(81.5%) were having BP between 120-139/80-89, 95(15.8%) were having BP<120/80 and 16(2.7%) were having BP 140-159/90-99.

In a community-based cross-sectional study carried out by Saha I, Paul B to determine the prevalence of hypertension and variation of blood pressure with age among adolescents in an urban slum of Chetla, Kolkata, India. A total of 1081 adolescents aged 10-19 years were involved in the study. The prevalence of hypertension was 2.9% (31) and highest prevalence (5.6%) was observed in the age group of 18-19 years. The mean systolic and diastolic blood pressure was higher in males than females.[7]

The difference in distribution of male adolescents population according to blood pressure in rural and urban area was found to be statistically significant.

287(95.7%) male adolescents from rural and 283(94.3%) from urban do not have any chronic illness. Among rural male adolescents 1(0.3%) had diabetes, 1(0.3%) had hypertension, 1(0.3%) had asthma and 10(3.3%) had other diseases. Among male adolescents from urban, 2(0.7%) had hypertension, 7(2.3%) had asthma and 8(2.7%) had other diseases. Among total 600 male adolescents 570 were having no history of chronic illness, 1(0.2%) was having diabetes, 3(0.5%) were having hypertension, 8(1.3%) were having asthma and 18(3%) were having other illness.

According to NFHS-3 among age group 15-19 yrs male adolescents per 100000, there were 101 diabetics, 941 suffering from asthma and 216 suffering from thyroid related disorders.[8]

The difference in distribution of male adolescent's population according to chronic illness in rural and urban area was found to be statistically highly significant.

Among mothers of male adolescents from rural area , 42(14%) were suffering from some disease. Among those 42 mothers, 15(35.7%) were suffering from diabetes, 11(26.2%) were suffering from hypertensions, 4(9.5%) were suffering from asthma and 12(28.6%) were suffering from other diseases. Out of 43 fathers, 6(14.0%) were suffering from diabetes, 11(25.6%) were suffering from hypertension, 4(9.3%) were suffering from asthma, 11(25.6%) suffered from cardio vascular diseases. Among mothers of male adolescents from urban area , 44(14.7%) were suffering from some disease. Among those 44 mothers, 18(40.9%) were suffering from diabetes, 12(27.3%) were suffering from hypertensions, 4(9.1%) were suffering from asthma, 2(4.5%) were suffering from cardiovascular diseases and 8(18.1%) were suffering from other diseases. Among fathers, 56(18.7%) were suffering from some disease. Among those 56 fathers, 32(57.1%) were suffering from diabetes, 12(21.4%) were suffering from hypertension, 2(3.6%) were suffering from asthma, 6(10.7 %) are suffering from cardio vascular diseases. Among total 231 male adolescents having family history of chronic illness 71(30.7%) were having diabetes, 46(19.9%) were having hypertension, 16(6.9%) were having asthma and 19(8.2%) were having cardio-vascular illness and 35(15.2%) were having other illness.

Majority 180(60.0%) of male adolescents from rural area and 196(65.3%) from urban had hemoglobin more than 12gm%. Among rural male adolescents

81(27.0%) were having hemoglobin between 10-12 gm%, 36(12.0%) were having hemoglobin between 7-10 gm% and 3(1.0%) were having hemoglobin less than 7 gm %. Among urban male adolescents, 70(23.3%) were having hemoglobin between 10-12 gm%, 30(10.0%) were having hemoglobin 7-10 gm% and 4(1.3%) were having hemoglobin less than 7 gm %. Among the total 600 male adolescents, 379(63.2%) were having hemoglobin more than 12 gm%, 151(25.2%) were having hemoglobin 10-12 gm%, 66(11.0%) were having hemoglobin 7-10 gm% and 4(0.7%) were having hemoglobin less than 7 gm %

According to NFHS-3, among adolescents males aged 15-19 yrs 30.2% were anemic. The prevalence of anaemia was higher for those aged 15-19 years in both women and men.[4]

The difference in distribution of male adolescents population according to hemoglobin in rural and urban area was found to be not statistically significant.

Majority 191 (63.7%) male adolescents from rural area and 148(49.3%) male adolescents from urban area; calorie intake was more than 2100 kcal per day. Among rural male adolescents 28(9.3%) and among urban male adolescents 24(8.0%) were having calorie intake less than 1500 kcal per day. There is a gross difference between calorie intake of 1500-2100 kcal per day among rural and urban area i.e. among rural male adolescents 81(21.0%) and among urban male adolescents 128(42.7%). This difference may be due to missing of breakfast among urban male adolescents. Among the total 600 male adolescents, 339(56.5%) were consuming more than 2100kcal per day, 209(34.8%) were consuming 1500-2100kcal per day and 52(8.7%) were consuming less than 1500 kcal per day.

An assessment of the current diet and nutritional status of 12,124 adolescents was carried out in villages of 10 states of India in 1996 by the National Nutrition Monitoring Bureau (NNMB), India, and compared with the data of an earlier survey conducted in 1975-79 in the same villages. Almost half of the adolescents of both sexes were not getting even 70% of their daily requirements of energy and a quarter of them were getting less than 70% of RDA of proteins. However, the extent of severe deficit with respect to energy intake (<50%) decreased from 21% to 9% in boys and 14% to 5% in girls during 1996-97 as compared to 1975-79 .[9]

The difference in distribution of male adolescents population according to calorie intake in rural and urban area was found to be statistically highly significant.

295(98.3%) male adolescents from rural and 284(94.7%) male adolescents from urban had protein intake more than 42g per day. Among rural male adolescents 5(1.7%) male adolescents and among urban 16(5.3%) male adolescents had protein intake less than 42g per day. Among total 600 male adolescents, 579(96.5%) were consuming more than 42gms of proteins per day, 18(3.0%) were consuming 30-42gms of protein per day and 3(0.5%) were consuming less than 30 gms per day.

The difference in distribution of male adolescent's population according to protein intake in rural and urban area was found to be statistically significant.

CONCLUSION

Network with and involve NGOs to a much greater extent. There should be a common understanding of issues and approaches to meet adolescents' reproductive and psychosocial needs. Involve parents in reproductive education and home-based counseling. Activate youth forums at the village level to remove myths and misconceptions about sexual health.

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