Original Article

A study of nutritional status and high risk behavior of adolescents in Ahmedabad: A Cross Sectional Study

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Abstract:

Background:
Adolescence is a distinct age group (10-19 yrs) with complex needs because of physical and psychological development during puberty.

Aim:
To evaluate adolescents' nutritional status and high risk behavior.

Settings and design: A Cross Sectional study was conducted in West Zone of Ahmedabad Municipal Corporation, Gujarat.

Methods & Material:
401 students (10-19years) from 10 schools and colleges surveyed using pretested questionnaire about nutritional status and high risk behavior. To analyze nutritional status height, weight and BMI were taken and analyzed using WHO growth standards 2007.

Statistical analysis:
Qualitative data analysis done using Epi Info and WHO Anthro Plus softwares.

Results:
47.4% (95% CI= 30.7% - 64.6%) were stunted and 19.5% (95%CI=12.6% - 28.7%) were overweight according to WHO growth standards 2007. Awareness about HIV/AIDS was 93.27% and main media of awareness was television(55.35%). 13.22% were sexually active and 35.85% used condoms during last sexual act. 22.56% have habit of masturbation. 25.19% students believe masturbation is bad habit. Only boys (15.9%) had addiction and common was tobacco chewing (61.29%). No one was Intravenous Drug User. Mean age for menarche was 12.84 yrs. From them 60.93% have problems during menstruation. Most common problem was dysmenorrhea (58.7%). For discussing sexual health problems, 74.64% students prefer with friends.

Conclusions:
Adolescents have many health problems that need to be taken care of by effective interventions.

Key message:
Nationwide adolescent health data is inadequate. Focus must be given on analyzing adolescent health issues and to solve them.

Key words: adolescent, high risk behavior, nutritional status.

Introduction:

Adolescent is defined by WHO as a person between 10-19 years of age. There are about 1.2 billion adolescents worldwide and one in every five people in the world is an adolescent. Adolescents constitute 18-25% of the population in member countries of South East Asia Region[(1)].

Adolescence involves:
Rapid physical growth and development;
Physical, social and psychological maturity, but not all at the same time; Sexual maturity and the start of sexual activity; Trying out experiences for the first time; A frequent lack of knowledge and skills to make healthy choices; Patterns of thinking in which immediate needs tend to have priority over long term implications; The start of behaviors that may become life-time habits that results in diseases many years later[(2)].

One in every five people in the world is an adolescent, and 85% of them live in developing countries[(3)]. Nearly two thirds of premature deaths and one third of the total disease burden in adults are associated with conditions or behaviours that began in youth, including tobacco use, a lack of physical activity, unprotected sex or exposure to violence[(3)]. Promoting healthy practices during adolescence and efforts that better protect this age group from risks will ensure longer, more productive lives for many[(3)]. Total adolescent population of India is 209 148 (21% of the total population)[(4)] adolescent health issues can be further complicated by factors associated with rapid social and economic development, increased urbanization, the widening gap between rich and poor, youth unemployment and rural poverty put adolescents at greater risk for sexually transmitted infections, pregnancy, undernutrition and overnutrition, and substance abuse[(5)].

Adolescents should receive explicit attention with services that are sensitive to their increased vulnerabilities and designed to meet their needs[6]. The present study was carried out to determine the nutritional status and high risk behavior of the adolescents.

Subjects & Methods

It was a cross sectional study , conducted amongst 401 Students (195 boys and 206 girls) in the age group of 10-19years attending 10 schools and colleges of West Zone of AMC in the period of July 2008 to December 2008 .Systemic random sampling technique was used to select a sample. Schools and colleges were selected by draw method. Students to be included were determined by taking every 5th, 10th, 15th, 20th, as per the roll number of the respective class. On an Average, 40 students were taken in each age group. There were 2 survey teams. 2 trained MBBS students were trained for interviewing, filling questionnaire and practical method of taking weight, height and BMI. After taking permission from school/college authority, teachers were explained the purpose of the study. By using pre-tested, pre-designed questionnaire, Students were personally interviewed for high risk behavior. General information like weight, height and Body Mass Index (BMI= Weight/Height^2= Kg/m^2) was collected for nutritional status assessment. Weight upto 100gm and height upto 0.1cm accuracy were taken. Analysis was done by using AnthroPlus software[7] and Epi info software. Chi square test was applied to find out correlation between overweight and menstrual problems.

BMI-for-age is the recommended indicator for assessing thinness, overweight and obesity in children 10-19 years.[7]

Cut-offs for BMI[7]

Overweight: >+1SD (equivalent to BMI 25 kg/m^2 at 19years)
Obesity: >+2SD (equivalent to BMI 30 kg/m^2 at 19 years)
Thinness: <-2SD
Severe thinness: <-3SD

Ethical Consideration: Consent of ethical committee was taken prior conducting the study.

Results:

Mean weight and height of the students were 45.34kg (2 SD= 11.08) and 147.35cm (2SD= 9.99) respectively. Mean BMI was 22.71 kg/m^2 (2 SD=35.06). According to WHO 2007 growth standards, from all the adolescents surveyed, as per BMI 19.5% (95%CI=12.6% - 28.7%) were overweight (>+1SD) and 0.5% (95%CI=0.1% - 2%) were categorized as thin. Overweight was more common in males. 80% of the adolescents have BMI in normal range. 26.7% (95%CI=16.1%, 40.8%) boys and 12.6% (95%CI=7.8% - 19.9%) girls were overweight. No one was found to be obese or severe thin. Average height for age was lower than standard WHO median height. 47.4% were stunted. (%<-2SD= 47.4, 95% CI= 30.7% - 64.6%). [Table 1]

Table 1. BMI for age and Height for age according to WHO growth standards 2007.

BMI for Age			
	Sexes combined	Male	Female
% <-2SD (95% CI)	0.5 (0.1%-2%)	0.5 (0.1%-4.6%)	0.5 (0.1%-4.2%)
%>+1SD (95% CI)	19.5 (12.6%-28.7%)	26.7 (16.1%-40.8%)	12.6 (7.8%-19.9%)
Mean(Z score)	0.23	0.49	-0.02
SD (Z score)	0.85	0.8	0.83
Height for Age			
	Sexes combined	Male	Female
% < -3SD (95% CI)	11 (5.2%, 21.6%)	19 (8.5%, 37.2%)	3.4 (0.9%, 11.7%)
% < -2SD (95% CI)	47.4 (30.7%, 64.6%)	53.8 (34.1%, 72.4%)	41.3 (24.2%, 60.7%)
Mean(Z score)	-1.86	-1.98	-1.75
SD (Z score)	1.09	1.27	0.87

Awareness about HIV/AIDS was good (93.27%). Only 3.49% were screened for HIV/AIDS. Most common media for HIV/AIDS awareness was television (55.35%) followed by radio, newspaper and internet (more than one choice of media for this question is given by the students who are aware of HIV/AIDS). All were unmarried. 13.22% (girls=22.64%, boys=77.36%) students were sexually active (premarital sex). all were heterosexual and only 35.85% had used condom in last sexual act. 22.56% students had habit of masturbation. 25.19% students believed that masturbation was a bad habit. Only boys had addiction (15.9%) and most common was tobacco chewing (61.29%). No one was Intra Venous

Drug User (IVDU). 43.64% believed that sex education in schools and colleges should be mandatory. [Table 2,3 & 4]

Table 2. Addiction pattern amongst 31 boys who had addiction.

	N=31	%
Tobacco chewing	19	61.29
Smoking	9	29.03
Drinking	3	9.68
Other	0	0

N= No. of respondents

Table 3. Characteristics of adolescent behavior

Sr. No.	Variables	No	yes	%
1	Awareness about HIV/AIDS N=401)	27	37	93.2
2	Screened for HIV/AIDS (N=401)	38	14	3.49
3	Sexually active (N=401)	34	53	13.2
4	Used condom during last sexual act amongst who are sexually active(N=53)	34	19	35.8
5	Doing masturbation (N=401)	35	44	22.5
6	Masturbation – a bad habit (N=401)	30	10	25.1
7	Any addiction (N=195)*	16	31	15.9
8	Sex education is mandatory (N=401)	22	17	43.6
9	Menarche achieved (N=206)**	55	15	73.3
1	Any menstruation problem amongst girls who achieved menarche(N=151)	59	92	60.9

N= No. of respondents *only boys=195 had addiction **only for girls=206

73.3% girls have achieved menarche from 11 to 15 years of age. Mean age for menarche was 12.84years (SD=0.86; 95%CI=12.39%- 13.33%). From 151 girls who achieved menarche, 60.93% had problems during menstruation. Most common complaint was dysmenorrhea (58.7%) followed by irregular menstruation (20.65%), excessive bleeding per vaginum (19.56%) and foul smell discharge (1.09%). There is no statistical significance between overweight and menstrual problems (p=0.0907, OR= 2.17, 95% CI= 0.9369, 4.122). [Table 5, 6 & 7]

Table 4. Media of awareness about HIV/AIDS. (N=374)

Sr. No.	Media of awareness	Total no. of responses given by adolescents	%
1	Television	207	55.35%
2	Radio	91	24.33%
3	Newspaper	62	16.58%
4	Internet	9	2.41%
5	Other	5	1.33%

Table 5. Age at menarche (N=151)

Age	N	%
11	8	5.3
12	39	25.83
13	65	43.05
14	38	25.17
15	1	0.65

N= No. of respondents

Table 6. Type of menstrual problems among adolescent girls who have problems during menstruation (N=92)

Sr. No.	Menstrual problems	No. of girls	%
1	dysmenorrhea	54	58.7%
2	Irregular menstruation	19	20.65%
3	Excessive bleeding per vaginum	18	19.56%
4	Foul smell discharge	1	1.09%

About discussing sexual health problems, most students prefer with friends (74.64%) followed by doctor (14.49%), sibling (7.97%) and then teacher (1.93%). Negligible students prefer to discuss with their parents. More than one response is allowed to be given by adolescents. [Table8]

Table7. Correlation between overweight and menstrual problems.

	Menstrual Problem+	Menstrual Problem -	P value
Overweight	16	10	0.0907
Non overweight	76	103	

Table-8. Adolescents discussing sexual health problems with the following persons commonly (N=414)

Sr. No.	Discussing sexual problems with following persons	Total no. of responses given by adolescents	%
1	Friends	309	74.64
2	Doctor	60	14.49
3	Siblings	33	7.97
4	Teacher	8	1.93
5	Other	4	0.97

Discussion :

Adolescents and young adults are adversely affected by serious health and safety issues such as substance abuse, unsafe sex and high risk behavior.

Adolescence is a phase of rapid growth and development during which physical, sexual and emotional changes occur. Adolescents are not homogeneous group and their needs vary with their gender, stage of development, life circumstances and the socio economic conditions in which they live. Many premature deaths among adults are largely due to behaviors initiated during adolescence[1]. Young people can easily be influenced to smoke, take drugs, drive dangerously, have unsafe sex, and commit crimes[13].

When children are growing up into adolescents, they feel very guilty and abnormal because they think about sex so often. Also, when they need some information, they are not allowed to have it. From the questions that frequently come up on the telephone help-line, and over radio programmes, it is also known that adolescents are bothered most about issues that are considered taboo by society - like masturbation, homosexuality, and abortion. They want authentic information and do not often know who to turn to or where to seek it[13]. Adolescence is also a period of forming relationships and breaking others. Many adolescents do not wish to acknowledge their parents and families, and parents should not wonder why they are seeking other company – it is a temporary phase and a natural part of growing up to seek relationships among peer groups. The traditional and conservative societies among which adolescents grow up may frown upon interactions, or close relationships, with members of the opposite sex. At the same time, they are being increasingly exposed to the freedom enjoyed by their counterparts in affluent societies. All this can lead to extreme frustration, unless community centers or other outlets like clubs can provide harmless activities and opportunities to keep them occupied. Frustration can lead them to seek undesirable company, to pursue dangerous activities, and to adopt harmful behaviour such as indulging in substance abuse[13].

Regardless of gender, the rate of stunting was higher in Indian adolescents from India (25.5-51%) when compared with Indian adolescents in UAE(3.1-21%)[16].Study by Sarah Bott[8], conducted in three remote rural areas found that the majority of adolescent girls were stunted and undernourished, including 72% of girls aged 10– 14 and 45% of girls aged 15–18. The majority (70%) of younger girls had a Body Mass Index (BMI) less than 5%, as did 15% of girls aged 15–18. The same study found that adolescent girls achieved menarche later. Large numbers of girls in Nepal are malnourished and reach menarche at an average age of 13.2 years[8]. Lower rates of undernutrition (except during the first 6 months of life) and higher rates of overweight and obesity was based on the WHO standards 2007[9]. In present study also overweight was 19% more than thinness amongst adolescents. Stunting is predominantly higher which indicates chronic malnutrition and lag of physical growth. So Nutritional status of adolescents must be improved in consideration of stunting, thinness and overweight and health programme should focus on adolescent nutrition. Mean age at menarche was 12.84years which is approximate to above mentioned study in Nepal. The prevalence of anemia was found to be 59.8%

in adolescent girls in rural Wardha[10]. In the present study it was 15.53% which is underestimated because it was based on clinical diagnosis.

Findings of the few available studies (see for example, Jejeebhoy, 2000, for India; or Abraham, this volume) generally suggest that between 20% and 30% of young men and between 0% and 10% of young women report premarital sexual experience. Sexual initiation occurs earlier than many assume, and is often unplanned and unprotected[11]. Young people aged 15-24 accounted for an estimated 45% of new HIV infections worldwide in 2007[3]. In our study 22.64% girls, 77.36% boys report pre-marital sexual act and only 35.85% were using condom. Boys are more commonly involved in premarital sexual act. So in the era of HIV/AIDS pandemic there is a great need to increase awareness about safe sexual behavior amongst adolescents.

According to the study conducted by A Dasgupta and M Sarkar[14], mean age of menarche in adolescent girls was 12.8 yrs, whereas in a study conducted in Rajasthan by Khanna at el[15], the mean age of menarche was found to be 13.2 yrs. In the present study mean age of menarche is 12.84yrs. The findings of the present study showed 58.7% prevalence of dysmenorrheal. Comparatively higher prevalence of dysmenorrheal has been reported in study by by Anil Agrawal[17], (79.67%) and Sundel et al[18], (67%).

Limited access to sex education and attitudes that prohibit discussion of sex exacerbate their ignorance. Three papers, namely those by Rashid (Bangladesh), ul Haque and Faizunnisa (Pakistan) and Masilamani (India), explore communication between adolescents and adults. Parents reported embarrassment about discussing issues with adolescent children believes that talking to adolescents about these matters will imply approval of premarital sexual activity. Adolescents perceive discussions with parents about sexual and reproductive topics to be taboo and express embarrassment at the prospect. In both rural areas and urban slums, parents often want and expect their adolescent children, particularly daughters, to remain uninformed about sex. Educational systems also tend to be ambivalent about sex education, though this has begun to change in the wake of the HIV/AIDS pandemic. Teachers often find the topic embarrassing or shameful, and may avoid such issues, even in schools that supposedly teach a family life/sex education curriculum. As a result of adults' reticence to address these issues, young people tend to rely on peers and mass media for information about sex, reproduction and STIs including HIV/AIDS[8]. In our study 93.27% adolescents were aware of HIV/AIDS. Major media of HIV/AIDS awareness was T.V. (55.35%) and majority adolescents discuss various aspects of sexual health with their friends (75%) and no one with their parents. So there is a need for educators and parents to improve their ability to communicate with young people.

The vast majority of tobacco users worldwide begin during adolescence. Today more than 150 million adolescents use tobacco, and this number is increasing globally.[3] Tobacco companies have long targeted youth as "replacement smokers" to take the place of those who quit or die. The industry knows that addicting youth is its only hope for the future. Although anyone who uses tobacco can become addicted to nicotine, people who do not start smoking before age 21 are unlikely to ever begin. Adolescent experimentation with a highly addictive product aggressively pushed by the tobacco industry can easily lead to a lifetime of tobacco dependence. The younger children are when they first try smoking, the more likely they are to become regular smokers and the less likely they are to quit[12]. In this study tobacco addiction is most common in the form of tobacco chewing and smoking amongst adolescents. So for deaddiction and awareness programmes related to tobacco addiction, adolescents and youth must be targeted for interventions.

Unless we can address these critical issues, it is not possible to promote the health of adolescents in the Region. The answer appears to lie in universal education, improved quality of life, equitable opportunities, access to health care, confidential counseling and information services but above all, understanding and supportive parents[13].

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