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**Ashok Maan**  
Assistant Professor,  
Department of Community  
Medicine, Al-Falah Medical  
College and Research Center  
Dauj Faridabad Haryana,  
India

**Manoj Kumar Yadav**  
Assistant Professor,  
Department of Community  
Medicine, S.N Medical College  
Agra, Uttar Pradesh, India

**SS Chaudhary**  
Associate Professor,  
Department of Community  
Medicine, S.N Medical College  
Agra, Uttar Pradesh, India

**Manisha**  
Assistant Professor,  
Department of Community  
Medicine, S.N Medical College  
Agra, Uttar Pradesh, India

**Corresponding Author:**  
**Manoj Kumar Yadav**  
Assistant Professor,  
Department of Community  
Medicine, S.N Medical College  
Agra, Uttar Pradesh, India

## To assess the knowledge of adolescents about the dietary behaviour & its consequences

**Ashok Maan, Manoj Kumar Yadav, SS Chaudhary and Manisha**

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### Abstract

**Background:** Adolescence represents a real opportunity to make a difference in lifelong patterns. There are 1.2 billion adolescents in the world, 85% of them live in developing countries. The adolescent population constitutes about 18 to 25% of the total population of the South East Asia Region.

**Objective:** To assess the knowledge of Adolescents about the dietary behaviour & its consequences.

**Material and Methods:** The present observational cross-sectional study was carried out in Department of Community Medicine, Santosh Medical College, Ghaziabad & Urban area of district Ghaziabad. The unit of the study was selected adolescent students studying in randomly selected schools of Ghaziabad city. Adolescents aged 10 to 19 years studying in the selected schools of urban Ghaziabad were included for the study. The period of study was from November 2011 to October 2012

**Results:** 253 (67.5%) male and 192 (51.2%) female had knowledge about healthy diet. about half of the female 193 (51.5%) preferred homemade food while about two-third 252 (67.2%) of boys preferred outside food. Males 162 (43.2%) ate junk food daily, 183 (48.8%) ate weekly and 30 (8.0%) ate occasionally while in females 108 (28.8%) ate junk food daily, 218 (58.1%) ate weekly and 49 (13.1%) ate occasionally. 270 (72.0%) male and 265 (70.7%) female had knowledge that consuming junk food regularly can harm health. 209 (55.7%) male and 224 (59.7%) female were encouraged from surrounding to eat outside or junk food.

**Conclusions:** Considering the large no. of adolescents in our country, the study thus evokes an urgent need to stimulate an action to identify those at risk and those who need treatment and prevention of progression of the health risk behaviors, among the adolescents.

**Keywords:** Knowledge, Adolescents, dietary behaviour, junk food

### Introduction

Adolescents account for one fifth of world's population and have been on increasing trend.<sup>[1]</sup> India has the largest population of adolescents in the world being home to 243 million individuals aged 10-19 years.<sup>[2]</sup> Adolescence, the unique development period between childhood and adulthood, is generally associated with the second decade of life and is characterized by tremendous biological, cognitive, psychological and sexual changes. The vulnerable adolescent group suffers from various health problems due to their risk-taking behavior, poor nutrition, improper social and environmental conditions etc.

More than 33 % of the disease burden and almost 60% of premature deaths among adults can be associated with behaviors or conditions that began or occurred during adolescence for example, tobacco and alcohol use, poor eating habits, sexual abuse and risky sex (WHO 2002)<sup>[3]</sup>. Thus, although adolescents are apparently healthy, they are practicing unhealthy behaviors that will ultimately result in much death and disability and therefore this is an immense public health issue. The World Health Organization (WHO), in 1999, commissioned a special analysis of the burden of disease in adolescence, which examined the 10 to 14 and the 15 to 19 age groups. The study found that young people age 10 to 19, who constitutes 19% of the world's population, account for 15% of the disease and injury burden worldwide. It also found that more than 1 million people in that age group die each year.<sup>[4]</sup> The top three causes of DALYs were found to be unipolar major depression, transportation falls and accidents. The profile of disease burden was significantly different for younger and older adolescents. In the 10 to 14 years of age group injuries and communicable diseases were prominent causes of DALYs. For the 15 to 19 years of age group, the disease burden shifted to outcomes of sexual behaviors and mental health.

The major adolescent health problems are related to mental health, intentional and unintentional injuries, sexual and reproductive issues, poor diet and nutrition, lack of exercise, tobacco and alcohol.

The health of its children is nation's biggest asset. The school is the extraordinary setting through which the health of adolescents can be improved. It is a means to support the basic human rights of both education and health. It offers opportunities to achieve significant health and education benefits with investments of scarce education and health resources. [5] The World Health Organization's expert committee on school health services noted as long ago as 1950 that to learn effectively children need good health [6].

We need to study the risk behavior of adolescents because they face significant problems and risk related to their healthy development. The increasing focus on adolescent health and the need for research will help in the development of preventive, promotive and curative adolescent health programme in the community.

Adolescent have very special and distinct needs, which can no longer be overlooked. It is also essential to invest in adolescents, as they are the future of the country. They need to be helped to help themselves and to be helped to do it alone. By addressing their needs one would not only be contributing to the socio-economic development of the country but also to other societal concerns like social harmony, gender justice, population stabilization and improving the quality of life of our people. Since no such type of study was conducted in this area, that is why we have planned to conduct this study in Ghaziabad with the objective to assess the knowledge of Adolescents about the dietary behaviour & its consequences.

**Materials & Methods:** The present observational cross-sectional study was carried out in Department of Community Medicine, Santosh Medical College, Ghaziabad & Urban area of district Ghaziabad. The unit of the study was selected adolescent students studying in randomly selected schools of Ghaziabad city. Adolescents aged 10 to 19 years studying in the selected schools of urban Ghaziabad were included for the study. The period of study was from November 2011 to October 2012.

**Sample Size:** The proposed study assessed sexual behaviours among the adolescents. In view of the above factors the sample size was calculated by taking mean of the prevalence of the various individual risk behaviours.

1. Mean prevalence of the Substance Abuse = 25.38% (since the prevalence of substance abuse from various studies ranges between 2.28% - 45.9%. The mean prevalence comes out to be 25.38%).
2. Prevalence of Risky Dietary Behaviour = 48% [since the prevalence of malnourishment and anemia among adolescents in studies from National Nutrition Monitoring Bureau (NNMB)].
3. Prevalence of Risky Sexual Behaviour<sup>[1]</sup> = 15%
4. Prevalence of Physical Activity<sup>2</sup> = 53%  
Therefore, mean prevalence (p) = 35%  
The sample size for the study was calculated using the formula [7].

$$n = Z \cdot Z_c \cdot p \cdot q / L \cdot L_c \text{ or } n = Z^2 p q / L^2$$

$$Z = 2$$

n = minimum required sample size

$$p \text{ (prevalence rate)} = 35$$

$$q = 1 - p = 65$$

$$L = \text{Allowable error } 10\% \text{ of } p = 3.5\%$$

$$\text{Desired confidence level} = 95\%$$

$$\text{Hence, minimum sample size } (n) = \frac{4 \times 35 \times 65}{3.5 \times 3.5} = 742$$

So minimum required sample size was 742.

For convenience in equal distribution, 750 adolescents, i.e. 375 males and 375 females were taken up for the purpose of study as sample size.

**Sampling Technique:** The required sample was taken using simple random sampling technique.

**Inclusion Criteria:** Adolescents (male and female) between 10 to 19 years of age who volunteered for study at the time of data collection from the selected schools were included in the study.

**Exclusion Criteria:** Adolescents who did not volunteer for study and adolescents studying in the school for less than six months were excluded from the study.

**Sampling Procedure:** The present study was conducted in the Ghaziabad City. All the coeducation schools of Ghaziabad City were included in the sampling frame for the study. Randomly five schools were selected, using lottery method.

These were:

1. Bal Bharti Public School, Ghaziabad.
2. Cambridge Public School, Ghaziabad.
3. Delhi Public School, Ghaziabad.
4. Diwakar Model School, Ghaziabad.
5. DAV Public School, Ghaziabad.

Then considering absentees and non-response, 150 adolescents were chosen from each selected school. Further 75 male adolescent students and 75 female adolescent students were randomly chosen. A repeat visit was made for the students who were absent.

**Methodology:** After planning the modus operandi of the survey and after deciding the area of investigation, the next step was school visits for the active support and participation, it was imperative to explain the aim of the study to the principals of schools and the targets and consent was taken for the same. For the purpose of this study, detailed information was collected on a pre designed structured questionnaire.

The study methodology included-

**Data collection:** The principals of the identified schools were contacted. They were informed about the purpose of study, and apprised of the fact that anonymity and confidentiality of the respondents will be maintained in the study.

The principals were also informed, that following administration of the tools of data collection to the students, an interactive health education session would be held for the students, so that the exercise is mutually beneficial. In each school, adolescents in the class were encouraged to provide honest and unambiguous response to the question.

A written permission and consent from the principals was obtained prior to conducting the study in schools. The investigator administered the tools of data collection and subjects were asked to fill the questionnaire. The opinion of the students was elicited and their queries were sought to be answered as far as possible.

**Tools of data collection (Interview schedule):** A pre designed structured questionnaire was used to elicit the necessary information. The questionnaire was divided into following five sections -

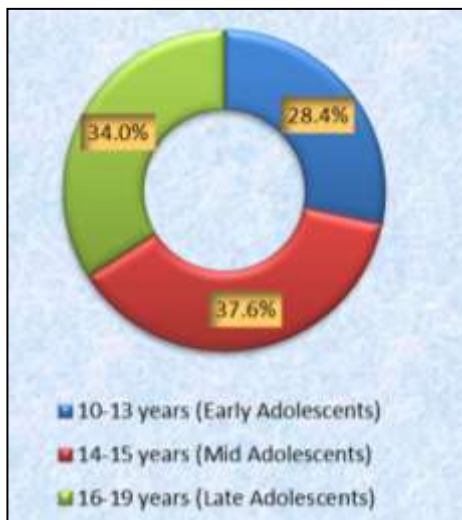
**1) Information on socio-demographic factors:** Information pertaining to the subject’s age, sex, religion, type of family, parent’s education and occupation, socio-economic status according to revised Kuppuswamy scale, etc. was gathered.

**Information on dietary behaviour:** Participants were asked about dieting, intake of junk food, etc

**Statistical Analysis:** Data was analyzed using Microsoft excel 2007 and Epi info version 3.5.3 software. For proportions, Chi square test was applied to find out significant association between independent and dependent variables. A p value of less than 0.05 was considered significant

**Results**

In the present study maximum number of the students i.e., 282 (37.6 percent) belonged to 14-15 years of age group (mid adolescent) followed by 255 (34.0 percent) in 16-19 years of age group (late adolescent) and the minimum number of 213 (28.4 percent) were in the 10-13 years of age group (early adolescent). Fig 1



**Fig 1:** Distribution of adolescents according to Age group

Majority of the students were Hindu (71.7%) followed by 14.8% Muslim students. Maximum students belonged to General category (62.3%) followed by OBC (37.73%). Only 8.7% and 3.4% were in SC and ST category respectively. Most of adolescents had nuclear families (84.8%) and rest (15.2%) had joint families.

The adolescents predominantly (66.1%) belonged to upper and upper middle socioeconomic status. Only 7.9% students were from lower socioeconomic status. The overall literacy

rate for fathers and mothers of adolescents was 99.6% and 98.8% respectively.

Most of the study subject’s father (54.0%) was semi-professional or professional (36.5%) and Majority (59%) of mother’s was working.

253 (67.5%) male and 192 (51.2%) female had knowledge about healthy diet. The association between two sexes was found to be statistically significant. Table 1

**Table 1:** Distribution of students according to their knowledge about healthy diet

Knowledge	Boys (n=375)		Girls (n=375)		Total (n=750)	
	N	%	N	%	N	%
Yes	253	67.5	192	51.2	445	59.3
No	122	32.5	183	48.8	305	40.7
$\chi^2 = 20.56, df = 1, p \text{ value} = 0.001$						

The table 2 shows that about half of the female 193 (51.5%) preferred homemade food while about two-third 252 (67.2%) of boys preferred outside food and this association between two sexes was found to be statistically significant.

**Table 2:** Distribution of students according to their choice of food

Choice of Nutritious food	Boys (n=375)		Girls (n=375)		Total (n=750)	
	N	%	N	%	N	%
Home-made food	123	32.8	193	51.5	316	42.1
Outside food	252	67.2	182	48.5	434	57.9
$\chi^2 = 26.80, df = 1, p \text{ value} = 0.001$						

The table 3 reveals that among males 162 (43.2%) ate junk food daily, 183 (48.8%) ate weekly and 30 (8.0%) ate occasionally while in females 108 (28.8%) ate junk food daily, 218 (58.1%) ate weekly and 49 (13.1%) ate occasionally and this association between frequency of consuming junk food and two sexes was found to be statistically significant ( $\chi^2 = 18.42, df = 2, p \text{ value} = 0.001$ ). Table 3

**Table 3:** Distribution of students according to their frequency of consuming junk food

Junk Food	Boys (n=375)		Girls (n=375)		Total (n=750)	
	N	%	N	%	N	%
Daily	162	43.2	108	28.8	270	36.0
Weekly	183	48.8	218	58.1	401	53.5
Occasionally	30	8.0	49	13.1	79	10.5
$\chi^2 = 18.42, df = 2, p \text{ value} = 0.001$						

270 (72.0%) male and 265 (70.7%) female had knowledge that consuming junk food regularly can harm health and this association between two sexes was found to be statistically insignificant ( $\chi^2 = 0.16, df = 1, p \text{ value} = 0.686$ ).

209 (55.7%) male and 224 (59.7%) female were encouraged from surrounding to eat outside or junk food and this association between two sexes was found to be statistically insignificant ( $\chi^2 = 1.23, df = 1, p \text{ value} = 0.268$ ). table 4.

**Table 4:** Distribution of students according to their encouragement from surrounding to eat outside or junk food

Encouragement	Boys (n=375)		Girls (n=375)		Total (n=750)	
	N	%	N	%	N	%
Yes	209	55.7	224	59.7	433	57.7
No	166	44.3	151	40.3	317	42.3
$\chi^2 = 1.23, df = 1, p \text{ value} = 0.268$						



131 (34.9%) male and 206 (54.9%) females believed in dieting and this association between two sexes was found to be statistically significant ( $\chi^2= 30.31$ ,  $df = 1$ ,  $p$  value = 0.001).

Knowledge about after-effects of heavy dieting was more among boys 269 (71.7%) than girls 192 (51.2%) and this association between two sexes was found to be statistically significant ( $\chi^2= 33.38$ ,  $df = 1$ ,  $p$  value = 0.001). Table 5 117 (31.2%) males and 180 (48.0%) had history of eating disorders and this association between history of eating disorders and two sexes was found to be statistically significant ( $\chi^2= 22.13$ ,  $df = 1$ ,  $p$  value = 0.001).

**Table 5:** Distribution of students according to their knowledge about after-effects of heavy dieting

Knowledge	Boys (n=375)		Girls (n=375)		Total (n=750)	
	N	%	N	%	N	%
Yes	269	71.7	192	51.2	461	61.5
No	106	28.3	183	48.8	298	38.5
$\chi^2= 33.38$ , $df = 1$ , $p$ value = 0.001						

## Discussion

More boys (67.5%) than girls (51.2%) had knowledge about healthy diet that is contrary to that reported by Gupta D<sup>[8]</sup> in 2011 (Girls 67.4% and boys 51.4%). About half of the girls (51.5%) had a choice of homemade food while about two-third (67.2%) of boys had a choice of outside food in this study while Nielsen SJ *et al.* (2002)<sup>[9]</sup> observed that adolescents obtained less of their energy intake at home and more at restaurants and fast food places.

This study revealed that 53.5%, 36.0% and 10.5% of adolescents ate junk food weekly, daily and occasionally respectively. Among males 43.2% ate junk food daily, 48.8% ate weekly and 8.0% ate occasionally while in females 28.8% ate junk food daily, 58.1% ate weekly and 13.1% ate occasionally. This data is in line with the studies of Singh P *et al.* (2008)<sup>[10]</sup> revealed that 33% of the girls ate Junk food regularly, Gupta D. (2011)<sup>[8]</sup> revealed that 51%, 40.9% and 8.1% of adolescents eat junk food weekly, daily and occasionally respectively. Among males 53.7% eat junk food daily, 42.6% eat weekly and 3.7% eat occasionally while in females 29.6% eat junk food daily, 58.3% eat weekly and 12.1% eat occasionally, Musaiger AO *et al.* (2011)<sup>[11]</sup> who obtained the frequency of eating junk food among adolescents on daily, weekly and occasional basis to be 14.4%, 56.6% and 29.0% respectively, Onyiriuka AN *et al.* (2013)<sup>[12]</sup> revealed that 12.7% of the girls ate junk food daily while 87.3% did it on weekly basis and Goel S *et al.* (2013)<sup>[13]</sup> in Kurukshetra, Haryana observed that 97.5% of girls ate junk food on weekly basis and 2.5% consumed it daily. Abalkhail B *et al.* (2002)<sup>[14]</sup> showed that 89.4% of students ate junk food regularly and Jain S *et al.* (2010)<sup>[15]</sup> reported dissimilar results by founding that 66.5% of adolescents ate junk food regularly in Meerut.

Both boys and girls had almost equal knowledge that consuming junk food regularly can harm health in this study which is similar to that reported by Gupta D<sup>[8]</sup>.

More than half (59.7%) of adolescent girls were encouraged from surrounding to eat outside or junk food in this study which is in line to that reported by Singh P *et al.* (2008)<sup>[10]</sup> in an urban area of Varanasi, where 61% of the girls were allured to eat outside food.

54.9% of the girls believed in dieting in the present study which is almost similar (47%) to the finding of Australian

study by Grigg M *et al.* (1996)<sup>[16]</sup>.

This study showed that knowledge about after-effects of heavy dieting was more among boys (71.7%) than girls (51.2%) which is contrary to that observed by Gupta D (2011)<sup>[8]</sup> that girls had more (70.4%) knowledge about after-effects of heavy dieting.

In the present study 48.0% of girls had history of eating disorders which is in line with the results of Fear JL *et al.* and Martin AR *et al.* (1999)<sup>[17, 18]</sup> to be 54% and 46.3% respectively. Australian study by Grigg M *et al.* (1996)<sup>[16]</sup> observed lower percentage of females (33.0%) suffered from eating disorders.

## Conclusion

The health status of the adolescents of this study was consistent with those seen among the adolescent around the world. The present health status of the study population has the potential possibility of leading to increased health problems for this vulnerable population, in future. Considering the large no. of adolescents in our country, the study thus evokes an urgent need to stimulate an action to identify those at risk and those who need treatment and prevention of progression of the health risk behaviors, among the adolescents

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