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**Original Research Article**

# A cross sectional study on health status of adolescents in urban field practice area of tertiary care hospital in central India

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## ABSTRACT

**Background:** Adolescence is defined by WHO as the age group of 10-19 years. In India, adolescents (10-19 years) constitute about 21.4 percent of the population, comprising one fifth of the total population. Adolescents are apparently healthy people but they may also have various kinds of problems. If they are to reach adulthood in a healthy state, then it's necessary to analyze the common health problems prevalent in this age-group so that targeted and concerted services could be provided to them. Objective of current study was to assess the health status of adolescents in urban field practice area of tertiary care hospital in Central India.
**Methods:** A community based descriptive cross-sectional study was conducted in urban field practice area of Government Medical College and Hospital Nagpur. House to house survey was conducted among 330 adolescents out of which 214 (64.84%) were male and 116 (35.16%) were female.
**Results:** In present study most common morbidity found was dandruff in 127 (38.48%) adolescents followed by acne vulgaris in 102 (30.90%). Anemia was present in 52 (15.75%) of study subjects. Out of 237 morbid study subject, 114 (48.10%) study subjects had single morbidity followed by 2 and 3 morbidities in 52 (21.94%) and 63 (26.59%) respectively. About 8 (3.37%) study subjects had more than 3 morbidities.
**Conclusions:** The present study shows that adolescents experience various health problems. Predominant morbidities observed in study subjects are dandruff (pityriasis capitis), acne vulgaris, anaemia, dental carries.

**Keywords:** Adolescent, Health status, Health problem, Morbidity, Prevalence

## INTRODUCTION

The term adolescence comes from Latin word meaning" to grow to maturity". Adolescence is defined by WHO as the age group of 10-19 years. In India, adolescents (10-19 years) constitute 21.4 percent of the population, comprising one fifth of the total population.[1-4] Adolescence is the transitional period that occurs after childhood and before adulthood which requires special attention and protection.[5-8] In this period of rapid growth and development adolescents experience physical and mental maturation, along with movement toward socio-economic independence and development of identity.[6]

Adolescence is a time when many problem behaviors and emotions begin or elevate. The biological, psychological and social changes that occur during adolescence can influence their behavioral and emotional development.[9-11] If they are to reach adulthood in a healthy state, then it's necessary to analyze the common health problems prevalent in this age-group so that targeted and concerted services could be provided to them.[2] Health is a most

important factor in entering, continuing and performing in school. It is necessary to have good and optimum health to attain effective learning.[2] In a developing country like India due to poverty and prevailing socio-cultural milieu a substantial number of school children from paediatric age to adolescents suffer from various diseases. It is estimated that, out of three one child has some sign of ill health manifesting in the form of dental, visual and hearing problems, nutritional deficiencies, respiratory infections, skin problems, musculoskeletal disabilities etc.[12] And most of these health problems during this opportunistic phase are either preventable or treatable and are associated with various behaviours like poor eating habits, lack of physical activity, exposure to violence, tobacco and alcohol use.[13] Early detection of the morbidities or various health problems through regular survey and check-up helps in prompt treatment and prevention of later complications.[3] Hence, early recognition and seeking appropriate medical care if necessary for their health problems are necessary for designing appropriate health care services to ensure a healthy and enjoyable life in this age group. Therefore, the present study was carried out with the objective to assess the health status of adolescents.

## METHODS

### *Study design, location and duration*

A community based descriptive cross-sectional study was carried out in urban field practice area of Government medical college and hospital, Nagpur in central India. Study was carried out for 2.5 years from Aug 2019 to December 2021.

### *Study subjects*

Study subjects consisted of Adolescent girls and boys between 10-19 years of age.

### *Inclusion and exclusion criteria*

Adolescent girls and boys between 10-19 years of age were included. Study subject not present even after three consecutive visits, seriously ill and mentally retarded adolescents and study subjects/parents not willing to give consent for study were excluded.

### *Sample size*

Sample size estimated with reference to study done by Wasnik et al sample size estimated considering the prevalence of Anaemia in adolescent as 30%.[14] Sample size required for the study was calculated by using following formula;

$$N = [Z^2 (1-\alpha/2)^* p^*(1-p)]/ d^2$$

Where P: Expected proportion, d: Absolute precision, 1-α/2: Desired Confidence level, sample size was calculated by estimated proportion = 30%, absolute precision (%) = 5, desired confidence interval (1-α) % = 95 and Minimum required sample size = 326. Thus 330 patients were included in current study. A pilot study was conducted in 50 study subjects. The necessary corrections were done in questionnaire.

### *Data collection procedure*

Data collection was started after obtaining clearance from Institutional Ethics Committee. House to house survey was done. Before starting the interview, study participants were well informed about the nature of the study and written informed consent/assent for each study participant was taken. After establishing a good rapport, information of the study subjects was obtained and recorded in pre-designed and pretested proforma and other examination was done. During every visit to the community such information was obtained from approximately 4-5 adolescents. At the time of first visit where the study subject was not at home, subsequent two visits were given to include these subjects and all the study subjects were taken till sample size was achieved. Data collection tools were mentioned in (Figure 1).

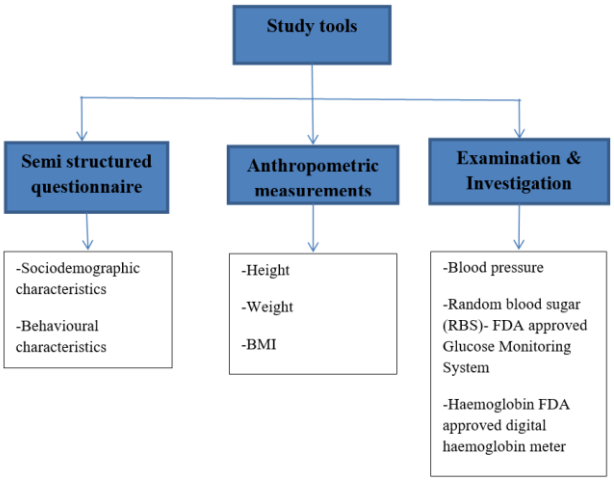


**Figure 1: Data collection tools.**

### *Data management and analysis*

Collected data were checked, edited at the end of the day during the period of data collection. Data were entered in Microsoft Excel 2019 and was rechecked and cleaned after entry to ensure quality of data. The quantitative data were expressed in terms of number, percentage, mean and standard deviation. The categorical data were expressed in terms of proportion.

## RESULTS

House to house survey was conducted and face to face interview was taken among 330 adolescents out of which 214 (64.84%) were male and 116 (35.16%) were female. In the present study, mean age of the study subjects was 14.27±2.68 (10-19) years. Majority 131 (39.71%) study

subjects were from age group of 14-16 years followed by 10-13 years (32.72%) and 17-19 years (27.57%) of age group. Most of the study subjects belonged to nuclear family (89.93%) followed by three generations (10.32%) and rest were from joint family (05.75%) (Table 1).

**Table 1: Distribution of study subjects according to their sociodemographic profile.**

| Parameters | N (%) | Parameters | N (%) |
|---|---|---|---|
| **Age group (years)** | | **Type of family** | |
| 10-13 | 108 (32.72) | Nuclear | 277 (83.93) |
| 14-16 | 131 (39.71) | Joint | 19 (05.75) |
| 17-19 | 91 (27.57) | Three generation | 34 (10.32) |
| **Gender** | | **Type of diet** | |
| Male | 214 (64.84) | Mixed | 316 (95.76) |
| Female | 116 (35.16) | Vegetarian | 14 (04.24) |
| **Religion** | | **Socioeconomic status** | |
| Hindu | 311 (94.24) | Upper (I) | 08 (02.42) |
| Other | 19 (05.76) | Upper middle (II) | 60 (18.19) |
| | | Lower middle (III) | 208 (63.03) |
| | | Upper lower (IV) | 54 (16.36) |
| | | Lower (V) | 0 |

**Table 2: Distribution of study subjects according to symptoms at the time of data collection.**

| ICD 10 code | Symptom | N | % |
|---|---|---|---|
| **L29.9** | Itchy scalp | 42 | 12.72 |
| **R05** | Cough | 35 | 10.60 |
| **R52.9** | Bodyache | 29 | 08.78 |
| **J00** | Cold | 17 | 05.15 |
| **R51** | Headache | 17 | 05.15 |
| **M79.6** | Pain in legs (limbs) | 12 | 03.63 |
| **M54.9** | Backache | 09 | 02.72 |
| **S81** | Wound | 09 | 02.72 |
| **M25.5** | Joint pain | 07 | 02.12 |
| **R14** | Acidity | 07 | 02.12 |
| **K12** | Oral ulceration | 05 | 01.51 |
| **R53** | Fatigue/Loss of energy | 04 | 01.21 |
| **R42** | Giddiness | 04 | 01.21 |
| **R63.0** | Loss of appetite | 03 | 00.90 |
| **K59** | Constipation | 01 | 00.30 |
| **R06.8** | Breathlessness on walking | 01 | 00.30 |

**Table 3: Distribution of study subjects according to health morbidities found.**

| ICD 10 code | Morbidity | N | % |
|---|---|---|---|
| **L21** | Dandruff (Pityriasis capitis) | 127 | 38.48 |
| **L70.9** | Acne vulgaris | 102 | 30.90 |
| **D64.9** | Anemia | 52 | 15.75 |
| **K02** | Dental caries | 41 | 12.42 |
| **H61.20** | Wax in ear | 39 | 11.81 |
| **J06.9** | URTI | 35 | 10.60 |
| **J31.0** | Rhinitis | 17 | 05.15 |
| **H52.7** | Refractive error | 09 | 02.72 |
| **K29.7** | Gastritis | 07 | 02.12 |
| **K12** | Oral ulcers | 05 | 01.51 |
| **I10** | Hypertension | 02 | 00.60 |
| **J03.9** | Tonsillitis | 02 | 00.60 |
| **L81.9** | White spots on face (disorder of pigmentation, unspecified) | 02 | 00.60 |
| **H02.84** | Edema of eyelid | 01 | 00.30 |

**Table 4: Distribution of study subjects according to number of morbidity.**

| Morbidities | N | % |
|---|---|---|
| Absent | 93 | 28.18 |
| Present | 237 | 71.82 |
| **Number of morbidities in study subject (n=237)** | | |
| 1 | 114 | 48.10 |
| 2 | 52 | 21.94 |
| 3 | 63 | 26.59 |
| >3 | 08 | 03.37 |
| Average morbidity/subject | 1.86 | |

Maximum of study subjects were Hindus 311(94.24%), rest were Buddhist 19(05.76%). According to Modified Kuppuswamy socioeconomic status scale updated for the year 2021, majority of the study subjects 208 (63.03%) belonged to socio economic class III followed by socio economic class II, socio economic class IV and socio economic class I included 60 (18.19%), 54 (16.36%) and 8 (02.42%) respectively. Most of the study subjects 316 (95.76%) had mixed diet. Only 14 (4.24%) of study subjects were vegetarian (Table 1). The (Table 2) depicts the distribution of study subjects according to symptoms experienced at the time of examination. 42 (12.72%) had itchy scalp followed by cough, bodyache, cold, headache, pain in legs, backache, wound, joint pain, acidity, oral ulceration, fatigue/loss of energy, giddiness, loss of appetite, constipation and breathlessness on walking in 35 (10.60%), 29 (8.78%), 17 (5.15%), 17 (5.15%), 12 (3.63%), 9 (2.72%), 9 (2.72%), 7 (2.12%), 7 (2.12%), 5 (1.51%), 4 (1.21%), 4 (1.21%), 3 (0.9%), 1 (0.3%) and 1 (0.3%) respectively.

Distribution of study subjects according to Health morbiditis found in (Table 3), shows that majority 127 (38.48%) adolescents had dandruff followed by acne vulgaris in 102 (30.90%). Anemia was present in 52 (15.75%) of study subjects. Other health problems found were dental caries, wax in ear, URTI, rhinitis, refractive error, gastritis, oral ulcers, hypertension, tonsillitis, white spots on face and edema of eyelid in 41 (12.42%), 39 (11.81%), 35 (10.60%), 17(5.15%), 9 (2.72%), 7 (2.12%), 5 (1.51%), 2 (0.6%), 2 (0.6%), 2 (0.6%) and 1 (0.3%) study subjects respectively. Distribution of study subjects according to number of morbidity (Table 4) reveals that some or other morbidity present in 237(71.82%) study subjects. Out of 237 morbid study subject, 114 (48.10%) study subjects had single morbidity followed by 2 and 3 morbidities in 52 (21.94%) and 63 (26.59%) respectively. About 8 (3.37%) study subjects had more than 3 morbidities.

## DISCUSSION

In present study, majority i.e., 127 (38.48%) study subjects had dandruff followed by acne vulgaris in 102(30.90%). Other morbidities found were dental caries, wax in ear, URTI, rhinitis, refractive error, gastritis, oral ulcers, hypertension, tonsillitis, white spots on face and edema of eyelid in 41 (12.42%), 39 (11.81%), 35 (10.60%), 17 (5.15%), 9 (2.72%), 7 (2.12%), 5 (1.51%), 2 (0.6%), 2 (0.6%), 2 (0.6%) and 1 (0.3%) study subjects respectively. Slightly similar findings was found in study conducted by Krishna et al.[3] About 12% of the study subjects had dental caries while 14% of the study subjects were found to be suffering from refractive error. Other morbidities included worm infestation (13%), skin problems (9%) tonsillitis (3%) and wax in the ear (9%). Study by Yerpude et al reported that the dental caries was the commonest (41.90%) among all health problems.[4] Skin disorders were present in 20.95% adolescents. ENT problems were present in 17.62% adolescents. History of worm infestation was present in 13.33% adolescents. Acute respiratory infection was found in 21 (10.00%) of study subjects. Also Naseem et al in their study showed that most common health problem found in urban adolescents were dental problems (36.4%) and skin diseases (36%) followed by ENT problems (18%), gastro-intestinal diseases (11.2%), respiratory disorders (7.2%), eye problem (6%), and musculo-skeletal disorders.[12] A study done in Burdwan district of West Bengal in eastern India by Bhattacharya et al showed that About 40.33% adolescents had dental caries, 33.49% adolescents were found to be suffering from refractive errors, 23.11% adolescents had history of worm infestation, 38.90% adolescents had skin problems, and 68.61% adolescents had one or the other ENT problem.[15]

### *Limitations*

Study has all the inherent limitations of a cross-sectional study. Generalizability of the study findings may be limited to the study area.

## CONCLUSION

The present study shows that adolescents experience various health problems. Predominant morbidities observed in study subjects are dandruff (pityriasis capitis), acne vulgaris, anaemia, dental carries. In order to improve health status of these adolescents, a periodic and regular health check-up with dedicated efforts for their common health problems are required. Adequate health education and awareness creation about healthy adolescent life style should be imparted at community level. The study suggests

for the further more research on their health status including other aspects.

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