## **Original Research Article**

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# A study of adolescent health problems in a rural school in Thiruvanthapuram district, Kerala, India

## Nazeema Beevi P.\*, Manju L., Anil Bindhu

Department of Community Medicine, Sree Gokulam Medical College & Research Foundation, Venjaramoodu, Kerala, India

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#### \*Correspondence: Dr. Nazeema Beevi. P,

E-mail: drnazeemabeevi@yahoo.co.uk

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#### **ABSTRACT**

Background: Adolescence is a period of transition from childhood to adulthood. As adolescents are less vulnerable to diseases than the children, health problems specific to this group is given less importance. Their emotional problems are little noticed by the parents.

Methods: A cross sectional study was conducted in a rural government higher secondary school, Kilimanoor during November 2013. 10<sup>th</sup> and 11<sup>th</sup> class students (110 girls and 107 boys) were interviewed with the help of a pretested

**Results:** A total of 217 students in the age group of 15-17 years were studied. Obesity was found in 2.8% of students. 45.6% falls under normal category and the rest 51.6% were in the underweight category. Hypertension was observed only in males i.e. 4.2%. 24.4% were in the pre hypertensive group. Systolic BP is correlated with BMI (r = 0.270, pvalue <0.001). The prevalence of hypertension and pre hypertension in males are 8.4% and 30.8% respectively, whereas none of the females are hypertensive and 18.2% are in pre hypertensive group. Among the 106 girls, the prevalence of premenstrual symptoms is 83%. Among the 107 boys it was found that 13.0% students smoked cigarettes and 15.8% had consumed alcohol at this age. 11.2% students reported that they have both these habits.

Conclusions: This study brought out the problems of malnutrition both under nutrition and over nutrition so also the prevalence of hypertension and pre hypertension among adolescents which are going to be serious health problems in future.

Keywords: Adolescents, Hypertension, Obesity, Premenstrual symptoms

#### INTRODUCTION

Adolescence is a phase separate from both early childhood and adulthood. It is a transitional period that requires special attention and protection. About 1 in 6 persons in the world is an adolescent, 1.2 billion people is 10-19 years. Adolescence is generally considered as healthy period of life. Several important public health and social behaviours either start or peak during these years.

Most of the problems are linked with life styles and social determinants. The behavioural patterns established during this developmental phase determine their current health status and the risk for developing some chronic diseases in later years.

Promoting healthy practices during adolescence and taking steps to protect young people from health risk are critical for prevention of health problems in adulthood, thereby improving the socioeconomic development of country.

#### **Objective**

To study the prevalence of adolescent health problems in students of Government higher secondary school, Kilimanoor, Trivandrum District.

#### **METHODS**

#### Study design

A cross sectional study was carried out over a period of two weeks. 217 students in the age group of 15-17 years were examined during the period. Data was collected by interviewing the students using a pretested semi-structured questionnaire after taking informed consent. Anthropometric measurements were recorded using standardised methodology as recommended by WHO. Body mass index (BMI) was calculated using the formula  $BMI = \frac{Weight(kg)}{Height^2(meter)}$ . The subjects were categorised into various grades based on BMI according to WHO international standards.

#### Statistical analysis

Qualitative data were expressed in frequency and percentage. Pearson's correlation coefficient is used to test the correlation between BMI and Systolic BP. Student 't' test is used to compare the obese group with normal group. The SPSS (version 16.0) software was used for analysis.

#### **RESULTS**

A total of 217 students (107 boys and 110 girls) in the age group of 15-17 years were studied.

Table 1: Distribution of students according to BMI.

| BMI             | Male<br>Number<br>(%) | Female<br>Number<br>(%) | Total Number (%) |
|-----------------|-----------------------|-------------------------|------------------|
| Under<br>weight | 61 (57.0)             | 51 (46.4)               | 112 (51.6)       |
| Normal          | 43 (40.2)             | 56 (50.9)               | 99 (45.6)        |
| Obese           | 3 (2.8)               | 3 (2.7)                 | 6 (2.8)          |

Obesity was found in 2.8% (95% CI: 0.60 - 4.99) of students, equally distributed between boys and girls. 45.6% (95% CI: 36.74 - 54.46) falls under normal category and the rest 51.6% (95% CI: 44.95 - 58.24) were in the underweight category. The prevalence of underweight was more in males compared to females.

Hypertension was observed in 4.2% (95% CI: 1.51 - 6.88) of school children, all were males. 24.4% (30.8% in males and 18.2% in females) were in the pre hypertensive

group. Systolic BP is correlated with BMI (r = 0.270, p-value <0.001). Also the mean systolic BP in obese group was more compared to normal group (mean systolic BP in boys = 132±21.9 versus 117±11.7, p-value=0.047; mean systolic BP in girls =110±10 versus 106±9, p-value=0.458). It is found that the prevalence of hypertension and pre hypertension in males are 8.4% and 30.8% respectively, whereas none of the females are hypertensive and 18.2% are in pre hypertensive group.

Table 2: Distribution of students according to SBP (systolic blood pressure).

| SBP (mmHg)        | Male Number (%) | Female Number (%) | Total Number (%) |
|-------------------|-----------------|-------------------|------------------|
| Normal            | 65              | 90                | 155              |
| (90-119)          | (60.7)          | (81.8)            | (71.4)           |
| Pre-hypertension  | 33              | 20                | 53               |
| (120-139)         | (30.8)          | (18.2)            | (24.4)           |
| Hypertension ≥140 | 9 (8.4)         | 0 (0)             | 9 (4.2)          |

#### Menstrual problems

Among the 110 girls, 4 were not attained menarche. Of the remaining 106 girls, 59% have duration of menstrual flow of 3-7 days.

Table 3: Distribution of girls according to duration of menstruation.

| Duration of menstruation (days) | Number (%) |
|---------------------------------|------------|
| <3                              | 11 (10)    |
| 3-7                             | 62 (59)    |
| >7                              | 33 (31)    |

35% of girls reported passage of clots during menstruation.

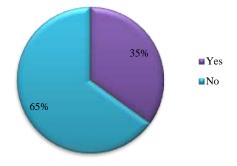


Figure 1: Distribution according to the menstrual flow.

Among the 106 girls, the prevalence of premenstrual symptoms is 83%. 35.9% complained of stomach pain, 8.7% complained of back ache and 30.4% complained of multiple problems.

**Table 4: Distribution of pre menstrual syndromes.** 

| Premenstrual syndrome  | Number (%) |
|--|------------|
| Mental stress  | 2 (2.2)    |
| Stomach pain   | 39 (35.9)  |
| Breast tenderness  | 5 (4.3)    |
| Back ache  | 9 (8.7)    |
| Hip pain + breast tenderness and back ache                   | 8 (7.6)    |
| Stomach pain + breast<br>tenderness + backache<br>+puffiness | 1 (1.1)    |
| Stomach pain + back ache                                     | 19 (17.4)  |
| Stomach pain + breast tenderness                             | 5 (4.3)    |

#### Smoking and alcohol use among boys

Among the 107 boys it was found that 14 (13.0%) students smoked cigarettes and 17 (15.8%) had consumed alcohol at this age. 12 (11.2%) students reported that they have both these habits.

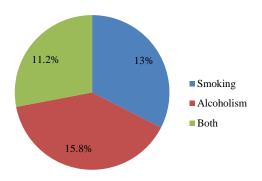


Figure 2: Distribution according to smoking and alcohol use.

47% had the influence of friends where as 47% is influenced by TV and cinema.

Table 5: Factors leading to smoking/alcoholism

| Factors              | Number (%) |
|----------------------|------------|
| Anxiety              | 1 (5.8)    |
| Influence of friends | 8 (47.0)   |
| Television           | 5 (29.4)   |
| Cinema               | 3 (17.6)   |

### **DISCUSSION**

20% of the world's population is constituted by adolescents. India is home to more than 243 million adolescents, who account for a quarter of the country's population<sup>2</sup>. 350 million adolescents comprising 22% of the population is in countries of South East Asian Region<sup>3</sup>. They exist in variety of circumstances and have diverse needs. Almost 47% girls in the group of 11-19 years are under weight in India. In this study also 40% of

the girls are under weight. Prevalence of overweight and obesity is increasing among adolescents according to various studies conducted by Thankachy YR.<sup>4</sup> In their study prevalence of overweight varied from 7.4 - 10.4%. In this study it is only 5% in girls and 3% in boys .In another study conducted by Raj et al in Ernakulam district in children 5-16 years found that prevalence of obesity is 6.57 in 2005.<sup>5</sup> Prehypertension is present in 32% of boys and 23% of girls. There is significant relation between obesity and hypertension. The same relation is present in the studies conducted by Raj et al<sup>5</sup>. In the above study 17.34% overweight children are found to be hypertensive. In our study 8% of boys are found to be hypertensive.

Most striking change in adolescent girls is the onset of menarche. There are various problems associated with menstruation. Regarding menstrual problems, 65% of girls are suffering from menstrual problems. Various studies conducted in different parts of India also showed similar findings. Most common symptom is found to be dysmenorrhoea, then oligomenorrhea, menorrhagia, amenorrhea. In a study published in Indian journal of paediatrics, for 67.2% of the girls have dysmenorrhoea was the commonest problem and 63.1% had one or the other symptoms of premenstrual syndrome (PMS).

The vast majority of tobacco users worldwide begin the use of tobacco during adolescence. Currently, more than 150 million adolescents use tobacco, and this number is increasing globally. NFHS-3 revealed that 40 per cent of males and 5 per cent of females aged 15 to 24 year consumed tobacco nationwide. Systematic review of 15 studies across India aged 13-15 year showed a median prevalence of tobacco use (ever users) to be 18.2 per cent; 14 per cent among males and 6.3 per cent among females. In this study prevalence of smoking and alcohol is found to be 15% among males. Female addiction is nil. In a study conducted in school going students in south Delhi shows that 16% students including boys and girls tried cigarettes and bidi smoking. 10

#### **CONCLUSION**

Study on adolescent health problems brought out the problems of malnutrition both under nutrition and over nutrition so also the prevalence of hypertension and pre hypertension among adolescents which are going to be serious health problems in future. In females menstrual problems are prevalent in majority of study population which can later develop problems in reproductive health. Substance abuse among adolescent boys also found to be prevalent which has to be addressed. Awareness classes should be started from the primary school level itself for the prevention of these problems.

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Institutional Ethics Committee

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