

ORIGINAL ARTICLE

Stress and safe health behaviour among mid adolescent school going children in urban Bhubaneswar, Odisha, India

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Abstract	Introduction	Methodology	Results	Conclusion	References	Citation	Tables / Figures
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Abstract

Background: During adolescence, that the child is heavily influenced by his surroundings and attempts to change his or her habits and take on to newer habits. This has made relevant the emphasis of safe health behaviour in school and incorporation of stress assessment and subsequent counselling among the adolescent age group. The current study was planned among mid adolescent age group boys and girls, both from government and private schools of Bhubaneswar. **Aims & Objectives:** To see the association of socio-demographic characteristics with perceived stress among the adolescent children and to find the association of safe health behaviour with perceived stress among the adolescent children and determine the significant factors. **Material & Methods:** A total of 480 students (240 boys and girls each) selected randomly from 4 government and private schools were included in the study and administered a self-marking questionnaire which elicited information regarding safe health behaviour and also stress scores by using the Perceived Stress Scale which is a 10 points item. **Results:** Type of school and mother's education emerged most significant in the sample in terms of stress experienced by the children. Children who were verbal abused by the teachers had higher stress (28.9%) compared to who were not abused ($p = 0.012$). In terms of health history, any report of sickness or illness in the past 3 months accounted for significantly higher stress levels (37%) compared to the group with no such history (22.5). **Conclusion:** These findings hint that school environment has a major role to play on the adolescent's stress levels.

Keywords

Adolescent; School Going Children; Safe Health Behaviour; Perceived Stress

Introduction

About 20 million children of ages 10–14 are estimated to be tobacco addicted, according to a survey done by the National Sample Survey Organization of the Indian Government. It is well documented that behaviours developed during this

period influence health in adulthood (1). Several health-compromising (e.g., smoking, alcohol) as well as health-enhancing behaviours (e.g., physical exercise, nutrition) are adopted in adolescence, and they often persist into adulthood which is the primary underlying cause of stress and even mental distress and these findings are elicited from studies

in India and abroad (2-4). Against all this background, it strongly emerges that the period of adolescence bears a great significance in determining the disease burden in future. The mid adolescence period i.e. from age 12-16 years are the years when the behaviour have more profoundly set in and at the same time, the population is very receptive to health education. Hence, in this context, a study was conceptualized to study the safe health behaviours and stress among the school going students in Bhubaneswar city of state Odisha in India.

Aims & Objectives

To see the association of socio-demographic characteristics with perceived stress among the adolescent children

To find the association of safe health behaviour with perceived stress among the adolescent children and determine the significant factors

Material & Methods

It was a cross sectional study done in schools of Bhubaneswar city from December 2015 to October 2017. High school (class VIII to X standard) students, belonging to the age group of 12 years to 16 years from the selected schools of Bhubaneswar city, India, irrespective of any gender were the study population.

A pre-designed, pre-tested, semi-structured and self-administered questionnaire, was finalized using 2006 India, Central Board of Secondary Education (CBSE) Global School-based Student Health Survey (GSHS) (5) questionnaire and modified according to our objectives. The GSHS is a self-administered Questionnaire developed by World Health Organization (WHO) and the Centers for Disease and Prevention (CDC) in collaboration with UNICEF, UNESCO and UNAIDS.

The final questionnaire had sections eliciting information on:

- I. Social and demographic parameters
- II. Diet-dietary habit, benefit of healthy eating
- III. Activity-school related activities, activities related to physical education and exercise, time management at home
- IV. Personal hygiene activities-brushing of teeth, hand washing.
- V. Personal health-health related issues like tooth ache, pain in abdomen.
- VI. Injury and safety-any accident while playing, felt unsafe in school.

- VII. Social health- awareness and use of Cigarette, tobacco and alcohol.
- VIII. HIV knowledge on infection and AIDS
- IX. Reasons for absenteeism from school- any sickness or illness that warranted absenteeism and more than one visits to the doctor or hospital
- X. Mental health-related to emotional behaviour like being sad, feeling stressful, being confident, feeling of irritation, being happy. (Cohen perceived stress scale was used for assessment, depicted in figure)

Cohen Perceived Stress

It is a 10-questionnaire based scale with following option for each question -never, almost never, sometimes, fairly often, or very often.

Perceived Stress Scale Scoring

Each item is rated on a 5-point scale ranging from never (0) to almost always (4).

Positively worded items are reverse scored, and the ratings are summed, with higher scores indicating more perceived stress.

PSS-10 scores are obtained by reversing the scores on the four positive items:

For example, 0=4, 1=3, 2=2, etc. and then summing across all 10 items.

Items 4, 5, 7, and 8 are the positively stated items.

Minimum was the 0 score and Maximum was the 40 score.

Score (6,7) were then classified in simpler way, for better understanding

Score categories	Level of stress
0 -10	No stress
11- 20	Mild stress
21 and above	Moderate to severe stress

For analysis in this journal, scores 20 and below is considered normal and above 20 is considered as stress that needs extra addressal. The questionnaire was translated to Odiya language too, for use where necessary. The adaption in the questionnaire was not in terms of content but the sequence of questions which were taken as enlisted in the tools section. Detailed sections on alcoholism, substance abuse not very relevant to Indian scenario and questions on broken homes were excluded. After translation the questionnaire was pretested in about 30 students in order to check for their understanding and comprehension. It was also screened by a psychiatrist and psychologist in order to check for its

appropriateness. Only after this validation exercise the questionnaire was finalized for the study.

It also included a section on physical examination of the sampled students warranting measurement of height (in metres) and weight (in kilogram). For measurement of height portable stadiometer was used. It was calibrated with metal anthropometric tape before the visit to school. For weight measurement, bathroom weight scale with zero error correction of 0.1kg was used.

Taking prevalence of the behaviour and emotional problems reported as 17.9 % (rounding to 18%) among male adolescent in Aligarh (5), the final sample was 455 at 95% CI and a relative error of 20%. For convenience in data collection, final sample was calculated as 480 students to get the equal number of students an allocation ratio of 1:1 was taken for Government and Private school and also for the gender, so that each school would have 240 students. Four private and four government schools separately selected using multistage random sampling technique.

Inclusion Criteria: Adolescents of either gender between age group of 12 years -16 years and shown willingness to participate after filling the assent form.

Exclusion Criteria: Subjects who were absent or acutely sick on the day of study were excluded. In the first stage, Bhubaneswar was divided into 3 zones (north zone, south west zone, south east zone as per zonal map of Bhubaneswar Municipal Corporation) and then the north zone was selected randomly.

In the second's stage, list of all the schools (private and government), of this zone were collected from office of School and Mass Education department, Bhubaneswar (Annexure II). List of four schools each from government and private sectors was selected by simple random sampling using random number table.

In the third stage, simple random sampling was used to select the children from each of the selected schools. In this stage, first sampling frame of the eligible children was prepared in discussion with the school authorities (from classes 8-10th class) and then simple random sampling method was applied to select 60 children from each of the selected school. Finally, we selected 240 children from four government schools and another 240 children from

four private schools to achieve the target sample size of 480.

After due Institutional ethical clearance, and permission from the school authority, the data collection work was initiated.

Before commencement of study, a team was made involving other P. G students from department of Community Medicine, junior resident, interns and non -technical staff. All of them were oriented about purpose and trained regarding method of survey.

Each school was approached and due appointment was taken from the concerned authority, which in most cases were headmasters or principals of the schools. After due permission (which in some cases of government school was a school committee) the survey was initiated. Few schools denied the permission to conduct the survey, in that case again, with the help of lottery method, another school was selected.

On the allotted date and time, each school was approached. Students of particular age group from particular section were chosen by lottery method. Before start of survey, students were explained the purpose of survey and assent was taken from them to be participants in survey. Students were assured that confidentiality would be maintained at all level; even the survey team would not know the identity of a particular student. Students were given self-administered semi structured questionnaire and each question was explained in the language of their teaching, either English or Oriya.

Statistical Methodology:

Data were entered in M.S Excel sheet 2007, and converted to Statistical package for social sciences (SPSS version 20) for analysis. For all the categorical characteristics were presented as frequency and percentage and association of such characteristics with the level of stress, either Chi-square test or Fishers's exact test was done. A p value of < 0.05 was considered to be statistically significant. A stepwise multiple logistic regression model with entry probability of 0.10 and exit probability of 0.05 was used to find out the independent association of various factors with the stress level by quantifying the adjusted odds ratio and accordingly all the significant factors (marginally associated at 0.10 level of significance in univariate analysis) were treated as candidate variables for the regression analysis.

Results

The above table compares the stress levels in the adolescents against some sociodemographic sample characteristics. There is no difference between the stress levels as per gender or parent's occupation or caste. Stress is more common among the government school going adolescent. Lower mother's education ($p=0.008$) is highly significant showing high stress levels. Similarly, low levels of father's education account for high stress in the same group

[Table 2](#) compares the stress levels against safe health behaviours in the sample. Lower BMI were seen to have higher stress levels, maximum being in the underweight category and the difference was statistically significant (0.003). Indulging in physical education also was seen to help reduce stress as levels were higher in those who did not avail it or incorporate it and is again highly significant (<0.001). Those who did not have awareness for latest health problems of HIV/AIDS which was also taken as a proxy for sexual education were seen to report high stress levels ($p=0.024$) and so is the infliction of verbal abuse by teachers (0.012).

When a multiple logistic regression model was run on all significant factors that were studied in the study, being in a private school and access to physical education emerged as being protective in terms of stress and was highly significant. Lack of information regarding reproductive health in terms of awareness for HIV/AIDS were the most significant factor that caused 1.57 times more stress in the mid adolescents age group.

Discussion

Adolescent years are among the most stressful times in a person's life. Adolescents are going through puberty, meeting the changing expectations of others, and coping with feelings that may be new to them. In the present scenario as the society is influenced by modernization and westernization, the path from adolescence to adulthood is endowed with stress. Stress had been defined as "state of psychological and / or physiological imbalance resulting from disparity between situational demands and individual's ability or motivation to meet those demands" (American institute of stress) (8). In this study it has been attempted to explore the stress attributory factors given the context of school going children. In the current sample, no gender difference in stress levels was not noted however

Indian. (9, 10) (Kanpur in 2010 and Kerala in 2017) and western studies (Danish children aged 14-15 years in 2013) (11) have reported more stress among girls and they scored higher on maladaptive coping strategies and emotional distress and scored lower on distraction than boys.

Findings of this study cannot be generalized to all of the state Odisha or India, wherein perhaps a more descriptive sample may give representative results. The study was conducted in Bhubaneswar, the capital city and a distinguished educational hub and the findings could be because of the emancipated inmates of this region. Akin to our study the Danish study (11) too reported stress to be more in the younger children; ours stress level being higher in median age of 13.59 ± 0.77 . This could be because of the increased study pressure on the children at a younger age and them failing to cope in the initial years. However, the scenario improves as they go to higher classes; in much of the cases again indicative of coping mechanisms by the children. However, this picture may be grim in a bigger picture perspective like rural areas where the parental and societal pressures increase with age and have been beyond the scope of this study.

This could be because of a recent positive change in the Indian society wherein girls are not discriminated against and get tremendous social support. In today's context, a Lancet study in 2012 (12) stated that safe and supportive schools as well as supportive peers are crucial to the adolescent's growth, which is also seen in our study in terms of family and supportive teachers would be surrogate for supportive school environment. The peer effect however did not come out very strongly in our study which could be because of the lack of play and integrated fun events in today's context with the coming of mobiles and gadgets that keen the teens preoccupied. Another study in Lancet 2015 (13) that used a time series data on health behaviours in school children in 34 North American and European studies brought out that good socioeconomic conditions did not always mean less stress and safe health behaviour. Children in the stated study reported fewer days of physical activity (-0.05 days; $p=0.0295$), higher BMI (0.06 ; $p<0.0001$), more psychological (0.18 ; $p<0.0001$) and physical (0.16 ; $p<0.0001$) symptoms, which is similar to our findings. In terms of safe behaviour practices that have a bearing on stress, being underweight, not attending physical education and verbally being abused by

teachers was significantly related to stress. According to WHO (14) children and youth aged 15–17 years should accumulate at least 60 minutes of moderate vigorous intensity physical activity daily, in order to improve cardio respiratory and muscular fitness, bone health, and cardiovascular and metabolic health biomarkers. In this study, overall 29% of students in government schools attended and practiced optimum physical education classes (included theory as well as sports) as against nearly 71% in private schools. (15) This could be one of the reasons why the type of school emerged as a prominent protector against stress in the study. lack of knowledge about prevention against HIV infection was higher in government children than in private school children (84.2% vs 74. 6%). Boys of government schools with no knowledge were 90.0% and the difference was significant between gender in both schools ($p = 0.013$ government vs $p = 0.000$ private). Study conducted by Jyoti Bagla *et al*, 2007 (16) done in Rajasthan, among 423 adolescents in 11-19 years age group, reported 85.5% girls and 82.9% boys had knowledge about prevention about of HIV use which was significantly higher ie 23.75% in males and 17.5% in females in the current study (shown in frequency tables). This again could be an incidental finding as now HIV/AIDS is widely covered in school as well as in social media. But poor reports in this study mean that these topics need reinforcement. Awareness on topics like HIV/AIDS, hand washing etc may not have any direct relation with health or stress, however given the public health relevance of these topics, and the regression models reporting the former as bearing a significance when comparisons were drawn between stressed and unstressed groups, they have been included in the results and discussion.

Conclusion

Nevertheless, it is a requirement to do such studies among adolescents wherein we can bring out important determinants of stress in this age group, Counselling of the students regarding diet, safe health behaviour definitely would help them tackle stress in these demanding years.

Limitation of the study

The limitations of the study were not being able to include rural population in Odisha and the tool used was self-administered questionnaire, which does not rule out recall and reporting bias.

Authors Contribution

All authors have contributed equally.

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Tables

TABLE 1 ASSOCIATION OF SOCIO-DEMOGRAPHIC CHARACTERISTICS WITH PERCEIVED STRESS AMONG THE ADOLESCENT CHILDREN

Characteristics	≤20 (low stress)	>20 (High stress)	p value
Gender n(%)			0.670
Male	184 (76.7)	56 (23.3)	
Female	180 (75.0)	60 (25.0)	
Age (Mean ±SD)	13.76 ± 0.75	13.59 ± 0.77	0.034
Type of school n(%)			<0.001
Government	160 (66.7)	80 (33.3)	
Private	204 (85.0)	36 (15.0)	
Caste n(%)			0.231
General	171 (77.7)	49 (22.3)	
OBC	107 (77.5)	31 (22.5)	
SC/ST	73 (69.5)	32 (30.5)	
Father’s Education n(%)			0.012
Illiterate	16 (76.2)	5 (23.8)	
High School	153 (69.5)	67 (30.4)	
Above	190 (81.5)	43 (18.4)	
Mother’s Education n(%)			0.008
Illiterate	43 (68.2)	20 (31.7)	
High School	166 (71.9)	65 (28.1)	
Above	151 (83.4)	30 (16.6)	
Father Occupation n(%)			0.160
Govt	67 (83.75)	13 (16.2)	
Private	70 (75.3)	23 (24.7)	
Business	154 (75.1)	51 (24.9)	
Farmer	59 (68.6)	27 (31.4)	
Mother’s Occupation n(%)			0.234
Housewife	298 (75.8)	95 (24.2)	
Govt	24 (85.7)	4 (14.3)	
Private	16 (59.3)	11 (40.7)	
Business	6 (85.7)	1 (14.3)	
Farmer	13 (76.5)	4 (23.5)	

TABLE 2 ASSOCIATION OF SAFE HEALTH BEHAVIOUR WITH PERCEIVED STRESS AMONG THE ADOLESCENT CHILDREN

Health Behaviour Characteristics	≤20 (low stress)	>20 (High stress)	p value
Diet n (%)			0.749
Veg	35 (77.8)	10 (22.2)	
Non-veg	329 (75.6)	106 (24.4)	
BMI Classification n (%)			0.003
Under-weight	135 (68.9)	61 (31.1)	
Normal	211 (79.6)	54 (20.4)	

Over-weight	18 (94.7)	1 (5.3)	
BMI (Mean ±SD)	19.83±3.98	18.34±3.09	0.002
Physical education n (%)			<0.001
No	188 (68.6)	86 (31.4)	
Yes	176 (85.4)	30 (14.6)	
Owning Mobile n (%)			0.463
Yes	120 (77.9)	34 (22.1)	
No	244 (74.8)	82 (25.1)	
If Yes, specific use of mobile n (%)	50 (75.8)	16 (24.2)	0.481
Communication	44 (75.9)	14 (24.1)	
Entertainment	26 (86.7)	4 (13.3)	
Both			
Hand washing n (%)			1.000
No	8 (80.0)	2 (20.0)	
Yes	356 (75.7)	114 (24.3)	
Safe drinking water in school n (%)			0.972
Yes	333 (75.8)	106 (24.1)	
No	31 (75.6)	10 (24.4)	
History of Absenteeism from school (in last 6 months for reasons other than sickness) n (%)			0.151
Yes	228 (78.1)	64 (21.9)	
No	136 (72.3)	52 (27.7)	
Serious Accident (in past 6 months) n (%)			0.439
Yes	51 (79.7)	13 (20.3)	
No	313 (75.2)	103 (24.8)	
Verbally abused by the teachers (in past 3 Months) n (%)			0.012
No	190 (80.8)	45 (19.1)	
Yes	174 (71.0)	71 (28.9)	
Any episode of ill health in the last 3 months n (%)			0.019
Yes	34 (63.0)	20 (37.0)	
No	330 (77.5)	96 (22.5)	
Ever tobacco use n (%)			0.391
Yes	349 (76.2)	109 (23.8)	
No	15 (68.2)	7 (31.8)	
Awareness regarding HIV/AIDS n (%)			0.024
Yes	222 (79.6)	57 (20.4)	
No	142 (70.6)	59 (29.3)	

TABLE 3 EXPLANATORY FACTORS OF PERCEIVED STRESS AMONG THE SCHOOL CHILDREN

Explanatory factors	Odds Ratio (95% CI)	p value
Type of school		<0.001
Government	1.00	
Private	0.42 (0.26 – 0.66)	
Physical education		<0.001
No	1.00	
Yes	0.42 (0.26 – 0.67)	
Awareness regarding HIV/AIIDS		0.042
Yes	1.00	
No	1.57 (1.01 – 2.44)	