An epidemiological study of stress among adolescent of urban and rural Moradabad

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ABSTRACT

Background: Adolescence is considered as a stressful phase due to physical, psychological, and sexual changes. Due to stress overload, people from adolescent age group easily fall prey to mood disturbances such as anxiety and depression compromising their quality of life. **Objectives:** The objectives of the study were to study the prevalence and sociodemographic correlates of stress, among urban and rural areas of Moradabad district of Uttar Pradesh. **Materials and Methods:** A present cross-sectional study was conducted from January 2017 to December 2017 among adolescents of field practice areas of the Department of Community Medicine, Teerthanker Mahaveer Medical College and Research Centre, Moradabad. A total of 400 participants were selected using a multistage sampling design with a random approach. **Results:** Majority of adolescents (165) belonged to late adolescent followed by early (119) and midadolescent (116). One hundred and thirteen adolescents were in primary school, high school (124), intermediate (100), and illiterate (18). About 54.5% of adolescents belonged to nuclear families. Amongst our 400 study participants 49.3% reported of being stressed. This was significantly more in mid and late adolescents, who were living either alone or belonging to nuclear families, children of illiterate parents, belonging to lower socioeconomic class (58.7%) followed by participants from upper socioeconomic class (51.8%). **Conclusion:** Our study draws attention to the high prevalence of stress among adolescents. Identification of stress can enable us to intervene proactively which can avert further complications. We recommend strengthening the information, education, and communication activities for prevention, early identification, and timely treatment for stress in adolescents.

KEY WORDS: Adolescence; Stress; Prevalence

INTRODUCTION

Adolescence is a period of transition between childhood and adulthood. The World Health Organization defines adolescence both in terms of the age (spanning the ages between 10 and 19 years) and in terms of a phase of life marked by special attributes. These attributes include rapid physical growth and development and social and psychological maturity.[1] The stage of adolescence is characterized by significant physical, emotional, and intellectual changes and changes in social roles, relationships, and expectations.[2] It is a time when people become independent individuals, expand knowledge and skills, forge new relationships, develop social skills and learn to deal with emotions and relationships, and learn behaviors that will last the rest of their lives.[3] Adolescence is considered as a stressful phase due to physical, psychological, and sexual changes and is also influenced by development.[4] Due to stress overload, people from adolescent age group easily fall prey to mood disturbances such as anxiety and depression compromising their quality of life. The symptoms of these three disorders can lead to poor academic performance, lack of communication with friends and family members, substance abuse, feeling of abandonment, homicidal

ideation, and suicidal tendency.[5] Mental health conditions account for 16% of the global burden of disease and disability in people aged 10–19 years;[6] the most common mental disorders occurring in this age group are stress, anxiety, and depression.

Stress is defined as a process, in which environmental demands exceed the adaptive capacity of an organism, resulting in psychological and biological changes that may place persons at risk for diseases.[7] Stress can be differentiated into two types acute and chronic. Acute stress is defined as single events such as a life transition or an uncharacteristic event. Chronic stress refers to recurring demands such as financial difficulties, academic concerns, or disability.[8] The prevalence of stress among Indian adolescents varies from 13% to 45% among different studies done after the year 2000.[9]

The World Health Report has reported that India is having a substantial prevalence of childhood and adolescent mental health disorders.[10] We need to study the health problems of adolescents because they face significant problems and risk related to their healthy development. The present study was undertaken to evaluate the prevalence of stress among adolescent of urban and rural Moradabad and its association with various academic and sociodemographic factors.

MATERIALS AND METHODS

The present cross-sectional study was conducted in field practice area of the Department of Community Medicine, Teerthanker Mahaveer Medical College, Moradabad district, Uttar Pradesh. The study subjects were adolescents (10–19 years) under field practice areas of the Department of Community Medicine, Teerthanker Mahaveer Medical College and Research Centre, Moradabad. The present study was conducted during 1 year from January 2017 to December 2017. The prevalence of stress as shown by a previous study conducted in India by Sahoo *et al.*,[11] in 2010, is 12.1%, so by taking minimum prevalence as 12.1% and using the formula:

$$N = 4PQ/L^2$$

P = Prevalence of the number of cases
Q = (100−p)
L = Permissible error.

With the above assumption, the required sample size at 95% level of confidence with 5% of permissible error in the estimates is 170. Hence, we took a sample of 200 adolescents each from urban and rural areas of Moradabad; hence, the final sample size was 400.

Inclusion Criteria

The following criteria were included in the study:
1. Adolescents present at the time of the survey
2. Adolescents giving the written consent.

Exclusion Criteria

The following criteria were excluded from the study:
1. Adolescents who were unavailable at the time of the survey
2. Adolescents not willing to give written consent.

Sampling Technique

Multistage sampling design with random approach was used in our study.

First stage: Selection of primary sampling units (PSUs)

All villages and mohallas in the field practice area constitute as PSU. The urban PSU comprised 23 mohallas and rural PSU comprised 29 villages. The population of each of the selected PSU was obtained from the annual census maintained in the Community Medicine Department of Teerthanker Mahaveer Medical College and Research Centre, Moradabad. Each village and mohalla has been designated a serial number, and the required numbers of villages and mohallas, that is, 10 were selected using the simple random technique.

Second stage: Selection of families

The department maintains a list of all families in the field practice area. Families with an adolescent had been selected and designated a serial number. Then, all the selected families were allotted random numbers generated online. These random numbers were then selected randomly until the required sample size was reached from each PSU. After obtaining informed consent, the structured questionnaire was administered. If more than one such adolescent was found, then one from them was selected randomly. If no adolescent was found in the selected family at the time of visit, then the investigator moved to the next preselected household. This process was continued until the required sample size was fulfilled.

Ethical Considerations

The study was examined and cleared by the Institutional Review Board and Ethical Committee of Teerthanker Mahaveer University.

Scales

A predesigned self-administered questionnaire was used to assess sociodemographic characteristics such as age, religion, education, type of family, and socioeconomic status of adolescents. Perceived stress scale[11] was used to assess stress among adolescents.

Data Management and Analysis

The collected data were entered into Microsoft Excel Word Spreadsheet on a daily basis. Data were presented in tabular form. Data were analyzed using Epi info. Test of significance applied was Chi-square test. The difference was considered statistically significant at $P < 0.05$.

RESULTS

The study population included 232 male and 168 female adolescents. Of total study males, 119 were from rural area and 113 from urban area, while in females, 81 were residing in rural area and 87 in urban area. Table 1 demonstrates the distribution of adolescents according to the age group. Majority of adolescents (165) belonged to late adolescent (16–19 years) age group followed by the early (119) and midadolescent (116). Among these 165 late-stage adolescents, 75 belong to rural and 90 belong to urban area. Majority of our study participants are Muslims (224) and remaining 176 belong to Hindu religion. Among Muslims, 138 reside in rural area and rest 86 reside in urban area. Among Hindu participants, 114 belong to urban area and 62 belong to rural area. Majority of adolescents (133) were in primary school followed by high school (124) and intermediate (100). Only 18 of our study subjects were illiterate. In our study, most of the fathers of the study subjects were graduate and above

(162) followed by educated up to high school (99) and 57 of them were illiterate. While among mothers of the study participants, majority of them were illiterate (129) followed by high school (77) and graduate and above (74). Only 12 fathers were unemployed and in case of mothers, we found that 245 were unemployed. Maximum (54.5%) adolescents were living in nuclear families and rest (45.5%) in joint families. Among urban population, 62% of adolescent were belonged to nuclear families and 38% belonged to joint families. In rural children, 47% belonged to nuclear families and 53% were living in joint families.

A maximum number of participants reported of being indulge in playing (63%) followed by walking (19.2%) and running (8.1%). Only 2.3% of adolescents were indulging in doing gym. About 52.7% of adolescent take part in religious activities and rest 47.3% did not take part in any religious activities. Maximum (64%) of adolescent sleeps 6–8 h daily followed by more than 8 h (21.5%) and < 6 h (14%).

A total of 71 adolescents were indulging in any substance abuse. Maximum number of adolescents were using tobacco (66%) followed by alcohol intake (21%). About 16% of adolescents were having any chronic disease. About 33.25% of the study population had a family history of any mental illness, whereas rest 76.75% of samples did not have any history of mental illness.

Of 400 participants, 49.3% reported to have stress. Table 2 depicts various factors associated with stress; we found that stress was significantly more in mid and late adolescents, living either alone or belonging to nuclear families. Table 3 demonstrates different parental factors and their association with the presence of stress in children. It was observed that children of illiterate parents were significantly more stress than those of educated parents; this difference was statistically

Table 1: Area and age-wise distribution of the study population

Age (years)	Rural	Urban	Total
10–13 (early)	53	66	119
14–15 (mid)	72	44	116
16–19 (late)	75	90	165
Total	200	200	400

Table 2: Factors associated with stress

Male (*n*=232)	Female (*n*=168)	Total (*n*=400)	*P* value
101 (43.5%)	96 (57.1%)	197 (49.25%)	χ^2=0.25, P>0.05
Rural (*n*=200)	Urban (*n*=200)	Total (*n*=400)	
107 (53.5%)	90 (45%)	197 (49.3%)	χ^2=2.89, P>0.05
10–13 years (early adolescent) (*n*=119)	14–15 years (mid adolescent) (*n*=116)	16–19 years (late adolescent) (*n*=165)	χ^2=18.6, P<0.05
39 (32.8%)	67 (57.7%)	91 (55.1%)	
Hindu (*n*=176)	Muslim (*n*=224)	Total (*n*=400)	χ^2=2.39, P>0.05
79 (44.9%)	118 (52.7%)	197 (79.3%)	
Nuclear family (*n*=218)	Joint family (*n*=182)	Total (*n*=400)	χ^2=23.5, P<0.05
129 (59.2%)	68 (37.3%)		
Living with family (*n*=337)	Living with friends (*n*=29)	Living alone (*n*=34)	χ^2=6.84, P<0.05
160 (47.5%)	13 (44.9%)	24 (70.5%)	
Tobacco (*n*=47)	Alcohol (*n*=15)	Others (*n*=9)	χ^2=0.94, P>0.05
16 (34%)	7 (46.6%)	4 (44.4%)	
Sleep <6 h (*n*=56)	Sleep=6–8 h (*n*=258)	Sleep>8 h (*n*=86)	χ^2=3.0, P>0.05
33 (58.9%)	120 (46.5%)	44 (51.1%)	

Table 3: Parental variables

Father's education	Graduate and above (n=162)	Intermediate (n=40)	High school (n=99)	Primary (n=12)	Literate (n=30)	Illiterate (n=57)	P value
Stress in children	84 (51.9%)	17 (42.5%)	32 (32.3%)	2 (16.6%)	20 (66.7%)	42 (73.6%)	$\chi^2=34.9, P<0.05$
Mother's education	Graduate and above (n=74)	Intermediate (n=24)	High school (n=77)	Primary (n=30)	Literate (n=66)	Illiterate (n=129)	
Stress in children	40 (54.7%)	7 (29.2%)	29 (37.7%)	9 (30%)	25 (37.9%)	87 (67.4%)	$\chi^2=34.6, P<0.05$
Father's occupation	Professional (n=25)	Semi-professional (n=94)	Clerk, shop owner (n=167)	Skilled (n=24)	Semi-skilled (n=23)	Unskilled (n=55)	Unemployed (n=12)
Stress in children	18 (72%)	50 (53.2%)	80 (48%)	10 (41.7%)	12 (52.1%)	20 (36.3%)	7 (58.3%)
Mother's occupation	Professional (n=11)	Semi-professional (n=24)	Clerk, shop owner (n=18)	Skilled (n=21)	Semi-skilled (n=31)	Unskilled (n=50)	Unemployed (n=245)
Stress in children	5 (45%)	8 (33.3%)	9 (50%)	7 (33.3%)	13 (42%)	20 (40%)	135 (55.1%)

significant. On the other hand, we did not find any statistical difference due to the parental occupation. Maximum stress was found in adolescents belonging to lower socioeconomic class (58.7%) followed by adolescents belonging to the upper socioeconomic class (51.8%). The prevalence of stress (32.6%) was seen more in the adolescents who were not doing sufficient physical activity. However, the association between the duration of physical and prevalence of stress was found to be not statistically significant. Similarly, stress was more prevalent in participants with the presence of chronic diseases or family history of mental illness, but the association with these factors was having not statistically significant.

DISCUSSION

The present cross-sectional community-based study involved 400 individuals of age 10–19 years residing in the urban and rural areas of Moradabad. The study was conducted to assess the sociodemographic correlates of stress, among adolescent population of rural and urban areas of Moradabad.

The present study population included 232 (58%) male and 168 (42%) female adolescents. Among males, 119 (51.3%) were from rural area and 113 (48.7%) from urban area, while in females, 81 (48.2%) were residing in rural area and 87 (52.8%) in urban area. Maximum (54.5%) adolescents were living in nuclear families and rest (45.5%) belong to joint families. In our study, majority of fathers (40.5%) were graduates followed by studied until high school (25.5%) and 14.25% were illiterate. While in case of mothers, maximum (32.25%) were illiterate followed by 19.25% studied until high school and only 18.5% were graduate and above. Overall prevalence of stress was found to be 49.3%, stress was found to be more in rural population (53.5%) as compared to urban population (45%); of 400, 57.1% of female adolescent and 43.5% of male adolescent found to be suffering from stress.

In our study, midadolescent stage and of late adolescent found to be suffering more from stress. Maximum stress was found in adolescents who were just literate followed by high school and educated till intermediate. Maximum adolescents of illiterate father were suffering from stress followed by just literate fathers. However, maximum adolescents of illiterate mother were suffering from stress; this association between stress and parental education was statistically significant. In our study, 52.7% of Muslim and 44.9% of Hindu were found to be suffering from stress. The prevalence of stress was more seen in adolescents living in nuclear families as compared to joint families. Maximum stress was found in adolescents belonging to lower socioeconomic class (58.7%).

As reported by Sandal,[12] among 470 adolescents in Chandigarh, 54.68% of adolescents were male and 45.32% of adolescents were female. While in another study conducted by Karande *et al.*,[13] among 210 adolescents in rural districts

of Muzaffarnagar, Uttar Pradesh, only 37.6% of adolescents were male and rest 62.4% were female.

In our study, 165 (41.25%) of adolescents belong to the late adolescent stage and 119 (29.75%) belong to the early adolescent stage while in the study conducted by Jain *et al.*,[1] 39% of sample belong to the late adolescent stage and only 27.6% belong to early adolescent stage.

While in study conducted by Shailendra *et al.*,[14] 62% of adolescent were residing in nuclear families and rest (38%) belong to joint families. In his study, Watode *et al.*[8] concluded that fathers of maximum number of adolescents (46.2%) were postgraduates followed by graduate (40.5%) and below graduate fathers (13.3%) while majority of mothers (42.6%) had educational level below graduation followed by graduate (32.7%) or higher degree holders (24.6%). In a study conducted by Singh *et al.*,[15] among students, the overall prevalence of stress came out to be 52.7%. In a study conducted by Kumar and Akoijam,[5] among higher secondary school adolescent students of Manipur, the prevalence of stress among 830 respondents was 21.1%. In a study conducted by Watode *et al.,*[8] among school-going adolescents in Delhi, the prevalence of stress was present in 87.6% of students.

The study by Bhasin *et al.*,[16] in Chandigarh, also found that the prevalence of stress was higher in females than males. Similar outcome was reported by Singh *et al.*[15] and Sandal *et al.*[12]. Waghachavare *et al.*[17] performed a cross-sectional study of stress rural area of Sangli district of Maharashtra. Stress was observed in 69 (38.1%) female students and 49 (23.3%) male students; the association with gender was statistically significant. Association between stages of adolescents with stress was found to be statistically significant. Waghachavare *et al.*[17] found a statistically significant association between age and stress. Higher stress was observed in younger students as compared to the older students. Thus, stress had reverse trend with age. Bhasin *et al.*[16] have also found that stress levels were significantly higher among the "board classes," that is, 10 and 12 as compared to the classes 9th and 11th. A study conducted by Watode *et al.,*[8] among school-going adolescents in Delhi revealed that adolescents with mothers' education below graduation are less stressed as compared to students whose mothers had higher educational level. Contrary to this, adolescents with fathers' educational level below graduation were more stressed. In a study conducted by Parpio,[18] stress was seen more among adolescents whose fathers were unemployed, as compared to whose father was employed. Singh *et al.*[15] found that adolescents belonging to middle socioeconomic condition had shown a higher prevalence of stress.

CONCLUSION

The present cross-sectional community-based study involved 400 adolescents aged 10–19 years, residing in the urban and rural areas of Moradabad in the study. Our study draws attention to the prevalence of stress among adolescents which was almost half among our study population. Identification of stress can enable us to intervene proactively which can avert further complications. Numerous tactics can be planned to manage stress among adolescents such as information, education, and communication activities to raise the public awareness to address the problems arising out of lack of awareness, and government should take necessary measures for strengthening the existing services for adolescents under various initiatives and programs. We need to identify the prevalence of negative mental health states among the adolescent population, and especially those at high risk, which would help in the designing and provision of school-based or community-based counseling and treatment options exclusively for the adolescents. This would go a long way in ensuring that the adolescents are able to emerge as healthy adult citizens of the country.

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