

# Study on adolescent health and associated factors: Comparison between rural and urban areas of West Bengal

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## ABSTRACT

**Background:** Adolescence is a very delicate phase of life – a period of rapid physical and psychological changes, and a period strife and storm. Mental and psychological problems among adolescents are fairly common. **Objectives:** The objectives of the study were to study and compare the mental health status and physical activity pattern among rural and urban school-going adolescents. **Materials and Methods:** A cross-sectional study was conducted among both coeducational schools of rural and urban field practice area of Calcutta National Medical College between March 2019 and May 2019. After implementing the inclusion and exclusion criteria, 357 adolescents were randomly selected as our study group. After taking permission from school authorities and ethical committee, the study was undertaken. The questionnaire consisted of sociodemographic data, strength and difficulty questionnaire, and international physical activity questionnaire. Data collected were compiled and presented in tabular form and expressed in frequency and percentages. SPSS version 23 was used for statistical analysis. **Results:** It was seen that 16.8% of study populations have a mental illness. Among the study group, 24% has peer problem followed by conduct related issues in 22%. The total difficulty score is slightly higher in urban (18.5) than rural (15.3) study population. Girls had more emotional problems, whereas conduct problems, hyperactivity, and pro-social issues were more prevalent among boys. Hyperactivity was less prevalent among adolescents with sedentary behavior. **Conclusion:** One in six adolescents had mental illness in our study. Awareness and implementation of mental illness-related programmes and incorporation of life skills education and sports, yoga, etc., and can guide the community to understand and identify and help adolescents struggling with behavioral and mental issues.

**KEY WORDS:** Adolescent; Mental Illness; Physical Activity; Urban; Rural


## INTRODUCTION

Adolescence is a very delicate phase of life – a period of rapid physical and psychological changes, a period strife and storm. Mental and psychological problems among adolescents are fairly common. In any given year, about 20% of adolescents experience a mental health problem, most commonly depression or anxiety.<sup>[1]</sup> A recent study

from Kerala has estimated the prevalence of psychological problems among school adolescents to be about 35%.<sup>[2]</sup> A study by Arif *et al.* draws attention to the high prevalence of stress among adolescents.<sup>[3]</sup> The prevalence rates of various mental disorders among adolescents in developing countries have been found to be similar to those in developed countries.<sup>[4]</sup>

Physical activity can lead to improvements in both long and short-term physical and mental health and there is increasing evidence that it is also associated with academic and cognitive performance and overall psychological well-being.<sup>[5-7]</sup>

Urban and rural areas may be associated with two different lifestyles and differential environmental characteristics may

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contribute to separate levels of physical activity and fitness in adolescents.<sup>[8-10]</sup> However, studies addressing physical activity levels and sedentary behavior in adolescents with mental wellness are particularly scarce.

Brief, low-cost screening instruments, like the Strengths and Difficulties questionnaire, may help build a national database of youth mental health needs, beyond diagnosable psychiatric conditions.<sup>[11]</sup> With this in view, the present study is an attempt to understand the perceived vulnerability of this age group by way of two psychological tests, namely, strengths and difficulty questionnaire (SDQ)<sup>[12]</sup> and International Physical Activity Questionnaire (IPAQ).<sup>[13]</sup>

## MATERIALS AND METHODS

A cross-sectional study was conducted among both coeducational schools of rural and urban field practice area of Calcutta National Medical College between March 2019 and May 2019. Two Government schools were selected randomly from present schools in the selected study area.

A total of 400 students studying in Std VII to Std XII in selected rural and urban schools were taken for study. After implementing the inclusion and exclusion criteria, 357 adolescents were randomly selected as our study group. Of the selected adolescents, 184 and 173 were from rural and urban schools, respectively.

Permission was taken from school authorities and ethical clearance was obtained from the Institutional Ethical Committee before conducting the study.

The questionnaire consisted of sociodemographic data, SDQ, and IPAQ.

SDQ is used for psychiatric screening and consists of domains such as emotional problem, conduct problem, peer problem, hyperactivity, and pro-social behavior. The adolescents responded as “not true,” “somewhat true,” and “certainly true” and rated accordingly. Individual and total scores were then evaluated and total difficulty score (TDS) was calculated. TDS was used to identify likely “cases” with mental disorders.

IPAQ consists of questions to understand if students were sedentary or engaged in moderate or vigorous physical activity.

Pre-testing of the questionnaire was done among a small group of students and they were excluded from the final study sample.

Pre-designed pre-tested self-administered questionnaires were used for this study after translation to Bengali. Validation was done by retranslation to English by three public health experts.

Data collected were compiled and presented in tabular form and expressed in frequency and percentages. SPSS version 23 was used for statistical analysis.

## RESULTS

A total of 357 adolescent school students participated in the study. Table 1 shows that 53.3% of the study population was male and 51.5% were from the rural area. About 13% of students in the study sample belong to broken families. It was seen that 16.8% of the study population have mental illness. Among the study group, 24% has peer problem followed by conduct related issues in 22% [Table 2].

The study also shows that conduct problems are significantly higher in urban compared to rural adolescents. TDS is slightly

**Table 1:** Distribution of study population according to sociodemographic characters.

Sociodemographic characteristics	Frequency (5)
Gender	
Male	190 (53.2)
Female	167 (46.8)
Residence	
Urban	173 (48.46)
Rural	184 (51.54)
Age	
Early adolescence (10–14 year)	153 (42.86)
Late adolescence (15–19 year)	204 (57.14)
Family type	
Nuclear	154 (43.2)
Joint	157 (44)
Broken family	46 (12.8)
State of education	
Middle school	153 (42.86)
Secondary school	122 (34.17)
H.S level	82 (22.97)
Religion	
Hindu	278 (77.9)
Muslim	66 (18.5)
Others	13 (3.6)

**Table 2:** Distribution of mental problems among study population (*n*=357)

Domain	Normal	Borderline	Abnormal
	No. (%)	No. (%)	No. (%)
Emotional	289 (81)	36 (10)	32 (9)
Conduct	278 (78)	40 (11)	39 (11)
Hyperactivity	324 (91)	17 (5)	16 (4)
Pro-social	317 (89)	23 (7)	17 (4)
Peer problem	271 (76)	64 (18)	22 (6)
Total difficulty score	297 (83.19)	39 (11)	21 (5.88)

higher in urban (18.5) than rural (15.3) study population [Table 3].

On comparison of boys' and girls' adolescent school children, girls had more emotional problems, whereas conduct problems, hyperactivity, and pro-social issues were more prevalent among boys [Table 4].

Table 4 also shows that TDS was higher in boys (18%) than girls (15.6%).

Hyperactivity was less prevalent among adolescents with sedentary behavior. A significant association was found between physical activity and emotional and conduct problems and hyperactivity, whereas no significant association was found between TDS and physical activity [Table 5].

**DISCUSSION**

Adolescent mental health is a worldwide issue, especially in developing countries like India, with a large number of adolescent population. This is further complicated by stigma and ignorance related to mental illness related to society.

Study shows that 16.8% of the study population have a mental illness of which 24% has peer problem. Conduct problems are significantly higher in urban compared to rural adolescents. TDS is slightly higher in urban than rural study population. A significant association was found between physical activity and emotional and conduct problems.

In our study, 16.8% of the study population have a high SDQ score which is almost similar in a study conducted by Nair *et al.* in Gujarat (15%).<sup>[14]</sup> Few Indian studies reported high SDQ scores ranging from 10 to 17%.<sup>[15-17]</sup> Our study also shows that peer problem (29%), conduct problem (22%), and emotional problem (19%) are a more prevalent problem. Nair *et al.* almost give similar results except conduct problem (17%).<sup>[14]</sup> Another study done by Bhola *et al.* reported conduct problem (13%), peer problem (9.4%), and hyperactivity (12.6%).<sup>[18]</sup>

Emotional problems are significantly higher in girls, whereas conduct problems and hyperactivity mostly found in boys. Sadock *et al.* also stated that girls are mostly affected by emotional problems due to depression.<sup>[19]</sup> TDS is slightly higher in boys (18%) comparative to girls in this study which is almost similar to the study done in Gujarat among

**Table 3:** Distribution of mental health problems in rural and urban adolescents

Domain	Rural (n=184)	Urban (n=173)	Statistical test
Emotional problem			
Normal (n=289)	153 (83.2)	136 (78.6)	$\Sigma^2=1.19$
Borderline (n=36)	14 (7.6)	22 (2.7)	$P=0.27$
Abnormal (n=32)	17 (9.2)	15 (8.7)	
Conduct problem			
Normal (n=289)	154 (83.7)	124 (71.64)	$\Sigma^2=7.74$
Borderline (n=40)	17 (9.23)	23 (13.34)	$P=0.006$
Abnormal (n=39)	13 (7.06)	26 (15.02)	
Hyperactivity			
Normal (n=324)	162 (88.0)	162 (94)	$\Sigma^2=3.33$
Borderline (n=17)	12 (6.5)	5 (3)	$P=0.067$
Abnormal (n=16)	10 (5.4)	6 (3.4)	
Peer problem			
Normal (n=271)	133 (72.3)	138 (79.8)	$\Sigma^2=2.73$
Borderline (n=64)	37 (20.1)	27 (15.6)	$P=0.098$
Abnormal (n=22)	14 (7.6)	8 (4.6)	
Pro-social behavior			
Normal (n=317)	161 (87.5)	156 (90.17)	$\Sigma^2=0.64$
Borderline (n=23)	9 (4.9)	14 (8.1)	$P=0.42$
Abnormal (n=17)	14 (7.6)	3 (1.73)	
Total difficulty score			
Normal (n=297)	156 (84.78)	141 (81.5)	$\Sigma^2=0.68$
Borderline (n=39)	20 (10.9)	19 (11)	$P=0.407$
Abnormal (n=21)	8 (4.4)	13 (7.5)	

**Table 4:** Distribution of mental health problems in male and female adolescents students

Domain	Male (n=190)	Female (n=167)	Statistical test
Emotional problem			
Normal (n=289)	159 (89)	120 (71.9)	$\Sigma^2=16.83$
Borderline (n=36)	10 (5.3)	26 (15.6)	$P=0.00004$
Abnormal (n=32)	11 (5.7)	21 (12.5)	
Conduct problem			
Normal (n=289)	131 (68.9)	147 (88.0)	$\Sigma^2=18.77$
Borderline (n=40)	25 (13.15)	15 (9)	$P=0.00001$
Abnormal (n=39)	34 (17.89)	5 (2.99)	
Hyperactivity			
Normal (n=324)	167 (87.89)	157 (94)	$\Sigma^2=3.96$
Borderline (n=17)	11 (6)	6 (3.59)	$P=0.046$
Abnormal (n=16)	12 (6.3)	4 (2.39)	
Peer problem			
Normal (n=271)	141 (79.2)	130 (78%)	$\Sigma^2=0.64$
Borderline (n=64)	30 (15.8)	34 (20.35)	$P=0.422$
Abnormal (n=22)	19 (10)	3 (1.79)	
Pro-social behavior			
Normal (n=317)	158 (83.15)	159 (95.2)	$\Sigma^2=12.97$
Borderline (n=23)	17 (8.95)	6 (3.6)	$P=0.0003$
Abnormal (n=17)	15 (7.9)	2 (1.2)	
Total difficulty score			
Normal (n=297)	156 (82)	141 (84.4)	$\Sigma^2=0.34$
Borderline (n=39)	19 (10)	20 (12)	$P=0.56$
Abnormal (n=21)	15 (8)	6 (3.6)	

**Table 5:** Distribution of study population according to mental health problems and physical activity status

Domain	Met			Statistical test
	Sedentary behavior (n=222)	Moderate physical activity (n=78)	Vigorous physical activity (n=57)	
Emotional problem				
Normal (n=289)	199 (89.6)	56 (71.8)	34 (59.6)	$\Sigma^2=43.1$ $P=0.0000$
Borderline (n=36)	16 (7.2)	6 (7.7)	14 (24.6)	
Abnormal (n=32)	7 (3.2)	16 (20.5)	9 (15.8)	
Conduct problem				
Normal (n=278)	202 (91.0)	53 (67.9)	23 (40.4)	$\Sigma^2=73.198$ $P=0$
Borderline (n=40)	11 (4.9)	20 (25.6)	9 (15.8)	
Abnormal (n=39)	9 (4.1)	5 (6.4)	25 (43.9)	
Hyperactivity				
Normal (n=324)	212 (95.5)	64 (82.1)	48 (84.2)	$\Sigma^2=15.9$ $P=0.0000$
Borderline (n=17)	8 (3.6)	5 (6.4)	4 (7.01)	
Abnormal (n=16)	2 (0.9)	9 (11.5)	5 (8.77)	
Peer problem				
Normal (n=271)	172 (77.4)	58 (74.3)	41 (71.9)	$\Sigma^2=0.8$ $P=0.6$
Borderline (n=64)	39 (17.5)	15 (19.2)	10 (17.5)	
Abnormal (n=22)	11 (4.95)	5 (6.4)	6 (10.5)	
Pro-social behavior				
Normal (n=317)	198 (89.1)	68 (87.2)	51 (89.5)	$\Sigma^2=0.26$ $P=0.87$
Borderline (n=23)	11 (4.9)	9 (11.5)	3 (5.3)	
Abnormal (n=17)	13 (5.8)	1 (1.3)	3 (5.2)	
Total difficulty score				
Normal (n=297)	182 (82)	69 (88.5)	46 (80.7)	$\Sigma^2=2.03$ $P=0.36$
Borderline (n=39)	27 (12.2)	6 (7.7)	6 (10.5)	
Abnormal (n=21)	13 (5.8)	3 (3.8)	5 (8.80)	

adolescent school children. Tapasvi *et al.*<sup>[20]</sup> study shows the emotional problem (18%), conduct problem (16%), and hyperactivity (3%), whereas Kharod *et al.* study<sup>[21]</sup> suggests conduct problem is high among adolescents.

In our study, hyperactivity was less prevalent among adolescents with sedentary behavior. Our study also shows a significant association between physical activity status, emotional problem, conduct problem, and hyperactivity problem. Our study result corroborates with findings of a study by Sagatun *et al.*<sup>[22]</sup> also reveals in their study that pro-social behavior and emotional are significantly associated with different levels of physical activity.

## CONCLUSION

Mental health problems among adolescents are a global problem, especially in developing countries like India. One in six adolescents had mental illness in our study.

Emotional problems are more in females, whereas conduct problem, hyperactivity, and peer-related issue are more prevalent among boys. Rural school students have more

mental illnesses where conduct problems are more common in urban adolescents. Frequent mental illness-related programs can guide the community, including parents and school teachers, to understand and identify adolescents struggling with behavioral and mental issues.

Incorporation of life skill education in an ongoing curriculum is important to combat mental illness. Yoga sports or any recreational activity must be encouraged in students to deal with stress related to studies and for social well-being.

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