

Prevalence of Severe Depression among Adolescents in Rural Area of Odisha, India

Sai Chandan Das, Mallicka¹, Prabhudarsan Sahoo², Pragyan Priyadarshini³, R. V. Manasa⁴

Department of Community Medicine, Fakir Mohan Medical College and Hospital, Balasore, ¹Department of Community Medicine and Public Health, Kings George's Medical University, Lucknow, Uttar Pradesh, ²Department of Psychology, Nayagarh Autonomous College, Nayagarh, Odisha, ³MBBS Student Fakir Mohan Medical College and Hospital, Balasore, ⁴Department of Community Medicine and Biostatistics, GIMSR, Vishakapatnam, Andhra Pradesh, India

Abstract

Background: In adolescents, major depression is projected to rank the second most cause of human illness by the year 2022. Unfortunately, half of the depressed adolescents go undiagnosed in primary care settings. **Objectives:** The objective is to estimate the prevalence of severe depression among rural adolescents and also to identify few epidemiological determinants causing severe depression. **Settings and Design:** This cross-sectional study included 341 adolescents from a selected village of Balasore, Odisha. **Materials and Methods:** A semi-structured questionnaire, and “Beck’s Depression Inventory II” questionnaire for screening depression. **Results:** Only 24 (7%) of adolescents were found to be having severe depression. The subcategories of depression showed mild mood disturbance in 8.8%, borderline depression in 15.2%, and moderate depression in 12% individuals. Almost 267 (78.2%) were between 15 and 19 years of age. The mean age (standard deviation) of the participants was 16 ± 1.9 years. Majority of the participants belonged to joint family and lower middle-class status as per the Modified Kuppuswamy Scale. **Conclusion:** Female gender was found to be significantly associated with depression ($P = 0.006$). Other contributory factors for depression were sleep duration (<6 h), parental fighting, and socioeconomic status.

Keywords: Adolescent, rural area, severe depression

INTRODUCTION

Mental health account for 16% of the global burden of disease and injury in people aged 10–19 years. It is estimated that 190 million adolescents comprise over one-fifth of the entire population.^[1] The World Health Organization defines adolescents as persons in the age group of 10–19 years.^[2] Adolescence is a period of transition in terms of both physical and mental. During this phase, the adolescent develops stronger bonding with peer groups and romantic interest.^[2] There is always physiological and psychological development during this part of life.^[3]

Globally, depression is one of the leading causes of illness and disability.^[2] Even in developed nation’s depression is a known health burden among children, adolescents, and adults. One in four children in the age group of 13–15 years in India suffers from depression, which affects 86 million people in the South-East Asia region, the World Health Organization. In adolescents, major depression is projected to rank second-most cause of human illness by the year 2020.^[4]

Unfortunately, half of the depressed adolescents go undiagnosed in primary care settings.^[4,5] Declining physical exercise, overutilization of gadgets during bedtime affects the sleep quality thereby predisposing to rise of depression.^[3,5] A number of literatures have also shown that sleep deprivation and depression both have bidirectional relationship.^[6-9] Depression can have affect on the academic performances of students, hence limiting their career opportunities.^[10-15]

Various researchers have shown different proportion of depression among school and college-going students in both urban and rural areas.^[16-19] Due to the paucity of community-based studies on severe depression in this part of

Address for correspondence: Dr. Mallicka,
Department of Community Medicine and Public Health, King’s
George Medical University Lucknow - 226 003, Uttar Pradesh, India.
E-mail: drmallicka09@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Das SC, Mallicka, Sahoo P, Priyadarshini P, Manasa RV. Prevalence of severe depression among adolescents in rural area of Odisha, India. Indian J Community Med 2021;46:438-41.

Received: 07-07-20, **Accepted:** 14-04-21, **Published:** 13-10-21

Access this article online

Quick Response Code:



Website:
www.ijcm.org.in

DOI:
10.4103/ijcm.IJCM_570_20

Odisha; this present study was conducted in one of the villages of Balasore district, Odisha with the following objectives.

1. To estimate the prevalence of severe depression among rural adolescents
2. To identify epidemiological determinants causing severe depression.

MATERIALS AND METHODS

Study design

This present community-based cross-sectional study was carried out among the adolescents in the age group of 10–19 years residing in rural areas of Balasore district, Odisha. Data were collected from October 2019 to December 2019. Balasore is one of the coastal districts of Odisha. The proportion of children currently attending school in the age group of 6–17 years is 89.9% and 92.5% in both rural and urban areas of Balasore district, respectively.

Sample size and sampling technique

The sample size was estimated based on the prevalence data from the existing literature.^[5] Taking prevalence of depression as 30%,^[5] with 20% relative precision and after applying a design effect of 1.5, the sample size was calculated as 336. Even though required sample size was 336, which with a nonresponse rate of 5% was increased to 354. Multistaged sampling method was adopted.

The first stage was cluster sampling where clusters were selected based on probability proportional to size. A list of all eligible adolescents residing in the selected villages was prepared with help of the Integrated Child Development Scheme supervisors, AWW, and ASHA. The second stage of sampling involved selecting the adolescents from within the clusters by simple random sampling. Probability proportionate to size strategy was adopted to enroll required number of participants from each village. From each house, one participant was selected. If one house consists of both boy and girl of the same age group then lottery system was adopted to choose a participant and to avoid selection bias. Data collection was done by a team comprising a final year psychology student and a 2nd year MBBS student on every Sundays and public holidays to ensure the presence of adolescents at home.

Study tool

A semi-structured questionnaire was administered; which included questions related to sociodemographic characteristics and other personal details. The socioeconomic status was calculated using Modified Kuppaswamy Scale. Beck's Depression Inventory II" screening tool was used to assess depression. It comprised 21 items with multiple choice answers, and each answer being scored on a scale of values 0–3 with the maximum possible score of 63. A score of 0–13 was considered as normal, 14–19 as mild/borderline depression and 20–28 as moderate depression, and 29–63 as severe depression.^[20,21]

Inclusion and exclusion criteria

Adolescents residing for more than 6 months in the selected village were included in the study. Participants on treatment for chronic illness, or any medically diagnosed mental illness and also those not giving consent were excluded from the study.

Statistical analysis

Statistical analysis data were entered into SPSS software version 22 (SPSS Inc., Chicago, IL, USA). The prevalence is expressed as percentages with 95% confidence interval (CI). Independent variables that were found to be statistically significant in univariate analysis were considered for the logistic regression model to determine the important correlates. $P \leq 0.05$ was considered statistically significant.

Ethical clearance

Permission to carry out the study was obtained from the Institutional Ethical Committee of the Government Medical College and Hospital, Balasore. Informed consent was obtained from parents/guardians after explaining them about the purpose of the study. Assent was also obtained from the participants.

RESULTS

Of the total 354 adolescents, seven were excluded due to refusal to participate in the study or who were not present in the house even after three separate visits, and other six had permanently migrated from the study area. Out of 341 participants selected, 229 (67.2%) were male and 112 (32.8%) were female. Around 74 (21.7%) were in the age group of 10–14 years and 267 (78.2%) were between 15 and 19 years of age. The mean age (standard deviation) of the participants was 16 ± 1.9 years. According to the type of family, 46 (13.5%) participants were from nuclear family and 295 (86.5%) participants were from joint family.

148 (43.4%) showed depression and 193 (56.5%) were found to be having no depression. The subcategories of depression show mild mood disturbance in 8.8%, borderline depression in 15.2%, 12%, and 7% with moderate depression had severe depression.

Table 1 depicts univariate analyses of depression with the socio-demographic factors. Females were more depressed compared to males. Based on the educational qualification, the majority of 199 (58.4%) were into primary school, secondary schooling 8 (2.4%), high school, and above 134 (39.2%). More than half 195 (57.1%) were sleeping for <6 h in the night time and the rest 146 (42.9) for >6 h.

Table 2 depicts logistic regression analysis of factors related to depression. Females tend to be more depressed than males (adjusted odds ratio [AOR] = 0.38; CI 95%: 0.15–0.98). This difference across the gender was found to be statistically significant ($P = 0.006$). Participants sleeping for lesser duration have higher chances of developing depression compared to those who sleep

more (AOR = 5.1; CI 95%: 1.4–18.2). It has been observed that participants witnessing regular parental fighting have three times more chances of becoming depressed compared to their counterparts (AOR = 3.1; CI 95%: 1.1–9.0). Furthermore, socioeconomic status seems to be playing a contributory role in depression (AOR = 3.4; CI 95%: 1.3–9.0).

DISCUSSION

Our study showed that 7.03% of participants had severe depression which is similar to the findings of previous studies.^[20,21,22] A study in North India reported the prevalence of depression to be 39% which is much higher compared to our findings.^[23] Such variation could be because of different methods used for the assessment of depression and different baseline variables of study population.

In this study, mid and late adolescent age group, i.e., 15–19 years were found more depressed, this corroborates with the finding of Jayashree *et al.*,^[23] on the contrary Jha *et al.*^[20] and

Shukla *et al.*^[24] found significant association between higher proportion of depression with the increasing age which may be attributed to factors such as more academic and parental pressure compared to lower standards.^[25]

Findings of higher depression among females well corroborate with some of the previous studies.^[16,17,20,23] There can be various reasons such as fear of getting married at an early age, especially in rural areas, incomplete education, hormonal changes, and extra work at home. However, Umesh *et al.*^[21] and Chauhan *et al.*^[22] did not support any similar association.

The type of family seems to be having no role in depression which is also explained by Jayashree *et al.*^[23] and Jha *et al.*^[20] In contrast to our study, a finding by Umesh *et al.*^[21] shows a statistically significant difference with type of family.

It was observed that adolescents who were never engaged in playing any outdoor games were more depressed compared to others. This is in line with the finding of Nair *et al.* and^[16] Chauhan *et al.*^[22] We also found an association between sleep deprivation (i.e., sleeping <6 h) and depressions. In this regard, our results are consistent with other studies.^[11,12]

In addition, we found socioeconomic status of the family and parental fighting to be significantly ($P < 0.05$) associated with depression. This observation is in consonance with a previous study done by Nair *et al.* and^[16] Jayashree *et al.*^[23]

CONCLUSION

This is a small effort by the authors in rural area of Odisha to show the proportion of depression and few stressors causing depression such as sleep duration, outdoor sports activities, socioeconomic status, and parental fighting, and education level of participants.

Limitations

A cause-and-effect relationship is difficult to elicit due to cross-sectional study. There is underrepresentation of female population in our study. Other sensitive topics such as addictions in the family, and sexual abuse were not addressed due to difficulty in opening up of adolescents as the interview was conducted during home visit.

Recommendation

- Researchers should be encouraged for undertaking more studies on mental health issues, especially in rural areas
- Behavior change and communication materials with more focus on the younger age group children.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Table 1: Prevalence of depression as per various demographic characteristics (n=341)

Characteristics	Total, n (%)	Proportion with depression, n (%)
Age (years)		
10-14	74 (21.7)	4 (5.4)
15-19	267 (78.2)	20 (7.4)
Gender*		
Female	112 (32.8)	14 (12.5)
Male	229 (67.2)	10 (4.3)
Type of family		
Nuclear	46 (13.5)	3 (6.5)
Joint/extended	295 (86.5)	21 (7.1)
Socioeconomic status*		
≥Upper middle	84 (24.6)	11 (13.1)
≤Lower middle	257 (75.4)	13 (5.06)
Education level of study participants*		
Up to primary level	199 (58.4)	13 (6.5)
Middle school	8 (2.4)	3 (37.5)
High school and above	134 (39.2)	8 (5.9)
Mother education		
≥High school	168 (49.2)	9 (5.3)
Primary	173 (50.8)	15 (8.6)
Daily sleeping hours*		
≤6	195 (57.1)	21 (10.7)
≥6	146 (42.9)	3 (2.0)
Play outdoor games*		
Never	133 (39.0)	16 (12.0)
>3 times in a week	101 (29.6)	1 (0.9)
<3 times in a week	107 (31.4)	7 (6.5)
Parental fighting*		
No	41 (12.0)	7 (17.0)
Yes	300 (88)	17 (5.6)

* $P < 0.05$ is significant

Table 2: Logistic regression analysis of factors related to depression in the study population (n=341)

Variables	Category	AOR (95% CI)	UOR (95% CI)
Gender	Male		-
	Female	0.38 (0.15-0.98)	0.31 (0.13-0.74)
Play outdoor games	Never	N/A	-
	>3 times in a week		0.07 (0.00-0.56)
	<3 times in a week		0.51 (0.20-1.29)
Hours of sleep	≥6	-	-
	≤6	5.1 (1.4-18.2)	5.7 (1.6-19.6)
Education level of study participants	Up to primary		-
	Middle school	4.2 (0.70-25.6)	8.5 (1.84-39.95)
	Above high school	0.89 (0.33-2.4)	0.90 (0.36-2.25)
Parental fighting	Yes		-
	No	3.1 (1.1-9.0)	3.42 (1.32-8.85)
Socioeconomic status	≤Lower middle		-
	≥Upper middle	3.4 (1.3-9.0)	2.8 (1.21-6.58)

AOR: Adjusted odds ratio, UOR: Unadjusted odds ratio, CI: Confidence interval, NA: Not applicable

REFERENCES

- Das S, Mishra S, Mohanty AK, Sahoo SS. Assessment of adolescent problems in tribal adolescent girls: A cross sectional study. *Int J Community Med Public Health* 2016;5:1014-9.
- Adolescent Mental Health. Available from: <https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health.pdf>. [Last accessed on 2019 Dec 10].
- Donskoy I, Loghmanee D. Insomnia in adolescence. *J Med Sci* 2018;72:1-12.
- Olson AL, Kelleher KJ, Kemper KJ, Zuckerman BS, Hammond CS, Dietrich AJ. Primary care pediatricians' roles and perceived responsibilities in the identification and management of depression in children and adolescents. *Ambul Pediatr* 2001;1:91-8.
- Singh MM, Gupta M, Grover S. Prevalence and factors associated with depression among school going adolescents in Chandigarh, North India. *Indian J Med Res* 2014;146:205-15.
- Victor R, Garg S, Gupta R. Insomnia and depression: How much is the overlap? *Indian J Psychiatry* 2019;61:623-9.
- Chen PJ, Huang CL, Weng SF, Wu MP, Ho CH, Wang JJ, *et al.* Relapse insomnia increases greater risk of anxiety and depression: Evidence from a populationbased 4 year cohort study. *Sleep Med* 2017;38:122-9.
- Mendlewicz J. Sleep disturbances: Core symptoms of major depressive disorder rather than associated or comorbid disorders. *World J Biol Psychiatry* 2009;10:269-75.
- Sivertsen B, Salo P, Mykletun A, Hysing M, Pallesen S, Krokstad S, *et al.* The bidirectional association between depression and insomnia: The HUNT study. *Psychosom Med* 2012;74:758-65.
- Baglioni C, Battagliese G, Feige B, Spiegelhalter K, Nissen C, Voderholzer U, *et al.* Insomnia as a predictor of depression: A meta-analytic evaluation of longitudinal epidemiological studies. *J Affect Disord* 2011;135:10-9.
- Roberts RE, Duong HT. The prospective association between sleep deprivation and depression among adolescents. *Sleep* 2014;37:239-44.
- Roberts RE, Roberts CR, Chan W. One-year incidence of psychiatric disorders and associated risk factors among adolescents in the community. *J Child Psychol Psychiatry* 2009;50:405-15.
- Kyle SD, Morgan K, Espie CA. Insomnia and health-related quality of life. *Sleep Med Rev* 2010;14:69-82.
- Perlis ML, Giles DE, Buysse DJ, Thase ME, Tu X, Kupfer DJ. Which depressive symptoms are related to which sleep electroencephalographic variables? *Biol Psychiatry* 1997;42:904-13.
- Ford DE, Kamerow DB. Epidemiologic study of sleep disturbances and psychiatric disorders. An opportunity for prevention? *JAMA* 1989;262:1479-84.
- Nair S, Ganjiwale J, Kharod N, Varma J, Nimbalkar SM. Epidemiological survey of mental health in adolescent school children of Gujarat, India. *BMJ Paediatr Open* 2017;1.
- Thapar A, Collishaw S, Pine DS, Thapar AK. Depression in adolescence. *Lancet* 2012;379:1056-67.
- Grover S, Raju VV, Sharma A, Shah R. Depression in children and adolescents: A review of Indian studies. *Indian J Psychol Med* 2019;41:216-27.
- Malik M, Khanna P, Rohilla R, Mehta B, Goyal A. Prevalence of depression among school going adolescents in an urban area of Harayana, India. *Int J Community Med Public Health* 2015;2:624-6.
- Jha KK, Singh SK, Nirala SK, Kumar C, Kumar P, Aggrawal N. Prevalence of depression among school-going adolescents in an Urban Area of Bihar, India. *Indian J Psychol Med* 2017;39:287-92.
- Umesh S, Rahul K, Vaishali P, Sandeep N, Prashant P. Study of Depression among adolescent students of rural Maharashtra and its association with socio-demographic factors: A cross sectional study. *Int J Med Res Health Sci* 2015;4:41-5.
- Chauhan S, Lal P, Nayak H. Prevalence of depression among school children aged 15 years and above in public school in Noida, Uttar Pradesh. *J Assoc Indus Res* 2014;3:269-73.
- Jayashree K, Mithra PP, Nair MK, Unnikrishnan B, Pai K. Depression and anxiety disorders among schoolgoing adolescents in an Urban Area of South India. *Indian J Community Med* 2018;43:28-32.
- Shukla M, Ahmad S, Singh JV, Shukla NK, Shukla R. Factors associated with depression among school-going adolescent girls in a district of Northern India: A cross-sectional study. *Indian J Psychol Med* 2019;41:46-53.
- Deb S, Strodl E, Sun J. Academic stress, parental pressure, anxiety and mental health among Indian high school students. *Int J Psychol Behav Sci* 2015;5:26-34.