A study on prevalence and risk factors of depression among adolescent girls studying in government and private schools—A comparative study

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ABSTRACT

Background: The prevalence of depression among school-going adolescent girls in India is about 40%. Adolescent girls attending private and government-run schools in South India have vastly different sociodemographic backgrounds and school environments. Assessing the associated risk factors for depression will help in designing appropriate preventive strategies. **Objective:** To evaluate the prevalence of depression among school-going adolescent girls and the associated risk factors among government and private school students. **Methods:** The cross-sectional comparative study was conducted in two private and two government-run schools in Tamil Nadu. A semi-structured questionnaire and 11-item Kutcher Adolescent Depression Scale were administered to female students belonging to grades eight, nine, and ten. Differences in the prevalence of depression and the familial, social, and behavioral risk factors between private and government school students were measured and analyzed. **Results:** The prevalence of depression among our study population is 23.8%. An adolescent girl studying in a private school has a 4.67 times higher chance of being depressed as compared to her counterpart in a government school. Stress due to higher academic expectations, peer pressure, disagreement with friends, excess smartphone usage, and family discord are associated factors in private school students, and family discord and chronic illness among family members were associated risk factors for depression in government school students. **Conclusion:** There is a wide disparity in the prevalence of depression and associated factors among private and government school-going adolescent girls. The intervention program for depression has to be addressed differently according to the type of school.

Keywords: Adolescent girls, depression, private, government, risk factors, school

Introduction

Depression affects around 300 million people worldwide, according to the WHO estimates taken in 2017 during its campaign on depression.[1] India is estimated to have about 57 million people (18% of the global estimate) affected by depression.[2] Despite being a major public health concern in India, it is a grossly undiagnosed and under-addressed issue.[3]

Though depression can affect individuals of any age group, the adolescence is known to be particularly vulnerable as it is a period of both biological and social changes.[4]

Studies have also consistently shown that women are 1.7 times more likely to be affected by depression than men. By the age of 15, girls are twice as likely than boys to become depressed.[5] A report by Anne C. Petersen *et al*.[6] highlights the significance of understanding the nature, course, and treatment of depression in adolescents.

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Several studies have analyzed the risk factors and protective factors associated with adolescent depression with the aim to modify them and thereby lessen the burden of depression. The social environment in terms of family, school, peers, and neighborhood has significant effects on the risk for depression.[7-9]

After family, the next significant risk factor for depression is school environment and peers. In India, 72% of schools are government and 28% of schools are private-run or aided schools. A study by Sathya Kishan showed that private sector schools compared to government schools not only focus on teaching academics but also life skills for better learning outcomes.[10] A study done by Subramani shows that private school students have better mental health and experience higher academic stress than government school students.[11] To further investigate, this study aims to find the prevalence of depression among the private and government school adolescent girls and the differences in risk factors for depression between them. Primary care physicians are the point of contact to health services for the community. Primary care physicians need to understand the prevalence and risk factors for depression among the adolescent girls for early intervention of depression in adolescent girls.

Methods

Study design: A comparative cross-sectional study

Study area: The study was done in Vellore, South India.

Sample size: The sample size of the study was calculated with an estimated prevalence of 10% of depression in the control group, i.e., government students, and an estimated risk of 2 for private school students with a 95% confidence interval and 80% power. The sample size is calculated as 197 in each group.

Study participants: Girls studying in grades eight, nine, and ten from the selected schools were recruited into the study after informed consent from parents and an adolescent assent form. A government school is defined as one that is established, maintained, and supported by the State Government of Tamil Nadu. A private school is defined as one that is supported by a private individual or organization.

Study tool: The study tool included a semi-structured questionnaire on demographic details, social and behavioral risk factors for depression, and 11-item Kutcher Adolescent Depression Scale (KADS-11). The questionnaire includes sociodemographic details about age, type of school, place of residence, type of family, number of siblings, parent's education and occupation, chronic illness or disability in family members, social and behavioral risk factors like alcohol and smoking addiction in family members, academic stress, peer pressure, disagreement with friends, indulging in physical activity, hobbies, and smartphone use. The questionnaire was administered to the students in the language of their preference (English or Tamil).

Ethical consideration: The study was approved by the Ethics Committee of Government Vellore Medical College, Vellore (Reg.no. ECR/1215/Inst/TN/2019).

Analysis: A KADS-11 score of ≥9 as shown in other studies was taken as the cutoff value for depression. Mean and standard deviation (SD) were calculated for continuous variables and percentages for the categorical values. The odds ratio was calculated to find the association of various risk factors from school and family environment to the presence of depression was done by univariate and multivariate analysis using SPSS. A P value of less than 0.05 was considered significant.

Results

The study was conducted in two private and two government schools. Totally 396 girls participated in the study. Five forms were incomplete, and they were excluded from the analysis. Out of the 391 student responses which were analyzed, 44.9% were from private schools (23.7% and 21.2% from Schools 1 and 2) and 55.1% were from the two government schools (38.9% and 16.8% from Schools 3 and 4). The mean age of the students was 13.8 years with a standard deviation of 0.8. The other sociodemographic details of the study participants are given in Table 1. There was a significant difference between the father's education and occupation, the mother's education and occupation, the type of family, and the number of siblings between the private and government school students.

The prevalence of addiction in family members like alcoholism and smoking is significantly higher ($P < 0.05$) among the students in government schools when compared to private schools. On the other side, the prevalence of indulging in physical activities, having hobbies, disagreement with friends, peer pressure, smartphone usage, and stress about studies were significantly higher ($P < 0.05$) among the students in private schools when compared to government schools. Regarding peer pressure, 79% of private schoolgirls mentioned that they have peer pressure, whereas only 22% of government schoolgirls have experienced the same.

According to the KADS-11 questionnaire among the study population, 93 (23.8%) were found to have depression. Among the private school students 67 (38%) and government school students 26 (12%) had depression and the difference was statistically significant. Students of age 16 years showed the highest prevalence (33%) of depression. The 13- to 15-year-old students showed similar results, with each age group having around 22–25% prevalence. However, this difference was not statistically significant (P value 0.9).

The proportion of students reporting that they hardly ever had the given symptoms in the KADS-11 questionnaire varied widely between the two groups and indicated significantly fewer depressive symptoms among the government school students as shown in Figures 1 and 2. The odds of depression among adolescent girls is 4.67 times higher ($P < 0.05$) in private schools than in government schools.

Demographic characteristic	Category	Total	Private schools n (%)	Government schools n (%)	P
Father's education	Degree and above	141	131 (92.9)	10 (7.1)	<0.05
	Illiterate to higher secondary	250	42 (16.8)	208 (83.2)	<0.05
Mother's education	Degree and above	123	119 (96.7)	4 (3.3)	<0.05
	Degree and above	268	54 (20.1)	214 (79.9)	<0.05
Father's occupation	Skilled	228	165 (72.4)	63 (27.6)	<0.05
	Unskilled	163	8 (4.9)	155 (95.1)	<0.05
Mother's occupation	Unskilled	64	0 (0.0)	64 (100)	<0.05
	Skilled	130	103 (79.2)	27 (20.8)	<0.05
	Home maker	197	70 (35.5)	127 (64.5)	<0.05
Type of family	Nuclear	178	122 (68.5)	56 (31.5)	<0.05
	Joint/extended	213	51 (23.9)	162 (76.0)	<0.05
Living with	Both parents	341	150 (44)	191 (56)	0.77
	Single parent/relatives	50	23 (46)	27 (54)	0.77
Chronic illnesses in the family	Yes	29	8 (4.6)	21 (9.6)	0.06
Disability in the family	Yes	8	0 (0.0)	8 (3.7)	<0.05
Addictions					
Alcohol intake	Yes	56	7 (4.0)	49 (22.5)	<0.05
Smoking	Yes	27	4 (2.3)	23 (10.6)	<0.05
Studies stress	Sometimes/Often/Always	240	157 (90.7)	83 (38.1)	<0.05
Indulging in hobbies	Sometimes/Often/Always	298	163 (94.3)	135 (61.9)	<0.05
Physical activities	Sometimes/Often/Always	269	147 (84.9)	122 (55.9)	<0.05
Smartphone usage	Sometimes/Often/Always	253	137 (79.1)	116 (53.2)	<0.05
Disagreement with friends	Sometimes/Often/Always	257	133 (76.9)	124 (56.9)	<0.05
Peer pressure	Sometimes/Often/Always	185	137 (79.2)	48 (22)	<0.05
Family disagreements	Sometimes/Often/Always	243	81 (48.6)	162 (74.3)	<0.05
Materialistic contentment	Yes	247	159 (91.9)	188 (86.2)	0.19

Table 1: Background characteristics of the students in private and government schools
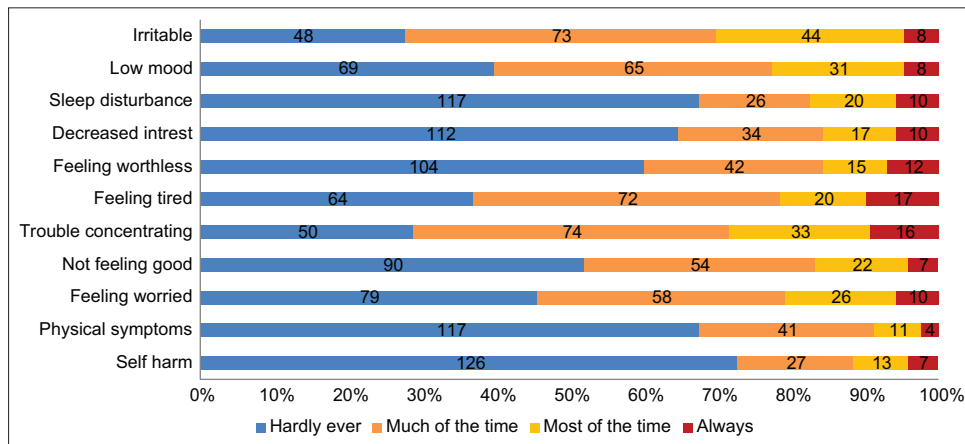

Figure 1: Symptoms in KADS-11 questionnaire among private school adolescent girls

The risk factors for depression among the adolescent girls are shown in Table 2. The factors that were associated with depression were father or mother being a graduate (*P* value <0.05) and the father's occupation being skilled or a professional (*P* value <0.05). Regarding the mothers' occupation, having a working mother has a higher risk of depression (odd's ratio 1.6, *P* < 0.5) than students with mothers who were homemakers. The students who were from nuclear families showed a 1.8 times higher risk of becoming depressed (95% CI 1.14–2.95) than students from extended or joint families. The factors that did not show significant association with depression were the age of the student, grade and number, order of siblings, living with both parents, having a disabled person in the family, a person with alcohol use, and students with hobbies, physical activities, and material possession.

The significant risk factors in school and home environments that are associated with depression in students are academic stress, peer pressure, disagreements with family and friends, excess smartphone usage, and chronic illness among the family members (*P* < 0.05). However, in multivariate analysis studying

	Risk factor	Depression	No depression	Odds ratio	P	95% confidence interval (CI)	
						Lower	Upper
Father education	Degree	54 (38.3%)	87 (61.7%)	3.36	<0.05	2.07	5.44
Mother education	Degree	48 (39%)	75 (61%)	3.17	<0.05	1.96	5.14
Mothers occupation	Working	60 (32.6%)	124 (67.4%)	2.55	<0.05	1.57	4.14
Fathers occupation	Skilled	69 (30.3%)	159 (69.7%)	2.51	<0.05	1.50	4.22
Family type	Nuclear	53 (29.8%)	125 (70.2%)	1.83	<0.05	1.15	2.94
	Single parent/living with relatives	14 (28%)	36 (72%)	1.29	0.48	0.66	2.51
Family	Disability	2 (25%)	6 (75%)	1.07	1.00	0.21	5.39
	Chronic illness	12 (40%)	18 (60%)	2.3	<0.05	1.07	4.98
	Excess alcohol use	15 (26.3%)	42 (73.7%)	1.17	0.62	0.62	2.23
	Excess tobacco use	12 (40%)	18 (60%)	2.3	0.04	1.07	4.98
	Disagreement or discord	67 (27.5%)	177 (72.5%)	1.76	0.03	1.06	2.93
School	Studies stress	82 (34%)	159 (66%)	6.52	<0.05	3.34	12.73
	Disagreement with friends	80 (30.8%)	180 (69.2%)	4.03	<0.05	2.15	7.58
	Peer pressure	73 (39%)	114 (61%)	5.86	<0.05	3.4	10.13
Personal	Hobbies	79 (26%)	225 (74%)	1.83	0.06	0.98	3.43
	Physical activity	70 (25.8%)	201 (74.2%)	1.47	0.16	0.87	2.5
	Smartphone	77 (30.1%)	179 (69.9%)	3.2	<0.05	1.78	5.75

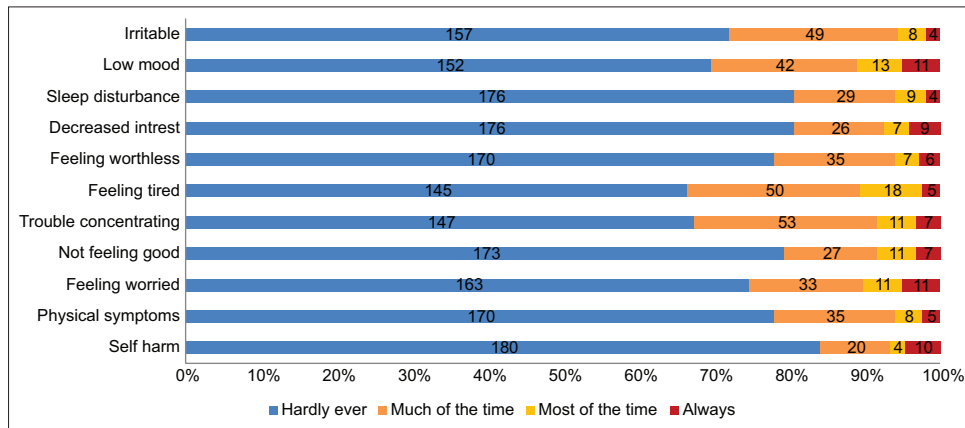Table 2: Risk factors for depression among adolescent girls

Figure 2: Symptoms in KADS-11 questionnaire among government school adolescent girls

in private school, peer pressure, studies stress, disagreement with friends, and family discord remained significant risk factors.

The significant risk factors for depression among the private and government school adolescent girls are shown in Table 3. The significant risk factors among the private school students are alcohol use in the family, disagreement with family and friends, peer pressure, and smartphone usage. Among the government school students, working mothers, chronic illness in family members, studies stress, and peer pressure are significant risk factors.

Discussion

Adolescence is a vulnerable period for depression. Our study has estimated that 23.8% of the students have depression, higher than that found by Shukla M *et al.*[7] (18.7%), but very similar to a study done by Mohanraj and Subbaiah (27%).[12] The private school students showed a significantly higher prevalence of depression (39%), than the government school students (12%). Despite private schools having better environment and infrastructure, the prevalence of depression is higher. The risk factors associated with depression in the school environment are academic pressure (OR 6.52), peer pressure (OR 5.86), and disagreement with friends (OR 4.03).

In recent years, academics and the pressure associated with it have been on a steady rise. Board exams and other competitive exams cause undue pressure on girls from their schools, families, and society. We have found that academic stress is associated with depression with an odds of 6.52 and it is similar to a study done by Jayanthi *et al.*[13] However, the stark difference of 90% of private school students facing academic stress versus 38% of government school students is important and needs further investigation. The odds of depression in government adolescent girls is 6.83, whereas for the private school, adolescent girls are 1.30. Though the prevalence of academic stress is lower in government schoolgirls, the association is higher which

Table 3: Univariate analysis of the risk factors related to the private and government school adolescent girls					
Environment	Risk factor	Depression	No depression	odds ratio	*P*
Private school adolescent girls					
Private Family	Father graduate	52 (39.7%)	79 (60.3%)	1.18	0.72
	Mother graduate	48 (40.3%)	71 (59.7%)	1.25	0.61
	Father Skilled worker	63 (38.2%)	102 (61.8%)	0.62	0.71
	Mother working	44 (42.7%)	59 (57.3%)	1.52	0.21
	Nuclear family	47 (38.5%)	75 (61.5%)	0.97	1.00
	Alcohol in family	7 (70%)	3 (30%)	4.01	0.05
	Chronic illness	5 (55.6%)	4 (44.4%)	0.31	2.06
	Family discord	48 (59.3%)	33 (40.7%)	5.59	0.00
School	Academic stress	62 (39.2%)	96 (60.8%)	1.30	0.44
	Disagreement with friends	61 (45.5%)	73 (54.5%)	4.60	0.00
	Peer pressure	61 (47.2%)	77 (52.8%)	3.67	0.01
Personal	Hobbies	62 (37.3%)	104 (62.7%)	0.24	0.11
	Physical activity	55 (36.9%)	94 (63.1%)	0.59	0.26
	Smartphone	59 (42.8%)	79 (57.2%)	2.52	0.03
Government school adolescent girls					
Govt Family	Father graduate	2 (20%)	8 (80%)	1.92	0.34
	Mother graduate	0 (0%)	4 (100%)	1.14	1.00
	Father skilled worker	6 (9.5%)	57 (90.5%)	0.71	0.65
	Mother working	16 (19.8%)	65 (80.2%)	3.13	0.01
	Nuclear family	6 (10.7%)	50 (89.3%)	0.85	1.0
	Alcohol in family	8 (17%)	39 (83%)	1.61	0.22
	Chronic illness	7 (33.3%)	14 (66.7%)	4.68	0.01
	Family discord	19 (11.7%)	144 (88.3%)	0.91	0.81
School	Studies stress	20 (24.1%)	63 (75.9%)	6.83	0.00
	Disagreement with friends	19 (15.1%)	107 (84.9%)	2.16	0.14
	Peer pressure	12 (24.5%)	37 (75.5%)	3.60	0.01
Personal	Hobbies	17 (12.3%)	121 (87.7%)	1.11	0.06
	Physical activity	15 (12.3%)	107 (87.7%)	1.09	1.00
	Smartphone	18 (15.3%)	100 (84.7%)	2.07	0.14

might be because of poor support for the family with regard to studies, since only 7% of parents of government schoolgirls are graduates. Also, the infrastructures are better and the teacher/students ratio is higher in the private schools, thus might help in the better support system for coping up with academic stress.[9]

Secondly, girls in this age group are highly vulnerable to an identity crisis and place an excessive value on being accepted and praised by their peers. Our study has established that 79% of private schoolgirls experienced peer pressure against only 22% of government schoolgirls, which contributed to the higher prevalence of depression in private schoolgirls. The association of peer pressure is almost similar between the government and private schoolgirls. In important peer relationships, studies have shown that failure to establish autonomy is likely to lead to depressive symptoms and is related to increasingly doubting oneself and one's capacity to take her place within an emerging social world.[14] It is suggested that autonomy-related behaviors are best developed in the context of strong, connected relationships. Similarly, when a child's social status and relationships are uncertain, there is a higher chance of the child seeking validation from others, even at the cost of one's own autonomy.[15] This is an effort to maintain or bolster her social status and relationships. In this study, as a significantly higher number of private school students faced peer pressure as compared to government school students, there is a need to further study whether this is related to a higher proportion of working parents and lesser connectedness within the family. In early adolescence, these problems may be relatively minor; however, the role of peer relationships increases as adolescence progresses.

The factors with regard to family that have been identified to be associated with depression among the adolescents are parents being educated (father and mother, OR 3.38 and 3.17), working mothers (OR 2.55), nuclear family (OR 1.83), chronic illness (OR 2.3), and smoking (OR 2.3) in family members and family discord (OR 1.76). With regard to personal risk factors for depression, smartphone usage is a significant (OR 3.2) risk factor. The factors that contribute to depression among government school students are working mothers and chronic illness in families, whereas in private schools are family discord and alcohol in family members.

Discord or disagreement within the family (OR 1.76) is a major contributor to adolescent depression. The interesting fact regarding this risk factor is that it was more associated among private school students. Family discord increases the rates of major depressive disorders, anxiety, and substance use disorders.

Parental depression is associated with family discord and is a consistent risk factor for depression in children as shown by a 10-year follow-up study.[16,17] Family cohesion acts as a protective factor for depression among children.[18] This shows that family also plays an important role in the mental health of the child.

Smartphone usage has been associated with depression (OR 3.2) among the schoolgirls. Studies show that mobile phone addictions lead to loneliness, impaired parent–child relationship, impaired school relationships, conduct problems, and emotional symptoms.[17,18] Smartphone usage also leads to a higher level of detachment from parents, leading to a higher level of internalizing problems.[19,20] The smartphone usage is a significant risk factor among the private school students. There has been a rise in smartphone usage in the post-COVID period and efforts need to be taken to address this issue by adequate counselling.

The factors that could have contributed to greater resilience among government school students may be the presence of joint families, more mothers being homemakers, and lesser competitiveness in academics, sports, and hobbies.[17]

Limitations

Our study had a few limitations. The sample size was different in different schools. The girls were given a self-administered questionnaire which they had to answer within a stipulated time and return. Factors like their physical status, including biological conditions like pre-menstrual syndrome, their mood, or current events in their lives at that time could have influenced their answers. It is also important to note that there could have been a certain degree of variation in the way each student would have perceived and understood the questions.

Conclusion

The prevalence of depression among adolescent girls was found to be 23.8% in our study. An adolescent girl in South India from a private school has more than four and a half times higher chance of being depressed as compared to her government school counterpart. The contributing risk factors to depression were academic and peer pressure, and family discord which were vastly different among private and government school students. While a young girl in a private school in South India may have a better life in terms of social, economic, and family factors, she may still have a higher chance of depressive symptoms due to greater peer pressure and smartphone usage. Teachers in private and government schools need to be sensitized about the wide gap in the existing social, familial, and behavioral risk factors for depression among adolescent girls in their respective type of schools. Based on these differences, teachers could be trained to provide tailor-made counseling services to improve the emotional resilience of their students. Further research should be encouraged to identify effective methods of intervention to reduce the prevalence of depression among adolescent girls in private schools. By understanding the risk factors for depression, primary care physicians can actively help in prevention, early identification, and appropriate management of depression in adolescent girls.

Conflicts of interest

There are no conflicts of interest.

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