

Mental health among adolescent girls – An effort to know the association of mental disorders with socio-demographic variables

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Abstract

Background: Adolescents constituting 21% of India's population (Census, 2011) form the major chunk of adolescents in the world. Most mental disorders begin during youth (12–24 years), though they are often first detected later in life. Less described in the literature is the association between common life stressors and a wide range of psychopathology in adolescents especially among late adolescent girls and henceforth this study was conducted to know the extent and spectrum of psychiatric disorders and its association with sociodemographic variables.

Objective: (1) To determine the prevalence of mental health disorders among adolescent girls. (2) To determine the association of mental disorders with various sociodemographic variables.

Materials and Methods: It was a cross-sectional study conducted in pre-university and Degree Colleges belonging to JSS Mahavidyapeeta in Mysore city. Sample size was estimated to be 683. Adolescent girls between 16 and 19 years were included. The study was conducted from June 2013 to November 2013. Mini International Neuropsychiatric Interview, Version 6.0 was used to diagnose psychiatric morbidity. Data collected were analyzed using SPSS V. 22. Proportions were calculated using Chi-square analysis and regression model was used.

Results: Among the 664 adolescent girls, the overall prevalence of mental health disorders was found to be 15.5% with major depressive disorder being the most common disorder amounting to 37% followed by dysthymia (12.3%), panic disorder and social phobia (15.7%), posttraumatic stress disorder (10%), obsessive compulsive disorder (7.8%), and generalized anxiety disorder (6.7%). Age, place of residence, birth order, education of father, education of mother, and socioeconomic status were significantly associated with mental disorders ($p < 0.05$).

Conclusion: High prevalence of mental disorders among adolescent girls necessitates life skill-based education (LSBE) in the regular curriculum, counseling services, mentorship program, and health education at colleges.

KEY WORDS: Adolescent girls, mental disorder, Mini Kid International Neuropsychiatric Interview Version 6.0, socio demographic variables

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Introduction

Adolescence represents the transition from childhood to adulthood. Often addressed as teens, they are young people between the age of 10 and 19 years (WHO).^[1] Adolescence is defined in three stages: early (10–13 years), middle (14–16), and late (17–19).

Adolescent age group constituting 21% of India's population is the period of rapid physical, sexual, and psychological

growth. It is a period of joy and is often thought as a healthy group. Although they have passed the vulnerable period of infancy and childhood, they are still under an immense risk when it comes to health and a significant number die prematurely due to accidents, suicide, violence, pregnancy-related complications, and other illnesses. Most of these are both preventable and treatable. One among such problems is mental disorders that constitute a major portion of disability in this age group. Nevertheless, many adolescents do die prematurely due to accidents, suicide, violence, pregnancy-related complications, and other illnesses that are either preventable or treatable. Increased parental and peer pressure can put this age group into lots of stress. Most mental disorders are seen to begin during youth (12–24 years), although they are often first detected later in life. Poor mental health is strongly related to other health and development concerns in young people notably lower educational achievements, substance abuse, violence, and poor reproductive, and sexual health. According to present estimates by WHO, mental illnesses are the leading causes of disability-adjusted life years (DALYs) worldwide, accounting for 37% of healthy years lost from noncommunicable diseases. Depression alone accounts for one-third of this disability. The new report estimates the global cost of mental illness to be nearly \$2.5T (two-thirds in indirect costs) in 2010, with a projected increase to over \$6T by 2030.^[2] Worldwide, first main cause of YLD - Years Lived with Disability for 10- to 24-year-olds was neuropsychiatric disorders (45%).^[3] With all these issues in mind, this study was conducted with an intention to know the psychiatric morbidity among adolescent girl population of Mysore city such that further interventions can be done in terms of prevention and promotion of better health.

Materials and Methods

This cross-sectional study was conducted in Mysore from June 2013 to November 2013. Sample size was estimated using the formula zpq/l^2 . with $z = 1.96$, p (prevalence) = 20% from previous study, q ($100 - p$) = 80, and l = relative precision taken as 15% of p , that is, 3. Sample size was estimated to be 683, which was rounded to 700.

Multistage sampling method was followed.

First Stage

Listing of all PU and degree colleges in Mysore city under JSS Mahavidhyapeeta was done and randomly one college was selected from the list by lottery method. The first college picked had huge student strength and hence was sufficient to reach the sample size that was estimated and further colleges were not selected. If it were not to be so, further selection of colleges would continue till the sample size of 700 was met.

Second Stage

In the selected college, information was collected regarding the number of sections in 1st and 2nd year of Preuniversity, and 1st and 2nd year of degree, and also information was

collected as to how many of these classes belonged to Arts and Science. Of them, two classes were selected for each arts and science subjects at every level (i.e., 1st, 2nd PU and 1st and 2nd degree) again by using lottery method.

Third Stage

In the selected classes, all students were personally interviewed to screen them for mental disorders and to collect information regarding their sociodemographic profile.

Adolescent girls belonging to the age group of 16–19 years were included. This age group was particularly included as it represents more vulnerable portion of adolescents who encounter problems due to excess parental and peer pressure and relatively less number of studies conducted. They are also more mature to answer the personal interview conducted while assessing the mental health status in this particular study.

MINI KID Questionnaire V 6.0 was used to screen the study subjects for mental disorders, which is specifically designed for assessing mental health status of children and adolescents. Diagnosis included in the present study under MINI KID were major depressive disorder, dysthymia, mania, panic disorder, agoraphobia, obsessive compulsive disorder, social phobia, psychotic disorder, post-traumatic stress disorder, bulimia nervosa, anorexia nervosa, and generalized anxiety disorder. Information regarding sociodemographic variables was collected by semi-structured questionnaire. The age of the adolescents was recorded in completed years.

Educational level of the parents was obtained and was classified under not educated, completed 10th standard, completed Preuniversity, completed undergraduation, and completed postgraduation. Types of family were divided into nuclear, joint, and three-generation families. Socioeconomic status of family was categorized according to Modified B.G Prasad classification, which was standardized at the time of the study using the then Consumer Price Index (Ministry of statistics and program implementation, Government of India).

Other Independent variables collected includes the subject which they were pursuing, whether they belonged to urban or rural background, presence of siblings, birth order, and place of present residence (hostelite/localite).

Ethical Consideration

Confidentiality and voluntariness were the guiding principles of the study. Informed consent was obtained from each of the study participant. The study was approved by the Ethics Committee of JSS Medical College, Mysore.

Statistical Analysis

Data thus obtained were coded and entered into SPSS version 22 and analyzed using the same. Data were analyzed using descriptive statistics, viz. percentages and the inferential statistics using Chi-square test for qualitative data. Binary logistic regression was applied to understand the independent predictability of the various sociodemographic variables on the outcomes. The difference in proportion was considered statistically significant whenever $p \leq 0.05$.

Results

In the present study among 664 adolescents, 269(40.5%) were 16 years, 155(23.3%) were 17 years, 110 (16.5%), and 130 (19.5%) were 19 years of age. Mean age was found to be 17.6 ± 1.154 .

Among the study subjects, 334(50.4%) belonged to arts subject. Three hundred and ninety-three (59%) were localities and 395 (59.4%) belonged to urban areas. A total of 423 (64.3%) belonged to nuclear families. Majority 219 (32.9%) belonged to class III socioeconomic status. A total of 530 (79.8%) had siblings and 263 (49.9%) belonged to first birth order. Since 134 adolescent girls were single daughters, information of birth order was collected for the rest 530. Majority, that is, 200 (30.1%) and 294 (44.2%) of fathers and mothers had not completed high school, respectively [Table 1].

Among the 664 adolescent girls, overall prevalence of mental health disorder was found to be 15.5% with major depressive disorder being the most common disorder accounting to 36.8%. There were no cases of mania, agoraphobia, bulimia nervosa, and anorexia nervosa among the study subjects [Table 2].

The study shows that there is a significant association between the place of residence ($p < 0.001$), birth order ($p < 0.001$), education of father ($p < 0.005$), and education of mother ($p < 0.005$) with the mental health disorders. Those variables with the p -value of < 0.25 were considered for analysis for Binary logistic regression [Table 3].

Sociodemographic variables with p -value < 0.25 were included in the analysis for binary logistic regression [Table 4]. Age—as age increased the risk of psychiatric morbidity increased (Adj OR-1.4;95% CI 1.07–1.925, $p < 0.05$), place

Table 1: Sociodemographic profile of the study subjects of varying ages

Variables	16 Years n = 269	17 Years n = 155	18 Years n = 110	19 Years n = 130	Total N = 664	
Subject	Arts	146 (43.7)	58 (23.6)	67 (17)	63 (18.8)	334 (50.4)
	Science	123 (37.3)	97 (26.4)	53 (16.3)	57 (17.8)	330 (49.6)
Background	Urban	186 (47)	116 (26.8)	58 (14.8)	45 (11.3)	395 (59.4)
	Rural	83 (30.8)	59 (18.2)	52 (19.3)	85 (31.5)	269 (40.6)
Place of residence	Localite	177(44.5)	72 (18.3)	58 (14.7)	86 (21.8)	393 (59)
	Hostelite	92 (33.9)	83 (30.6)	50 (19.1)	44 (16.2)	271 (41)
	Nuclear	193 (45.1)	108 (25.2)	60 (14)	66 (15.4)	427 (64.3)
Type of family	Joint	42 (35.8)	27 (23)	23 (20.5)	24 (20.5)	117 (17.6)
	Three generation	34 (28.3)	20 (16.6)	26 (21.6)	40 (33.3)	120 (18.1)
	Class V	32 (43.2)	15 (20.2)	14 (18.9)	13 (17.5)	74 (11.1)
Socioeconomic class	Class IV	75 (40.5)	43 (22.7)	32 (17.2)	36 (19.4)	186 (28)
	Class III	89 (40.6)	52 (23.7)	34 (15.5)	44 (20)	219 (32.9)
	Class II	56 (38.6)	37 (25.5)	23 (15.8)	29 (20)	144 (21.6)
	Class I	17 (41.4)	9 (21.9)	7 (17)	8 (19.5)	41 (6.4)
Siblings	Absent	47 (27.6)	39 (29.1)	26 (19.4)	22 (16.4)	137 (20.2)
	Present	222 (41.8)	116 (21.8)	84 (15.8)	108 (20.3)	527 (79.8)
Birth order		n = 223	n = 118	n = 82	n = 104	n = 527
	First	115 (43.3)	60 (22.6)	42 (15.8)	44 (16.6)	261 (49.4)
	Second	82 (40.1)	41 (20)	33 (16.1)	48 (23.5)	204 (38)
	Third	25 (38.4)	16 (24.6)	7 (10.7)	12 (18.4)	60 (12.2)
	Fourth	1 (50)	1 (50)	0	0	02 (0.05)
	Not educated	61 (39.8)	46 (30)	26 (16.9)	20 (13)	153 (23)
	Completed 10thStd	80 (46)	47 (23.5)	32 (16)	41 (20.5)	200 (30.1)
	Completed 2ndyr Pre-University t/	37 (34.2)	28 (25.9)	22 (20.3)	21 (19.4)	108 (16.2)
Education of mother	Completed UG	67 (41.8)	28 (21.6)	23 (14.3)	43 (26.8)	161 (24.2)
	Completed PG	24 (55.8)	7 (16.2)	7 (16.2)	5 (11.6)	42 (6.5)
	Not educated	47 (37.3)	37 (29.3)	23 (18.2)	19 (15)	126 (18.9)
	completed 10th Std	124 (42.1)	70 (10.5)	56 (19)	44 (14.9)	294 (44.2)
	Completed 2nd yr Pre-University	46 (46.6)	14 (14.1)	10 (11.1)	28 (28.2)	99 (14.9)
	Completed UG	47 (38.2)	28 (22.7)	14 (11.3)	34 (27.6)	123 (18.65)
	Completed PG	5 (22.7)	6 (27.2)	6 (27.2)	5 (22.7)	22 (3.3)
Education of father	Completed 2nd yr Pre-University	46 (46.6)	14 (14.1)	10 (11.1)	28 (28.2)	99 (14.9)
	Completed UG	47 (38.2)	28 (22.7)	14 (11.3)	34 (27.6)	123 (18.65)
	Completed PG	5 (22.7)	6 (27.2)	6 (27.2)	5 (22.7)	22 (3.3)

Table 2: Prevalence of mental disorders among study subjects

Type of mental disorder	Frequency (n = 103)	Percentage (%)*	95% CI
Depression	38	36.8	33.1–40.5
Dysthymia	11	10.6	8.3–12.9
Panic disorder	14	13.5	10.3–16.1
Obsessive compulsive disorder	7	6.7	4.8–8.6
Social phobia	15	14.5	11.8–17.2
Psychotic disorder	1	0.9	0.54–1.26
Posttraumatic stress disorder	10	9.7	7.4–11.9
Generalized anxiety disorder	7	6.7	4.8–8.6
Total	103	100	-

*Proportions.

of residence—being localities was protective against psychiatric morbidity (Adj OR-1.5; 95% CI 0.16–0.517, $p < 0.01$), birth order—lower birth orders had higher risk (Adj OR-0.418; CI 0.058–0.679, $p < 0.01$), education of father—the risk of psychiatric morbidity reduced as the education of father increased (Adj OR -0.610; 95% CI 0.446–0.834, $p < 0.01$), and education of mother—the risk increased as the education of the mother increased (Adj OR -2.530;95% CI 1.818–3.521, $p = 0.002$). Socioeconomic status was not seen to be associated with psychiatric disorders on application of binary logistic regression analysis.

Discussion

The overall prevalence of psychiatric disorders among the late adolescents using MINI KID Questionnaire V.6 was found to be 15.5% with major depressive disorder having the highest prevalence of 36.8% followed by panic disorder and social phobia both accounting to 15.7%, followed by dysthymia (12.3%), posttraumatic stress disorder (10.1%), obsessive compulsive disorder (7.8%), generalized anxiety disorder (6.7%), and psychotic disorder (1.1%). Very few studies have been conducted to know the psychiatric morbidity, especially in late adolescents, and in most of the studies this age group has been studied along with other age groups like the children less than 13 years or with the adults. Hence comparison and interpretation regarding differences in the overall prevalence of psychiatric morbidity specific to this age group becomes difficult. However, if we consider the prevalence of psychiatric disorders in adolescent age group which ranges from 10 to 19 years, with the available studies (both done in India and other countries) it is seen that the prevalence of overall psychiatric morbidity ranges from 6.7% to 31.2%^[4-23]. This difference in the prevalence can be attributed to the inherent nature of the psychiatric disorders, the existence of stigma—due to which eliciting history becomes difficult, differences in diagnostic tools used, recall bias, differences in the definitions used to define the cases, and the differences in sampling methods. The difference can also be attributed to the varying

age groups, and the inclusion of both sexes in most of the studies.

There was significant association between age and mental health disorders. About 44.6% of those with psychiatric disorders belonged to 16 years which reduced as age progressed. This may be attributed to better stress coping abilities, better adjustments to life events, and development of life skills as age progresses. Place of residence was found to be significantly associated with psychiatric morbidity. Nearly 66% of those who had psychiatric morbidity stayed in the hostels or PGs away from their parents, siblings, and relatives as compared to 34% who were localities and stayed in their homes. This may lead to the lack of support from their dear ones at time of stress as the students enter into new milestone with respect to academics after finishing 10th standard or 2nd year PU. The stress might also be related to the difficulties they had to face once they leave their native places and join hostels as majority of the students shared when interviewed.

Birth order was found to be associated significantly with the prevalence of psychiatric morbidity. Surprisingly, those adolescents who were first born constituted only 8% of those having psychiatric morbidity. The maximum proportion was formed by those who were born subsequently after the first child in the family, which constituted 92%, of which 43.6% was formed by adolescents who were of second birth order. This may be due to the higher amount of attention given by parents toward the first born as she/he would be the first child in the family and with subsequent births the amount of love and support gets shared between the siblings. Unwanted pregnancy, gender bias, neglect of the second, sibling rivalry, and economic burden after the second child is born may be other reasons. This finding is similar to that of the Bansal *et al.* study.^[8] However, it was seen that in the study of Saigal and Doyle,^[24] majority of the children with psychiatric morbidity belonged to first order. Education of mother had significant association with the prevalence of psychiatric morbidity. On regression analysis, it was seen that adolescent girls having mothers who were not educated had increased risk of developing psychiatric morbidity. This may be attributed to a better

Table 3: Association of various mental disorders with the sociodemographic variables of the subjects

Sociodemographic profile	Mental health		Number (N = 664)	p Value
	Yes (n = 103)	No (n = 561)		
Age (Years)				
16	46 (44.6)	223 (39.7)	269 (40.5)	0.231*
17	28 (27.1)	128 (22.8)	156 (23.4)	
18	16 (15.5)	93 (16.5)	109 (16.4)	
19	13 (12.6)	117 (20.8)	130 (19.5)	
Subject				
Arts	36 (34.9)	212 (37.7)	248 (37.3)	0.584*
Science	67 (65)	349 (62.2)	416 (62.6)	
Background				
Urban	60 (58.2)	334 (63.1)	394 (59.3)	0.890*
Rural	33 (32)	227 (40.4)	270 (40.6)	
Place of residence				
Localite	35 (33.9)	354 (63.1)	389 (58.5)	0.001*
Host elite	68 (66)	207 (36.8)	274 (41.2)	
Siblings				
No	25 (24.2)	145 (25.8)	170 (25.7)	0.806*
Yes	78 (75.7)	416 (74.1)	494 (74.3)	
Type of family				
Nuclear	63 (61.1)	364 (64.8)	427 (64.3)	0.312*
Joint	16 (15.5)	101 (18)	117 (17.6)	
Three generation	24 (23.3)	96 (17.1)	120 (18)	
Birth order	(n = 84)	(n = 410)	(n = 494)	
1	32 (33.3)	219 (47.9)	237 (35.6)	0.001*
2	45 (48.8)	171 (40.8)	202 (30.4)	
3	15 (15.4)	45 (10.7)	53 (7.9)	
4	2 (2.3)	1 (0.4)	2 (0.3)	
Socioeconomic status				
I	7 (6.7)	67 (11.9)	74 (11.1)	0.096*
II	34 (33)	152 (27)	186 (28)	
III	38 (36.8)	181 (32.2)	219 (32.9)	
IV	15 (14.5)	129 (22.9)	144 (21.6)	
V	9 (8.7)	32 (5.7)	41 (6.1)	
Education of father				
Not educated	23 (22.3)	103 (18.3)	126 (18.6)	0.345*
Educated	81 (77.7)	457 (81.7)	538 (81.4)	
Education of mother				
Not educated	37 (35.9)	116 (20.6)	153 (23)	0.001*
Educated	66 (74.1)	445 (79.4)	511 (77)	

Percentages are represented in parenthesis, *Chi-square analysis.

Table 4: Binary logistic regression

Variable	Adjusted odds	p Value	95% Confidence interval	
			Lower limit	Upper limit
Age	1.436	0.016	1.071	1.925
Place of residence	1.532	0.001	0.161	0.517
Birth order	0.418	0.001	0.058	0.679
Education of mother	3.050	0.001	1.669	5.574
Socioeconomic status	0.114	0.808	0.621	1.052

support by the mothers to their children as education makes them equipped with better knowledge with respect to child rearing. Social issues such as gender inequality is also less prevalent among well-educated families and it is not illogical to think that education provides jobs of better income, which further helps in providing financial stability and a better quality of life. This finding was similar to the study of McLaughlin *et al.*^[17] About 65% of adolescents with psychiatric morbidity belonged to science subject, while the remaining 35% belonged to arts. This difference may be due to increased parental pressure regarding academic achievements and inability to face failures with respect to academics among science students compared to arts students. However, there was no statistical significance. Whether the adolescents belonged to urban or rural background did not have any significant association with psychiatric morbidity in the present study, but in the study of Sidhu,^[20] it was seen that higher proportion of those who had psychiatric morbidity were from urban area and significant association was found. The reason for this may be the changes in the living conditions and other predisposing factors (influencing mental health) in rural areas which are becoming similar to that in urban areas making population in rural areas as susceptible to psychiatric morbidities as the urban population. Adolescents having more than two siblings constituted 61% of those having psychiatric morbidity. This may be due to a better life in terms of fulfillment of basic needs in case of small families. It can also be attributed to a better support from the parents who most of the times pamper the needs of single child, and absence of sibling rivalry. Majority of those who belonged to nuclear families had psychiatric morbidity (61%), followed by joint family (15.5%), and three-generation family (23.3%); however, there was no statistical significance with respect to the association of psychiatric morbidity with type of family in the present study. The study by Sidhu,^[20] on adolescents in Punjab showed that majority of the adolescents who had come to hospital to seek treatment were from nuclear families constituting 55%. This finding was also similar to that of Saigal *et al.*^[24] Though the study is one of a kind in terms of exploring mental health and its association with sociodemographic variables, our study does carry its own limitations in that, after psychiatric morbidity was identified among adolescents by MINI KID Questionnaire, confirmation of diagnosis was not done by a psychiatrist, and physical health of adolescents which might have influenced psychiatric morbidity was also not assessed. Said so, the strength of the study is that it has made genuine effort in trying to explore one of the most important hidden health issue among the vulnerable section of the society—adolescent girls. Huge sample size that reduces the error is another strength. It has made sincere attempt in identifying the association of psychiatric morbidity with sociodemographic variables, which has been less explored in previous literature. By doing so the study contributes toward understanding the factors that may influence the mental health, the knowledge of which can help in prevention of psychiatric morbidity.

Conclusion

High prevalence of mental disorders among adolescent girls necessitates life skill-based education (LSBE) in the regular curriculum, counseling services, mentorship program, and health education at colleges.

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