Original Research Article

A comparative study of prevalence of mental abnormalities among high school children in tribal, rural and urban Mysuru district, Karnataka, India

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ABSTRACT

Background: Adolescence is defined by WHO as period in human growth and development that occurs after childhood and before adulthood from ages 10 to 19 years. According to WHO, half of all mental health disorders in adulthood start by age 14 years, but most cases are undetected and untreated.

Methods: The present study was community based cross sectional comparative study was conducted on study participants were high school children aged 14 years to 16 years in tribal, rural and urban areas of Mysuru from November 2014 to May 2016, i.e., one and a half years (eighteen months). Around 9 tribal high schools, 8 rural high schools and 13 urban high schools were selected and sampling was done according to probability proportionate to size. Institutional Ethics Committee clearance was obtained before start of the study. The study methodology was discussed with and permission obtained from all Principals and Headmasters of respective High Schools. Written informed assent was obtained from each study participant. Data thus Obtained were coded and entered into Microsoft excel Work sheet .This was analyzed using SPSS 22 version. Descriptive statistics like percentage, mean and standard deviation were applied. Inferential statistical tests like chi square test were applied to find out association. The difference, association were expressed statistically significant at p-value less than 0.05.

Results: Among the study participants, in tribal area, 88 (47.3%) belonged to age group of 15 years, in rural area, 103 (51.5%) belonged to age group of 15 years and in urban area 116 (59.8%) belonged to age group of 14 years. Anxiety disorders were seen more in urban participants 26.3% and least in rural, major depressive disorders were seen more in urban participants (4.1%) and suicidality was seen more in rural participants (6.5%).

Conclusions: Anxiety disorders were seen more in urban participants 26.3%, Major depressive disorders were seen more in urban participants (4.1%) and suicidality was seen more in rural participants (6.5%). The present study stresses importance of School-based specific diagnostic screenings such as for anxiety disorders, depression, ADHD should be implemented.

Keywords: Adolescence, Anxiety disorders, Depressive disorders, Suicidality

INTRODUCTION

Adolescence is defined by WHO as period in human growth and development that occurs after childhood and before adulthood from ages 10 to 19 years. It is one of the critical transitions in the life span which is characterized by a great pace in growth and change which is second only to that of infancy. Adolescence marks the developmental transition from childhood to adulthood, a time when many important social, economic, biological, and demographic events set the stage for adult life.[1]

Adolescents need extreme care for many reasons as adolescence is the final chance for correcting growth lag.

Adolescence age group also form the future demographic and economic force of country when harnessed and nurtured at this time. Any risk taking behavior, substance abuse, eating habit which is checked at this stage has long term benefits. According to WHO, half of all mental health disorders in adulthood start by age 14 years, but most cases are undetected and untreated. Because of this serious negligence around 20% of the world's children and adolescents have mental disorders or problems and Suicide being second leading cause of death in 15-29-year-old. Not only mental health but also risk factors for non-communicable diseases like diabetes, cardiovascular diseases are also on verge of massive increase.[2]

In India 22% of population comprise of 10-19 year old (242 mn). With many adolescence related health problems faced by our country like anemia, undernutrition, increase prevalence of HIV/AIDS in this age group, mental health problems are also very important health issues but still neglected on very large scale.[3] Depression when seen in adolescence increases risk of hospitalizations, recurrent episodes of depressions, psychosocial impairment, alcohol abuse in early or future life and antisocial behaviors as they grow up and the most devastating of all this is suicide.[4,5] Anxiety is a normal human emotion which encompasses behavioral, affective and cognitive responses to the perception of danger. Mental health component in school-based health education programs which could enhance positive health behaviors, reduce mental health symptoms and improve scholastic grades are deeply missing in Indian schools. Schools are great not only at teaching math and social studies but also the best place for adolescence where life skills can be imparted successfully which is very essential to deal with stress and this is also the key element in healthy lifestyle intervention. Realizing the importance of detecting the mental abnormalities of high school children who fall under adolescence age group, the present study was carried out with the objective of comparing the prevalence of mental disorders, depression and anxiety and also to know sociodemographic determinants among high school children in tribal, rural and urban areas of Mysore district.

METHODS

This community based cross sectional comparative study was conducted on study participants were high school children aged 14 years to 16 years in tribal, rural and urban Mysuru from November 2014 to May 2016, i.e., one and a half years (eighteen months). Around 9 tribal high schools, 8 rural high schools and 13 urban high schools were selected and sampling was done according to probability proportionate to size. All those students who were willing to participate in the study belonging to age group of 14-16 years were included and students suffering from any kind of chronic disease requiring prescribed medication, those who had taken any such screening tests before and any past history of diagnosed mental illness were excluded from the study. Institutional

Ethics Committee clearance was obtained before start of the study. The study methodology was discussed with and permission obtained from all Principals and Headmasters of respective High Schools. Written informed assent was obtained from each study participant. Study population were from high schools of Mysuru District. High school students of tribal areas of H.D Kote taluk and Periyapatna Taluk were selected and similarly rural and urban schools were selected.

Estimation of sample size

According to the study conducted by Srinath et al, the reported prevalence of mental disorders in adolescents is 12% in Urban and rural Bangalore[8]

p=12%, q=100-p=100-12=88

Allowable error r =5%

Sample size=$4pq/r^2$=4X12X88/25=170

Round off sample size=185

A Pre tested semi-structured proforma for sociodemographic profile of study participants and regarding mental health data was collected by personal interview using Mini International Neuropsychiatric Interview (MINI KID) questionnaire Version 6.0 which is specifically designed to assess the mental health status of children and adolescents. In the present study Panic disorder (with or without agoraphobia), agoraphobia without panic, social phobia (social anxiety disorder), specific phobia, generalized anxiety disorder (GAD), acute stress disorder, posttraumatic stress disorder, obsessive compulsive disorder were grouped into anxiety disorders and Mood disorders were Bipolar Disorder and major Depressive Disorder all according to DSM-IV. Data thus Obtained were coded and entered into Microsoft excel Work sheet .This was analyzed using SPSS 22 version. Descriptive statistics like percentage, mean and standard deviation were applied. Inferential statistical tests like chi square test were applied to find out association. The difference, association were expressed statistically significant at p-value less than 0.05.

RESULTS

Among the study participants in tribal area and rural area, 88 (47.3%) and 103 (51.5%) belonged to age group of 15 years respectively and in urban area 116 (59.8%) belonged to age group of 14 years. Majority 108 (58.1%) and 103 (51.5%) were girls in tribal and rural area and in urban area, 104 (53.6%) were boys. Among the study participants in tribal area, 97 (52.2%) belonged to 10th standard, in rural area, 99 (49.5%) belonged to 9th standard and in urban area, 83 (42.8%) belonged to 8th standard. Among the study participants 66 (35.5%) and 119 (59.5%) 162 (83.5%) belonged to nuclear family in

tribal, rural and urban area respectively. 101 (54.3%) tribal area study participants had family members more than 5 where as in rural and urban areas 167 (83.5%), 156 (80.4%) had family members less than 5. Among the study participants in tribal area, majority 177 (95.2%)

belonged to class V socioeconomic status, in rural area, 171 (85.5%) belonged to class V socioeconomic status and in urban area, 87 (44.8%) belonged to Class IV socioeconomic class (Table 1).

Table 1: Socio-demographic profile of study participants.

		Tribal (n=186)	Rural (n=200)	Urban (n=194)
Age in years	14	83 (44.6)	60 (30)	116 (59.8)
	15	88 (47.3)	103(51.5)	71 (36.6)
	16	15 (8.1)	37 (18.5)	7 (3.6)
Gender	Boy	78 (41.9)	97 (48.5)	104 (53.6)
	Girl	108 (58.1)	103(51.5)	90 (46.4)
Class/ Standard	8	38 (20.4)	8 (4)	83 (42.8)
	9	51 (27.4)	99 (49.5)	77 (39.7)
	10	97 (52.2)	93 (46.5)	34 (17.5)
Fathers Education	Illiterate	81 (43.5)	48 (24)	7 (3.6)
	School(1 to 10th standard)	99 (53.1)	124 (62)	140 (60.2)
	PUC, degree, post graduation	6 (3.2)	28 (14)	47 (24.2)
Fathers occupation	Unemployed /Retired	10 (5.4)	0 (0)	2 (1)
	Unskilled workers	55 (29.6)	38 (19.5)	41 (21.2)
	Semi-Skilled workers	117 (62.9)	119 (59.5)	52 (26.8)
	Skilled Workers	2 (1.1)	15 (7.5)	52 (26.8)
	Semi-professional	2 (1.1)	25 (12.5)	45 (23.2)
	Professional	--	2 (1.5)	2 (1)
Mothers occupation	Home maker	68 (36.6)	168 (84.5)	171 (88.1)
	Unskilled workers	61 (32.8)	7 (3.5)	7 (3.6)
	Semi-Skilled workers	56 (30.2)	16 (8)	--
	Skilled Workers	--	4 (2)	12 (6.2)
	Semi-professional	1 (0.4)	4 (2)	4 (2.1)
Type of family	Nuclear	66 (35.5)	119 (59.5)	162 (83.5)
	Joint	59 (31.7)	41 (21.5)	21 (10.8)
	Three generation	61 (32.8)	40 (20.5)	11 (5.7)
Total family Members	Up to 5 members	85 (45.7)	167 (83.5)	156 (80.4)
	6 members & above	101 (54.3)	33 (16.5)	38 (19.6)
Socioeconomic status (Modified B.G.Prasad's Classification)	I	--	--	
	II	--	--	23 (11.9)
	III	--	5 (2.5)	49 (25.3)
	IV	9 (4.8)	24 (12.0)	87 (44.8)
	V	177 (95.2)	171 (85.5)	--

Among the study participants of urban high schools around 26.3% had anxiety disorders, 23.7% of tribal high school participants had anxiety disorders and least prevalence was 18% seen among rural study participants. Among the study participants of urban high schools around 4.1% had mood disorders, 3.5% of rural high school participants had mood disorders and least prevalence was 1.6% seen among tribal study participants (p-value >0.05). Among the study participants of rural high schools around 6.5% had suicidality, 6.2% of urban high school participants had suicidality and least prevalence was 3.2% seen among rural study participants (p-value >0.05). Among the study participants of urban

high schools around 4.1% had ADHD, 2.2% of tribal high school participants had ADHD and least prevalence was 2% seen among rural study participants (p-value >0.05) (Table 2).

DISCUSSION

The prevalence of mental abnormalities among high school students aged between 14 to 16 years was assessed using MINI KID Questionnaire V.6 in the present study varied along with locality. The prevalence of anxiety disorders was 26.3% in urban participants, 23.7% in tribal high school participants and 18% in rural high

school participants (Table 2). In a study conducted by Srinivas among Government high school students of Tiptur in Karnataka using Screen for Child Anxiety Related Emotional Disorders (SCARED) questionnaire, 37% were found to have anxiety disorder which is similar to the prevalence of anxiety disorders in the study.[9] According to the study done by Bakhla et al conducted on high school students revealed the prevalence to be around 11% using the Spence anxiety scale (children version).[7] In a study done by Sahoo the prevalence of clinical anxiety disorder was similar reported to be 19% which used MINI (Mini-International neuropsychiatric interview) among high school children.[10] A meta-analysis conducted by Reddy and Chandrashekhara showed prevalence rate for urban and rural adolescent participants as 20.7% (18.7-22.7) for all neurotic disorders.[6]

Table 2: Distribution of mental abnormalities among study participants using MINIKID diagnostic tool.

Mental abnormalities	Locality	Mental abnormalities		Total	p-value
		Present	Absent		
Anxiety disorders	Urban	51 (26.3%)	143 (73.7%)	194	0.43
	Rural	36 (18%)	164 (82%)	200	
	Tribal	44 (23.7%)	142 (76.3%)	186	
	Total	88 (15.2%)	492 (84.8%)	580	
Depression (major depressive disorder)	Urban	8 (4.1%)	186 (95.9%)	194	0.34
	Rural	7 (3.5%)	193 (96.5%)	200	
	Tribal	3 (1.6%)	183 (98.4%)	186	
	Total	18 (3.1%)	562 (96.9%)	580	
Suicidality	Urban	12 (6.2%)	182 (93.8%)	194	0.29
	Rural	13 (6.5%)	187 (93.5%)	200	
	Tribal	6 (3.2%)	180 (96.8%)	186	
	Total	31 (5.3%)	549 (94.7%)	580	
ADHD	Urban	8 (4.1%)	186 (95.9%)	194	0.39
	Rural	4 (2%)	196 (98%)	200	
	Tribal	4 (2.2%)	182 (97.8%)	186	
	Total	12 (2.1%)	568 (97.9%)	580	

The prevalence of major depressive disorder in the present study was highest among urban high school participants i.e. 4.1% compared to 3.5% in rural and 1.6% in tribal (Table 2). According to the study done by Nair in adolescents of age group from 13 to 19 years belonging to high schools, the prevalence revealed 3% which used Beck's Depression Inventory (BDI) which is nearer to our study[5]. According to Bansal study, which was done among high school students, 18.4% were found to be depressed which used BDI.[4] According to the study done by Sahoo the prevalence of major depression was 12.1% which used MINI (Mini-International neuropsychiatric interview).[10] The prevalence is lower in our study than other studies which may be due to methodological factors used in the present study as the present study included MINI KID screening tool and diagnostic tool before diagnosing major depressive disorder and the other possible reason could be scope of the present study because the present study included many schools and was not restricted to two or less schools as done by in other studies. The prevalence of suicidality among our study participants was highest among rural high school participants (6.5%) to urban 6.2% and least in tribal (3.2%) (Table 2). In a study conducted by Vivek, Goyal and Srivastava among adolescents studying in public school of 9th standard using Becks Depression Scale revealed 18.4% to be depressed[4]. Nair, Paul and John study revealed 3% depression among school students aged 13-19 years which also used Becks depression Scale.[5] According to Sharma, Grover and Chaturvedi study showed about 15.8% having thought of attempting suicide, 5.1% had actually attempted suicide which used a pre-tested, semi-open-ended and self-administered questionnaire which is almost similar to our study.[13] Nearly 5.5% of the age group 13-17 years reported high suicidal risk and suicidal ideation according to National Mental Health Survey reports of NIMHANS 2016.[11]

The prevalence of ADHD (Attention Deficit Hyperactive Disorder) in our study was highest among urban high school participants i.e. 4.1% compared to 2% in rural and 2.2% in tribal (Table 2). According to study conducted by Juneja et al. the prevalence of ADHD was 7.2% estimated by using Conners' parents and teachers rating scales. Only few studies are done among adolescents related to ADHD.[15] A school-based study in Colombia by Pineda et al. 7.3% adolescents were diagnosed as ADHD using DSM-IV based ADHD checklist, with Inattentive

sub-type being predominant.[14] A cross-sectional epidemiological study from Bangalore reported the prevalence of ADHD at 1.6% among children aged 4-16 years more in urban participants than rural which is similar to present study.[8] As children with ADHD mature in adolescence, leads to academic failures, demoralization, poor self-esteem, high rates of injuries, substance abuse and delinquency.[12]

There could be various reasons for wide variations noted in the prevalence rates of mental abnormalities in above studies which could be because of inherent limitations in defining clinical cases, the screening instrument which was used, ability to understand verbal instructions and the very definitions of mental disorders failing to provide a clear boundary between psychopathology and normality.

Limitations

Single informant interview as no parents or teachers were actually interviewed.

CONCLUSION

Anxiety disorders was seen more in urban participants 26.3% and least in rural, Major Depressive Disorder were seen more in urban participants (4.1%) and suicidality was seen more in rural participants (6.5%).While the fact that mental abnormalities interferes in normal growth and development, coping with tough educational pressure of adolescents disrupting day to day social interactions, making them more vulnerable inside and outside home tapping an urgent call not only early recognition and intervention but also harnessing rich human dividend of our country.

Recommendations

The mental health program (preventive strategies and mental health services) should be coordinated with educational programs and other school-based health services by training School-based specific diagnostic screenings such as for depression, ADHD should be implemented and Staff members should be trained to recognize stresses that may lead to mental health problems as well as early signs of mental illness and refer these students to trained professionals.

REFERENCES

1. WHO | Adolescent development [Internet]. WHO. [cited 2016 Jul 18]. Available from: http://www.who.int/ maternal_child_adolescent/t opics/ adolescence/ dev/en/

2. WHO | Adolescent health epidemiology [Internet]. WHO. [cited 2016 Jul 20]. Available from: http://www.who.int/maternal_child_adolescent/epidem iology/adolescence/en/

3. Sivagurunathan C, Umadevi R, Rama R, Gopalakrishnan S. Adolescent Health: Present Status and Its Related Programmes in India. Are We in the Right Direction? J Clin Diagn Res. 2015;9(3):LE01-6.

4. Bansal V, Goyal S, Srivastava K. Study of prevalence of depression in adolescent students of a public school. Ind Psychiatry J. 2009;18(1):43-6.

5. Nair MKC, Paul MK, John R. Prevalence of depression among adolescents. Indian J Pediatric. 2004;71(6):523-4.

6. Reddy VM, Chandrashekar CR. Prevalence of mental and behavioural disorders in India : a meta-analysis. Indian J Psychiatry. 1998;40(2):149-57.

7. Bakhla AK, Sinha P, Sharan R, Binay Y, Verma V, Chaudhury S. Anxiety in school students: Role of parenting and gender. Ind Psychiatry J. 2013;22(2):131-7.

8. Srinath S, Girimaji SC, Gururaj G, Seshadri S, Subbakrishna DK, Bhola P, Kumar N. Epidemiological study of child & adolescent psychiatric disorders in urban & rural areas of Bangalore, India. Indian J Med Res. 2005;122:67-79.

9. Srinivasa S, Chaithanya C, Nair C, Ravindra LS. A Study On Prevalence Of Anxiety Disorders Among Higher Secondary School Students. J Evolution Medical Dental Sci. 2015;4(26):4473-8.

10. Sahoo S, Khess CRJ. Prevalence of Depression, Anxiety, and Stress Among Young Male Adults in India. ResearchGate. 2010;198(12):901-4.

11. National Mental Health Survey 2015-16 | Nimhans [Internet]. [cited 2016 Dec 22]. Available from: http://www.nimhans.ac.in/national-mental-health-survey-2015-16

12. Verma R, Balhara YPS, Mathur S. Management of attention-deficit hyperactivity disorder. J Pediatr Neurosci. 2011;6(1):13-8.

13. Sharma R, Grover VL, Chaturvedi S. Suicidal behavior amongst adolescent students in south Delhi. Indian J Psychiatry. 2008;50:30-3.

14. Pineda D, Ardilla A, Rosselli M, Arias BE, Henao GC, Gomez LF, et al. Prevalence of Attention deficit hyperactivity disorder symptoms in 4-17 year old children in the general population. J Abnorm Child Psychol. 1999;27:455-62.

15. Juneja M, Sairam S, Jain R. Attention Deficit Hyperactivity Disorder in Adolescent School Children. http://www.indianpediatrics.net/ feb2014/feb-151-152.htm [Internet]. 2014 Feb [cited 2016 Dec 21]; Available from: http://imsear.hellis.org/handle/123456789/170192.