Distribution of psychiatric morbidity among school going adolescents in a district of North India

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ABSTRACT

Mental disorders and mental health problems seem to have increased considerably among adolescents in the past 20-30 years. Adolescents constitute an important part of our community, yet attention to their mental health is meager. The study was done to determine the distribution of psychiatric symptoms among adolescents and the characteristics of high- and low-risk groups in Indian society. After ethical clearance, a stratified clustered sample of students from various rural and urban based schools were asked to fill the Strength and Difficulties Questionnaire (SDQ, based on which students with abnormal or borderline score were selected and were followed by clinical interview, detailed case history, and Mental State Examination and psychiatric disorders were diagnosed following ICD -10 criteria.A total of 912 participants in the age range 11-16 years participated in this study. The overall distribution of psychiatric morbidity among adolescents in all four schools combined was found to be 20.39%. Odds of having Psychiatric disorders were more among female children (24.12%) as compared to male children (17.50%), OR= 1.49 (p<0.05). Adolescents with history of drug abuse among first degree relatives showed higher levels of stress.Teachers at school level should be trained to identify students with compromised mental health so that their psychiatric problems can be identified at the earliest and proper treatment could be started.

Keywords: Adolescents, Schools, Mental disorders, morbidity
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INTRODUCTION

The term adolescence meaning "to emerge" or "achieve identity" is a relatively new concept, especially in developmental thinking[1]. In the life cycle of a homosapien organism, adolescence is a period of transition from childhood to adulthood [2] In India, age limits of adolescents have been fixed differently under different programs keeping in view the objectives of that policy or programme, like in the National Youth Policy it is 13-19yrs, ICDS it is 11-18yrs, Reproductive and Child Health programme it is 10-19yrs[1]whereas World Health Organization (WHO)[3] defines adolescence as the age group between 10 to 19 years. As on March 2001, adolescents accounted for 22.8% of the population of India[4] Mental disorders and mental health problems seem to have increased considerably among adolescents in the past 20-30 years[5]. Studies have shown that 1 in 10 children and adolescents suffer from mental health disorders severe enough to cause impairment[6]. Worldwide, up to 20% of children and adolescents suffer from disabling mental health problems[7]. There are close links between child and adult mental illness – the presence of mental illness during childhood may lead up to 10 times higher costs during adulthood[8]. Adolescents constitute an important part of our community, yet attention to their mental health is meager. Psychiatrists professing special interest in this age-group are few. Thus unfortunately, there is a paucity of information. While there are a number of comprehensive studies on the prevalence of psychiatric illness in a

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community, there are few which have examined the teenage years themselves and fewer in India in which age-specific rates are available for a period in life when so many biological and emotional changes are taking place[9]. Thus this study is being conducted to determine the distribution of psychiatric symptoms among adolescents and the characteristics of high- and low-risk groups in Indian society. This would further help formulate a rational basis for deploying our resources for the treatment and prevention of mental illness in tomorrow's adults.

MATERIALS AND METHODS

Study Design
Cross sectional study

Study Period
One year (from January,2013 to December,2013)

Study Participants
The population for the study comprised of children aged 11-16 years, studying in various government and public schools located in urban and rural areas of a district in North India. The study was conducted with the help of Department of Psychiatry and Department of Community Medicine at a Rajindra Hospital, Patiala.

The study was conducted in eight schools of the district. To get a representative sample of all socioeconomic classes of the society, two government schools and two public schools were chosen randomly, in urban and rural areas respectively.

Ethics Approval
Approval of the Institutional Ethics Committee was obtained prior to commencement of the study.

Consenting Procedure
Permission to conduct the study was taken from the principals of the concerned school.
The permission was taken from the parents/guardian and their signed consent was obtained.

Study Procedure
From the above population children aged 11-16 years studying in VII-X classes, who satisfied the selection criteria and whose parents/guardian gave informed consent were included in the sample for the study. Stratified cluster sampling was used considering the type of school as strata and sections of each standard as clusters. One section from each class from each school was selected randomly covering at least 30 students of each class in a school and covering 120 students in all the classes in a school.

Study was conducted in two steps, in the first step self-designed questionnaire (proforma I) consisting of questions pertaining to socio-demographic data of the children which was prepared separately and pre-tested before final administration was used along with socioeconomic status scale (proforma II), Parekh's method of socio-economic classification for rural areas (ProformaIIa) and Kuppuswami's revised method of social classification of an individual for urban areas (ProformaIIb). To study the psychiatric morbidity, the students were also asked to fill the strength and difficulties questionnaire (SDQ) (proforma III), self-report version (IIIa) in the class. All the questionnaires in English were translated in Punjabi also. The students of one section were asked to fill the questionnaires at a time in the presence of the researcher. Supervision by the teacher was avoided to enable the students to answer the questions. SDQ parent version (proformaIIIb) was given to the students to be filled by their parents and was collected on next working day. Students who scored borderline or abnormal on SDQ either version formed the sample for the second stage and further, 5% cases were randomly selected out of the students with normal score, which were followed by clinical interview, detailed case history, and Mental State Examination and psychiatric disorders were diagnosed following ICD -10 criteria. The diagnoses were crosschecked by a senior psychiatrist.

Selection criteria:
Inclusion criteria
- Students of class VII-X
- Students aged between 11 to 16 years.

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- Students and whose parents/guardians gave informed consent.

Exclusion Criteria
- Students who don't want to participate.
- Students whose parents oppose to give information.
- Mentally retarded students, if any.

Instruments
The following instruments were used :
1. **Identification data** : this was used to obtain information about students individual life and sociodemographic variables.(Proforma I)
2. **Socioeconomic scale:**
- Parekh's method of socio-economic classification for rural areas(Proforma II a)
- Kuppuswami's revised method of social classification of an individual for urban areas (Proforma II b)
3. **The Strengths and Difficulties Questionnaire (SDQ)**[10-13]
The Strengths and Difficulties Questionnaire (SDQ) is a brief behavioural screening questionnaire which was developed by Goodman in 1997. It evaluates children's and teenager's symptoms and positive attributes. SDQ contains 25 items on psychological attributes, which are further divided into emotional, conduct, hyperactivity/inattention, peer relationship, prosocial behaviour consisting of 5 items each. SDQ items are rated not true, somewhat true, or certainly true, with scores of 0-1-2 being given to items that describe unfavourably phrased problem items and 2-1-0 to prosocial items and favourably phrased problem items. The scores are classified as normal, borderline and abnormal. It has been observed that those children who score between borderline and abnormal on one or both of the total difficulties scores of SDQ can be identified as likely "cases" with psychiatric illness. Also the extended version includes an impact supplement that asks if the respondent thinks the young person has a problem, and if so, enquires further about chronicity, distress, social impairment and burden for others. Multi-informant SDQs can identify individuals with a psychiatric diagnosis with a specificity of 94.6% (95% CI 94.1-95.1%) and a sensitivity of 63.3% (59.7-66.9%).

Questionnaire in English, Punjabi or Hindi were made available to the parents and students according to the language spoken by them.

4. **ICD-10** : was used to make psychiatric illness diagnosis.

Statistical analysis
To find the association between socio-demographic factors and psychiatric morbidity, chi-square test was applied. Student's t test was used for analysing scores of questionnaire. "p" value less than 0.05 was considered significant. Analysis was carried out using SPSS software version 21 (IBM Corp., Armonk, NY, USA)

RESULTS

A total of 912 participants in the age range 11-16 years studying in VII-X classes in two private and government schools each from rural and urban areas participated in this study.

Sociodemographic and socioeconomic information:
Out of 912 participants, 56.35% (n=514) were males and 43.64% (n=398) were females. Out of these 50.76% (n=463) participants belonged to urban schools and 49.23% (n=449) belonged to rural schools. The age and sex wise distribution of the students is given in [Table 1].

Psychiatric morbidity
Distribution of Psychiatric Disorders:
On screening all the students, SDQ identified 14.7% of the subjects as abnormal, 25.5% as borderline and 59.8% as normal. Subjects who scored abnormal or borderline were further evaluated for the diagnosis of psychiatric morbidity. The mean scores on SDQ in the normal group were 10.61 in urban and 10.52 in rural, in borderline group 14.33 in urban and 13.52 in rural whereas it was 17.68 in urban and 17.42 in rural in the abnormal group. The difference between the scores of the three groups was significant on t test. (P<0.01) [Table 2]

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The overall distribution of psychiatric morbidity among adolescents in all four schools combined was found to be 20.39%.

In Table 3, the overall rates of psychiatric disorders are highlighted and these were higher among rural adolescents (21.38%) as compared to urban (19.43%). Children from rural areas had higher odds for the overall rates of dysthymia, any other mood disorder, conduct, somatoform, adjustment and other behavioural disorders whereas the reverse was true for anxiety, hyperkinetic disorders and depression among urban students. However, the difference between rural and urban was not found to be statistically significant p>0.05.

Gender distribution of psychiatric disorders:
As shown in Table 4, Females have higher odds of prevalence of depression (OR 3.52), dysthymia (OR 9.18), somatoform disorders (OR=3.13) and anxiety (OR 3.44) as compared to males. Whereas the reverse was observed for hyperkinetic disorders, conduct disorder and other behavioural disorders.

Odds of having Psychiatric disorders were more among female children (24.12%) as compared to male children (17.50%), OR= 1.49. Psychiatric morbidity was higher among females as compared to males and this was found to be statistically significant. (p<0.05).

Distribution of psychiatric illness according to socioeconomic status:
Table 5 shows that maximum number of diagnosed children , i.e 27 belonged to upper lower class (5.83%) and second in the rank were children from upper class , 25 (5.39%) in the urban area. Whereas in the rural area highest number belonged to middle class i.e 24 (5.35%). It was seen that adolescents in lower socioeconomic classes (6 out of 23 students in urban area and 14 out of 48 students in rural area) had higher psychiatric morbidity as compared to upper class in both rural (18 out of 72 students) and urban areas (25 out of 122 students) and was significant statistically. (p<0.05)

Association between family history of drug abuse and psychiatric morbidity among students:
Table 6, shows that adolescents with history of drug abuse among first degree relatives, i.e 27.81% in urban area, 30.06% in rural area experienced higher levels of stress and thus psychiatric illness was more prevalent among them as compared to 15.38% in urban and 15.94% in rural with no history of drug abuse among family members. This was found to be statistically significant (p<0.01) in both urban and rural area.

DISCUSSION

The issue of childhood psychiatric morbidity is more serious in middle and low income countries because these countries have a much larger proportion of child and adolescent population; much lower levels of health indices; poorer infrastructure and resources to deal with problems. In recent years, there have been several population studies giving fairly reasonable estimates on the prevalence of child and adolescent mental disorders in low and middle income countries[14].

On applying SDQ, 14.7% of the subjects were identified as abnormal, 25.5% as borderline and 59.8% of the students had normal scores. It was higher as compared to a study conducted in Ireland which reported 8.7% of the population with an abnormal SDQ score and further 15.3% with a borderline abnormal SDQ score, as only mainstream schools were included in the study[15].

The overall distribution of psychiatric morbidity among adolescents in all four schools combined was found to be 20.39%. This was found to be similar to studies conducted by Gau et al[16] in 1995 in Taiwan, Anita et al[17] in 2001 in Rohtak and Robert et al[18] in 2000 in USA in which the overall prevalence of psychiatric disorders was found to be 20.3%, 17.5% in urban and 16.5% in rural areas, and 17.1% respectively.

However, Srinath et al[19] in 2000, Bangalore reported the prevalence rates among the 4 -16 yr group, to be 12 per cent overall , which was lower compared with our findings and from other community-based studies in Western countries.

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The overall distribution of psychiatric disorders is higher among adolescents in rural area (21.38%) as compared to urban area (19.43%) . This was similar to findings in other studies where rural area has been reported to have comparatively higher rates of psychiatric morbidity as compared to urban areas[20-24].

Compared to their urban counterparts, rural adolescents had significantly higher rates of somatoform disorders (4.45%) and conduct disorder (3.78%), dysthymia (1.11%) and other mood disorders (0.89%), whereas higher rates of depression (3.88%) , anxiety (3.67%) and hyperkinetic disorders (3.02%) were found in urban counterparts.

Table 1: Age and sex wise distribution

Urban Area(GROUP A) n=463									
Age Range	**Private School=234**				**Govt. School=229**				
	Male 128	%age	Female 106	%age	Male 132	%age	Female 97	%age	X^2
11-12	36	28.13%	39	36.79%	31	23.48%	25	25.77%	0.81 (p <0.847894)
13-14	49	38.28%	36	33.96%	54	40.91%	40	41.24%	3.39 (p <0.334336)
15-16	43	33.59%	31	29.25%	47	35.61%	32	32.99%	0.108 (p <0.990872)
Total	128	54.70%	106	45.29%	132	57.64%	97	42.36%	0.41 (p<0.5237)
Rural Area (GROUP B) n=449									
Age Range	**Private School=228**				**Govt. School=221**				
	Male 125	%age	Female 103	%age	Male 129	%age	Female 92	%age	X^2
11-12	32	25.60%	30	29.13%	30	23.25%	22	23.91%	0.56 (p < .906334)
13-14	44	35.20%	35	33.98%	47	36.43%	31	33.69%	1.43 (p < .699577)
15-16	49	39.20%	38	36.89%	52	40.31%	39	42.39%	0.0802 (p < .994103)
Total	125	54.83%	103	45.18%	129	58.37%	92	41.63%	0.57 (p<0.4485)

TABLE 2: ANALYSIS OF SDQ SCORE

SDQ SCORES	URBAN SCHOOLS					
	MEAN	**SD**	**MEAN**	**SD**	**SE**	**t-TEST**
ABNORMAL V/S BORDERLINE	17.68	2.42	14.33	1.49	0.33	**10.15****
ABNORMAL V/S NORMAL	17.68	2.42	10.61	2.06	0.32	**22.09****
BORDERLINE V/S NORMAL	14.33	1.49	10.61	2.06	0.17	**5.24****
SDQ SCORES	RURAL SCHOOLS					
	MEAN	**SD**	**MEAN**	**SD**	**SE**	**t-TEST**
ABNORMAL V/S BORDERLINE	17.42	2.32	13.52	1.14	0.30	**13.00****
ABNORMAL V/S NORMAL	17.42	2.32	10.52	1.97	0.31	**22.26****
BORDERLINE V/S NORMAL	13.52	1.14	10.52	1.97	0.17	**17.64****

**P<0.01

Our findings of higher rates of conduct disorder in rural areas and anxiety disorders in urban areas, although contrary to that in study by Robert et al[18], and Srinath et al[19] where both anxiety and conduct disorders were more in urban area (0.5%) each, were in accordance with those from other studies[16,17]. Anita et al [17] found similar results of increased anxiety (4%) in urban and increased conduct disorder (4.75%) among rural students.

Overall distribution among boys was 17.50% and among girls was 24.12%. It was comparable to the study conducted by Jajuet al[25], 2005 in Oman which reported that female gender was a strong predictor of lifetime risk of Major Depressive Disorder, Any Mood Disorder and specific phobia. But it was in contrast to the other studies[16-18]where males had higher psychiatric morbidity as compared to girls. However in contrast to all other studies there was no gender difference seen in study by Srinath et al[19].

Similar to earlier studies [16-19,25], we found higher rates of hyperkinetic disorders (3.8%) and conduct disorders (5.25%) in boys, whereas higher rates of anxiety disorders (3.50%) and depressive disorders (3.28%) among adolescent girls.

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TABLE 3: PSYCHIATRIC DISORDERS IN RURAL VERSUS URBAN AREAS

Sr. No.	Diagnosis ICD-10	Urban Area			Rural Area			OR (rural vs urban)	CI
		Male n=260	Female n=203	Total (n=463)	Male n=254	Female n=195	Total (n=449)		
1	Depression	5(1.92%)	13(6.40%)	18(3.88%)	4(1.57%)	8(4.10%)	12 (2.67%)	0.62	0.29 to 1.33
2	Dysthymia	1(0.38%)	2(0.98%)	3(0.64%)	0(0%)	5(2.56%)	5(1.11%)	**1.72**	0.41 to 7.26
3	BAD	2(0.76%)	0(0)	2(0.43%)	2(0.78%)	1(0.51%)	3(0.67%)	0.51	0.04 to 5.69
4	Any other mood disorder	0(0%)	4(1.97%)	4(0.86%)	0 (0%)	4 (2.05%)	4(0.89%)	**1.03**	0.25to 4.15
5	Anxiety	6(2.30%)	11(5.41%)	17(3.67%)	4(1.57%)	11(5.64%)	15(3.34%)	0.91	0.45 to 1.84
6	Adjustment	1(0.38%)	2(0.98%)	3(0.64%)	2(0.78%)	2(1.02%)	4(0.89%)	**1.03**	0.21 to 5.13
7	Somatoform	3(1.15%)	8(3.94%)	11(2.37%)	7(2.75%)	13(6.66%)	20(4.45%)	**1.81**	0.85 to 3.86
8	hyperkinetic	11(4.23%)	3(1.47%)	14(3.02%)	9(3.54%)	3(1.53%)	12(2.67%)	0.88	0.40 to 1.92
9	Conduct	11(4.23%)	2(0.98%)	13(2.80)	16(6.29%)	1(0.51%)	17(3.78%)	**1.36**	0.65 to 2.83
10	PDD	1(0.38%)	1(0.49%)	2(0.43%)	0(0)	0(0)	0(0)	0	0 to NAN
11	Behavioural	2(0.76%)	1(0.49%)	3(0.64%)	3(0.78%)	1(0.51%)	4(0.89%)	**1.03**	0.21 to 5.14
Total		43(16.53%)	47(23.15%)	90(19.43%)	47(18.50%)	49(25.12%)	96(21.38%)	**1.13**	0.82 to 1.56

OR= ODDS RATIO, CI= CONFIDENCE INTERVALS
Rural vs urban X^2=0.35, df=1, p<0.55

TABLE 4: SEX WISE DISTRIBUTION OF PSYCHIATRIC DIAGNOSIS

Sr. No.	Diagnosis ICD-10	Males n=514	Females n=398	Total n=912	OR (Females v/s Males)	CI
1	Depression	9(1.75%)	21(5.27%)	30(3.28%)	**3.52**	1.54 to 8.04
2	Dysthymia	1(0.19%)	7(1.75%)	8(0.87%)	**9.18**	1.12 to 71.95
3	BAD	4(0.77%)	2(0.50%)	6(0.66%)	0.64	0.12 to 3.54
4	Any other mood disorder	0 (0%)	8(2.01%)	8(0.87%)	-	-
5	Anxiety	10(1.94%)	22(5.52%)	32(3.50%)	**3.44**	1.57 to 7.52
6	Adjustment	3(0.58%)	4(1.005%)	7(0.76%)	**1.72**	0.47 to 14.26
7	Somatoform disorders	10 (1.94%)	21(5.27%)	31(3.39%)	**3.13**	1.41 to 6.90
8	Hyperkinetic disorders	20(3.8%)	6(1.50%)	26(2.85%)	0.37	0.15 to 0.95
9	Conduct	27(5.25%)	2(0.50%)	29(3.17%)	0.13	0.04 to 0.46
10	PDD	1 (0.19%)	1(0.25%)	2(0.21%)	1.29	0.08 to 20.72
11	Behavioural	5(0.97%)	2(0.50%)	7(0.76%)	0.64	0.12 to 3.53
Total		90(17.50%)	96(24.12%)	186(20.39%)	**1.49**	1.08 to 2.06

(males vs females) X^2 = 3.96, df=1, p= 0.04*

TABLE 5: DISTRIBUTION OF PSYCHIATRIC ILLNESS ACCORDING TO SOCIOECONMIC STATUS

SES	Urban Area			Rural Area	
	NORMAL n=373	ABNORMAL n=90		NORMAL n=353	ABNORMAL n=96
Upper Class	97 (20.95%)	25 (5.39%)	Upper Class	54 (12.03%)	18 (4.01%)
Upper Middle Class	95 (20.52%)	21 (4.54%)	Upper Middle Class	81 (18.04%)	21 (4.68%)
Lower Middle Class	60 (12.96%)	11 (2.38%)	Middle Class	116 (25.84%)	24 (5.35%)
Upper Lower Class	104 (22.46%)	27 (5.83%)	Lower Middle Class	69 (15.37%)	19 (4.23%)
Lower Class	17 (3.67%)	6 (1.29%)	Lower Class	34 (7.57%)	14 (2.67%)
X^2	11.54** (p<0.01)		X^2	5.63* (p<0.05)	

Also Similar to other studies [3,17,18,26], we found strong associations of disorders with indicators of socioeconomic status. In this study there was more psychiatric morbidity seen in lower class of both urban and rural areas. This was similar to the study conducted by Anita et al [17] which reported that children belonging to lower social class were at increased risk of psychiatric disorders. Rahi et al [26] reported that the prevalence increased as

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the socio-economic status lowered, the highest in lower class, i.e 20.9% in lower socioeconomic status and 11.7% in upper middle and lower middle classes. In an ICMR study conducted at NIMHANS, Bangalore[19], there were no significant differences found among the prevalence rates in the middle-class urban, slum and the rural areas.

Drug abuse in the family may have multidimensional effect such as inadequate attention to the child, parental conflicts, disturbed family environment etc. and moreover, the child may consider it as a socially approved habit. Rates of psychiatric illness was significantly higher (p<0.01) in adolescents with family history of addiction. i.e 27.81% and 30.06% in urban and rural area respectively which was similar to a study by Rahi et al [26] which reported significantly higher prevalence rate in children of alcoholic fathers (20.2%) as compared to non-alcoholic fathers (13.6%) , which was found to be significant p <0.05.

Table 6: ASSOCIATION BETWEEN FAMILY HISTORY OF DRUG ABUSE AND PSYCHIATRIC MORBIDITY AMONG STUDENTS.

	Urban Area Family drug abuse		Rural Area Family drug abuse	
	Present n =151	**Absent n =312**	**Present n =173**	**Absent n =276**
Normal	109 (72.18%)	264 (84.61%)	121 (69.94%)	232 (84.06%)
Abnormal	42 (27.81%)	48 (15.38%)	52 (30.06%)	44 (15.94%)
Total	151 (100%)	312 (100%)	173 (100%)	276 (100%)
X^2	10.04** (p< 0.01)		12.61** (p<0.01)	

LIMITATIONS:
There are a few limitations pertaining to this study. The results should be interpreted in context of these limitations.
1. The limited sample size of the study was due to time limited nature of the study. Thus there is a need for a larger sample size to accurately assess distribution patterns.
2. The study had cross- sectional research design and thus sample was not followed up.
3. Co-morbid diagnosis were not made at present and as there is evidence to suggest that single disorders often progress to complex co-morbid disorders that are impervious to treatment and more likely to recur than less complex conditions. Therefore, our subjects need to be re-assessed at a later period for a meaningful understanding of the impact of the present labelling.
4. All the variables were assessed cross-sectionally, hence answers to cause- effect relationship between variables cannot be given. Longitudinal studies should be carried out to look for correlations between changes in impact (variables) with changes in severity of illness.
5. Also it is possible that the present survey may have omitted those who had dropped out from school as a result of mental ailments and also those who were non-school going for other reasons.

CONCLUSION

The distribution of psychiatric morbidity among adolescents in all four schools combined was found to be 20.39%. The odds of having a psychiatric illness in females were 24.15% as compared to 17.50% in males. The higher rates in females, may speculate low standards of the importance of psychiatric disorders in females owing to the cultural and societal factors which could have combined to increase the magnitude of female adolescents problems. Accentuated different gender roles and preference of male child over female also play a role in decreased care and thus increased rates in females.

Increased rates of psychiatric illness in adolescents with family history of addiction may have multidimensional effect and the child may consider it as a socially approved habit. With a special reference to Punjab, where drug abuse is a concerning topic, negative effect of familial factors is high into consideration and demands adequate steps to control its adverse outcome.

Decreased awareness amongst the families with low socioeconomic status, about the importance of early diagnosis of psychiatric illness is also one of the important causes of increased rates among this stratum.

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Therefore to conclude, teachers at school level should be trained to identify students with compromised mental health so that their psychiatric problems can be identified at the earliest and proper treatment could be started. School authorities are cautioned against overburdening the children with classes and home works. Moreover steps should be taken to curb the practice of substance addiction in the community. There should be training in the field of community mental health, substance abuse, and more of child adolescent psychiatric clinics should be opened. Legal measures such as prohibition of sale of uniodised salt, ban on the manufacture and sale of psychoactive drugs should be made.

FUTURE DIRECTIONS:

Future studies should be planned and carried out keeping in view the above methodological limitations. They should have a larger and more representative sample and should perform a more comprehensive analysis of variables using structured instruments. These studies need to have a longitudinal design in order to examine the natural course of these disorders and to evaluate the risk factors for various psychiatric disorders.

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REFERENCES

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[1] India. UNFPA for UN System in India. Adolescents in India: a profile.2000 [Internet]. 2003. Available from: web.unfpa.org/focus/india/facetoface/docs/adolescentsprofile.pdf

[2] Sharma N. Identity of the adolescent girl. New Delhi: Discovery Publishing. 1996.

[3] Ahmad A, Khalique N, Khan Z, Amir A. Prevalence of psychosocial problems among school going male adolescents. Indian J Community Med 2007;32:219-21.

[4] Planning commission. Government of India. Report of the working group on adolescents for the tenth five year plan [Internet]. 2001.
Available from:http://www.planningcommission.gov.in/aboutus/committee/wrkgrp/wg_adolcnts.pdf.

[5] Michaud PA, Fombonne E. ABC of adolescence, Common mental health problems. BMJ 2005;9:330.

[6] Drugs and Alcohol Ireland - Second annual child and adolescent mental health service report 2009-2010. Retrieved from http://www.drugsandalcohol.ie/14281/#

[7] World Health Organization. Caring for children and adolescents with mental disorders. Geneva: World Health Organization; 2003.

[8] Stengård, E., &Appelqvist-Schmidlechner, K. (2010). Mental health promotion in young people: An investment for the future. Retrieved from http://www.euro.who.int/en/what-we-do/health-topics/noncommunicable-diseases/mental-health/publications/2010/mental-health-promotion-in-young-people-an-investment-for-the-future.

[9] Henderson AS. The Nature Of Adolescent Psychiatric Illness. Aust N Z J Psychiatry 1969;3: 120

[10] Goodman R. The Strengths and Difficulties Questionnaire: A Research Note. Journal of Child Psychology and Psychiatry 1997; 38:581-86.

[11] Goodman R, Meltzer H, Bailey V. The Strengths and Difficulties Questionnaire: A pilot study on the validity of the self-report version. European Child and Adolescent Psychiatry 1998; 7:125-30.

[12] Goodman R, Scott S. Comparing the Strengths and Difficulties Questionnaire and the Child Behavior Checklist: Is small beautiful? Journal of Abnormal Child Psychology 1999; 27:17-24.

[13] Goodman R. The extended version of the Strengths and Difficulties Questionnaire as a guide to child psychiatric caseness and consequent burden. J Child Psychol Psychiatry. 1999;40(5):791-9.

[14] Malhotra S, Kohli A, Kapoor M, Pradhan B. Incidence of childhood psychiatric disorders in India. Indian J Psychiatry 2009; 51:101-107.

[15] Greally P, Kelleher I, Murphy J, Cannon M.Assessment of the mental health of Irish adolescents in the community. Royal College of Surgeons in Ireland Student Medical Journal 2010; 3: 33-35.

[16] Gau SSF, Chong MY, Chen THH, Cheng ATA. A 3- year panel study of mental disorders among adolescents in Taiwan.Am J Psychiatry 2005; 162:1344–1350.

[17] Anita, Gaur DR, AK Vohra, S Subash, Khurana H. Prevalence of psychiatric morbidity among 6 to 14 year old children. Indian J Community Med 2007;28:7-9.

[18] Roberts RE, Roberts CR, Xing Y. Rates of DSM-IV Psychiatric Disorders Among Adolescents in a Large Metropolitan Area. J Psychiatr Res 2007; 41(11): 959–67.

[19] Srinath S, Girimaji SC, Gururaj G, Seshadri S, Subbakrishna DK, Bhola P, *etal*. Epidemiological study of child and adolescent psychiatric disorders in urban and rural areas of Bangalore, India. Indian J Med Res 2005;122:67-79.

[20] Rutter M. Isle of Wight revisited: twenty-five years of child psychiatric epidemiology. J Am Acad Child AdolescPsychiat 1989;28:633–53.

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[21] Merikangas KR, He JP, Burstein M, Swanson SA, Avenevoli S, Cui L et al.Lifetime prevalence of mental disorders in U.S. adolescents: results from the National Comorbidity Survey Replication-Adolescent Supplement.JAmAcad Child Psychiatry 2010;49(10):980-9.

[22] Modrzejewska R, Bomba J. Prevalence of mental disorders and psychoactive substance use in metropolitan 17-year old youth population.Psychiatr Pol 2010;44(4):579-92

[23] Raju VB, Sundaravalli N, Somasundaram O, Raghavan VG. Neurotic disorders in children. Indian Paediatr 1969;6:296-301.

[24] Asal RA, Abdel-Fattah MM.Prevalence, symptomatology, and risk factors for depression among high school students in Saudi Arabia.Neurosciences 2007;12(1):8-16

[25] Jaju S, Al-Adawi S, Al-Kharusi H, Morsi M, Al-RiyamiA.Prevalence and age-of-onset distributions of DSM IV mental disorders and their severity among school going Omani adolescents and youths: WMH-CIDI findings.ChildAdolesc Psychiatry Ment Health 2009; 3: 29.

[26] Rahi M, Kumavat AP, Garg S, Singh MM.Socio-Demographic Co-relates of Psychiatric Disorders.Indian Journal of Pediatrics 2005;72:395-8.