

ORIGINAL ARTICLE

PREVALENCE OF EMOTIONAL AND BEHAVIORAL PROBLEMS AMONG ADOLESCENCE AND SOME RISK FACTORS IN MONGOLIA

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Abstract

Objectives: To determine emotional and behavioral problems among adolescents and to define risk factors for these emotional and behavioral problems. **Methods:** A cross-sectional study was conducted among selected and qualified middle and high school children, their parents and teachers. The “Strength and Difficulties Questionnaire” (SDQ) were employed with the intention to measure psychosocial problems and strengths [prosocial behavior] in children between the ages of 4-10 and adolescents ages 11-17, through a multi-informant methodology. The questionnaire consists of 25 items equally divided across five scales measuring: 1) emotional symptoms; 2) conduct problems; 3) hyperactivity-inattention; 4) peer problems; and 5) prosocial behavior. Except for the prosocial scale, the combined scale [*i.e.* Total Score] reflects total difficulties, indicating the severity and content of the psychosocial problems. The prosocial scale indicates the amount of prosocial characteristics child displays. **Results:** In the SDQ questionnaires answered by parents, we obtained the following scores: 27.4% for emotional symptoms, 28.2% for conduct disorders, 20.4% for hyperactivity, 81.4% for interpersonal relationships, and 43.3% as the Total Score. In the SDQ questionnaires answered by teachers, we obtained high scorings such as 8.9% for emotional symptoms, 20.2% for conduct disorders, 13.4% for hyperactivity, 47.6% for interpersonal relationships and a Total Score of 33.4%. In the SDQ questionnaires answered by the adolescents themselves, we obtained scorings such as: 10.0% for emotional symptoms, 10.2% for conduct disorders, 18.8% for hyperactivity, 14.6% for interpersonal relationships, and 16.3% as the Total Score. **Conclusion:** Mongolian adolescents were found to have emotional and behavioral problems as evidenced by the Total Scores of parents, *i.e.* 43.3%; by teachers, 33.4%; and self-report 16.3%, respectively. The SDQ confirmed that an adolescent’s age, gender, family environment and living areas will influence their emotional and behavioral well-being. *ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: XX XX.*

Keywords: Emotions, Adolescent, Mental Health, Adolescent Behavior

Introduction

Mental-health problems in children are common throughout the world. According to estimates provided by the World Health Organization, 20% or one-fifth of children worldwide suffer with mental and behavioral disorders. Most are adolescents between the ages of 10-19. World Health Report-2001 showed the prevalence of anxiety was 13.0%, behavioral disorders 10.3%, and emotional disorders 6.2% among children ages 9-17. At the minimum, 3% of school-age children complain of severe depression, suicidal thoughts, psychosis and attention-deficit hyperactivity disorders.

Epidemiological studies demonstrate that 13-25% of adolescents will meet the criteria for a mental disorder during their lifetime. Adolescence is an important period in the life of a child. Adolescent mental-health problems often go unnoticed. Therefore, "screening" tools can aid early detection of these problems to facilitate early intervention and a child's access to effective treatments [1,2].

According to a study [3] in more than 10438 children aged, 5-15 using the Strength and Difficulties Questionnaires (SDQ), individuals with a psychiatric diagnosis were identified with a specificity of 94.6% and a sensitivity of 63.3%. The SDQ identified over 70% of individuals with emotional and behavioral problems. Approximately, 10% these children and adolescents reported having psychiatric disorders. However, only about 20% were in contact with a specialist from the mental health service [3]. According to the British school-based survey results, 18-22% of participants were diagnosed with mental-health problems, including 5-8% diagnosed with severe emotional disorders [4-6]. According to the results from a study by the Global School based Student Health Survey 2013 in Mongolia, 23% of 5393 students aged 12-17 were seriously considering suicidal behavior; and 9.6% did attempt suicide within the past year. Girls attempt at suicide were more frequent than boys.

In the World Health Organization Report Instrument for Mental Health Systems (WHO-AIMS, 2006) reported; "Mongolia does not

offer child and adolescence mental health services. Furthermore, special attention needs to be given to develop competent professional services in the area of child and adolescent mental health in Mongolia [2]". The purposes of this study were: (i) to determine results of emotional and behavioral problems of adolescents and ii) to define risk factors for emotional and behavioral problems among adolescents.

Methods

1. Study population

Our study was a cross-sectional study of 22 schools selected from Ulaanbaatar City and 50 schools from rural areas. Total sample sizes were: 2250 adolescents, 2250 parents and 72 teachers. Ethical approval for this study was acquired from the Research Ethics Committee of Mongolian National University of Medical Sciences. Participants signed consent forms after introduction and discussion of ethical issues and had to meet the inclusion criteria of the survey. Inclusion criteria are: 1) School children of middle and high school; 2) Access to school children's parents and their teachers; 3) Agreements of school children and their parents and teachers to participate in the survey; 4) School children, parents and teachers must be able to understand and provide answers to the SDQ.

Data collection was done during the period of 1st February to 30th March 2013, among 22 schools of 7 districts in Ulaanbaatar and in urban areas among 50 schools of 8 provinces during the period of 1st September to 30th November.

2. Instruments

We used various versions of the Strengths and Difficulties Questionnaire (SDQ) applicable for children, adolescents, parents and teachers (S11-17, P11-18, T11-17). SDQs for self-assessment by adolescents asked the same 25 questions, though the wording was slightly different (Goodman et al, 1998). This self-assessment version is suitable for young people ages 11-17 depending on their level of understanding and literacy. These 25 items are divided into five scales: 1)

hyperactivity/inattention; 2) emotional symptoms; 3) conduct problems; 4) peer relationship problems; and 5) prosocial behavior. Each item can be answered as ‘Certainly True’, ‘Somewhat true’, ‘Not true’ being weighted using a 0 to 2 score depending on the template (Table 1). The Total Score of difficulties typically ranging from 0 to 40, with higher scores indicating more difficulties.

The prosocial scale score is not incorporated in the Total Score of difficulties, as the absence of prosocial behaviors is conceptually different

from the presence of psychological difficulties.

3. Scoring the Strengths & Difficulties Questionnaire for age 4-17

The 25 items in the SDQ comprise 5 scales of 5 items each. It is best to score all 5 scales first before calculating the Total [difficulties] Score. ‘Somewhat True’ is always scored as 1, but the scoring of ‘Not True’ and ‘Certainly True’ varies with the item, as shown below scale by scale. For each of the 5 scales the score can range from 0 to 10 if all items were completed.

Table 1. Scoring symptom scores on the SDQ for 4-17 year olds

Items	SDQs 5 scales	Not True	Somewhat True	Certainly True
Emotional problems Scale				
ITEM 3:	Often complains of headaches... (<i>I get a lot of headaches...</i>)	0	1	2
ITEM 8:	Many worries... (<i>I worry a lot</i>)	0	1	2
ITEM 13:	Often unhappy, downhearted... (<i>I am often unhappy....</i>)	0	1	2
ITEM 16:	Nervous or clingy in new situations... (<i>I am nervous in new situations...</i>)	0	1	2
ITEM 24:	Many fears, easily scared (<i>I have many fears...</i>)	0	1	2
Emotional problems Scales score range		0-10 score		
Conduct problems Scale				
ITEM 5:	Often has temper tantrums or hot tempers (<i>I get very angry</i>)	0	1	2
ITEM 7:	Generally obedient... (<i>I usually do as I am told</i>)	2	1	0
ITEM 12:	Often fights with other children... (<i>I fight a lot</i>)	0	1	2
ITEM 18:	Often lies or cheats (<i>I am often accused of lying or cheating</i>)	0	1	2
ITEM 22:	Steals from home, school or elsewhere (<i>I take things that are not mine</i>)	0	1	2
Conduct problems Scales score range		0-10 score		
Hyperactivity scale				
ITEM 2:	Restless, overactive... (<i>I am restless...</i>)	0	1	2
ITEM 10:	Constantly fidgeting or squirming (<i>I am constantly fidgeting....</i>)	0	1	2
ITEM 15:	Easily distracted, concentration wanders (<i>I am easily distracted</i>)	0	1	2
ITEM 21:	Thinks things out before acting (<i>I think before I do things</i>)	2	1	0
ITEM 25:	Sees tasks through to the end... (<i>I finish the work I am doing</i>)	2	1	0
Hyperactivity scales score range		0-10 score		
Peer problems scale				
ITEM 6:	Rather solitary, tends to play alone (<i>I am usually on my</i>	0	1	2

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	<i>own)</i>			
ITEM 11:	Has at least one good friend (<i>I have one goof friend or more</i>)	2	1	0
ITEM 14:	Generally liked by other children (<i>Other people my age generally like me</i>)	2	1	0
ITEM 19:	Picked on or bullied by other children... (<i>Other children or young people pick on me</i>)	0	1	2
ITEM 23:	Gets on better with adults than with other children (<i>I get on better with adults than with people my age</i>)	0	1	2
Peer problems scales score ranges		0-10 score		
Total difficulties score: This is generated by summing scores from all the scales except the prosocial scale. The resultant score ranges from 0 to 40.				
Prosocial scale				
ITEM 1:	Considerate of other people's feelings (<i>I try to be nice to other people</i>)	0	1	2
ITEM 4:	Shares readily with other children... (<i>I usually share with others</i>)	0	1	2
ITEM 9:	Helpful if someone is hurt... (<i>I am helpful is someone is hurt...</i>)	0	1	2
ITEM 17:	Kind to younger children (<i>I am kind to younger children</i>)	0	1	2
ITEM 20:	Often volunteers to help others... (<i>I often volunteer to help others</i>)	0	1	2

SDQ = Strength and Difficulties Questionnaire

We used the same cut-off points published in the literature and available in the Internet at www.sdqinfo.com to define 'normal', 'borderline' and 'abnormal' scores.

Table 2. Categorizing SDQ scores for 4-17 year olds

Completed SDQ	Original three-band categorization		
	Normal	Borderline	Abnormal
Parent SDQ			
Total difficulties score	0-13	14-16	17-40
Emotional problems score	0-3	4	5-10
Conduct problems score	0-2	3	4-10
Hyperactivity score	0-5	6	7-10
Peer problems score	0-2	3	4-10
Prosocial score	6-10	5	0-4
Teacher SDQ			
Total difficulties score	0-11	12-15	16-40
Emotional problems score	0-4	5	6-10
Conduct problems score	0-2	3	4-10
Hyperactivity score	0-5	6	7-10
Peer problems score	0-3	4	5-10
Prosocial score	6-10	5	0-4
Self-assessment SDQ			
Total difficulties score	0-15	16-19	20-40
Emotional problems score	0-5	6	7-10
Conduct problems score	0-3	4	5-10
Hyperactivity score	0-5	6	7-10
Peer problems score	0-3	4-5	6-10
Prosocial score	6-10	5	0-4

SDQ = Strengths and Difficulties Questionnaire

Cut-off points for SDQ scores: original three-band solution: Although SDQ scores can be used as continuous variables, it is sometimes convenient to categories scores. The initial bandings presented for the SDQ scores were ‘normal’, ‘borderline’ and ‘abnormal’.

4. Statistical analysis

Data analysis included the SDQs completed by 1959 adolescents, 1959 parents and 72 teachers. Information was analyzed using SPSS 22.0 for statistical analysis. Descriptive statistical analysis was performed to reveal the

prevalence of emotional and behavioral problems among adolescents and calculated with 95 percent confidence intervals (95% CI).

After identifying variables to analyze the correlation between parameters, we employed the Pearson correlation coefficient and Chi-square test. A p-value of less than 0.05 was judged to be statistically significant. Correlations between emotional and behavioral problems among adolescents and their risk factors were calculated by correlation analysis and linear regression to determine confidence intervals.

Results

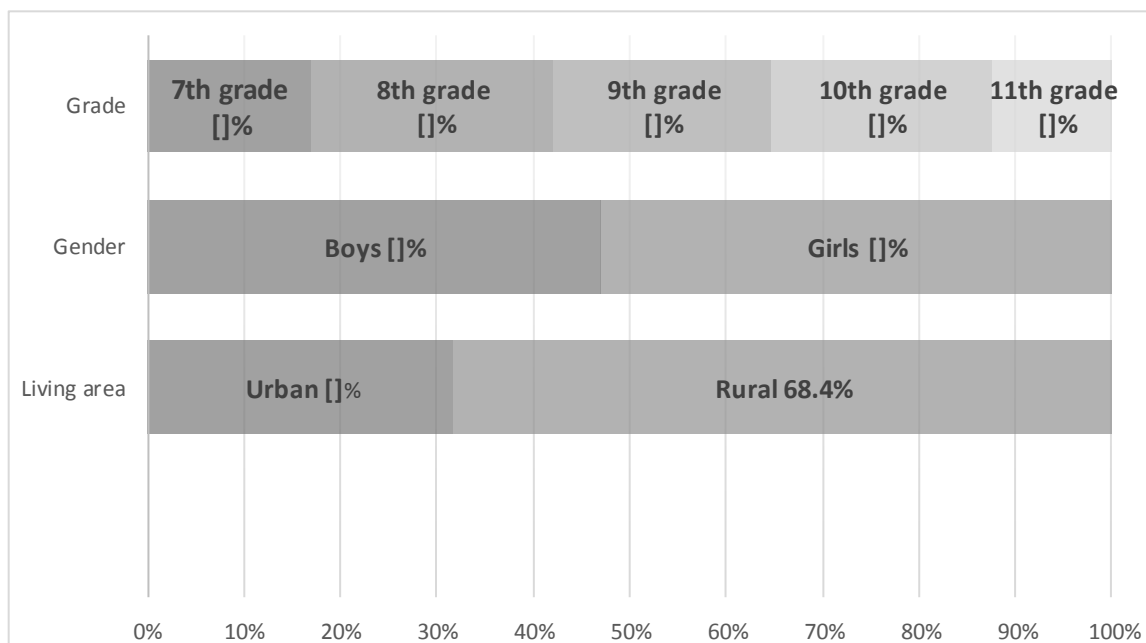


Figure 1. Demographic indications of participants

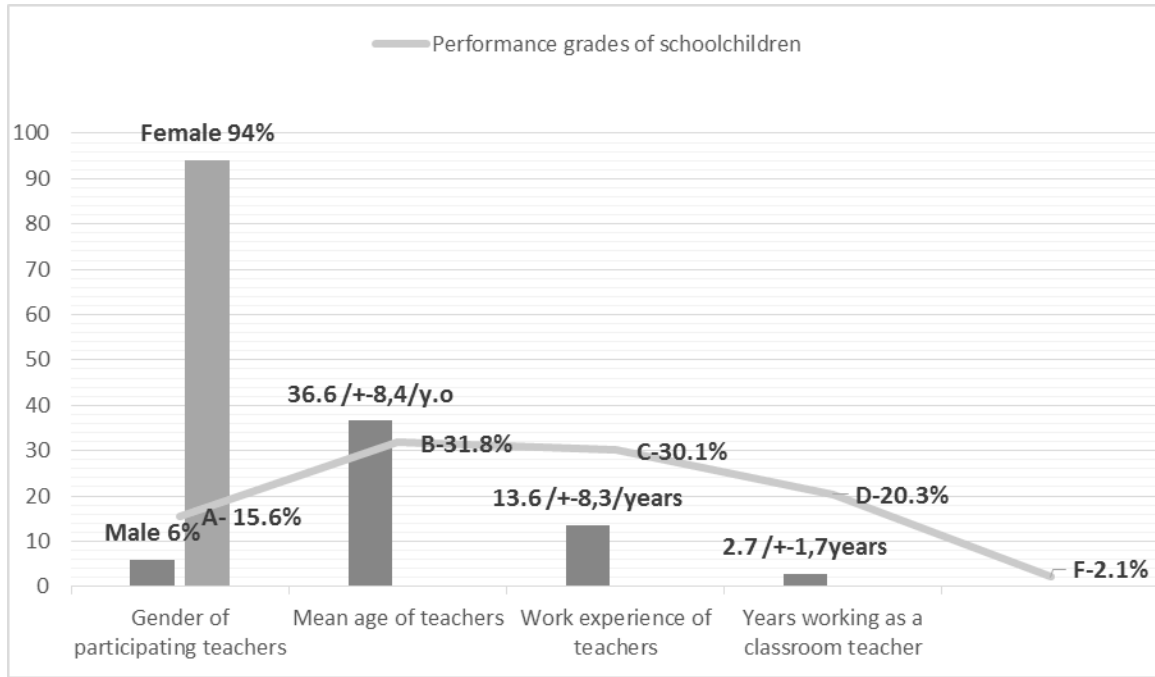


Figure 2. Demographic indications of teachers

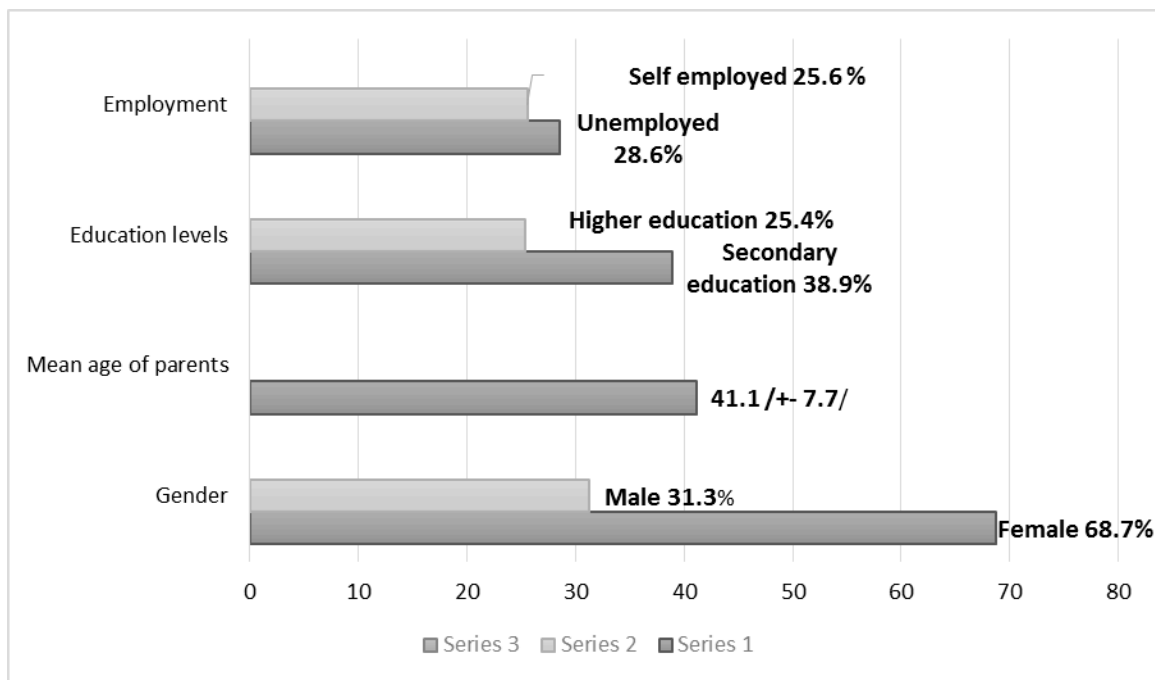


Figure 3. Demographic indications of parents

In the rural areas, most participants had only elementary educations, an incomplete secondary education or no education. Participants from urban areas had higher-education levels, including: Master's degrees

and higher. Regarding employment of participating parents, in urban areas, 25.6% were self-employed, 22.8% production workers, and 22.4% office staff.

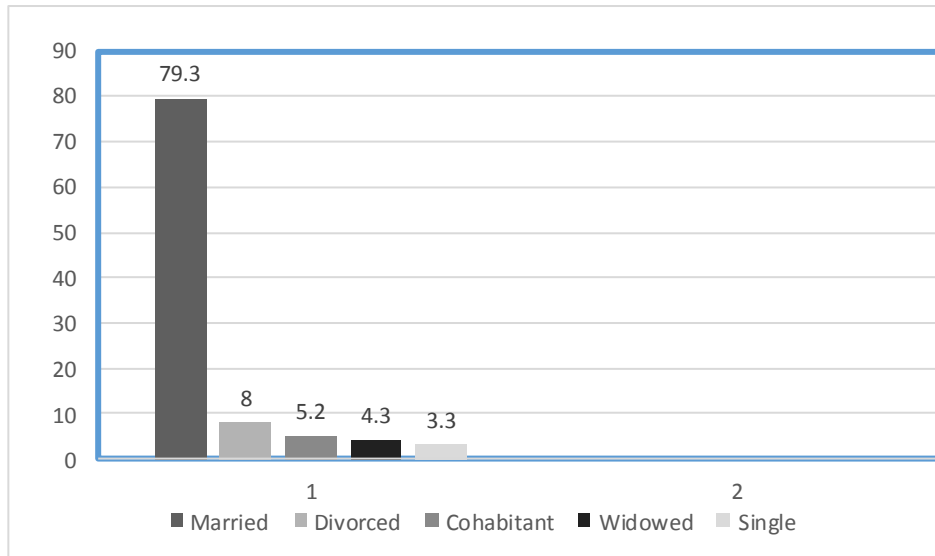


Figure 4. Demographic indications of marital status

Of the marital status: In urban areas most parents were: married, divorced or single. In

the rural areas, most parents were cohabitant or widowed.

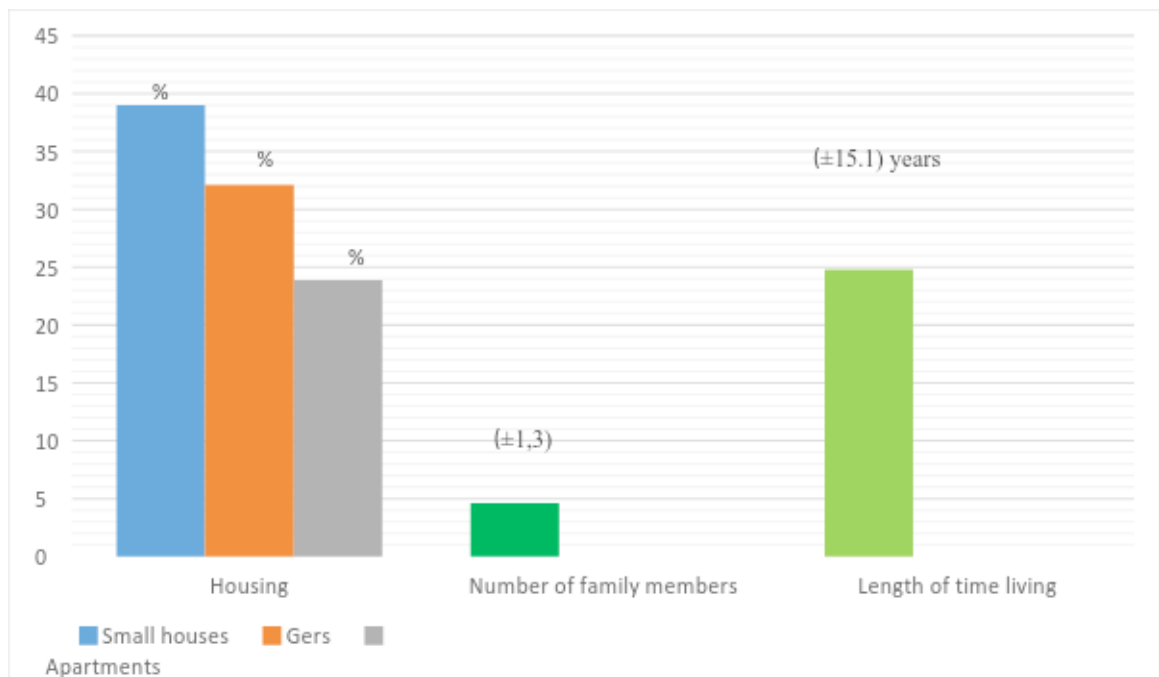


Figure 5. Housing indications of parents

Regarding housing, in urban areas, most parents live in apartments. In the rural areas, parents living in private houses, i.e. *gers*, a Mongolian term to denote a portable, round tent covered with skins or felt and used as a dwelling by nomads in the steppes of Central Asia. Mean urban household monthly income is approximately 600000 tugriks (about 240 US dollars). Comparing urban areas to rural areas, a rural area household monthly income

is less than 200000 tugriks (about 80 US dollars).

Evaluation of parent's responses determined that hyperactive problems are common in all age groups and genders of school children but most common in boys. Conduct problems prevailed mostly among boys. Emotional symptoms between 17-year-old male adolescents ($p < 0.05$), conduct problems

between 14-year-old male adolescents ($p < 0.001$), hyperactivity problems of male adolescents between 12-13 year-old ($p < 0.05$),

conduct problems between 14-year-old male adolescents ($p < 0.05$) were more common compared with females (Table 3).

Table 3. Parent's report of emotional and behavioral symptoms of school children by the age and gender

Age	Gender	n	Emotional	Conduct	Hyperactive	Peer	Prosocial
			Mean \pm SD	Mean \pm SD	Mean \pm SD	Mean \pm SD	Mean \pm SD
11	Male	17	3.05 \pm 1.85	2.70 \pm 1.26	5.17 \pm 1.33	4.82 \pm 1.13	7.41 \pm 1.54
	Female	12	2.25 \pm 2.13	2.5 \pm 1.24	5.25 \pm 1.76	4.58 \pm 1.08	8.16 \pm 1.85
12	Male	150	3.33 \pm 1.81	2.86 \pm 1.44	5.44 \pm 1.61*	4.8 \pm 1.35	7.2 \pm 1.73*
	Female	124	3.63 \pm 2.02	2.94 \pm 1.15	4.98 \pm 1.67	4.61 \pm 1.34	7.70 \pm 1.76
13	Male	208	3.41 \pm 2.11	3.01 \pm 1.58	5.62 \pm 1.62*	4.66 \pm 1.56	7.47 \pm 1.88*
	Female	248	3.50 \pm 2.05	2.83 \pm 1.25	5.27 \pm 1.55	4.54 \pm 1.40	7.83 \pm 1.72
14	Male	176	3.14 \pm 1.88	3.16 \pm 1.53**	5.15 \pm 1.54	4.61 \pm 1.39	7.49 \pm 2.02
	Female	207	3.44 \pm 2.04	2.68 \pm 1.45	5.08 \pm 1.56	4.64 \pm 1.39	7.79 \pm 1.82
15	Male	197	3.02 \pm 1.93	3.04 \pm 1.52	5.30 \pm 1.73*	4.50 \pm 1.31	7.60 \pm 1.93
	Female	209	3.27 \pm 2.03	2.95 \pm 1.27	4.96 \pm 1.45	4.73 \pm 1.27	7.93 \pm 1.94
16	Male	107	3.19 \pm 1.88	3.22 \pm 1.44	5.19 \pm 1.69	4.47 \pm 1.42	7.74 \pm 1.95
	Female	148	3.58 \pm 2.17	2.98 \pm 1.32	4.83 \pm 1.64	4.68 \pm 1.35	8.04 \pm 1.82
17	Male	50	2.64 \pm 1.63*	2.8 \pm 1.22	4.9 \pm 1.74	4.46 \pm 1.71	7.32 \pm 1.82
	Female	71	3.50 \pm 2.26	2.88 \pm 1.29	4.59 \pm 1.62	4.52 \pm 1.47	7.64 \pm 1.73
18	Male	15	2.46 \pm 1.88	2.66 \pm 1.23	5.33 \pm 1.71	4.26 \pm 1.53	8 \pm 1.77
	Female	19	3.21 \pm 1.96	3 \pm 1.20	5 \pm 1.66	4.31 \pm 1.00	8 \pm 1.37

* $p < 0.05$, ** $p < 0.001$, *** $p < 0.0001$; SD = standard deviation

Table 4. Teacher's report of emotional and behavioral symptoms of school children by the age and sex

Age	Gender	n	Emotional	Conduct	Hyperactive	Peer	Prosocial
			Mean \pm SD	Mean \pm SD	Mean \pm SD	Mean \pm SD	Mean \pm SD
11	Male	17	2.76 \pm 1.44	2.65 \pm 0.93	5.88 \pm 1.62**	5.24 \pm 0.97**	7.24 \pm 1.86*
	Female	12	1.75 \pm 1.22	2.42 \pm 0.90	4.33 \pm 1.15	4.25 \pm 0.87	8.50 \pm 1.24
12	Male	150	2.53 \pm 1.56*	2.57 \pm 1.49**	4.92 \pm 1.53**	4.73 \pm 1.29	6.78 \pm 1.97**
	Female	124	2.15 \pm 1.54	2.11 \pm 0.89	4.42 \pm 1.37	4.59 \pm 1.29	8.06 \pm 1.95
13	Male	208	2.52 \pm 1.91	2.75 \pm 1.39	5.14 \pm 1.69**	4.27 \pm 1.32	7.26 \pm 2.14**
	Female	248	2.53 \pm 1.96	2.51 \pm 1.36	4.42 \pm 1.53	4.41 \pm 1.29	7.92 \pm 2.00
14	Male	176	2.60 \pm 1.80	2.90 \pm 1.87**	4.84 \pm 1.57**	4.44 \pm 1.37	7.23 \pm 2.38**
	Female	207	2.41 \pm 1.96	2.44 \pm 1.47	4.43 \pm 1.37	4.40 \pm 1.16	8.00 \pm 2.02
15	Male	197	2.96 \pm 2.19	2.93 \pm 1.69	4.98 \pm 1.62	4.68 \pm 1.42	7.06 \pm 2.32**
	Female	209	3.09 \pm 2.18	2.75 \pm 1.77	4.79 \pm 1.58	4.56 \pm 1.50	7.75 \pm 2.07
16	Male	107	2.80 \pm 2.05	2.59 \pm 1.59	5.07 \pm 1.58	4.41 \pm 1.50	7.20 \pm 1.92
	Female	148	2.93 \pm 1.85	2.64 \pm 1.65	4.78 \pm 1.39	4.41 \pm 1.38	7.50 \pm 2.13

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17	Male	50	2.38 ± 1.89	2.78 ± 1.58**	4.62 ± 1.84*	4.34 ± 1.30	6.74 ± 2.15**
	Female	71	2.25 ± 1.85	2.10 ± 1.00	4.03 ± 1.42	4.35 ± 1.21	7.76 ± 1.65
18	Male	15	2.87 ± 2.23	2.87 ± 1.41	4.93 ± 1.71	4.20 ± 1.01	6.40 ± 2.41
	Female	19	2.42 ± 1.84	2.53 ± 1.02	3.95 ± 1.47	3.74 ± 1.05	6.74 ± 2.35

*p<0.05, **p<0.001, ***p<0.0001; SD = standard deviation

Table 5. Parent's report of emotional and behavioral symptoms of school children by gender and urban and rural areas

Parent's report	Total	Urban	Rural
	Mean ± SD	Mean ± SD	Mean ± SD
Emotional symptoms			
Male	3.18±1.93	3.46±2.01**	3.04±1.88
Female	3.45±2.08	3.63±2.00	3.37±2.11
Total	3.32±2.01	3.55±2.01**	3.22±2.01
Conduct problems			
Male	3.03±1.50	3.23±1.50**	2.93±1.49
Female	2.87±1.31	3.13±1.47***	2.75±1.21
Total	2.94±1.40	3.18±1.48***	2.83±1.35
Hyperactivity problems			
Male	5.34±1.65	5.38±1.77	5.32±1.59
Female	5.02±1.58	4.97±1.61	5.05±1.57
Total	5.17±1.62	5.16±1.70	5.17±1.58
Peer relationship problems			
Male	4.61±1.43	4.65±1.50	4.59±1.40
Female	4.63±1.36	4.74±1.38	4.57±1.35
Total	4.62±1.39	4.70±1.43	4.58±1.37
Total score			
Male	16.71±4.60	15.88±4.34**	16.15±4.44
Female	16.47±4.12	15.74±4.10**	15.97±4.12
Total	16.59±4.36	15.81±4.21***	16.05±4.27
Prosocialbehaviour			
Male	7.49±1.90	7.38±2.00	7.55±1.84
Female	7.86±1.81	7.67±1.87*	7.94±1.77
Total	7.69±1.86	7.53±1.94*	7.76±1.82

*p<0.05, **p<0.001, ***p<0.0001; SD = standard deviation

Table 6. Teacher's report of emotional and behavioral symptoms of school children by gender and urban and rural areas

Teacher's report	Total	Urban	Rural
	Mean ± SD	Mean ± SD	Mean ± SD
Emotional symptoms			
Male	2.67 ± 1.92	2.89 ± 2.12*	2.57 ± 1.81
Female	2.60 ± 1.96	2.61 ± 2.09	2.59 ± 1.90
Total	2.63 ± 1.94	2.74 ± 2.11	2.58 ± 1.85
Conduct problems			

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Male	2.77 ± 1.60	3.11 ± 1.84***	2.61 ± 1.45
Female	2.49 ± 1.45	2.62 ± 1.59*	2.42 ± 1.38
Total	2.62 ± 1.53	2.85 ± 1.73***	2.51 ± 1.42
Hyperactivity problems			
Male	4.99 ± 1.63	4.82 ± 1.65*	5.06 ± 1.61
Female	4.51 ± 1.47	4.26 ± 1.53***	4.63 ± 1.43
Total	4.73 ± 1.56	4.53 ± 1.61***	4.83 ± 1.53
Peer relationship problems			
Male	4.50 ± 1.37	4.59 ± 1.41	4.46 ± 1.35
Female	4.44 ± 1.31	4.72 ± 1.41***	4.31 ± 1.25
Total	4.47 ± 1.34	4.66 ± 1.41***	4.38 ± 1.30
Total score			
Male	14.93 ± 4.23	15.41 ± 4.64*	14.70 ± 4.01
Female	14.04 ± 4.13	14.22 ± 4.71	13.95 ± 3.83
Total	14.45 ± 4.20	14.78 ± 4.71*	14.30 ± 3.93
Prosocial behavior			
Male	7.08 ± 2.18	6.58 ± 2.26***	7.32 ± 2.10
Female	7.83 ± 2.02	7.66 ± 2.09	7.91 ± 1.98
Total	7.48 ± 2.13	7.14 ± 2.24***	7.64 ± 2.06

*p<0.05, **p<0.001, ***p<0.0001; SD = standard deviation

According to the parents and teachers SDQs we evaluated, three ranges: *normal, borderline and abnormal*.

Table 7. Results of normal, borderline and abnormal ranges of SDQ

	Parent-report		Teacher-report		Self-report	
	Ranges	95% CI	Ranges	95% CI	Ranges	95% CI
Total score						
Normal	28.3%	24.5-32.0	23.7%	19.9-27.6	52.6%	49.6-55.7
Borderline	28.4%	24.6-32.1	42.9%	39.5-46.2	31.1%	27.4-34.8
Abnormal	43.3%	40.0-46.6	33.4%	29.8-37.0	16.3%	12.2-20.3
Emotional symptoms						
Normal	55.2%	52.2-58.2	83.9%	82.1-85.6	82.0%	80.1-83.9
Borderline	17.4%	13.3-21.4	7.2%	2.9-11.5	8.1%	3.8-12.3
Abnormal	27.4%	23.7-31.2	8.9%	4.7-13.2	10.0%	5.8-14.2
Conduct problems						
Normal	40.9%	37.5-44.3	60.0%	57.2-62.8	76.1%	74.0-78.3
Borderline	30.9%	27.3-34.6	19.8%	15.8-23.8	13.6%	9.5-17.8
Abnormal	28.2%	24.4-31.9	20.2%	16.3-24.2	10.2%	6.0-14.4
Hyperactivity problems						
Normal	59.2%	56.4-62.0	71.1%	68.7-73.4	62.2%	59.4-64.9
Borderline	20.4%	16.4-24.3	15.6%	11.5-19.6	19.1%	15.1-23.0
Abnormal	20.4%	16.5-24.4	13.4%	9.3-17.5	18.8%	14.8-22.8

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Peer-relationship problems						
Normal	5.3%	1.0-9.6	21.5%	17.6-25.5	33.1%	29.5-36.8
Borderline	13.3%	9.2-17.5	30.9%	27.2-34.6	52.2%	49.2-55.3
Abnormal	81.4%	79.4-83.3	47.6%	44.4-50.8	14.6%	10.5-18.7
Prosocial behavior						
Normal	86.8%	85.2-88.4	80.2%	78.3-82.2	85.6%	84.0-87.3
Borderline	7.8%	3.5-12.0	12.1%	7.9-16.2	9.5%	5.3-13.7
Abnormal	5.4%	1.1-9.7	7.7%	3.4-11.9	4.9%	0.5-9.2

95% CI = 95% Confidence Interval

The ranges by parent's SDQs the Total Score was 43.3%, emotional symptoms 27.4%, conduct problems 28.2%, hyperactivity problems 20.4%, peer relationship problems 81.4% and prosocial behavior was 5.4%

among participants (Table 7). Results of multi-factorial linear regression revealed urban and rural areas, gender, age, family environment affected to adolescent's emotional and behavioral problems (Table 8).

Table 8. Some of the risk factors that was associated with emotional and behavioral problems

Parent	Regression coefficient	T-statistics	p-value
Emotional symptoms			<0.0001
Urban, rural	-0.43	-4.34	<0.0001
Gender	0.29	3.22	0.001
Age	-0.08	-2.72	0.01
Households	-0.14	-3.69	<0.0001
Marriage	-0.23	-2.03	0.043
Conduct problems			<0.0001
Urban, rural	-0.36	-5.16	<0.0001
Gender	-0.16	-2.50	0.013
Age	0.01	0.25	0.802
Households	-0.07	-2.71	0.007
Marriage	-0.07	-0.95	0.342
Hyperactivity problems			<0.0001
Urban, rural	-0.08	-1.01	0.314
Gender	-0.30	-4.18	<0.0001
Age	-0.09	-3.78	0.0002
Households	-0.12	-3.98	<0.0001
Marriage	-0.16	-1.77	0.076
Peer relationship problems			<0.005
Urban, rural	-0.15	-2.14	0.032
Gender	0.02	0.33	0.744
Age	-0.04	-2.13	0.033
Households	0.01	0.30	0.765
Marriage	-0.24	-3.07	0.002
Prosocial behavior			<0.0001
Urban, rural	0.29	3.15	0.002
Gender	0.34	4.11	<0.0001
Age	0.07	2.48	0.013
Households	0.05	1.61	0.107
Marriage	-0.02	-0.15	0.877
Total score			<0.0001
Urban, rural	-1.02	-4.83	<0.0001

Gender	-0.15	-0.78	0.435
Age	-0.21	-3.33	0.001
Households	-0.31	-4.04	<0.0001
Marriage	-0.70	-2.95	0.003

Discussion

According to the results from our study, hyperactivity abnormality was more distinct among younger adolescents when compared to survey results in UK, Norway and China [3,9-

10].As to gender, emotional abnormality was more distinct among female participants and conduct abnormality was more distinct among male participants. These results are identical to survey results of UK, Iran and China [3,10-11].

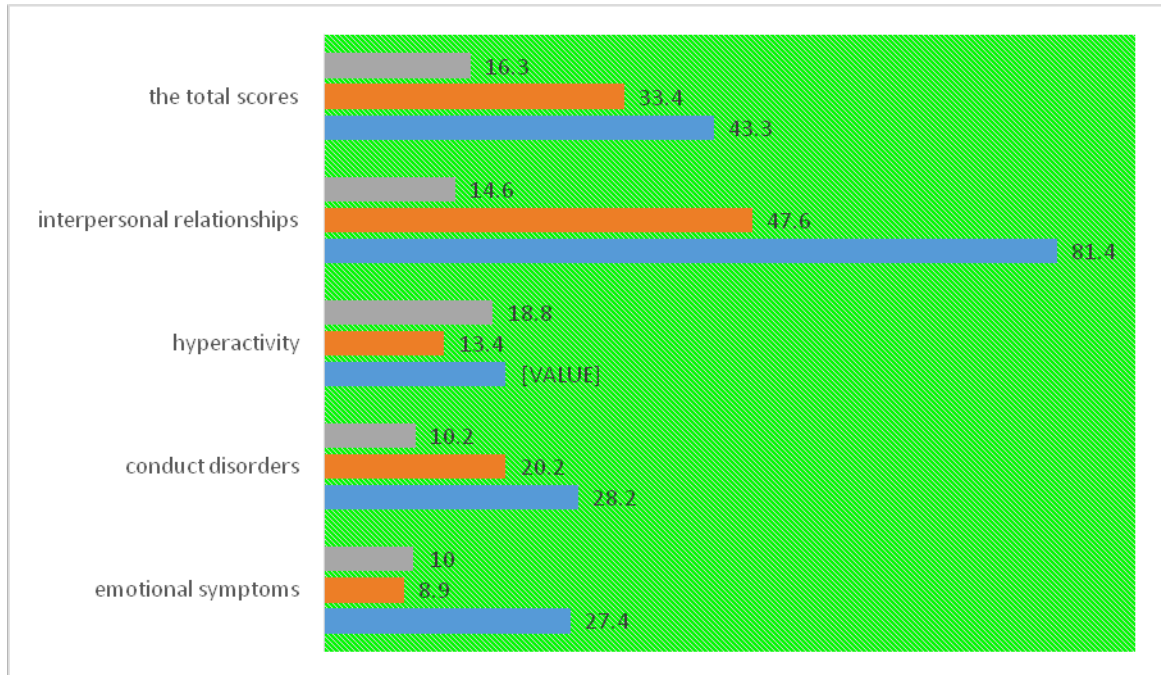


Figure 7. The by parents, teachers and self-assessments SDQs results of Mongolia

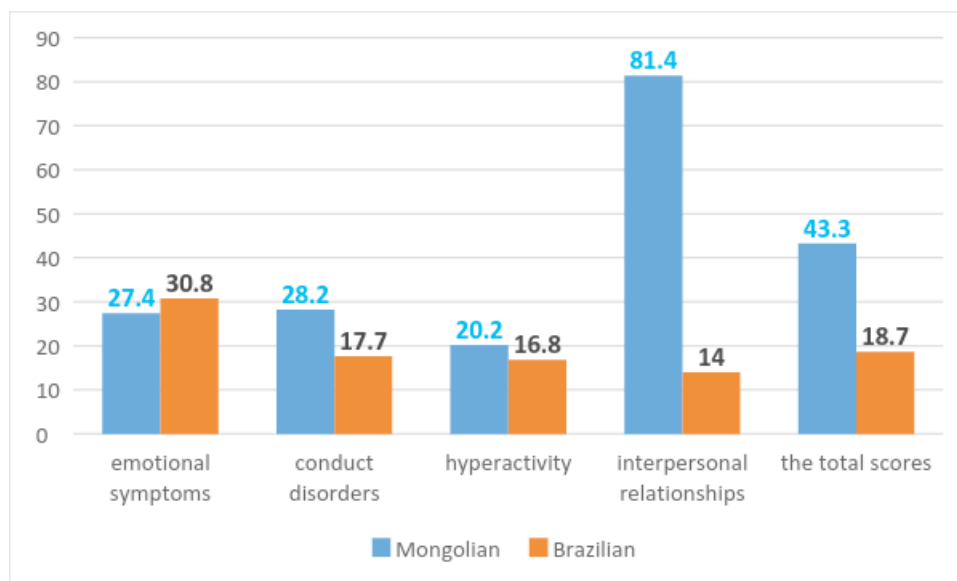


Figure 8. The parents results of comparing Mongolian survey with Brazilian survey

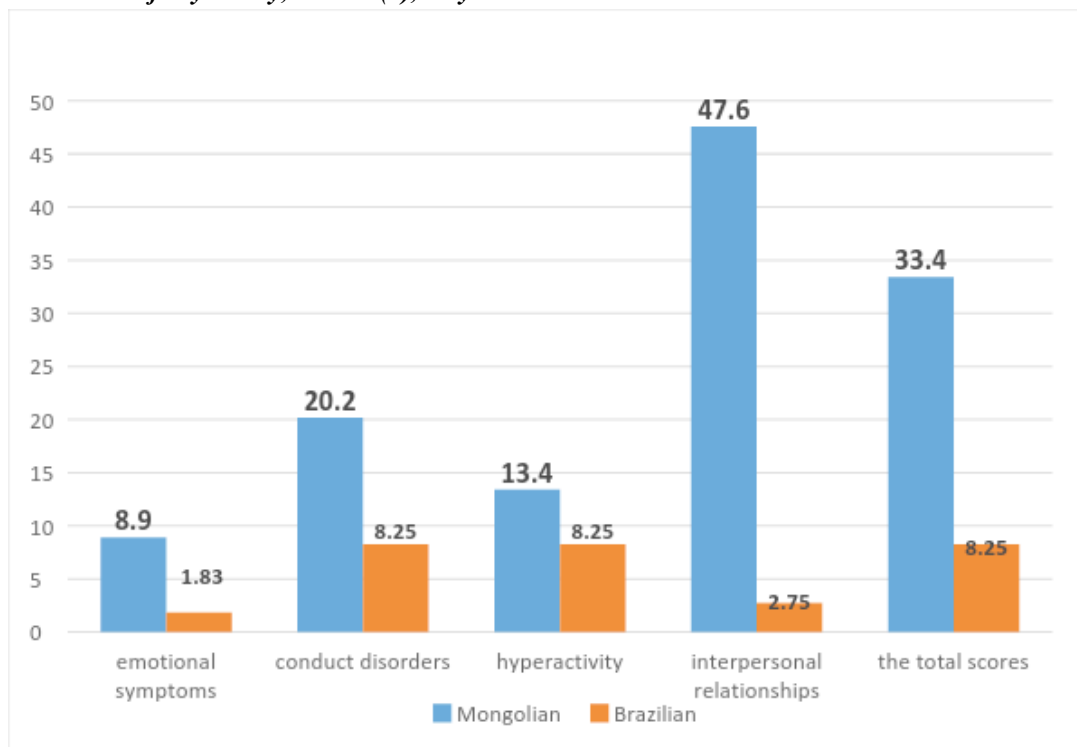


Figure 9. The teachers results of comparing Mongolian survey with Brazilian survey

Compared to Brazilian survey results from our study seemed higher in the total scores but evaluations by parents and teachers their high scored problems were approximate (Figure 8,9) [8]. Our study is valuable because this is the first time the SDQ was used in Mongolia for detecting normal and abnormal conditions of adolescents' emotions and behavior, and determining risk factors. By implementing early detection SDQs of adolescents' emotional and behavior abnormalities in the school environment, it can be significantly helpful in early detection of abnormal behavior and may be useful for prevention of pathological behaviors.

The findings from this study suggest that SDQs should be considered for community-wide screening programs to improve the detection and treatment of a child's mental-health problems. The SDQs identified that two-thirds of the questioned children and adolescents have psychiatric disorders. There were several limitations in our study. First, the SDQ was translated into the Mongolian language then retranslated to English another psychiatrist after then retranslated into Mongolian by psychiatrists because a Mongolian language SDQ was not available.

Further studies need to use SDQ via an official Mongolian version in the relevant website [7]. In conclusion, Mongolian adolescent's emotional and behavioral problems are prevalent in this country as reported by parents, teachers and the by self-assessment and was influenced by the adolescents' age, gender, family environment and living areas.

Conflict of Interest

The authors declare no conflict of interest.

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