

Original Research



Prevalence of mental health problems and associated factors among the school students aged 13-15 years in Jaffna District, Sri Lanka

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Abstract

Introduction: Mental health problems have a noticeable effect on the academic and non-academic performance of the students. Strength and Difficulties Questionnaire (SDQ) is one of the most widely used instruments for screening behavioural problems in children.

Objectives: To estimate the prevalence of mental health problems, and association of socio-cultural and school related factors on it among the school students aged 13-15 years in Jaffna District

Methods: A school-based analytical cross-sectional study was conducted among 800 students aged 13-15 years studying at government schools in Jaffna district from June 2016 to November 2017. The Tamil version of validated SDQ was used for this survey. Chi-squared test was performed and odds ratios were calculated. Independent variables with significant influence were entered to the logistic regression analysis, and individual contributions were identified. A p value less than 0.05 was considered as statistically significant and 95% confidence intervals were calculated.

Results: The study sample consisted of 408 (51.0%) boys and 392 (49.0%) girls. It showed 21.5% (n=172) of the students had mental health problems. Boys had significantly ($p<0.001$) higher mental health problems than girls (26.5% vs. 16.3%). Mean scores for conduct (2.39; SD=1.63), hyperactivity (2.66; SD=1.82), peer (2.24; SD=1.74) subscales were significantly higher among boys, while the significantly higher score was obtained in emotional (3.22; SD=2.07) and pro-social (8.48; SD=1.5) scales among females. Gender, living with both parents, education level of mother and father, supplementation of vitamin A and folic acid, and performance in mathematics had a statistically significant association with the mental health status of the students.

Conclusions & Recommendations: Boys had more mental health problems compared to girls of the same age and several socio-cultural factors associated with it.

Keywords: *Strength and Difficulties Questionnaire, mental health status, academic performance, students, Jaffna*

Introduction

Adolescents comprise one fifth of the Sri Lankan population (1). There are wide normal variations between the time of onset and the attainment of full maturity. Many adolescents face few problems during this potentially turbulent period and make the necessary adjustments without undue stress to themselves, their family or their friends. Most problems of adolescence are due to failure in understanding the anatomical, morphological and psychological changes expected during adolescence (2). In addition, adolescent behaviours, values, perceived socially accepted behaviours and judgment of own behaviours heavily depend upon the culture (3).

The World Health Organization (WHO) states the failure to recognize and address mental health problems in children and adolescents is a serious public health problem in the context of Sustainable Development Goals (3.5 and 3.4) (GDS). Mental health conditions such as depression, anxiety or other conditions may lead to behavioural problems such as tobacco, alcohol and drug use. The multi-directional linkages between mental health conditions and other health, educational, social and development problems call for evidence for action in this area (4).

It has been estimated that 2% of the total population is suffering from mental illness in Sri Lanka (5). Psychological problems increased during the middle (14%) to late (21%) adolescence (6). Adolescence is a phase of emotional sensitivity and self-centeredness. A study done in Kilinochchi among school-going adolescents revealed that girls significantly outperform boys in mental health testing using Sri Lankan Index of Psychosocial Status – Child version (SLIPS-C). However, this study also stated that there was no significant difference in externalising behaviour scores between boys and girls (7). Another study done in Northern Sri Lanka among children aged 9-13 found the prevalence of major depression to range from 0% in Valikamam West to 7% in Vadamadachi. Further, 5.7% of the children (range: 0-17.3%) were diagnosed with a dysthymic disorder, while 11.2% of the children (range: 0-25%) had suicidal tendencies in the past and 9.2% (range: 0-

23.3%) were diagnosed with current suicidal ideation according to the Mini International Neuropsychiatric Interview (MINI). They also found that when Strength and Difficulties Questionnaire (SDQ) which is a brief mental health problem screening instrument for children and adolescents was applied, the mean for internalizing problems was 4.7 (SD=3.7; range: 0-16) and the mean for externalizing behaviour problems was 5.1 (SD=3.5; range: 0-17). The average total score of the SDQ was 9.8 (SD=6.7; range: 0-32) (8). In comparison, an epidemiological survey in Sri Lanka among 1505 school children aged 12-17 years using SDQ found that 8.4% students were suffering from any psychiatric disorder, 5.8% from conduct disorder, 2.7% from emotional disorder and 0.7% from hyperactivity disorder (9).

Behaviour problems have obvious relevance to school performance (10). Therefore, good mental health status of the students is important for optimum level of educational performances. It was found to be important to explore the prevalence and the correlating factors of anxiety, depression, substance abuse, personality problems, conduct problems and pro-social behaviours among school going adolescents in Jaffna. Health education services should focus on improving mental health literacy among students at community level. Further, there is a need to analyse the correlating factors regard to mental illness of students and to construct preventive strategies to minimize the bad consequences in the society as well. This study aimed at estimating the prevalence of mental health problems and association of socio-cultural and school related factors among the school students aged 13-15 years in the district of Jaffna.

Methods

A school-based cross-sectional study was conducted among all types of government schools in all five educational zones in Jaffna District. The study population comprised the adolescents aged 13-15 years studying in government schools in Jaffna District. In this district, 27,527 students were studying in this age group during the study period. Based on an anticipated prevalence of mental health problems

among adolescents of 21% (5), margin of error of 4% and design effect of 2, the calculated sample size was 800. Forty classes (clusters) from 30 schools in Jaffna District were selected using multi-stage stratified cluster sampling. For this purpose, classes in grades 8, 9 and 10 were considered as clusters (average number of students estimated in each cluster was 20). From each selected classroom, all the students were recruited for the study. The questionnaire was administered after school hours and the students absent on the day of data collection were approached again on a feasible day.

A self-administered questionnaire was prepared in English language, translated to Tamil and back translation to English was done. The variables assessed were socio-demographic factors (gender, religion, living with parents, educational level of parents, occupation of parents, type of family and number of family members), school-related factors (type of school, availability of counselling teacher, provision of iron, vitamin C, folic acid supplementation and availability of a school health club in school) and student activities in school (extracurricular activities, participation in sports meet, participation of sports team, participation of Tamil or English Day competition, post of head student and obtaining more than 35 marks in mathematics and science subjects in the previous year third term examination). In addition, the Tamil version of validated SDQ was administered during this survey (11). This version was suitable as all the students studying in Jaffna schools were Tamils. The SDQ consists of 25 items and has 5 subscales: (a) emotional problems (5 items); (b) conduct problems (5 items); (c) hyperactivity/inattention (5 items); (d) peer relationship problems (5 items); and (e) pro-social behaviour (5 items).

Data analysis

Data were entered to Statistical Package for Social Sciences (SPSS) version 21 for analysis. Chi-squared test was performed; and odds ratio and 95% confidence interval (CI) were calculated. Multivariate logistic regression was performed to ascertain the independent factors associated with the

prevalence of mental health problems. A p value less than 0.05 was considered as statistically significant.

Results

A total of 800 students consented to participate in the study (response rate of 95.2%). The male: female ratio was nearly 1:1. All the children were Tamils. The majority of children were Hindus and studying in type 1AB schools (n=753; 94.1%). Both parents had education up to G.C.E (Ordinary Level); mothers were housewives (n=612; 76.4%); and fathers were in elementary occupations (n=607; 75.8%). More than 85% (n=701) of the children were living with both parents, while 14 (1.75%) children were residing in hostels. Majority of the children were living in nuclear families (n=597; 74.6%) and with 5-8 family members (n=570; 71.3%)

School level interventions such as adopting healthy practice through counselling and availability of school health clubs in respective schools and providing nutrient supplementation were carried out to reduce mental health problems among school students. Counselling service and health clubs of school was utilized by 92.8 (n=742), and 94.5% (n=756) of the students, respectively.

Performance of the students

Majority of the students were involved in extracurricular activities (n=615, 76.9%), while only 39.5% (n=316), 48.4% (n=387) and 27.6% (n=221) had the motivation to participate in sports meet, sports team and English or Tamil Day competition in their schools, respectively. Further, 16.4% (n=131) of the students have obtained the chance to be the head student. Regarding the academic performance of students, the majority received a pass in mathematics (n=550; 68.8%) and science (n=597; 78.3%) subjects

The results showed that 21.5% (n=172) of the students had mental health problems. Mean total difficulty score for males (10.05; SD=5.27) was significantly (p=0.004) higher than females (9.05; SD=4.66). Table 1 shows the distribution of scores of subscales of SDQ according to gender. Mean scores for conduct (2.39;

SD=1.63), hyperactivity (2.66; SD=1.82) and peer (2.24; SD=1.74) subscales were significantly higher among males than that of females, while the significantly higher score was obtained in emotional (3.22; SD=2.07) and pro-social (8.48; SD=1.5) scales among females (Table 1).

Relationships of school level mental health problems

Table 2 shows the relationship between socio-cultural factors and SDQ scores. Male students had 1.621 times higher mental health problems than females (26.5% vs. 16.3%; $p < 0.001$). Male students (OR=1.62; 95% CI=1.23-2.14), low educated fathers (OR=1.45; 95% CI=1.05-1.99) and mothers (OR=1.51; 95% CI=1.13-2.02) and living with less than five family members (OR=1.06; 95% CI=0.79-1.43) had a higher chance of obtaining abnormal SDQ scores.

The students in schools having a science syllabus, providing with nutrition supplementation such as vitamin A and folic acid and having school health club had low risk of obtaining unhealthy scores in SDQ. In contrast, the students having a counselling

facility had a high chance of getting abnormal SDQ score (OR 1.14; 95% CI: 0.66- 1.98) (Table 3). Also, the students who obtained unhealthy scores in SDQ, had not performed well in extracurricular activities, sports meet/ sports teams and post of a head student. Besides, performance in mathematics subject only had a statistically significant association with the mental health status of students ($p=0.005$). It was appreciated that motivation to participate in Tamil & English Day competition was higher among the students who obtained abnormal score in SDQ (OR=1.04; 95% CI=0.78-1.39) (Table 4).

Of the seven predictor variables included in the model (male gender, father with low education, mother with low education, living with both parents, received vitamin A, received folic acid, and studying in type 1AB schools), the results revealed that being males, father and mother as well with low education, received vitamin A and folic acid contribute to unhealthy scores in SDQ among the students (Table 5). In contrast, the students living with both parents and studying in type 1AB schools appeared to protect the students from abnormal mental health, while male gender was a significantly predictor for unhealthy scores in SDQ ($p < 0.001$).

Table 1: Distribution of SDQ scores on individual mental health problems according to gender

Symptom scale	Male ¹	Female ¹	p value
Conduct	2.39 (±1.63)	2.00 (±1.38)	<0.001*
Hyperactivity	2.66 (±1.82)	2.25 (±1.72)	0.001*
Peer	2.24 (±1.74)	1.75 (±1.41)	<0.001*
Emotional	2.86 (±1.97)	3.22 (2.07)	0.013*
Pro social	8.23 (±1.7)	8.48 (±1.5)	0.033*

¹ Mean (SD) of the scores obtained for SDQ; * Statistically significant ($p < 0.05$)

Table 2: Relationship between mental health status and socio demographic factors

Socio demographic factor		No. (%) ¹		p value	Odd ratio	95% CI
		Abnormal	Normal			
Sex	Male	108 (26.5)	300 (73.5)	<0.001*	1.62	1.23-2.14
	Female	64 (16.3)	328 (83.7)			
Religion	Hindu	155 (21.3)	574 (78.7)	0.6	0.89	0.57-1.38
	Christianity	17 (23.9)	54 (76.1)			
Father's education status	Up to O/L	132 (23.7)	424 (76.3)	0.02*	1.45	1.05-1.99
	Above O/L	40 (16.4)	204 (83.6)			
Mother's education status	Up to O/L	118 (25.0)	354 (75.0)	0.004*	1.51	1.13-2.02
	Above O/L	54 (16.5)	274 (83.5)			
Father's occupation	Officers	33 (17.1)	160 (82.9)	0.09	0.75	0.53-1.05
	Elementary occupation	139 (22.9)	468 (77.1)			
Mother's occupation	Employed	32 (17.0)	156 (83.0)	0.09	0.74	0.53-1.05
	Housewife	140 (22.9)	472 (77.1)			
Both parents living together	Yes	142 (20.3)	559 (79.7)	0.02*	0.67	0.48-0.93
	No	30 (30.3)	69 (69.7)			
Type of Family	Nuclear	128 (21.4)	469 (78.6)	0.94	0.99	0.73-1.34
	Extended	44 (21.7)	159 (78.3)			
Number of members in the family	<55	46 (22.4)	159 (77.6)	0.7	1.06	0.79-1.43
	and above	126 (21.2)	469 (78.8)			

* Statistically significant ($p < 0.05$); ¹ Based on scores obtained for SDQ

Table 3: Relationship between mental health status and school level activities

Socio demographic factor		No. (%) ¹		p value	Odd ratio	95% CI
		Abnormal	Normal			
Type of school	1AB	154 (20.5)	599 (79.5)	0.04*	0.53	0.36-0.79
	1C & 2	18 (38.3)	29 (61.7)			
Provision of iron supplementation	Yes	157 (21.0)	592 (79.0)	0.16	0.71	0.46-1.12
	No	15 (29.4)	36 (70.6)			
Provision of vitamin C supplementation	Yes	162 (21.2)	601 (78.8)	0.4	0.79	0.46-1.36
	No	10 (27.0)	27 (73.0)			
Provision of vitamin A supplementation	Yes	105 (19.1)	444 (80.9)	0.02*	0.72	0.55-0.94
	No	67 (26.7)	184 (73.3)			
Provision of folic acid supplementation	Yes	97 (18.5)	428 (81.5)	0.004*	0.68	0.52-0.88
	No	75 (27.3)	200 (72.7)			
Having a school health club	Yes	161 (21.3)	595 (78.7)	0.56	0.85	0.5-1.45
	No	11 (25.0)	33 (75.0)			
Availability of counselling teacher	Yes	161 (21.7)	581 (78.3)	0.63	1.14	0.66-1.98
	No	11 (19.0)	47 (81.0)			

* Statistically significant ($p < 0.05$); ¹Based on scores obtained for SDQ

Table 4: Relationship between mental health status and student performance

Socio demographic factor		No. (%) ¹		p value	Odd ratio	95% CI
		Abnormal	Normal			
Mathematics marks	Pass	103 (18.7)	447 (81.3)	0.005*	0.68	0.52-0.89
	Fail	69 (27.6)	181 (72.4)			
Science marks	Pass	127 (20.3)	499 (79.7)	0.13	0.78	0.53-1.16
	Fail	45 (25.9)	129 (74.1)			
Extracurricular activities	Yes	129 (21.0)	486 (79.0)	0.51	0.9	0.67-1.22
	No	43 (23.2)	142 (76.8)			
Participation in Tamil & English day competition	Yes	49 (22.2)	172 (77.8)	0.78	1.04	0.78-1.39
	No	123 (21.2)	456 (78.8)			
Participation in sports meet	Yes	61 (19.3)	255 (80.7)	0.22	0.84	0.64-1.11
	No	111 (22.9)	373 (77.1)			
Participation in school sports team	Yes	80 (20.7)	307 (79.3)	0.58	0.93	0.71-1.21
	No	92 (22.3)	321 (77.7)			
Prefect	Yes	28 (21.4)	103 (78.6)	0.97	0.99	0.69-1.42
	No	144 (21.5)	525 (78.5)			

* Statistically significant ($p < 0.05$); ¹Based on scores obtained for SDQ

Table 5: Independent factors associated with poor mental health status based on multivariate logistic regression

Associated factors	Adjusted OR	Sig.	95% CI	
			Lower	Upper
Constant	0.357	.151		
Male gender	0.524	<0.001*	0.366	0.749
Father with low education	0.960	0.872	0.583	1.581
Mother with low education	0.738	0.196	0.466	1.170
Living with both parents	1.590	0.062	0.977	2.585
Received Vitamin A	0.919	0.702	0.707	1.674
Received Folic acid	0.682	0.076	0.961	2.236
Studying in type 1AB school	1.531	0.201	0.797	2.942

* Statistically significant ($p < 0.05$)

Discussion

The SDQ is a brief mental health problem screening instrument for children and adolescents (11). In Sri Lanka, both the Tamil (12) and Sinhala (13) versions of SDQ have been used in studies, of which the Tamil version has been used effectively for screening adolescents for mental health problems for research purposes (12).

In this study, 21.5% of the students living in Jaffna District had mental health symptoms, while in other studies it was 22.1% (14) and 30% (15). It indicates that the prevalence of mental health problem among Jaffna students is around 20-30% for the past 15 years. However, such prevalence at the national level among Sri Lankan students except those living in Northern and Eastern Province was 18.9% (15). This too indicates that there is a high prevalence of mental health problems among adolescent school students in the district of Jaffna.

This study found that the prevalence of mental health problems significantly differed between males and females ($p < 0.001$), with males having a higher prevalence. This result supports two other studies carried out among 14-15-year-old children of Jaffna District, in which boys had significantly higher mental health problems than girls (14), among 13-18-year-old adolescents, where males had high abnormal mental health status compared to females (15).

In this current study, total difficulty score in SDQ was statistically significant high among males 13-15 years ($p = 0.004$), while higher prevalence of mental health problems was statistically significant among 13-18-year-old male students studying in Sri Lankan schools except in the Northern and Eastern provinces (14). Further, male students had a higher prevalence of hyperactivity, conduct and peer problems. It supports another Sri Lankan study with similar results (15). Besides, a significantly higher prevalence of emotional problems was found in female students in our study, there is no statistically significant difference in emotional difficulties score between gender. Past psychological issues such as

trauma, depression, emotional and behavioural problems might be some of the reasons for this current unhealthy score in SDQ (16). Further, memory of the war-stricken environment also could be one of the reasons (17).

Nutrition can play a key role in the onset as well as severity and duration of depression (18), and intertwined with human cognition, behaviour and emotion. The fat-soluble vitamin A plays an essential role in the inflammatory regulation of brain and leads to brain metabolism and psychiatric pathology (19). Folic acid deficiencies also have been linked to depression (20). Even though this study is a cross-sectional study, these literatures support the findings of our study that the students provided with vitamin A and folic acid within a one-year period of the study had low risk to obtain unhealthy scores in SDQ, and such associations statistically associated with the mental health status of the students.

Counsellors are a vital part of the education team and children should have adequate access to utilize counselling facility (21) while counselling services should be available to facilitate and increase mental health literacy and help-seeking regarding academic self-efficacy (22). According to the current study, counselling facility had not protected the students from obtaining unhealthy scores in SDQ. It might be due to behaviours, values and judgment of adolescents highly depended upon the socio-culture, inadequate knowledge to utilize the counselling services in school, mental health stigma and ineffectiveness of counselling service in respective schools as well. Performance of students regarding academic and non-academic as well as being affected by the lively history of mental health problems. A student's energy level, concentration, dependability, cognitive ability, and optimism could be affected by mental health problems (23). In the current study too, the students who had unhealthy scores in SDQ could not perform well in academic and athletic activities. However, these findings were not in agreement with the results of another study of students (24). Since the evidence is not conclusive, further research should be carried out considering the differences in gender, living environment, social/economic conditions, etc.

In this study, gender was a predictive factor for the distribution of unhealthy scores in SDQ. In contrast, in a survey carried out among children in the USA, this was not confirmed as a predictor (25). However, in our study, mental health status of the students did not have any impact on extracurricular activities. At the same time, the Longitudinal Study of Young People in England (LSYPE) showed that extracurricular activities buffered the effects of school and family factors on the presence of disruptive behavioural problems (26).

Conclusions & Recommendations

Even though the bivariate analysis indicated male gender, low education of parents, living with less than five family members and availability of counselling teacher as potential factors associated with unhealthy scores in SDQ, the multivariate analysis indicated only male gender as a significant factor for mental health problems among adolescents. However, the presence of a mental health problem did not reduce the motivation to participate in English Day & Tamil Day competitions in the schools. The attendance pattern of the students and facilities available in the respective schools should be focused to assess the effectiveness of interventions and rule out the effect of socio-cultural factors on the mental health status of the students studying in schools of the Jaffna district, Sri Lanka. Further, this study will be useful for the health and education sectors as well to implement programs to improve the mental health of adolescents in the district of Jaffna.

Public Health Implications

This study describes mental health problems among adolescents and its associated factors. It also states adolescent boys are having more mental health issues compared to girls and they need to be supported for better mental health outcomes. It highlights the need of strengthening the mental health services including school counseling services and public health programmes at school level to address the issues in effective manner.

Author Declarations

Competing interests: There are no conflicts of interest.

Ethics approval and consent to participate: Ethical approval was obtained from the Ethical Review Committee of Faculty of Medicine, University of Jaffna, Sri Lanka. The informed written consent was obtained from their parent /guardian, and assent from the children were obtained.

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