

ORIGINAL ARTICLE**Intelligence quotient, psychiatric co-morbidities, physical co- morbidities and correlation of depressive symptoms among children with specific learning disorder**

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ABSTRACT:

Introduction: We feel that identifying the symptoms of depression at an early stage is a crucial step to prevent the worsening of the condition. So, there is a felt need to assess the depressive symptoms among children with SLD. **Materials and Methods:** IQ was assessed by the clinical psychology unit using Malin's intelligence scale. Detailed diagnoses of cases along with comorbidities were done by the treating team comprising of psychiatrists and psychologists. These children, while reporting for treatment, was seen by the primary investigator and data collection was done. Techniques used for data collection were interview method, and record review as the primary investigator was a nursing professional. **Results:** Indicates that 32.5% of the participants were in the group of 8-9yrs, 74.1% were boys. More than half (50.8%) of the participants belong to the Hindu religion. Most of the participants (61.6%) were living in a rural area. 55.8% of the participants were elder children. 50.8% of the participants had one sibling. Most of the participants (63.3%) were maintaining peer interaction. **Conclusion:** Early diagnosis and intervention in children with SLD make a substantial improvement in self-confidence and social competence which help them in opening windows of opportunity.

Keywords: Intelligence Quotient, Psychiatric Co-Morbidities, Depressive Symptoms, Specific Learning Disorder

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INTRODUCTION

It is one of the major problems due to which many children drop out from schools at an early age.¹ It affects the brain's ability to receive, process, store and respond to information. SLD denotes a significant impairment in the acquisition and use of the academic skills of reading, writing, spelling and arithmetic, in the background of the child having normal and above normal intelligence.²

Children with SLD constitute the largest and fastest-growing population of children with special needs in schools. If left untreated or ignored, SLD can undermine a child's success during the school years. The stress and frustrations of living with SLD can trigger depressive episodes, and academic difficulties lead to low self-esteem¹ and these negative self-perceptions contribute to their problems in social and functional areas.

Recognition and appropriate treatment of childhood depression are important. Early detection, acceptance by parents and broad awareness among the academic community and above all, mature handling of the problem is needed. With a proper diagnosis, appropriate education, hard work and support from family, friends, teachers and others, an individual with SLD can lead a successful and productive life.

One possible reason for this could be attributed to the lower mental disorder morbidity and mortality among younger adolescents.^{3,4} However, this is of concern as almost half of mental health disorders occur prior to 14 years of age and tend to increase in severity with the advancement in age.⁵ Moreover, studies report that

the mean age for adolescent to develop mental disorders is around 15 years and symptoms commonly develop as early as 2 to 3 years prior to the diagnosis, suggesting that young adolescents may have already exhibited symptoms of mental disorders from as young as 12-13 years old.⁶ In addition, early onset depression among young adolescent results in undesired disease outcomes, poor academic performance, social disturbances, repeated depressive period occurrence during adulthood and increased suicidal risk.^{7,8} Therefore, it is important to examine the determinants of depressive symptoms among young adolescents which could potentially prevent depression early on. Moreover, there are limited studies that have specifically examined the determinants of depressive symptoms unique to each gender among young adolescents in Malaysia. This is an important aspect, as gender has been reported as a significant factor for depression, wherein the majority of studies reported higher risk of depression among females compared to their male counterparts. Consequently, it is crucial to determine the factors of depressive symptoms exclusive to each gender group. To address the above issues, this work determined the prevalence and factors associated with depressive symptoms among young adolescents in Malaysia. In addition, this work provides a rank order of the most important determinants for depressive symptoms among adolescents. We hypothesize several sociodemographic factors (i.e., gender, smoking,

alcohol intake, loneliness) would be significantly associated with depression among adolescents. Evidence generated from this work would highlight the burden of depression among young adolescents and form important findings regarding the factors of depressive symptoms unique to each gender. This would subsequently help decision makers in generating evidence-driven decisions to formulate depression prevention strategies and activities for adolescents.

MATERIALS AND METHODS

The sample consisted of 120 children in the age group of 8-15 years, with SLD attending the outpatient unit. SLD was diagnosed after a detailed assessment by psychiatry and clinical psychology units at IMHANS. IQ was assessed by the clinical psychology unit using Malin's intelligence scale. Detailed diagnoses of cases along with comorbidities were done by the treating team comprising of psychiatrists and psychologists. These children, while reporting for treatment, was seen by the primary investigator and data collection was done. Techniques used for data collection were interview method, and record review as the primary investigator was a nursing professional.

Subjects were selected by purposive sampling technique. The sample size was calculated based on formula $4pq/d^2(4 \times 40 \times 60 / 10^2)$ where d is 25% of P where the prevalence of a previous study was 40%.³ We have collected subjects consecutively as it is the only possible option to sample subjects from the hospital in order to have some generalizability.

MEASUREMENT INSTRUMENTS

1. Semi-structured interview schedule for the socio personal and clinical data

It consisted of two sections. Section A: Included 18 items to collect socio- personal data of children with SLD

Section B: Clinical data of children with SLD, which included six items such as diagnosis, duration of diagnosis, IQ score, psychiatric co-morbidities, Physical co-morbidities, and history of treatment.

DATA COLLECTION PROCEDURE

The investigator approached each subject individually, introduced herself and rapport established. The research objectives were clearly explained to the children, and the parents and confidentiality were ensured. Verbal assent was taken from children less than 12 years and written assent from children for more than 12 years and informed consent were obtained from the parent.

The socio personal and clinical data of the children were collected from the parent who accompanied the child by using an interview schedule and record review. The time taken for collecting socio-personal and clinical data were 10 to 15 minutes. Then Tool 2 was given to the participants and to the parent who accompanied the child. Instructions were given to complete the questionnaire by themselves. It took around 20 minutes for data collection from each sample. Investigator has not confronted with any difficulties during the data collection. Quantitative variables were summarised as mean and standard deviation, while qualitative variables were summarised as frequencies and percentages. Association of socio-demographic variables with depressive symptoms was tested using the chi-square test. P value < 0.05 was considered statistically significant.

RESULTS

Indicates that 32.5% of the participants were in the group of 8-9yrs, 74.1% were boys. More than half (50.8%) of the participants belong to the Hindu religion. Most of the participants (61.6%) were living in a rural area. 55.8% of the participants were elder children. 50.8% of the participants had one sibling. Most of the participants (63.3%) were maintaining peer interaction. Table 1

Table 1: Distribution of background variables

Characteristics	frequency	%
Age (in years)		
8-9	39	32.5
10-11	37	30.8
12-13	31	25.8
14-15	13	10.8
Gender		
Male	89	74.1
Female	31	25.8
Religion		
Hindu	61	50.8
Muslim	55	45.8
Christian	4	3.3
Place of residence		
Urban	46	38.3
Rural	74	61.6
Birth order		
First	67	55.8
Second	39	32.5
Third	8	6.6
Fourth and above		

	6	5
Number of siblings Nil		
2	25	20.8
3	61	50.8
	23	19.1
	11	9.1
Peer interaction Maintains	76	63.3
Not maintains	44	36.6

42.5% of the children diagnosed as learning disorder for <1yr.84% of the participants had IQ between 90-100. 47.5% of the children presented with psychiatric co-morbidities, 1% of them have co-morbid ADHD, six %had depressive disorder, 33.3% reported co-morbid physical illness, six % of them have seizure disorders. These data were collected with the help of record review. Table 2

Table 2: Distribution of participants based on the duration of diagnosis, Intelligence Quotient, psychiatric co-morbidities, and physical co-morbidities.

Characteristics(N=120)	Frequency	%
Duration of diagnosis(year)		
0-1	51	42.5
2-3	40	33.3
4-5	20	16.6
>5	9	7.5
Intelligence quotient		
90-100	94	78.3
>100	26	21.6
Psychiatric co-morbidities	57	47.5
Attention DeficitHyperactivity Disorder	40	33.3
Conduct disorder Depressive Disorder	13	10.8
Anxiety disorder	10	8.3
Physical comorbidities	40	33.3
Seizure Hypothyroidism	80	66.6

Table 3 shows that the mean score of depressive symptoms reported by children was 9.5 and a standard deviation of 5.3. Mean score of depressive symptoms reported by parents was the 7.3 and standard deviation of 5.6.

Table.3. Association between depressive symptoms and selected clinical variables.

Variables	df	X ²	P-value
Diagnosis- reading impairment	4	4.3	0.40
Writing impairment	4	20	0.001*
Arithmetic impairment	4	3.4	0.47
Mixed	4	5.2	0.22
IQ Score	2	0.76	0.4
Duration of diagnosis	10	12	0.30
Co morbid-ADHD	4	0.82	0.86

DISCUSSION

Children were assisted while taking up the test if they had reading difficulties, as explained earlier; hence this finding is important and shows the delay in diagnosis and intervention. These findings are consistent with a study conducted on the prevalence of depressive symptoms in children with learning disabilities in a sample of 53 children which showed that 35.85% scored in the depressed range on the Children's Depression Inventory. Comparison of the children's self-reports and parents reports of depressive symptoms in their children was not significant.⁹ The findings are also supported by a study conducted to investigate the prevalence of depression amongst LD children, 103 completed the Children's Depression Inventory and 14% of the sample scored at or above the critical cut-off,

more than in the general population. The important data which needs further research is the association between writing impairment and depressive symptoms because we know that writing especially in an academic setting and structured classroom setting is an essential part of learning, when there is an impairment in that area it might lead to comparison with peers, easy criticisms resulting in stress in child, we, however, need further research comparing domains of SLD and resulting behavioural and psychological symptoms in children.

The present study showed that 47 % of the children have a co-morbid psychiatric illness. The findings are also supported by a study result that 21 out of 88 children with learning disorder had a co-morbid psychological diagnosis.¹⁰

The present study revealed that 31% of the children had comorbid ADHD. The findings are consistent with the study to assess the association between LD and ADHD. The result showed that there is an increased prevalence of both LD and ADHD among children with early speech/language impairments.¹¹

The main strength in this study was its focus towards determining the factors associated with depressive symptoms among young adolescents accounting for the gender effect, which remains an important area to focus on. In addition, the randomly sampled participants from multiple schools across different districts would increase the generalization of the study findings in the local context. There are several limitations of the current study. First, being a cross-sectional study, it is challenging to establish a time-temporal relationship between predictors and outcome variables. Second, the ranking order of variables of importance employed in this study was based on the contribution of each variable towards improving the model ability to account for the variance of the outcome variables and therefore its interpretation must be performed with caution as there are various interpretations used in the literature when defining the importance of predictor variables. Third, the study focused on adolescents in Selangor state; therefore, generalization of findings to other states in Malaysia must be performed with caution.

In the present study, IQ profile of children shows that despite good intelligence, children have academic impairment due to LD. The findings are supported by a cross-sectional study on learning disorder in rural primary school children where it was observed that 13.8 % of those having IQ greater than or equal to 90 were found to have poor achievement in arithmetic test and teacher's assessment.

CONCLUSION

The study revealed the prevalence of depressive symptoms among children with SLD. Most of the parents were unaware that their children are suffering from depression. Necessary steps must be taken to make aware of the parents regarding depressive symptoms in children with learning disorders. Early diagnosis and intervention in children with SLD make a substantial improvement in self-confidence and social competence which help them in opening windows of opportunity.

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