

Psychosocial Profile of Preschool Stuttering Children with Co-morbid Psychiatric Disorders

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Abstract

Background: Stuttering is a complex multidimensional disorder that presents due to complex and dynamic cooperation of several factors like genetic predisposition, motor ability, language skills, cognition and temperament. **Objective:** This study was conducted to explore a characteristic psychosocial profile for stuttering children who are more prone to develop co-morbid psychiatric disorders. **Patients and Methods:** The study was carried on 104 preschool children; 65 children with stuttering (with mean age of 51 months and mean IQ of 93) and 38 children without manifestation of stuttering acting as a control group (with a mean age 59 months and mean of IQ 95). The children in both groups were subjected to psychometric evaluation, language test, speech evaluation including stuttering severity tests as well as the initial assessment for the prevalence of psychiatric disorders and variable psychosocial factors. Then the children in the stuttering group were subdivided into two subgroups: stuttering only (Group A) and stuttering with comorbid psychiatric disorder (Group B). Children in (Group A) and (Group B) were compared as regard their communication functions and variable psychosocial factors. **Results:** Statistically significant differences were detected between Stuttering group and control group as regard the percentage of associated psychiatric disorders. Attention deficit hyperactivity disorder (ADHD) was the commonest comorbid psychiatric disorders detected among the stuttering group. Statistically significant relations were detected between stuttering with comorbid psychiatric disorders and certain psychosocial factors as well as the duration and severity of stuttering. **Conclusion:** Childhood stuttering disorder is a heterogeneous disorder which could be viewed along a spectrum with different subtypes. The co-morbidity with psychiatric disorders may be considered as a specific subtype which may unfortunately be missed during the assessment although its great impact on the course and prognosis of

Key words: *Stuttering, Psychosocial background, Psychiatric disorders, ADHD, psychometry.*

Introduction

The American Speech- Language Hearing Association (ASHA) defined stuttering as a speech event that contains intraphonemic disruption, part-word repetitions, monosyllabic whole word repetitions, prolongations and silent fixations (blocks). This may be or may be not accompanied by secondary behaviors that are used to escape and / or avoid these speech situations¹. Stuttering affects approximately 1% of the general population². The onset of stuttering may occur at any time during childhood between the beginning of multiword utterances (around 18 months) and puberty (11 or 12 years). It is most likely to occur between ages 2 and 5 years^{3,4}.

Eighty percent of these cases persist after 6 years of age and its effect on personality and life is significant and considerable if isn't deleterious⁴.

Stuttering is a complex multidimensional disorder that presents due to complex and dynamic cooperation of several factors like genetic predisposition, motor ability, language skills, cognition and temperament⁵⁻⁷.

Data from clinical and epidemiological samples show that stuttering is often co-morbid with Axis I psychiatric disorders such as, Attention Deficit Hyperactivity Disorder (ADHD), Depression, Conduct disorders, anxiety and anxiety related disorders including social phobia and Obsessive Compulsive Disorders (OCD)⁷⁻¹¹. Unfortunately, the expected number of stutterers with co-morbid disorders is somewhat unclear and seems to vary considerably

among studies⁸. The concomitant of stuttering with other disorders exaggerates the disability of stuttering and exerts more negative influences on individual's academic occupational, social, emotional and psychological adjustment. So, once stuttering is associated with a psychiatric disorder, the clinicians will be confronted with a great challenge of deciding how to diagnose and manage the co-morbid disorder and stuttering when both are identified¹³.

Certain factors, such as socioeconomic status, family history of psychiatric disorders, parenting style and temperament are known risk factors for the development of psychiatric disorders¹⁴. Furthermore, these factors have been reported to have a role in the development and maintenance of stuttering¹⁵. That's why these factors were taken into consideration in the present study.

The aim of this work was to assess the frequency of psychiatric disorders among preschool stuttering children and to explore the presence of any specific psychosocial profile that characterizes those patients into a specific subtype which requires different type of management procedures.

Subjects and Methods:

Subjects of this study were among children who presented to outpatient clinics of both unit of phoniatics, E.N.T. department and outpatient clinic of psychiatric department at Mansoura University Hospitals in the period from November 2008 through May 2009. These subjects, who constituted Group 1, were children ranging in age between 3-6 years and they all received the diagnosis of stuttering. They were 65 children. All the parents of children gave a signed consent for the purpose of the study and the protocol had been explained to them before any intervention was performed. Another 38 children with normal speech and who matched group 1 children for age, sex and IQ, constituted Group 2 and acted as a control. Exclusion criteria for all participants selected for the study included children with mental retardation, hearing impairment, or psychiatric disorders due to general medical conditions.

All stutterers and normal children were subjected to an initial assessment for detection of the type of the temperament and parental style and for estimating the presence of associated psychiatric disorders. After the initial assessment, group 1 children were classified into two subgroups; stutterers only (group A) and stutterers suffering from psychiatric disorder in addition to their stuttering (group B). Both sub groups were compared regarding their language skills, severity of stuttering and other psychosocial factors selected for this study which included: socioeconomic level, intellectual skills, language skills, family history of psychiatric disorders, type of the temperament and parental style.

1) Protocol of assessment of stuttering included:

- i. History taking (Personal history, Complaint, Developmental history, History of present illness).
- ii. General examination.
- iii. Vocal tract examination.
- iv. Evaluation of communicative function:
 - *Language assessment*: using the Standardized Arabic Language Test¹⁶ and Mansoura Arabic articulation test and the total language Age(LA) was obtained.
 - *Speech assessment*:
 - a- Visual perceptual assessment (eye contact and involuntary movement)
 - b- Auditory Perceptual Assessment (APA) will be used as subjective tool for evaluation of the patients' speech (both automatic, spontaneous speech and reading) through listening to every patient in a free conversation and a recorded speech sample.
 - c- Formal Testing: All patients will be subjected to assessment of the severity of stuttering using Stuttering Severity Instrument for Children and Adults "SSI-3" in which the frequency of stuttering events, estimated average duration of the longest stuttering event and the observable physical concomitants including distracting sounds, facial grimaces, head movements and movements of extremities were converted to scale score¹⁸. To get an overall severity score, the scores for the three parameters (frequency, duration and physical concomitants) were added. The severity of stuttering can be ascertained by comparing this score to the age appropriate normative data in the conversion tables. The score can be described as a percentile or grade (very mild, mild, moderate, severe or very severe).

2) Clinical assessment of psychiatric disorders by Structured Clinical Interview for DSMIV-Childhood Diagnoses "KID-SCID"¹⁹.

3) Evaluation of psychosocial factors: that include;

- i. Assessment of intellectual level by using Stanford Bient intelligence scale, and the social age using Vineland Social Maturity scale(VSMS)^{20,21}. The mental age (MA), inelegance quotient (IQ) and the social age (SA) were obtained.
- ii. Social Class Classification: The individuals were classified into social class I, II, II and IV according to an Egyptian classification of Fahmy & El-Shirbini, 1988²².
- iii. The Very Short Form of the Children's Behavior Questionnaire Arabic form which is a validated very short form of the Standard Children Behavior Questionnaire for assessment of dimensions of temperament for the preschool children^{23,24}. It consists of three scales completed by the parents and used for assessment of three dimensions of temperament: surgency, negative affect and effortful control. Surgency dimension is characterized by high positive loadings on the impulsivity, high intensity pleasure and strong negative loadings on the shyness scale. Negative affectivity is characterized by high positive loadings on sadness, fear, anger/frustration and negative loadings on falling reactivity/soothability. The third broad dimension is

effortful control, which contains high positive loadings on inhibitory control, attentional control, low intensity pleasure, and perceptual sensitivity²³.

iv. Parenting Attitude Research Inventory (PARI) Arabic form which consists of three subscales represent the parental attitudes which include: authoritarian, authoritative and permissive types^{25,26}.

Statistical analysis: Data was analyzed using SPSS (Statistical Package for Social Sciences) version 10. Qualitative data was presented as number and percent. Comparison between groups was done by Chi-Square test. Student t- test was used to compare between two variables. F-test (One Way Anova) was used to compare between more than two variables. Pearson’s correlation coefficient was used to test correlation between variables. $P < 0.05$ was considered to be statistically significant.

Results:

Data reduction followed two main lines:
 A- Comparative analysis between the stuttering group and the control group: (Tables 1, 2, 3, 4).
 B- Comparative analysis between stuttering sub group without comorbid psychiatric disorders (Group A) and stuttering sub group with comorbid psychiatric disorders (Group B) (Tables 5, 6).

No significant differences were found between groups, 1 and 2, concerning their age, gender, social class mental age and IQ. On the other hand, a highly significant difference was obtained between both groups in the social age ($P < 0.001$) and language age ($P < 0.001$) (Table 1).

	Stuttering group		Control group		T	P value	
	Mean	SD	Mean	SD			
Age(in months)	56.12	9.68	50.92	19.24	1.555	0.127	
Gender	Male	43	66.2	29	76.3	1.177	0.278
	Female	22	33.8	9	23.7		
IQ	92.63	6.44	95.11	6.31	1.896	0.061	
MA(in months)	54.12	11.18	49.27	13.86	1.836	0.071	
SA(in months)	60.46	12.03	48.89	14.45	4.367	< 0.001**	
LA(in months)	61.66	11.10	32.97	11.25	12.595	< 0.001**	
Social class	21.09	5.17	22.71	4.18	1.640	0.104	

Table 1: Comparison between patients and control as regard age, gender, IQ, social age, language age and social class
 * Significant $P < 0.05$ ** highly significant $P < 0.01$
 MA= mental age SA= social age LA= language age

Comparison between the stuttering group and the control group revealed a significant difference regarding the total percentage of associated psychiatric disorders ($p = 0.002$). Attention deficit hyperactivity disorder (ADHD) (10.8%), social phobia (7.7%), oppositional defiant disorder (7.7%),

and obsessive compulsive disorder (OCD) (6.2%) were the commonest co-morbid psychiatric disorders detected among the stuttering group (Table 2).

	Stuttering group (n = 65)		Control group (n = 38)		T	P value
	No	%	No	%		
Total % of associated psychiatric disorders	20	30.8	2	5.3		0.002**
ADHD	7	10.8	2	5.3		0.002**
Social phobia	5	7.7	0	0	3.072	0.080
Oppositional	5	7.7	0	0	3.072	0.080
OCD	4	6.2%	0	0	2.433	0.119

Table 2: Prevalence (Frequency) of associated psychiatric disorders among patients and control
 * Significant $P < 0.05$ ** highly significant $P < 0.01$
 ADHD= Attention Deficit Hyperactivity Disorders
 OCD= Obsessive Compulsive disorders

There was no significant difference detected between the patients and control regarding the type of the parental attitude ($p = 0.083$) (Table 3).

Parenting attitude	Stuttering group		Control group		T	P value
	No	%	No	%		
Authoritative	16	24.6	16	42.1	4.983	0.083
Authoritarian	23	35.4	14	36.8		
Permissive	26	40	8	21.1		

Table 3: Type of parental style in patients and control
 * Significant $P < 0.05$ ** highly significant $P < 0.01$

Significant differences were observed in both negative affect ($p = 0.001$) and effortful control ($p < 0.001$) of the temperamental dimensions (Table 4).

Temperament	Stuttering group		Control group		T	P value
	Mean	SD	Mean	SD		
Negative Affect	4.03	0.95	4.68	0.83	3.522	0.001**
Surgency	3.85	0.76	3.70	0.57	1.142	0.256
Effortful Control	3.92	0.97	4.94	0.55	6.837	< 0.001**

Table 4: Type of temperament in patients and control
 * Significant $P < 0.05$ ** highly significant $P < 0.01$

Comparison between group A and group B revealed highly significant differences between both groups concerning severity of stuttering (SSI3) ($p < 0.001$) and temperament (effortful control) ($p < 0.001$). Also significant differences were detected between both groups regarding duration of illness ($p = 0.028$), IQ ($p = 0.025$), MA ($p = 0.041$), SA ($p = 0.039$) and LA ($p = 0.007$) with no statistical difference in social class ($p = 0.220$) (Table 5).

	Group A (n = 45)		Group B (n = 20)		T	P value	
	Mean	SD	Mean	SD			
Age (in months)	60.58	9.25	56.63	10.07	1.496	0.143	
IQ	94.29	6.34	90.90	5.06	2.299	0.025*	
MA(in months)	57.78	10.37	50.16	14.26	2.150	0.041*	
SA(in months)	62.80	11.28	55.46	12.44	2.258	0.029*	
LA(in months)	64.25	11.94	57.25	7.91	2.790	0.007*	
SSI3	36.75	16.65	67.06	17.18	6.627	<0.001**	
Duration (m)	23.59	9.93	29.00	8.36	2.269	0.028*	
Social Class	21.78	4.61	19.92	5.93	1.245	0.220	
Temperament	Negative Affect	3.77	0.60	4.06	0.98	1.225	0.228
	Surgency	4.01	0.87	3.83	0.76	0.842	0.402
	Effortful Control	4.74	0.51	3.82	0.97	4.003	<0.001***

Table 5: Comparison between stuttering children with (group B) and without (group A) associated psychiatric disorders as regard age, IQ, MA, SA and language age, severity of stuttering, duration of illness, social class and type of the temperament.
 * Significant $P < 0.05$ ** highly significant $P < 0.01$
 MA= mental age SA= social age LA= language age
 SSI3= Stuttering Severity instrument

Authoritarian parental attitude was significantly higher among group A ($p = 0.003$). On the other hand, no significant difference was observed in the family history of psychiatric disorder (Table 6).

		Group A (n = 45)		Group B (n = 20)		T	P value
		No	%	No	%		
Family history of psychiatric disorders		28	62.2	13	72.2	0.566	0.452
Parenting attitude	Authoritative	15	33.3	1	5	11.896	0.003*
	Authoritarian	18	40	5	25		
	Permissive	12	26.7	14	70		

Table 6: Comparison between stuttering children with (group B) and without (group A) associated psychiatric disorders regarding family history of psychiatric disorders and type of parenting attitude.
 * Significant $P < 0.05$ ** highly significant $P < 0.01$

Discussion:

Clinically, comorbidity means that the person has more than one condition in which their symptoms and manifestations are overlapped and blended together to create a unique clinical picture for the individual^{7,27}.

Consistent findings in the literatures on stuttering comorbidity are few but significant percentage of individuals who stutter exhibit comorbid psychiatric disorders^{7,27}. Different explanations have been proposed to understand the etiology of this comorbidity. Could it be that a stuttering isn't really coming from the speech disorder but it rather some sort of Attention Deficit

Hyperactivity Disorders (ADHD) manifestations as the child has decreased capacity to suppress inappropriate approach responses or could it be a problem of Obsessive Compulsive Disorders (OCD) where the repetitions are merely the result of inability to continue to the next step segment⁷. Other researches suggested the presence of common biology for this comorbidity as similar basal ganglia circuits were founded to be involved in stuttering, ADHD and other disruptive behavior disorders¹². The last explanation which is the weakest one, mentioned the comorbidity as just accidental association⁸. The results of this work showed 30.8% of the preschool stuttered children have at least one comorbid psychiatric disorder with a significant difference between children who do not stutter. Similar results found in previous studies of^{28, 29}.

In agreement with previous reports of Counteure, 2001, and Healey et al, 2003, ADHD was the most common comorbid condition identified (10.8%)⁸. The comorbid rate of oppositional defiant disorder (7.7%) and obsessive compulsive disorder (6.2%) and anxiety disorders (7.7%) were also consistent to great extent with similar study¹⁰. However, the comorbid rate of the comorbidity with social phobia was significantly lower in this study (7.7%) compared with previous results (44%) of Stien et al, 1996 and Messenger et al, 2004^{11,30}. One explanation for this difference could be rated to the fact that most of these studies were conducted on school children who are more indulged in social interactions. Del Nil et al, 1991, and Vanrycheghen et al, 2001, found that stutterers negative or mal attitude towards speaking appear to worsen with age where the child becomes concerned with other's criticism^{31,32}.

On examining the impact of comorbidity on stuttering children, the group of stuttering with psychiatric comorbidity showed significantly higher degree of severity and longer duration of illness. This may interpreted by the negative impact of the associated psychiatric disorders on the course and prognosis of stuttering disorder.

While the etiology of comorbidity is unknown up till now, in this work our focus was directed to the assessment of the risk factors of psychiatric comorbidity among stuttering children.

Regarding the role of family history of psychiatric disorders, the result of this work was surprising. There was no significant relation detected between the presence of comorbid psychiatric disorders and the presence of

family history which may exclude the family history from the risk factors of comorbidity. The interpretation may be due to the underreporting of the family history of psychiatric disorders because of the usual fear of stigmatization in our culture. Furthermore, family history alone doesn't fully account for the developmental pathways and the disability may be more complex and multifaceted than suggested by genetic factor alone.

Results of intelligence tests showed that IQ, MA scores were more significantly lowered among stuttering group with co-morbid psychiatric disorders, a finding which may shed light on the deficient skills among those children which may interfere with their coping mechanisms. Koenea et al, 2008, referred to IQ as an indicator of cognitive reserve which is inversely related to the risk of psychiatric disorders in children³³.

Social age was significantly different between stuttering and control groups and more significantly different between stuttering group with co-morbid psychiatric disorders and stuttering group without co-morbid psychiatric disorders. Stuttering children are lacking the social skills experience mainly because their total dependency on their parents in dealing with people and colleagues hence they would be more isolated socially which may increase the proneness for development of psychiatric disorders. On the other hand the presence of co-morbid psychiatric disorder adds more impairment on the social skills of stuttering children.

So, the stuttered children mainly those with co-morbid psychiatric disorders were having less intellectual skills and they were more environmentally deprived from the language exposure tasks that promote language acquisition. This can be explained the results of language test as LA score was significantly lowered among stuttering group with comorbid psychiatric disorders (Group B) in comparison with stuttering group without comorbid psychiatric disorders (Group A) as well as between stuttering group and control group. Watkins et al, 1999, found a higher incidence of language problems in children who stutter namely word finding difficulties, emotionally loaded words and complex syntactic sentences³⁴.

Socioeconomic status is an important variable for predicting children cognitive competence. It is also powerful prediction of the social emotional functioning³⁵⁻³⁷. There was no significant difference detected between stuttering group with and without psychiatric disorders as regard the social class which may be explained as the main bulk of the sample was from the University hospital attendances which may lead to referral bias.

Temperament refers to biologically based individual differences in behavioral characteristics or reactions that are present in infancy and are relatively stable across context and overtime^{38, 39}. It has been suggested that child with a vulnerable or sensitive temperament may be prone for developing and continuing stuttering^{2, 40}.

In this work, assessment of temperamental dimensions of the stuttered children in comparison to the control group showed that stuttering children were less adaptable, easily frustrated and more distractible which are consistent with findings of Embrechet et al, 2000, and Howell et al, 2004^{37, 42}. However, Andreson et al, 2003, found children who stutter to be less distractible while Wakaba, 1998, described them as more sensitive anxious, withdrawn and introverted^{43, 44}. The lack of consistency between studies on temperament may be a reflection of the heterogeneity of the disorder.

On examining the temperament among the group B, they were found to be more distractible with less inhibitory and attention control than the children who stutter only (group A), this is can be described in many studies in association with attention deficit hyperactivity disorder and disruptive behaviors which were the most prevalent psychiatric disorders in this study. It seems that the joint relation of the certain psychiatric disorders to specific temperamental dimensions may account for the characteristic pattern of comorbidity. However, these findings support the hypothesis that interactions among temperament dimensions during development influence comorbidity⁴⁴.

Parenting is a complex activity that includes many specific behaviors that work individually and together to influence child outcome²⁵. Categorizing parents according whether they are high or low on parental demandingness and responsiveness creates a typology of three parental attitude: authoritarian, authoritative and permissive⁴⁵. Each of these parenting attitudes reflects different naturally occurring patterns of parental values, practices and behavior and a distinct balance of responsiveness and demandingness⁴⁶.

Few studies have investigated the role of parental attitude in onset and maintenance of stuttering and found no difference between children who stutter and who do not stutter. This finding was replicated again in this work. However, harsh, authoritative parenting style was highly significantly detected among the parents of stuttering group with co-morbid psychiatric disorders (group B) in comparison to parents of stuttering group without comorbid psychiatric disorders (group A) which may be interpreted by the high correlation between this type of parenting attitude and the most common psychiatric disorders reported in this study (ADHD and oppositional defiant disorder). Evidence that suggest a change the parent's 'interaction attitude will make their role more effective in parent-child interaction skills management as a basis for facilitating the development of fluency skills in those children⁴⁷.

Finally, in a group of stuttered children with comorbid psychiatric disorders, some psychosocial risk factors should be considered. The presence of difficult temperament might elicit ineffective parenting, and poor coping which when acted upon by low intellectual abilities and harsh parental attitude, a coercive cycle will start

making those children more prone to the development of psychiatric disorders which in turn maintain and ultimately may exacerbate the stuttering.

Conclusion & Recommendations:

Childhood stuttering disorder is a heterogeneous disorder which could be viewed along spectrum with different subtypes. The comorbidity with psychiatric disorders may be considered as a specific subtype which may unfortunately be missed during the assessment in spite of its great impact on the severity and chronicity of the disorder. Early recognition of this subtype and the associated risk factors could optimize the delivery of clinical resources and different therapeutic approaches including psychopharmacological intervention, individual and family assessment and supportive interventions.

Further studies are indicated to solve the conflict of whether these association between stuttering and psychiatric disorders is a cause, or a result or just comorbidity; a puzzle that seems non-resolvable.

Limitations:

The attitude and reactions of stuttered children to interpersonal verbal communication (communication attitude) are the important psychosocial factors which were not covered in this research. Unfortunately, the scales used for attitude assessment require a child to have the ability to read and understand the concept covered by test items and consequently it isn't generally accurate when used with children younger than 7 years of age.

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