Original Article

Dysfluency among children of internally displaced population

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Objective: To determine the frequency of symptoms associated with dysfluency among children of internally displaced persons (IDP).

Methodology: This cross-sectional survey was conducted at primary, middle and high schools of North Waziristan Agency from 1st July to 31st December 2017. Sample recruited included Pushto speaking 400 children, of either gender with an age range of 5 to 16 years. They were subjected to speech assessment and symptoms recorded as per "Continuum of Dysfluent Behavior" chart. Data were analyzed by SPSS 20.

Results: Sample population included 78% males and 22% females with a mean age of 11.02 years**.** A high prevalence of dysfluency (61%) was recorded with frequency of typical dysfluency being 52.25%, and atypical dysfluency being 8.75%. In typical dysfluency, commonest symptom was Interjection (38.57%), followed by hesitation (18.18%) and one syllable word repetitions (11.57%).

Conclusion: Symptoms of typical dysfluency including interjection and hesitation were the commonest among children of IDP's living in stressful situation.

Key Words: Atypical dysfluency, disasters, internally displaced persons (IDPs), interjection, stuttering severity, typical dysfluency.

INTRODUCTION

Developmental dysfluency is temporary alteration in speech fluency when children undergo growth spurts.[1] Although71.40% children outgrow their developmental dysfluency, however in some it may persist and is labeled as stammering, also known as atypical dysfluency.[2] Atypical dysfluency is more common in males and has a worldwide incidence of 1%,[3,4] with the sufferer facing communicational difficulties.[3-5] An Australian study involving migrants reported that stuttering and migration were intrinsically linked with identity of one's-self and negatively affected communicational skills.[6] Developing countries like Pakistan have faced major migration issues like internal displacement of population following law and order situations.[7]

Dysfluency may beaccompanied by secondary symptoms like physical tension, secondary behaviors, and avoidance of sounds, words, or speaking situations.[8] Most children pass through a phase of dysfluent speech sometime during their early period of development.[3] Different protocols are used to differentiate typical and atypical dysfluency.[9] Clinically, dysfluency is considered atypical whenthere is within word dysfluency while it is labeled typical when dysfluency occurs between words.[10]

Commonly, Typical dysfluency is assessed as hesitation, injections, revision of phrase or sentences, phrase repetitions, one syllable word repetitions with two or less repetitions per instance with even stress and no tension. Atypical dysfluency is taken as one syllable word repetitions with three or more repetitions per instance or uneven stress, part-word syllable repetitions with three or more repetitions per instance or uneven stress, sound repetitions, prolongations, blocks and increased tension. The time pattern is also affected in dysfluency, with stutterers being three times more dysfluent with significantly more repetitions per instance than non-stutters.[11,12]

Stutters are less able to perform fluent flow of syllables from the beginning.[13] Hence, early identification of atypical cases of dysfluency is essential to avoid future communicational impairments.[14]Though there is no consensus as regards pathophysiology, however both environmental and genetic factors are considered to be involved, with social and emotional issues responsible for initiation and maintenance of dysfluency.[11,14,15] Emotional and psychological issues prevail in disaster situations specially children from broken families, loss of a beloved one, families with conflicts and inappropriate attitudes can lead to fluency disorders like stammering.[16] Such concomitants are a hallmark of displacement situations especially in worn torn areas with IDPs i.e. within internationally recognized borders of states as well.[17] The aim of this study was to determine the frequency of symptoms associated with dysfluency among children of internally displaced persons (IDP).

METHODOLOGY

Thiscross sectional survey involving 400 students from primary, middle and high schools of North Waziristan Agency, which was performed from 1st July to 31st December 2017. Sample comprised Pushto speaking children of registered IDPs of either gender; aged 5 to 16. Children with any other disability were excluded. A sample size was calculated using raosoft online calculator with a confidence level at 95% and margin of error 4.8%.

Study was had ethical approval of institutional research board of Isra University (registration number 1409-M. Phil SLP-001 dated 27th July 2017) and informed consent of the parents was obtained. Basic demographic sheet and continuum of Dysfluent Behavior Chart was used for data collection.

Statistical Analysis: Data were coded in Microsoft Excel-Worksheet. Statistical analysis was done using SPSS 20. Gender and age association was analyzed using Chi-Square and $p < 0.05$ was taken as statistically significant.

RESULTS

Out of 400 children, majority being males (78%) with male female ratio of 3.54:1. Mean age was 11.02 years. Dysfluency was highly prevalent (61%, n = 244) in sample population. Among the symptoms of typical dysfluency commonest symptom was interjection (38.57%) followed by hesitation (18.18%), one syllable word repetitions (11.57%) (Table 1).

In typical dysfluency group, the difference between gender and hesitation was statistically significant ($p = 0.014$) with more males having symptom of hesitation, while among the atypical dysfluency group no gender association was found. Also, typical dysfluencies revealed significant age association with significant difference between age group and hesitation ($p = 0.002$), interjection ($p = 0.00$), phrase repetition ($p = 0.03$), and one syllable word repetition ($p = 0.002$), while in the atypical dysfluency group no age association was found (Table 2).

Table 1: Symptoms associated with typical and atypical dysfluency.

Dysfluency	Symptoms	N	%
Typical	Hesitations (Silent Pauses)	66	18.18
	Interjection of Sounds, Syllables or Words	140	38.57
	Revisions of Phrases or Sentences	17	4.68
	Phrase Repetitions	11	3.03
	Monosyllabic word repetitions. Two or less repetitions per instance, even stress	42	11.57
	Part-word syllable repetitions. Two or less repetitions per instance, even stress	0	
	Total	276	76.03
Atypical	Monosyllabic word repetitions. Three or more repetitions per instance or uneven stress	9	2.48
	Part-word Syllable Repetitions. Three or more repetitions per instance or uneven stress	24	6.62
	Sound Repetitions	8	2.2
	Prolongations	14	3.86
	Blocks	25	6.88
	Increased Tension	7	1.93
	Total	87	23.97

Table 2: Symptoms of dysfluency in relation to age and gender.

Dysfluency		Gender	Dysfluency		P-Value	Age Group	Dysfluency		P-Value
Type	Symptom		Yes	No		(Years)	Yes	No	
Typical	Hesitation	Male	59	253	0.014	5 – 11	33	234	0.002
		Female	7	81		12 – 18	33	100	
	Interjection	Male	104	208	0.188	5 – 11	121	146	0.001
		Female	36	52		12 – 18	19	114	
	Revision	Male	13	299	0.749	5 – 11	9	258	0.363
		Female	3	85		12 – 18	7	126	
	Phrase	Male	9	303	0.757	5 – 11	4	263	0.03
		Female	2	86		12 – 18	7	126	
	One syllable	Male	36	276	0.202	5 – 11	36	231	0.002
		Female	6	82		12 – 18	4	129	
	Part word	Male	0	312	-	5 – 11	0	267	-
		Female	0	88		12 – 18	0	133	
Atypical	Syllable	Male	9	303	0.107	5 – 11	5	262	0.471
		Female	0	88		12 – 18	1	132	
	Part word	Male	26	286	0.113	5 – 11	14	253	0.537
		Female	2	86		12 – 18	9	124	
	Sound	Male	8	304	0.129	5 – 11	4	263	0.31
		Female	0	88		12 – 18	4	129	
	Prolong	Male	11	301	0.558	5 – 11	7	260	0.315
		Female	2	86		12 – 18	6	127	
	Blocks	Male	23	289	0.081	5 – 11	14	253	0.239
		Female	2	86		12 – 18	11	122	
	Increases	Male	6	306	0.619	5 – 11	5	262	0.791
		Female	1	87		12 – 18	2	131	

DISCUSSION

In the current study, dysfluency was highly prevalent (61%). One study puts the lifetime incidence to 10% most children.[18] The high prevalence in our study may be due to the vulnerability of children in disaster situations.[15] Typical dysfluency symptoms were more common (76.03%), while symptoms of atypical dysfluency was less common (23.97%). In contrast to our study, a Turkish study reported that frequency of atypical dysfluency was significantly higher than typical dysfluency.[19] In a study by Nogueira et al, atypical prevalence was 5.23% and typical dysfluency was 5.5%.[20]

Senkal et al reported higher frequency of atypical dysfluency with prolongations (24%), sound/syallable repetitions (49%), while typical dysfluency showed whole word repetitions (poly) (16%), whole word repetitions (mono) (9%) and expressive repetition in 2%.[19] In a local study, by Buttet al a higher occurrence rate of common symptoms of stuttering were reported.[21] The present study had repetition of sounds or syllables 79.17%, prolongation 50%, blocks 87.5%, pauses 75%, circumlocution 33.3% and physical tension 87.5%.

Prasseand Kikano reported that primary symptoms of stuttering repetition, prolongation of sounds or words are most common occurring primary symptoms while

physical concomitants, head jerking or eye blinking are the secondary symptoms of stuttering.[22] Stutters are less able from the beginning to perform fluent flow of syllables with mean percent syllables dysfluent for stutterers was 9.88 compared to 1.24 for non-stutters.[12]

In the current study the male to female ratio was 3.54: 1. While in a study, Butt et al, reported male-female ratio was 2:1.[21] In the current study, typical dysfluency was more common in males suffering from hesitation ($p < 0.014$), However, in atypical dysfluency no gender association was found. In contrast, in a study by Hedenqvist et al, higher number of dysfluencies were noted in females (17%) including more pauses, prolongations and sound repetitions as compared to boys (14.6%) who had more word repetitions.[23]

In typical dysfluency, statistically significant association was noted for age with symptom of hesitation, interjection, phrase repetition and one syllable word repetition, while no association of age was noted for symptoms of atypical dysfluency, with symptoms extend into adulthood.

Establishing correct diagnosis in a timely manner and early intervention with speech therapy is critical for prevention of extension of the symptoms into adulthood, with no significant evidence in favor of pharmacotherapy.[14] A number of limitations were faced by the researcher; firstly poor law and order situation in North Waziristan made mobility difficult and secondly lack of funding was a hurdle.

CONCLUSIONS

The present study found that symptoms of typical dysfluency including interjection and hesitation were the common among children of IDP's living in stressful situation.

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