

AGE AND GENDER DIFFERENCES IN PERSONS WITH STUTTERING

*Nisha Sudhi, **Merin John, ***Y.V Geetha

Abstract

Gender difference in stuttering is a much talked debated issue. A lot of studies have been done on this, mostly in the western countries. Stuttering is not only reported to be less common in females compared to males, with a 1:4 ratio, but its onset, development and recovery characteristics are more in favour of females. The present study is aimed to explore the similarities and differences in nature of disfluencies, if any, in male and female persons with stuttering, across the age groups in the Indian context. A retrospective analysis of 132 case files of all clients registered with the complaint of stuttering over a period of 6 months was made. The data was analyzed in terms of age of onset, nature and type of onset, associated problems and etiology of stuttering, across the gender and age groups. Across gender, significant differences have been obtained in most of the parameters under study and across the age and within gender too significant findings have been observed. The study confirms many of the earlier findings by other authors with regard to gender differences in stuttering. Female PWS are different in the onset, nature, development, severity characteristics of stuttering compared to male PWS.

Key words: Stuttering, nature of disfluencies, gender difference

Stuttering is a disorder of fluency, onset of which in majority of the individuals is in the preschool years. Despite decades of research it has evaded the researchers in understanding its onset, development, nature and management issues. Gender difference in stuttering has provoked the interests of many researchers but conflicts still exist regarding the differences in them. A look into the gender ratio in stuttering thoroughly documents an unequal sex distribution. Stuttering has been indicated as a male predominate disorder time and again in the literature. Early reports indicated that stuttering takes place more often in boys than girls (Blanton, 1916; Milisen & Johnson, 1936). Further research into this ratio was carried out. Yairi and Ambrose (1992) reported the male to female ratio to be 2.1:1. More recently, Van Borsel, Moeyart, Mostaert, Rossel, Loo and Renterghem (2006), in agreement with past studies reported stuttering prevalence to be higher in males than females. The tendency for stuttering prevalence to decrease with increasing age was confirmed too. The ratio is almost 4:1 in older children and adults as reported by many. This indicates that many female

children recover while male children persist in stuttering. Many different aspects of the nature of disfluencies and the association with the gender reveal substantial information.

The onset of stuttering in males and females has been widely investigated and there are several contradictory evidences. Andrews, Craig, Feyer, Hoddinott, Howie and Neilson (1983) reported the age of onset to be same across gender and did not consider that males have an earlier age of onset of stuttering than females. However, more recent data indicate that girls begin to stutter a little earlier. Mansson (2000) in a study of incidence and development of stuttering reported that boys tended to have later onsets than girls (34 months for boys and 31 months for girls).

Research into the nature and development of stuttering in boys and girls reveals significant findings too. Historically, development of stuttering problems were typically reported to be a gradual process with easier more variable forms of stuttering followed by increasing fragmentation and tension. More recent reports (Yairi, Ambrose & Nierman, 1993) however,

*Research Officer, All India Institute of Speech and Hearing (AIISH), Manasagangothri, Mysore, e-mail:nisha.sudhi@rediffmail.com, **Research Officer, AIISH, Mysore, e-mail: merinjohn.slp@gmail.com, ***Prof of Speech Sciences, AIISH, Mysore, e-mail: yvgeetha@yahoo.com

suggest that a significant number of preschool children exhibit a sudden onset of moderate to severe stuttering. Buck, Lees and Cook (2002) found that 53 percent of their cases had onsets reported as sudden. Yairi, and Ambrose, (2003) reported that 41% of the preschool age children had sudden onset (1-3 days), 32% intermediate onset (1-2 weeks) and the remaining 27% of the children were reported to have a gradual onset of stuttering.

One consistent finding in the literature on stuttering is that a small but significant percentage of children who stutter exhibit concomitant speech/language disorders in addition to their stuttering. Children who stutter typically achieve lower scores than their peers on measures of receptive vocabulary, the age of speech and language onset, MLU and receptive and expressive syntax. Few studies have explored the difference in terms of gender also. Healey and Reid (2003) noted that an increasingly large number of children who stutter are being diagnosed with attention deficit hyperactivity disorder (ADHD). Also, boys are classified four times more emotionally disturbed than girls (Stout & Conoley, 1992).

The question of why there is a sex ratio in stuttering has been subject to almost as varied speculation as the cause of stuttering itself. In the past, the difference in incidence between males and females was explained in a number of different ways including cultural differences in child rearing practices, (Johnson 1955), different societal stress levels on boys and girls etc. Later theories tried to explain the disparity in sex ratio in stuttering based on biological and genetic differences between the sexes. Geschwind and Galaburda (1985) considered that sex ratio in stuttering is due to higher levels of testosterone in the male foetus than in the female. Testosterone retards the development of the left cerebral hemisphere, thus increasing the risk of speech and language disturbances including stuttering. Recent neuro-imaging studies have shown increased bilateral speech and language representation in females compared to males. The males are more likely to have a strong left hemisphere lateralization for speech and language (Shaywitz et al., 1995).

According to Kidd, Kidd and Records (1978) and Kidd (1983, 1984), stuttering genotypes are expressed as different susceptibilities based on sex.

As the 'stuttering threshold' is hypothesized to be higher for females, it is assumed that more precipitating (genetic or environmental) factors that contribute to stuttering would have to be present for females to cross the threshold and manifest the disorder. Regarding the family history of stuttering, Andrews and Harris (1964) found that female probands have a higher frequency of affected relatives of both sexes than do the male probands. Kidd's (1984) study showed there was the highest risk for male relatives of females who stutter. However the data by Yairi and Ambrose (1996) indicated that the highest risk is for male relatives of males who stutter. More recently, Gupta (2001) reported that females had higher percentage of affected relatives than males. Anjana (2004) found that the first degree relatives have a higher percent of stuttering compared to second degree relatives.

Need for the study

There is a lot of debate about the onset, nature, development, type, associated problems and cause of stuttering in males and females with stuttering. Valuable opinion is available in scattered texts but these available information need to be compiled and a comprehensive comparison is necessary to give a better picture of the differences, if any, in the nature of disfluencies in them. This in turn may help in understanding their problems in a better way, finding out the prognosis and help in early intervention and serve better in treating the males and females persons with stuttering (PWS). The outlook towards the females with stuttering, their characteristics and needs can be understood better. In addition, most of the studies regarding gender and stuttering have been conducted in the Western countries and such intensive studies have not been conducted in India. Further investigation into the cause of the condition will also be possible.

Aims of the study

1. The present study aims at finding out the difference in nature of disfluencies if any in males and females with stuttering with regard to:

- The age and nature of onset, development of stuttering
- The severity of stuttering
- The associated problems if any
- The etiological factors if any in terms of family history/genetic factors, etc.

- To compare the results obtained across age groups in each gender.

Method

Subjects

132 case files of PWS registered over a period of six months (from March to August 2009) at the All India Institute of Speech and Hearing were reviewed. 132 PWS were classified into four groups based on age and gender. Case files of 57 adult males, 46 male children, 10 adult females and 19 female children were considered for the study (see Table 1).

Procedure

The retrospective design was used in the present study. A total number of 132 case files of individuals who were registered with a complaint of stuttering were reviewed. They were evaluated by qualified professionals who consisted of speech language pathologists and psychologists. The case files with complete fluency evaluations were considered for the present study. Table 1 depicts the details of the subjects considered for the present study.

Parameters, namely the age and nature of onset, development of stuttering, severity, associated problems and the etiological factors were closely addressed, across age and gender.

Age group	Male	Female	Total
Children (0-12 years)	46	19	65
Adults (12 years and above)	57	10	67
Total	103	29	132

Table 1: Details of the subjects selected for the study

Results

The purpose of the study was to evaluate the similarities and differences in the nature of disfluencies if any in males and females and to compare it across adults and children within the same gender. The results have been described under each category.

a) Age of onset of stuttering

Gender	< 3 years	3.1 – 5 years	5.1 – 10 years	10.1 – 20 years	> 20 years
Male	23 (22.33%)	14 (13.59%)	53 (51.45%)	9 (8.73%)	1 (0.97%)
Female	7 (24.13%)	12 (41.37%)	7 (24.13%)	0 (0%)	0 (0%)

Table 2: Age of onset and gender-wise distribution of individuals with stuttering

The data collected were grouped into 5 age groups, 3 years and below, 3.1 to 5, 5.1 to 10, and 10.1 to 20 and above 20 years for the analysis of age and onset, based on the information in the literature with regard to nature of onset. The results are shown in Table 2.

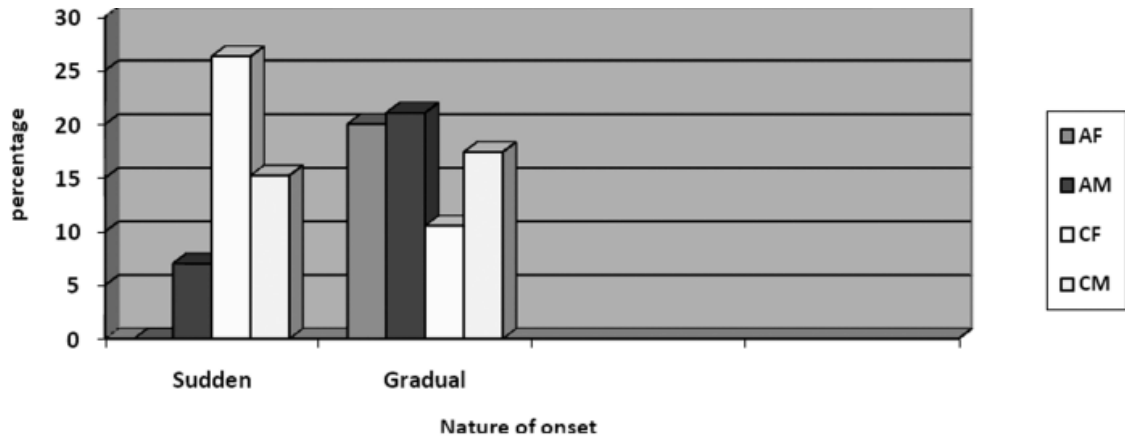
In terms of age of onset of stuttering, females were found to have an earlier age of onset (3.1-5 years) compared to males who had later onset of stuttering (5.1-10 years). This is in agreement with the literature which suggests early onset and recovery for females. Further, male to female ratio in the study is around 3:1 which is slightly higher probably because of inclusion of more children in the younger group.

(b) Nature and development of stuttering

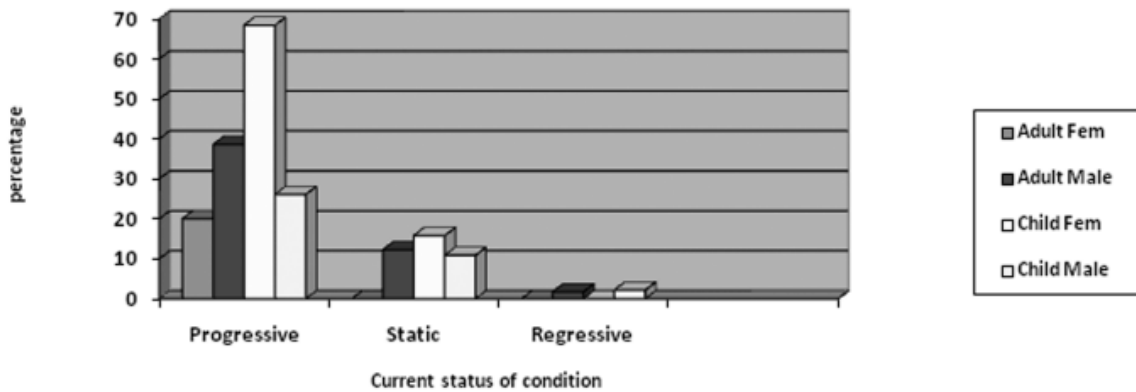
The nature of onset was categorized into two types as sudden and gradual onset. Sudden onset included all responses that fell into one of three subcategories describing onset to occur within 1 day, 2-3 days and 1 week. Gradual onset included responses that fell into one of three subcategories describing onset to occur within 2 weeks, 3-4 weeks and more than 5 weeks. The current status of the condition was classified as progressive, static and regressive in nature. Graph 1 shows the nature of onset and Graph 2 depicts current status of the condition.

With regard to the nature and development of stuttering, females were found to have a sudden onset which was progressive in nature in most whereas in few of the females it was of a static nature. Males were found to have more gradual onset of stuttering which was progressive in 33%, static in 12% and regressive in very few (2%). Both male and female CWS were found to have a progressive nature of stuttering compared to adult male and female PWS.

Based on the data available, and as depicted in Table 3, associated problems were divided into persons having Learning Disability (LD), Mental



AF- adult female, AM-adult male, CF-child female, CM- child male
 Graph 1: Nature of onset of stuttering across age and gender groups



AF- adult female, AM-adult male, CF-child female, CM- child male
 Graph 2: Current status of the condition across age and gender groups

c) Associated problems

Group	Gender	LD	MR	MA	Structural	DSL	Medical	Nil	Total
Adult	F	3 (30%)	1 (10%)	0 (0%)	2 (20%)	1 (10%)	0 (0%)	3 (30%)	10
Child	F	0 (0%)	1 (5.26%)	0 (0%)	0 (0%)	1 (5.26%)	1 (5.26%)	16 (84.2%)	19
Adult	M	2 (3.57%)	0 (0%)	2 (3.57%)	2 (3.57%)	2 (3.57%)	2 (3.57%)	47 (82.45%)	57
Child	M	5 (10.86%)	3 (6.52%)	5 (10.86%)	2 (4.34%)	5 (10.86%)	4 (8.69%)	22 (47.82%)	46

LD-Learning Disability; MR-Mental Retardation; MA-Misarticulation; DSL-Delayed Speech & Language

Table 3: Associated problems with stuttering across gender

problems like head injury, accidents etc. The occurrence of most of the associated problems with stuttering was found to be greater in females.

In females, adults had more history of learning

disability, mental retardation, structural defects and delayed speech and language problems, whereas, in males, children had history of learning disability, mental retardation, misarticulation, structural deficits,

speech and language delay and medical problems. Therefore, the associated problems were reported more in adult females with stuttering whereas the opposite was observed in male children with stuttering.

(d) Severity of stuttering

Based on the scores and classification on Stuttering Severity Index (SSI), persons with stuttering have been grouped under the categories of very mild, mild, moderate, severe and very severe. The results are shown in Graph 3.

The graph clearly shows that in the category of severe and moderate stuttering, males outnumber females, whereas, in very mild, mild, very severe and Normal Nonfluency condition it is females who are more in number. Most of the female children with stuttering were found to be categorized under the mild degree of severity. Adult females with stuttering were categorized almost equally under all levels of severity.

In males most of the adults were categorized under moderate and severe stuttering, with one very severe adult case reported. 26% of both adults and children were categorized under mild category. There were six children who were diagnosed as NNF.

Majority of female CWS were categorized under mild severity of stuttering compared to adult females. Adult females with stuttering were categorized almost equally under all levels of severity. The severity of stuttering was found to be more in adult males compared to male children with stuttering.

e) Causative factors

From the case history collected, the reported causes have been grouped into 3 main categories namely, family history/genetics, environmental and others as shown in Table 4. Family history has been further divided into maternal and paternal, and then again sub divided into first degree and second degree. Mother, father and siblings belong to first degree and other paternal and maternal relatives belong to second degree. The environmental causes include history of contact with another person with stuttering. The others category include stuttering caused due to fear, pressure at home, change in language, change in place etc.

Regarding the etiological factors, in both male and female PWS, family history of stuttering seem

to rule over the other probable etiologies of stuttering, with females showing a stronger genetic basis of stuttering. From table 5, it may be seen that females had more maternal and paternal 1st degree relatives who stuttered compared to male PWS.

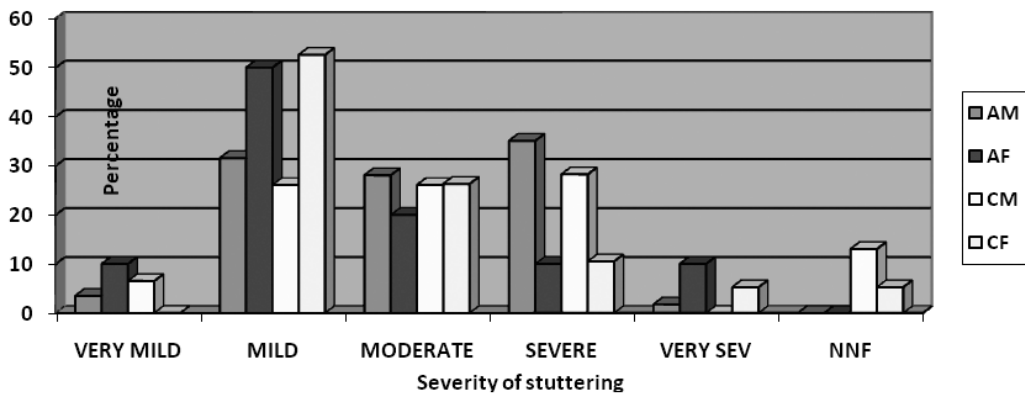
Results indicate that 90% of adult females presented with a family history/genetic etiology and 42% of female children with stuttering had reported to have genetic causes. Two female children had contact with PWS and 3 each in both adults and children group were reported to have other causes like change of place, fear etc. In males around 52% of children reported to have genetic cause. Six adults and four children had contact with stuttrer.

Discussion

This study was an exploration into the age and gender differences in PWS. Male and female PWS were compared in terms of important parameters such as age of onset of stuttering, the nature and development of stuttering, the causal factors behind the condition, the severity levels and the associated problems with the condition. The results obtained are in support of earlier studies published in western literature.

Considering the age of onset of stuttering, Yairi & Ambrose (1992) had reported that the onset of stuttering in males is 40.56 months and in females it is 34.21 months. The present study too supports the findings that females had an earlier age of onset compared to males. This finding could be accounted to the fact that more females than males spontaneously recover. Geschwind and Galaburda (1985) have suggested that young male speakers may have greater difficulty in achieving or maintaining fluency. Boys may be less able to adapt to communicative stress than their female counterparts. The speech language development of girls is also earlier when compared with boys. It has been well established now that during the period of acquiring speech and language, the disfluencies tend to occur.

Exploring deeper into this area, there is a sex related genetic influence too that can account for this. Yairi and Ambrose (1999) in their study have found that young females who stutter are much less likely to persist in stuttering than young males. This phenomenon suggests that males are more likely to continue to stutter than females.



AM- adult male, AF- adult female, CM- child male, CF- child female
 Graph 3: Severity of stuttering across gender groups

Moreover, etiological factors leading to the condition has received much attention. During the past few decades, the research conducted in this area has revealed a strong genetic component in PWS. Andrews and Harris (1964) found that female probands have a higher frequency of affected relatives of both sexes than do the male probands. The present study too supports these findings. The chance of getting stuttering is more for a female child with male relatives with stuttering. This is especially true in relatives of the first degree.

Stuttering has also been reported to be progressive or increasing in its development across age and gender. This progressive nature was more in children compared to adults wherein female CWS

reporting this more than male CWS. Females reported more of a progressive development than males.

Significant differences across the gender have also been reported in terms of associated problems with stuttering. Blood, Ridenour, Qualls, and Hammer (2003), in their study found that children with learning disability made upto 15% of their large sample of children who stuttered. The present study too reports similar findings. Learning related problems are seen most associated with stuttering across age and gender, with females exhibiting a greater percentage of the same. The occurrence of most of the associated problems with stuttering, were found to be greater in females.

Group	Gender	Genetics	Environmental	Others
Adult	F	9 (90%)	0 (0%)	3 (30%)
Child	F	8 (42.10%)	2 (10.52%)	3 (15.7%)
Adult	M	15 (26.31%)	6 (10.52%)	5 (8.7%)
Child	M	24 (52.17%)	4 (8.69%)	4 (8.69%)

Table 4: Causative factors across age and gender groups

Gender	Paternal		Maternal	
	1 st degree	2 nd degree	1 st degree	2 nd degree
Male	16 15.53%	19 18.40%	6 5.84%	11 10.67%
Female	7 24.13%	4 13.79%	3 10.34%	3 10.34%

Table 5: Proximity of relationship in paternal and maternal sides under genetic factor

Summary and Conclusions

This study is aimed to explore the similarities and differences in nature of disfluencies, if any, in male and female persons with stuttering. It is also aimed to compare the nature of disfluencies across the age and gender groups. The review of the case files of 132 PWS, gender difference in stuttering was done. The study confirms many of the earlier findings by other authors with regard to gender differences in stuttering. Female PWS are different in the onset, nature, development, severity characteristics of stuttering compared to male PWS.

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