

## Effects of Stuttering on Quality of Life in Adults Who Stutter

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**Background:** Stuttering is potentially a socio communicational problem, which has negative effects on individuals' mental and emotional health and other aspects of life. Recognizing the quality of life (QOL) dimensions in adults who stutter can be useful in treatment planning and preventing later mental, emotional and social disorders.

**Objectives:** This study aimed to investigate the QOL and its relationship with stuttering severity in adults who stutter.

**Patients and Methods:** This analytic-descriptive study was performed on 78 adults (61 males and 17 females) who stuttered and 78 normal control cases in Mashhad City, Iran. Short-form 36 (SF-36) questionnaire of QOL was used to collect data and the percentage of syllables stuttered (%SS) was determined in a spontaneous speech sample as a frequency measurement tool. Mann-Whitney test was used to compare data between the groups and ANOVA test was also used to evaluate the correlation between stuttering severity and QOL dimensions.

**Results:** This study showed a significant difference between the groups in mean scores of QOL, general and emotional health, social and physical functions, vitality and role limitations made by physical and emotional problems ( $P < 0.05$ ). No significant difference was found in pain between the groups and there was no significant relation between %SS and dimensions of QOL ( $P > 0.05$ ).

**Conclusions:** Stuttering has negative effects on different dimensions of QOL among individuals. Thus, it is necessary to pay special attention to its prevention and treatment before it is developed into a completed and progressive condition.

**Keywords:** Stuttering; Quality of Life; General Health

### 1. Background

World Health Organization (WHO) has explained "health" with emphasizing on its vast dimensions including complete physical, social and mental welfare in 1948. Base on this description, WHO explains health is not merely the lack of disease (1). It describes quality of life (QOL) as an individual comprehension from one's own life status, culture and system of values in where one lives and also in relation to objectives, expectations and one's own standards (2). In fact, QOL ideally assesses the health in physical, mental, environmental and social dimensions (2, 3). On the other hand, American speech and hearing association (ASHA) believes that one of the speech and language pathologist's duty is to attempt to improve QOL of individuals by reducing functional and structural deficits to one's body, decreasing limitations in activities and communications (4).

Thus, survey of QOL is not merely to comprehend people's life experience but also plays an important role in treatment process in patients with speech and language disorders. Also, it is necessary to mention that most studies on QOL have been conducted on diseases, which deal with mortality or have deep impressions on the society

such as cancers, diabetes, drug abuse etc. (5-10). However, it seems that no adequate studies have been performed on QOL in disorders and disabilities that do not lead to mortality (11-14).

One of the impairments on which limited QOL studies have been done is stuttering which is a kind of disorder in fluency of speech which mostly appears in childhood and its prevalence is about 1% of total population (15-18). Stuttering includes various forms of involuntary disruptions in speech such as repetition of syllables, prolongation, blocking of sounds, substitution and avoiding of words (15-17). This speech disorder is a communicational and social problem, which has negative impacts on mental and emotional health and various aspects of the adults' life (15-17). Therefore, in most people who stutter, daily activities are affected and in some cases stuttering causes problems in communication during speech activities including making a call or talking in front of others. And most often, communication problems will occur in a wide range of activities at school, at home or at work (16-20).

Most studies have shown that stuttering has a signifi-

cant relation with the level of social anxiety (20-25), so that the levels of tiredness, mental and emotional disorders will be increased in them and on the contrary, their social activities will be decreased (14, 26). Some studies show that one factor causes anxiety in people with stuttering is stuttering return after treatment and most of adults who stutter (AWS) have experienced this situation (18, 27, 28). Thus, it causes them a negative attitude toward themselves (22). Such attitude causes them to encounter problems in employment, seeking career, and keeping a job. These are social and mental items in QOL assessment (15-17, 29).

Klompas and Ross (2004) studied QOL in AWS and found negative impacts of stuttering on emotion, self-esteem, self-image, and work performance (30). Yaruss et al. (2010) using Overall Assessment of the Speaker's Experience of Stuttering (OASES) questionnaire to study QOL of people with stuttering before and after treatment considered that stuttering had negative impression on QOL; however, life quality increased after treatment (31). In Craig's study (2009) on QOL of AWS and normal adults, results showed that stuttering had negative impression on social and emotional activities and mental health. The more frequency of stuttering, the more emotional function was affected. And frequency of stuttering (the percentage of syllables stuttered) had no relationship with dimensions of QOL (14). Andrade et al. (2008) reported in their study that both mild and severe stuttering had negative effects on QOL (32), while Koedoot et al. (2011) reported that moderate to severe stuttering had negative effects on overall QOL (33). Bramlett et al. (2006) mentioned stuttering had negative impressions on QOL and the severity of stuttering had negative impact on QOL (34).

In Iran, Mohammadi et al. (2011) studied QOL of 59 Kurdish speaking AWS lived in Kermanshah City and 73 equal normal cases in sex, education, job and marital status by using Brief form of The World Health Organization Quality of Life (WHOQOL-BREF) questionnaire. They reported that QOL scores of people with stuttering was lower than normal peers in aspects of physical and mental health and also social interactions, but the significant difference was only observed in the domain of physical health. Also, there was a negative correlation between stuttering severity and the domains of physical, mental and environment health (35). Mansuri et al. (2013) studied QOL in Tehran City in 25 AWS and compared the results with 25 normal pairs with equal sex, age and education level using the WHOQOL-BRIEF questionnaire. Data analysis indicated that there was a significant difference in overall score of QOL and scores of physical, mental and environmental health between AWS and AWDNS. No significant difference was seen in domain of social relationship (36).

## 2. Objectives

Since Iran is a vast country with a variety of cultures and socio-economic conditions, and attitude of each person

to QOL depends on one's cultural and ethical values, objectives, expectations and standards of each nation, this study was conducted to assess the QOL in AWS in Mashhad City, Iran. Knowing about QOL in AWS and recognizing the signs and symptoms of stress among them can be useful in treatment planning, suitable rehabilitation and psychological interventions and prevention of secondary social, emotional and mental impairments.

## 3. Patients and Methods

This analytic-descriptive and cross-sectional study was conducted on 78 AWS (61 males and 17 females) and 78 controls (fluent speakers) matched for age, sex and education in which the participants of both groups were older than 18 years-old living in Mashhad City.

Participants had no history of sensory-motor disabilities, psychological problems such as depression, neurological diseases such as Parkinson and brain injury, and visual or hearing deficits. No one was addicted to alcohol or any kind of drugs and had no disable person in his/her family. Adults who stuttered were selected from private speech therapy clinics using the convenience sampling method. The AWS were just selected from clients who had less than 5 therapy sessions in that clinic by the time of study. Fluent speakers were randomly selected from the same community with the same age, sex, socio-economical condition and marital status nearby the living place of AWS. They were randomly selected from different places such as libraries, mosques, their working places and like that.

Diagnosing of the cases who stuttered was conducted by two speech and language pathologists during two stages: 1) Identifying cases through former evaluations which had been recorded in their file by the clinicians or speech therapists. 2) Recording 5 to 10 minutes of spontaneous speech sample through interviewing with people who stuttered and calculating %SS which is considered as a stuttering frequency measurement tool by dividing stuttered syllables to 100 in a certain time (37). Then, all 78 AWS were divided into three group base on their %SS to study any relation between stuttering severity and the QOL dimensions. Base on this classification, mild stuttering was the frequency less than 40%, moderate stuttering between 41 and 77 and severe stuttering was the frequency more than 78%. Then researchers explained objectives of study to the participants and all volunteers signed a written consent before entering the study. Demographic data including age, sex, marital status, level of education, and family income rate were recorded. Afterwards, to assess the QOL, the short-form 36 items (SF-36) health survey in Iranian format was given to the cases to be filled out. Validity and reliability of Persian version of this questionnaire is confirmed ( $\alpha = 0.82$ ) by Montazeri et al. (38).

The SF-36 questionnaire is a general QOL measurement which has 36 items to assess people's health in eight different domains: a) Physical function domain which indicates extent to which person's health limits his/her daily

physical activities, 10 items. b) Role limitations at work or home due to physical health problems, four items. c) Pain domain includes the extent to which pain interferes with daily activities, two items. d) Health status and perception of health, five items. e) Vitality, a measure of people energy level or fatigue, has 4 items. f) The domain of social functions that includes the extent to which health limits social activities, two items. g) The domain of role limitations due to emotional problems, which indicates the extent to which a person's emotional problems impact on daily and work activities with three items, and h) Mental health indicates the amount of time a person experiences feeling of nervousness, depression, happiness and so on, 5 items. Item number 2 is inserted in none of the subscales and it only assesses the health status of person during a one-year period. Lowest score in this test is zero and the highest is 100. The score of speech part is determined with the score of title in that part. Finally, the items of each subscale are added and score of each subscale is obtained which should be a number between 0 and 100. If the obtained score is more than 50, it indicates the existence of that feature and less than 50 shows the lack of that life dimension (39).

### 3.1. Method of Data Analysis

Data were analyzed by SPSS16.0 software. To investigate data distribution, Kolmogorov-Smirnov was used and then Mann-whitney U test was utilized to compare the data between groups. To investigate the relationship between %SS and dimensions of QOL, the ANOVA test was used.

## 4. Results

Results of this study showed that 23 (29.5%), 24 (30.8%) and 31 (39.7%) AWS had mild, moderate and severe stuttering (base on %SS), respectively. In this study, two groups of AWS and AWDNS were matched in age, sex, marital status, education level and the family's income level (Table 1). The age range of cases was 18 to 32 years old in the study (Mean = 22.7 and SD = 3.29) and control (Mean = 22.9 and SD = 3.6) groups (Table 1). Moreover, the results showed a significant difference between the groups ( $P < 0.05$ ) in scores of total QOL in AWS and AWDNS (60.5 vs. 73), general health (59.9 vs. 71.35), emotional health (48.2 vs. 72), social function (56.1 vs. 72.9), vitality (49 vs. 70.2), physical function (84.9 vs. 80.4), limitations of role-playing due to physical problems (48.1 vs. 60.9) and the limitations of role-playing due to emotional problems (37.2 vs. 52.6). Therefore, the mean of obtained scores from AWS were less in domains of total QOL, general health, emotional health, vitality, limitations of role-playing due to physical problems, but higher in domains of physical function and limitations of role-playing due to emotional problems. In the domain of pain, no significant difference was seen between the groups (80.4 vs. 82.3), (Table 2). Moreover, there was no significant relation between frequency of stuttering and QOL dimensions in this study.

In this study, 21.8% of the AWS were female and 78.2% were male. The ratio was nearly four males to one female. This finding corresponds with epidemiological study of Craig and colleagues (2002) done in New South Wales that mentioned the ratio of males to females between 2/1 and 4/1 (39). In another study conducted by Craig et al. (2009) ratio was 3 males to 1 female (14).

Our obtained results from QOL showed that in AWS, mean scores in total QOL, domains of general and emotional health, social function, vitality and role limitation due to physical and emotional problems were significantly less than those of the fluent people. Contrary, mean score in the field of physical function was more than AWDNS. These findings show that stuttering is naturally a social and mental problem (15-17). Stuttering has no physical effect on individuals; however, people who stutter attempt to overcome the social and communicational limitations resulted from stuttering through increasing their potent in physical field. This finding corresponds with studies done by Bramlett et al. (2006), Craig et al. (2004) and Kelompas (2004) (34). However, it did not correspond with findings of Mansouri (2011) and Mohammadi (2013) studies (35). In the study of Mansouri and her colleagues about QOL in two groups of people with and without stuttering by WHOQL-Brief questionnaire, QOL score and scores of physical, mental and environmental health were significantly different while the score of social relationship did not show significant difference (36). In Mohammadi et al. study about QOL among people who stuttered using WHOQL-Brief questionnaire, they reported that there was a significant difference between the two groups only in the field of physical health and no significant difference was observed in other fields of QOL including mental health, social relationship and environmental health (35).

In our study, the comparison between the groups of AWS and AWDNT in areas of general health (71.4 vs. 59.9), emotional health (48.2 vs. 72), social function (56.1 vs. 72.9), vitality (49 vs. 70.2) and general QOL (60.5 vs. 73) based on the Likert scale showed that AWS had less scores ( $P < 0.05$ ). Since stuttering causes feeling of shame and disappointment in social and communicational interactions and people who stutter predict their stuttering in most of social interactions, it causes anxiety and behaviors such as avoidance and fear from social and communication situations (16). Thus, it causes people who stutter to have less emotional health and do not have adequate vitality and cannot perform social functions favorably in comparison with people who do not stutter. Hence, there is no surprise that people who stutter get less scores in the above items. These results correspond with findings of Craig and his colleagues (14). Also, this study showed that stuttering had a negative effect on vitality and emotional function of AWS; however, it did not have any effect on the physical function. Vitality and emotional health can be described as a mental status and fatigue which are resulted from sadness and low mood which are different

from physical aspects of tiredness and boredom such as falling asleep and having a nap. Craig's et al. study (2009) had the same results (14).

ANOVA test showed no significant relation between stuttering severity and domains of QOL; this finding corresponds with Craig's report (2009). This finding suggests that %SS does not cause different QOL's dimensions and indicates that low and high frequency rates of stuttering have the same effects on QOL of AWS. This seems to be more resulted from cultural and social pressures than communicational limitations due to stuttering. On the contrary, with the present study, Bramlett et al. reported that the more the stuttering severity was the more QOL's aspects were affected (34). Andrade et al. and Koedoot

et al. also reported that QOL was affected by the severity of stuttering (32, 33). Mohammadi et al. also reported that three fields of physical, mental and environmental health had a significant and negative correlation with severity of understood stuttering by people who stuttered (35). One reason for such diversity can be the methods and severity measurement tools used in different studies. Here, like Craig's study (2009) we considered just %SS and did not consider other important factors in severity involves body spasms and prolongation durations (14). These features can be important in self-image and QOL beside %SS. However, any absolute comment on the effect of severity or frequency of stuttering on QOL needs further investigations.

**Table 1.** Comparison of Demographic Variables in Adults who Stutters and who do not Stutter <sup>a, b</sup>

	AWS <sup>c</sup>	AWDNS <sup>c</sup>	P Value
<b>Age</b>			0.2
< 20 y	20 (25.6)	28 (35.9)	
2-25 y	44 (56.4)	33 (42.3)	
> 25 y	14 (17.9)	17 (21.8)	
<b>Gender</b>			1.00
Male	61 (78.2)	61 (78.2)	
Female	17 (21.8)	17 (21.8)	
<b>Education level</b>			0.057
Under diploma	7 (9)	16 (20.5)	
Diploma	18 (23.1)	22 (28.2)	
Above diploma	53 (67.9)	40 (51.3)	
<b>Marital status</b>			1.00
Single	54 (69.2)	53 (67.9)	
Married	24 (30.8)	25 (32.1)	
<b>Income level</b>			0.27
< 10 million Rial	34 (43.6)	35 (44.9)	
10-15 million Rial	28 (35.9)	20 (25.6)	
> 15 million Rial	16 (20.5)	23 (29.5)	

<sup>a</sup> Abbreviations: AWDNS, adults who do not stutter; AWS, adults who stutter.

<sup>b</sup> Data are presented as No. (%).

<sup>c</sup> Data are presented for 78 subjects.

**Table 2.** Mean Scores and Standard Deviation of all Short Form-36 Questionnaire Dimensions in Adults who Stutter and who do not Stutter <sup>a, b</sup>

	AWDNS	AWS	P Value
<b>Total QOL</b>	60.5 (12)	73 (13.8)	0.0000
<b>General health</b>	59.9 (19.3)	71.3 (16.3)	0.0000
<b>Emotional health</b>	48.2 (15.9)	72 (15)	0.0000
<b>Physical function</b>	84.9 (16.8)	80.4 (16.3)	0.03
<b>Social function</b>	56.1 (18.8)	72.9 (21.5)	0.0000
<b>Physical limitation</b>	48.1 (28.7)	60.9 (33.6)	0.007
<b>Emotional limitation</b>	37.2 (33.9)	52.6 (37.8)	0.012
<b>Vitality</b>	49 (14.4)	70.2 (15.3)	0.000
<b>Pain</b>	80.4 (18.8)	82.3 (19.3)	0.37

<sup>a</sup> Abbreviations: AWDNS, adults who do not stutter; AWS, adults who stutter; SF-36, short form questionnaire of quality of life; QOL, quality of life.

<sup>b</sup> Data are presented as No. (%).

## 5. Discussion

This study indicates that stuttering has negative impacts on individual's QOL and recommends following instructions: 1) Health authorities and health care centers should allocate human resources, health care and financial facilities for stuttering therapy and prevent it to change into a complicated and expanded disease. 2) It is worthy SF-36 questionnaire to be used by health clinics and speech therapy centers to investigate different dimensions of QOL. If QOL aspects are affected by stuttering, speech therapists can design treatment plans or refer the cases. 3) To generalize the results of this study, further studies are necessary to be conducted with more cases in various places throughout the country. 5) Next studies need to be done on the effects of different kinds of stuttering therapy methods on QOL to identify the best methods. In fact, QOL questionnaire can be considered as a tool to measure the results of intervention and different methods of stuttering therapy.

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## Authors' Contributions

In this study, Ms. Fatemeh Kasbi and Ms. Maryam Mokhlessi were responsible for study conception, design and writing of the article, and Ms. Marziyeh Maddah, Ms. Reyhaneh Noruzi and Ms. Leyla Monshizadeh contributed in collecting the data and checking inclusion and exclusion criteria of the subjects. Also, Dr. Majid Mirmohammad Khani conducted the statistical analysis.

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