

Research Paper

Investigating the Development and Evaluation of the Psychometric Properties of the Stuttering Related Quality of Life Questionnaire



Mobina Sadat Hosseini¹ , Banafshe Mansuri² , Masoomeh Salmani³ , Seyed Abolfazl Tohidast^{2*} , Farhad Sakhai² 

1. Student Research Committee, Semnan University of Medical Sciences, Semnan, Iran.

2. Neuromuscular Rehabilitation Research Center, Semnan University of Medical Sciences, Semnan, Iran.

3. Department of Speech Therapy, School of Rehabilitation, Semnan University of Medical Sciences, Semnan, Iran.



Citation Hosseini MS, Mansuri B, Salmani M, Tohidast SA, Sakhai F. Investigating the Development and Evaluation of the Psychometric Properties of the Stuttering Related Quality of Life Questionnaire. *Iranian Rehabilitation Journal*. 2024; 22(3):423-436. <http://dx.doi.org/10.32598/irj.22.3.1472.3>

doi <http://dx.doi.org/10.32598/irj.22.3.1472.3>

Article info:

Received: 21 Apr 2023

Accepted: 02 Sep 2023

Available Online: 01 Sep 2024

ABSTRACT

Objectives: People who stutter (PWS) experience many problems in their lives in addition to speech fluency disorder. Meanwhile, stuttering reduces their quality of life (QoL). QoL depends on different social, economic, and cultural conditions of societies. Considering that there is no specific questionnaire to investigate the QoL in Iranian PWS; this study develops and evaluates the psychometric properties of a stuttering related QoL questionnaire (SRQoLQ).

Methods: First, by interviewing 11 PWS, with the help of 10 speech-language pathologists in the stuttering field, in addition to reviewing the literature, initial items were developed and a preliminary version of the SRQoLQ was designed. The content validity of the SRQoLQ was evaluated using two qualitative and quantitative methods (determining content validity ratio and content validity index) using the opinions of 12 experts. The qualitative method was also used to determine the face validity and interviews were conducted with 10 PWS. Finally, the reliability of the SRQoLQ was investigated through internal consistency and test re-test reliability with the participation of 83 and 30 PWS, respectively.

Results: Interviews with PWS and experts in addition to literature review led to the development of a questionnaire with 40 items. After determining content and face validity, the number of items in the SRQoLQ was reduced to 32. The results of calculating the Cronbach α coefficient showed the appropriate reliability of the SRQoLQ (0.96). The intraclass correlation coefficient of the SRQoLQ items in the test re-test phase ranged from 0.6 to 0.95. Moreover, the intraclass correlation coefficient value of the SRQoLQ was 0.95.

Discussion: A suitable tool was developed to evaluate the QoL of PWS, and its psychometric properties were investigated. Based on the results, the SRQoLQ for PWS is a valid and reliable tool with 32 items that can be used for clinical or research purposes in the field of stuttering.

Keywords:

Stuttering, Quality of life (QoL), Adults, Assessment, Validity, Reliability

* Corresponding Author:

Seyed Abolfazl Tohidast, Associate Professor.

Address: Neuromuscular Rehabilitation Research Center, Semnan University of Medical Sciences, Semnan, Iran.

Tel: +98 (935) 7542619

E-mail: slp.tohidast@gmail.com, a.tohidast@semums.ac.ir



Copyright © 2024 The Author(s);

This is an open access article distributed under the terms of the Creative Commons Attribution License (CC-BY-NC: <https://creativecommons.org/licenses/by-nc/4.0/legalcode.en>), which permits use, distribution, and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

Highlights

- Stuttering can reduce the quality of life (QoL) in people who stutter (PWS).
- To assess QoL in PWS, we need a valid and reliable questionnaire.
- A stuttering related QoL questionnaire (SRQoLQ) was developed to better identification of QoL in PWS and its psychometric properties were investigated.
- The SRQoLQ is a valid and reliable tool with 32 items that can be used for clinical or research purposes in the field of stuttering.

Plain Language Summary

Stuttering is a communication disorder that disrupts people's speech fluency. In addition to the negative effects on the smooth flow of speech, the occurrence of stuttering can also have many negative effects on the lives of people who stutter (PWS). To better identify the negative effects of stuttering on PWS, a questionnaire was developed in this study. This questionnaire can help clinicians plan a better treatment program for the treatment of stuttering in PWS.

Introduction

As a communication disorder, stuttering impairs one's ability to speak fluently and has an impact on many facets of a person's life [1]. The core stuttering behaviors include repetitions, prolongations, and blocks in the speech flow; however, for people who stutter (PWS), stuttering is more than just a problem with speech flow [1-4]. PWS has a wide range of issues in addition to speech difficulties, and the disorder is frequently made more complex by the unfavorable attitudes that people have toward stuttering [2-5]. PWS is frequently described as having a variety of unfavorable feelings and reactions because of their communication issues [6]. Some of these negative emotions include anxiety, fear, helplessness, anger, guilt, embarrassment, frustration, and limitations in social, occupational, and educational situations [7]. This particular emotion has an impact on someone's ability to communicate effectively as well as their overall quality of life (QoL) [1]. Many PWS may have a lower QoL than other members of society [1]. For instance, Klompas et al. [8] explored how stuttering affected important psychosocial facets of life and found that approximately 44% of participants thought it hurt their marriage and family life. Craig et al.'s [7] study, comparing 200 PWS and 200 people who do not stutter revealed that stuttering has a detrimental effect on the QoL. Mansuri et al. [1] conducted a cross-sectional study in Iran to compare the QoL of PWS and people who do not stutter using the [World Health Organization \(WHO\)](#) QoL scale, and the results revealed that PWS have a poorer level of QoL. The QoL of PWS is

one of the most crucial factors that stuttering therapists and researchers should take into account in this context. The [WHO](#) defines QoL as people's perceptions of their current circumstances concerning their objectives, aspirations, standards, and worries, as well as the culture and value system in which they live [8]. It is a broad notion that is influenced in a complex way by physical health, mental condition, amount of independence, social interactions, and relationships with important elements in the surroundings. A person's physical and mental health, satisfaction with life, communication skills, and awareness of their capacity to reach their life goals are all the factors that impact on an individual's QoL [1, 8]. Accordingly, paying specific attention to the QoL of PWS and evaluating it using specific tools for this disorder to identify their needs and desires can improve their QoL and speed up the treatment process of PWS. The overall assessment of the speaker's experience of stuttering (OASES) questionnaire, which has been translated into many languages, is one of many available tools in this discipline [9, 10]. Yaruss et al. [9] developed the OASES questionnaire in 2006 to assess a person's entire stuttering experience. One of the sections of this questionnaire examines the QoL of PWS. In Iran, Yadegari et al. [11] conducted a study in 2017 to translate the OASES-A questionnaire because it is important to translate tools that are appropriate for each culture and society because the QoL and how people perceive it is rooted in cultural conditions [12, 13]. They reported that the Persian version of the OASES-A had good validity and reliability including internal consistency (Cronbach $\alpha=0.98$) and test re-test reliability (intra-class correlation coefficient [ICC]=0.95) [11]. Existing

questionnaires, like OASES, were developed for Western countries and are available. We cannot disregard the influence of the circumstances and culture of each community on how a disease or a disorder is perceived, even though this questionnaire has been introduced as a suitable, valid, and reliable tool. A person's perception of and experience with a disease has an impact on their everyday activities, employment, and social circumstances [14, 15]. Further, the effects of a disorder on various facets of a person's life depend on the economic and social framework that governs various countries. For instance, Indians are more tolerant of pain compared to Americans, according to the report by Nayak et al. [14]. In another study, Kazemi et al. [13] also found that Iranians tend to hide their diseases and disorders and that this tendency is common in Iranian society. Hofstede [12] reported that using translated versions of the QoL questionnaire by ignoring the culture and context of the targeted population would provide an improper and misleading image, especially about different countries. These instances demonstrate how using questionnaires that have been translated from other languages without considering the social, economic, and cultural norms of each nation results in an inaccurate portrayal of the impact of any disorder on people who are living in different countries [12]. Moreover, only one section of this questionnaire examines the QoL in PWS, while QoL is a broad concept that needs to be examined with a special and comprehensive tool. So, all aspects of QoL may not be covered by this questionnaire. Therefore, we need a specific questionnaire to assess QoL in PWS that is related especially to the Iranian context and culture.

This study develops a suitable, valid, and reliable stuttering related QoL questionnaire (SRQoLQ), keeping in mind the aforementioned points and considering that the current questionnaires are based on the cultures of other countries and that there are no tools or questionnaires available to measure the QoL in Persian PWS that are appropriate for the conditions and culture of Iranian society. Overall, developing and validating a new questionnaire for stuttering-related QoL in Iranian PWS can provide valuable insights into the lived experiences and challenges faced by this population, and can help inform the development of interventions and support services that are tailored to their needs.

Materials and Methods

The initial version of the SRQoLQ was developed in the first stage of the current study, and its psychometric properties were assessed in the second stage of the study. To this end, the initial items of the SRQoLQ were developed using interviews with 11 PWS, 10 speech-language

pathologists who specialize in stuttering, and reviews of existing scientific literature. The content validity, face validity, and reliability of the SRQoLQ were assessed in the second stage. Two qualitative and quantitative methods (content validity ratio [CVR] and content validity index [CVI]) were used to assess the content validity of the SRQoLQ with the opinions of ten experts. Interviews with 10 PWS were done to investigate the face validity of the SRQoLQ using a qualitative method. Internal consistency and test re-test were used to determine the reliability of the SRQoLQ after its validity had been evaluated.

Phase 1: Item generation and initial questionnaire development

Until June 2022, the accessible scientific literature was reviewed by searching in multiple databases, including: Science Direct, MEDLINE (PubMed), Scopus, and Web of Science (ISI) using various keywords, like "stuttering," "life," "evaluation," "quality of life," "scale," "tool," and "questionnaire." The inclusion criteria for the studies were having access to the full texts of all Persian or English language papers related to the QoL. This study did not include any articles with questionnaires that were unavailable or published in other languages. Moreover, interviews with 11 PWS and 10 SLPs with experience in the field of stuttering treatment were undertaken to better understand the QoL in PWS. Semi-structured interviews were conducted in this section of the study either in-person or remotely. Before conducting the interviews, several questions to the QoL in the stuttering field were provided in advance. These questions were asked following a similar arrangement in all the interviews and the participants could answer or ignore any questions, yet the interviewers ensured that the answers were within the questions asked or those that developed quickly during the interviews. Moreover, the interviewer was allowed to ask more follow-up probes, which may not be included in the list of provided questions to extract additional information, when required [16]. Then, all the interviews were recorded and consequently transcribed verbatim. The qualitative content analysis method was used to analyze the interviews [17]. These actions were taken with the following objectives in mind: Conducting the interviews, reading the interviews verbatim, extracting the codes, grouping the extracted codes into sub-themes, and then grouping the sub-themes to create the main themes [18]. The extracted main themes were used for the constitution of the questionnaire's subscales. Finally, the initial SRQoLQ was developed based on the idea extracted from the qualitative section of the study and a review of the literature. The study team decided

on the scoring method for the items after developing the initial questionnaire items. The scoring method for the SRQoLQ items was decided upon using the 5-point Likert scales (“strongly disagree,” “disagree,” “neither disagree nor agree,” “agree,” and “strongly agree”).

Phase 2: Evaluating the validity and reliability of the SRQoLQ

Evaluating the validity

In the second phase of the study, content validity, using both quantitative and qualitative methods, was examined to identify the psychometric properties of the SRQoLQ. In the first step, which is carried out qualitatively, the initial version of the SRQoLQ was sent to 15 experts who had adequate competence, knowledge, and experience in speech-language pathology, stuttering, questionnaire design, and psychometrics to evaluate it qualitatively based on some questions (Appendix 1).

Subsequently, the CVR and CVI were determined. A questionnaire was developed at the CVR determination phase. The same experts who participated in the previous stage (12 experts who were different from 10 experts who participated in the interviewing phase) were asked to rate the necessity of each of the items based on a 3-point scale in this questionnaire. The CVR value was then determined for each item. According to Lawshe's recommended values, for the minimal CVR to keep the items, the minimum CVR to maintain each item was 0.56 [19, 20].

The experts who participated in the CVR determination phase were requested to comment on the importance of each item in the subsequent phase, which involved determining the CVI. A 4-point Likert scale was used in this study (1=not related, 2=somewhat related, 3=related, 4=completely related). By dividing the number of experts who gave each item a score between 3 and 4 by the total number of experts who took part in this stage, the CVI for each item was determined. Polit and Beck [21] suggested that an item is kept in the questionnaire if the CVI score is 0.79 or above. Following the determination of the questionnaire's content validity, the face validity was qualitatively tested. The comments of ten PWS were used during this phase. The three aspects of item clarity, design and style, or characteristics and comprehension of the goods, were presented to the participants at this point, and they were asked for their feedback.

Evaluating the reliability

After considering the perspectives of PWS, the internal consistency and test re-test methods were used to determine the reliability of the SRQoLQ. The correlation between questionnaire items was examined using the Cronbach α method. The Cronbach α of higher than 0.9 was considered great, 0.9-0.8 was considered good, 0.8-0.7 was acceptable, 0.7-0.6 was deemed questionable, 0.6-0.5 was considered poor, and less than 0.5 was rendered unacceptable [22].

Hence, 100 questionnaires were sent to PWS using a simple and convenience sampling method among those who were sent to speech-language pathology clinics to determine the internal consistency of the SRQoLQ. Age over 18 and a diagnosis of stuttering confirmed by a speech-language pathologist based on the proportion of stuttered syllables (without any other disorders or diseases based on the person's statements) were the inclusion criteria for the participants. Insufficient answers to the SRQoLQ (lack of answering to more than half of the questionnaire's items), a lack of interest in cooperating at any point of the study, and the onset of any physical disorder, such as any disease that reduced the person's QoL based on participants' statements throughout the study process was among the exclusion criteria. A total of 30 individuals who agreed to participate in the phase of determining the questionnaire's internal consistency completed the questionnaires once more 10 to 15 days later to test the reliability of the SRQoLQ through test re-test.

Statistical analysis

The SPSS software, version 21, was used for all statistical analyses, and a $P < 0.05$ was regarded as statistically significant. The frequency, Mean \pm SD of descriptive statistics were used. The CVR and CVI assessed the questionnaire's content validity. The test re-test reliability and internal consistency of the SRQoLQ were examined using the ICC method along with the Cronbach α calculation, respectively. The ICC between the outcomes of the two tests was calculated for test re-test analysis.

Results

Item generation and initial questionnaire development

The main concepts of the questionnaire and its domains were identified based on extracted themes from interviews with PWS and experts. These five main themes that constituted the questionnaire's domains

included general condition, psychological-physical effects, family situation, social relationships, and job-educational status. A list of items was developed for designing the SRQoLQ after explaining the questionnaire's goals. These items were taken from semi-structured interviews with PWS and experts as well as a review of the previous literature. The items were independently extracted from the mentioned sources based on their relevance, necessity, and importance for evaluating the QoL in the field of stuttering by two authors. Any discrepancies between these two authors for extracting data were resolved in a meeting. Finally, the 152 items that made up the most significant and pertinent phrases were chosen based on the data gathered from the conducted interviews. Overall, 85 related items to the topic were discovered after a thorough search of relevant scientific literature. In the first research team meeting after creating the pool of items, 237 initial items were examined, and following the questionnaire's objectives, items that overlapped or were different forms of the same concept were merged with the research team's opinions, and duplicate items were also removed. Moreover, some changes were made in some items which included grammatical and spelling changes. A total of 40 items eventually remained after the changes were made.

Validity and reliability of the SRQoLQ

In the qualitative content validity phase, some changes were made to the items' phrasing, and one item was eliminated from the questionnaire. A 39-item questionnaire then moved on to the quantitative step of content validity evaluation. Meanwhile, 7 items were taken out of the SRQoLQ at the time of calculating the CVR value since their scores were less than 0.56. (Table 1 shows the details of the CVR values of the SRQoLQ items). No item was taken out of the questionnaire at the stage of CVI determination because all of the items had CVI values higher than 0.79. Moreover, a 0.98 total validity index for the S-CVI questionnaire was found (Table 2 shows the details of the CVI values of the SRQoLQ items). Following this phase, a 32-item SRQoLQ was developed to evaluate face validity. According to the opinion of those who stutter during face validity, the items in the SRQoLQ were not problematic and did not require change.

The SRQoLQ was distributed to 100 PWS to assess its internal consistency. The questionnaires were completed by 83 PWS. The demographic data of the participants in this stage of the study are shown in Table 3. The findings of determining the internal consistency of

the SRQoLQ showed that the Cronbach α value of the SRQoLQ was 0.96. Likewise, the results of the evaluation of the internal consistency in the case of removing any of the items showed that removing any of the items did not lead to an increase in the internal consistency of the questionnaire (Table 4). A total of 30 PWS who participated in the internal consistency determination phase completed the SRQoLQ again. The findings indicated that the ICC value for the SRQoLQ items is between 0.6 and 0.95. Moreover, the overall questionnaire's ICC score was 0.95. (The details of the test re-test results and internal consistency are shown in Table 4).

Discussion

It is crucial to consider a person's QoL when evaluating and treating PWS. We need a special tool to evaluate the QoL in PWS so that it can accurately assess the QoL in PWS living in different societies because the QoL differs in different societies that have different social, economic, and cultural conditions [12-15]. Since there is no available specific questionnaire for Iranian PWS, the goal of this study was to develop and psychometrically evaluate a specific questionnaire to assess the QoL in PWS (SRQoLQ). Table 5 shows the final version of the SRQoLQ developed in the current study.

This tool attempted to follow all of the suggested standard directions for questionnaire development to design the SRQoLQ for the current study [23, 24]. In this regard, semi-structured interviews with PWS and experts with experience in the field of stuttering were carried out to better understand the QoL of PWS. These interviews indicated that the QoL in stuttering is a multifaceted concept including general condition, psychological-physical effects, family situation, social relationships, and job-educational status. Therefore, the main concepts of the questionnaire and its domains were selected based on these mentioned themes from interviews with PWS and experts. The initial version of the SRQoLQ, which contained 40 items, was developed. The SRQoLQ for PWS now has 32 items and is a validated questionnaire in terms of both content and face validity. Based on the information provided, the reliability of the SRQoLQ is excellent. Additionally, the ICC scores for the questionnaire are considered acceptable. The ICC score of 0.95 for the overall questionnaire further supports the reliability of the SRQoLQ.

Table 1. The results of the content validity ratio calculation for the SRQoLQ Items

| No. | Items | Unessential | Useful But Not Essential | Essential | Content Validity Ratio | Interpretation |
|-----|--|-------------|--------------------------|-----------|------------------------|----------------|
| 1 | I feel that stuttering has prevented me from achieving my goals in life. | | | 12 | 1 | Remained |
| 2 | I feel that stuttering has affected my mental health. | | | 12 | 1 | Remained |
| 3 | Stuttering affects my ability to communicate. | | | 12 | 1 | Remained |
| 4 | Stuttering does not affect my daily activities. | | 2 | 10 | 0.66 | Remained |
| 5 | I feel that stuttering has affected my overall physical health. | | 6 | 6 | 0 | Eliminated |
| 6 | I do not depend on others to do my tasks due to stuttering. | | 6 | 6 | 0 | Eliminated |
| 7 | Stuttering has affected my choice regarding the field of study. | | 3 | 9 | 0.5 | Eliminated |
| 8 | I avoid speaking because of the possibility of stuttering. | | | 12 | 1 | Remained |
| 9 | Due to stuttering, I have difficulty expressing my wishes. | | 1 | 11 | 0.83 | Remained |
| 10 | Due to stuttering, I ignore my ideals. | 1 | 3 | 8 | 0.33 | Eliminated |
| 11 | Due to stuttering, I have lost good situations (like job, education, or marriage) in my life. | | 1 | 11 | 0.83 | Remained |
| 12 | Due to stuttering, I compare myself with others more. | | 2 | 10 | 0.66 | Remained |
| 13 | Stuttering does not affect my performance at work. | | | 12 | 1 | Remained |
| 14 | Stuttering affects my relationships with my family members. | | 1 | 11 | 0.83 | Remained |
| 15 | Stuttering affects my performance in university classes. | | | 12 | 1 | Remained |
| 16 | Stuttering affects my decision to get married (or start a romantic relationship). | | | 12 | 1 | Remained |
| 17 | Stuttering has not limited me in choosing a job. | | | 12 | 1 | Remained |
| 18 | Stuttering affects my relationship with my wife (or someone I am romantically in a relationship with). | | 2 | 10 | 0.66 | Remained |
| 19 | Stuttering affects my communication with my friends. | | 2 | 10 | 0.66 | Remained |
| 20 | Due to stuttering, I have trouble making phone calls. | | 1 | 11 | 0.83 | Remained |
| 21 | I get anxious whenever I stutter. | | 1 | 11 | 0.83 | Remained |
| 22 | Stuttering has caused me financial problems. | | 6 | 6 | 0 | Eliminated |
| 23 | Stuttering is not an obstacle to the progress and promotion of my career. | | 1 | 11 | 0.83 | Remained |
| 24 | Due to stuttering, others have discriminatory behavior towards me. | | 3 | 9 | 0.5 | Eliminated |
| 25 | Due to stuttering, I rarely attend family activities. | | 1 | 11 | 0.83 | Remained |
| 26 | Stuttering has had an impact on my decision to have children. | 1 | 2 | 9 | 0.5 | Eliminated |
| 27 | I feel that my enjoyment of life is affected by stuttering. | | 1 | 11 | 0.83 | Remained |
| 28 | I feel that stuttering has reduced my self-confidence. | | | 12 | 1 | Remained |
| 29 | Stuttering has not diminished my happiness. | | | 12 | 1 | Remained |
| 30 | I feel that I have less peace in life due to stuttering. | | 1 | 11 | 0.83 | Remained |

| No. | Items | Unessential | Useful But Not Essential | Essential | Content Validity Ratio | Interpretation |
|-----|---|-------------|--------------------------|-----------|------------------------|----------------|
| 31 | Stuttering has an impact on my interaction with the opposite sex. | | 1 | 11 | 0.83 | Remained |
| 32 | Due to stuttering, I don't defend my rights in some situations. | | | 12 | 1 | Remained |
| 33 | I feel depressed because of stuttering. | | 1 | 11 | 0.83 | Remained |
| 34 | Due to stuttering, I give up on everyday discussions. | | 1 | 11 | 0.83 | Remained |
| 35 | Stuttering didn't have an impact on my social relationships with strangers. | | | 12 | 1 | Remained |
| 36 | Stuttering is annoying for me. | | 1 | 11 | 0.83 | Remained |
| 37 | I am afraid to speak because of the possibility of stuttering. | | | 12 | 1 | Remained |
| 38 | I feel that due to stuttering, I am not satisfied with my life. | | | 12 | 1 | Remained |
| 39 | I feel that stuttering has reduced my QoL. | | 1 | 11 | 0.83 | Remained |

Notes: Number of experts=12; the items with a content validity ratio of lower than 0.56 were eliminated. *Iranian Rehabilitation Journal*

Comparing the SRQoLQ with other questionnaires, the OASES questionnaire utilizes a 5-point Likert scoring system, similar to SRQoLQ. However the internal consistency has not been investigated in the original version of the OASES, and 14 samples including PWS have shown sufficient test re-test reliability of OASES [9]. In a study by Yadegari et al. [11], the internal consistency and test re-test values of the QoL section of the Persian OASES were recorded as 0.97 and 0.96, respectively. A 37-item questionnaire was developed to evaluate the QoL of PWS in a study by Bajaj et al. [2] that looked into the situation of Indian PWS. This questionnaire uses a three-point Likert scale as a scoring system, and its internal consistency was calculated to be 0.92. In terms of evaluating the questionnaire's reliability, the SRQoLQ, similar to those developed in other countries, has good validity, test re-test reliability, and internal consistency.

As the SRQoLQ has 32 items, it has more items than the OASES questionnaire (25 questions) [9]; however, fewer questions than the questionnaire developed by Bajaj et al. (37 questions). The SRQoLQ has an appropriate number of items. The majority of questionnaires used to measure people's QoL have between 20 and 40 items; for example, the WHO QoL scale and the 36-item short-form health survey have 25 and 36 items, respectively. Even while there are questionnaires with fewer items that are easier to use and yield faster results, the more items in the questionnaire, the more valid it will be and the more topics it will cover [20]. Furthermore, it was demonstrated that the methods used to design the items were capable of taking Iranian society's conditions into account by examining the questions of the designed questionnaire and comparing them to the questions of

other questionnaires. For instance, there is a question about talking to the opposite sex in the SRQoLQ the questionnaire developed for Indian society [2], whereas in other societies (i.e. Western countries), people do not place as much importance on this issue and the OASES questionnaire does not contain a question like this [9]. The current study's questionnaire includes a question that is not found in other questionnaires about how stuttering affects a person's decision to get married or begin a romantic relationship. Four questions on the Bajaj et al. [2] questionnaire pertain to the impact of speech therapy, which does not appear to directly address the question of QoL but rather the satisfaction with speech therapy.

The analysis of the number of questions in each section of the various QoL questionnaires can also show that the questions were developed taking into account the social, cultural, and economic circumstances of each society. The analyses conducted on this issue revealed that the Indian questionnaire had nine speech-related fear and anxiety questions, eight questions about employment and job opportunity, seven questions about behavioral reactions to stuttering, five questions about educational status, interpersonal and social relationships, and the effect of speech therapy (4 questions each) [2]. The QoL section of the OASES has five sections, and most questions pertain to the following topics: Stuttering interference in personal life (8 questions), stuttering interference in relationships (5 questions each), stuttering interference in the job and education (5 questions), stuttering interference in communication satisfaction (4 questions), and the negative effects of stuttering on QoL (3 questions) [9]. The five main sections of the SRQoLQ are psychological and physical health (11 questions),

Table 2. The results of the content validity index calculation for the SRQoLQ

| No. | Items | Not Relevant | Somewhat Relevant | Acceptable Relevant | Very Relevant | I-CVI | Interpretation |
|-----|--|--------------|-------------------|---------------------|---------------|-------|----------------|
| 1 | I feel that stuttering has prevented me from achieving my goals in life. | | | 2 | 10 | 0.83 | Remained |
| 2 | I feel that stuttering has affected my mental health. | | | | 12 | 1 | Remained |
| 3 | Stuttering affects my ability to communicate. | | | | 12 | 1 | Remained |
| 4 | Stuttering does not affect my daily activities. | | | 2 | 10 | 0.83 | Remained |
| 5 | I avoid speaking because of the possibility of stuttering. | | | | 12 | 1 | Remained |
| 6 | Due to stuttering, I have difficulty expressing my wishes. | | | | 12 | 1 | Remained |
| 7 | Due to stuttering, I have lost good situations (like job, education, or marriage) in my life. | | 1 | 1 | 10 | 0.91 | Remained |
| 8 | Due to stuttering, I compare myself with others more. | | 2 | 1 | 9 | 0.83 | Remained |
| 9 | Stuttering does not affect my performance at work. | | | | 12 | 1 | Remained |
| 10 | Stuttering affects my relationships with my family members. | | | 1 | 11 | 1 | Remained |
| 11 | Stuttering affects my performance in university classes. | | | | 12 | 1 | Remained |
| 12 | Stuttering affects my decision to get married (or start a romantic relationship). | | | | 12 | 1 | Remained |
| 13 | Stuttering has not limited me in choosing a job. | | | | 12 | 1 | Remained |
| 14 | Stuttering affects my relationship with my wife (or someone I am romantically in a relationship with). | | | 1 | 11 | 1 | Remained |
| 15 | Stuttering affects my communication with my friends. | | | 1 | 11 | 1 | Remained |
| 16 | Due to stuttering, I have trouble making phone calls. | | | 1 | 11 | 1 | Remained |
| 17 | I get anxious whenever I stutter. | | 1 | | 11 | 0.91 | Remained |
| 18 | Stuttering is not an obstacle to the progress and promotion of my career. | | | 1 | 11 | 1 | Remained |
| 19 | Due to stuttering, I rarely attend family activities. | | | 1 | 11 | 1 | Remained |
| 20 | I feel that my enjoyment of life is affected by stuttering. | | | | 12 | 1 | Remained |
| 21 | I feel that stuttering has reduced my self-confidence. | | | | 12 | 1 | Remained |
| 22 | Stuttering has not diminished my happiness. | | | | 12 | 1 | Remained |
| 23 | I feel that I have less peace in life due to stuttering. | | | | 12 | 1 | Remained |
| 24 | Stuttering has an impact on my interaction with the opposite sex. | | | 1 | 11 | 1 | Remained |
| 25 | Due to stuttering, I don't defend my rights in some situations. | | | | 12 | 1 | Remained |
| 26 | I feel depressed because of stuttering. | | | | 12 | 1 | Remained |
| 27 | Due to stuttering, I give up on everyday discussions. | | | | 12 | 1 | Remained |
| 28 | Stuttering didn't have an impact on my social relationships with strangers. | | | | 12 | 1 | Remained |
| 29 | Stuttering is annoying for me. | | | 1 | 11 | 1 | Remained |
| 30 | I am afraid to speak because of the possibility of stuttering. | | | | 12 | 1 | Remained |

| No. | Items | Not Relevant | Somewhat Relevant | Acceptable Relevant | Very Relevant | I-CVI | Interpretation |
|-----|---|--------------|-------------------|---------------------|---------------|-------|----------------|
| 31 | I feel that due to stuttering, I am not satisfied with my life. | | | | 12 | 1 | Remained |
| 32 | I feel that stuttering has reduced my QoL. | | | | 12 | 1 | Remained |
| | S-CVI average | | | | | 0.98 | Appropriate |

Notes: Number of experts=12; the items with a CVI lower than 0.78 were eliminated.

Iranian Rehabilitation Journal

Abbreviations: CVI: Content validity index; I-CVI: Item-content validity index; S-CVI: Scale content validity index; SRQoLQ: Stuttering-related quality of life questionnaire.

social relationships (9 questions), job and educational status (5 questions), family conditions (4 questions), and general situation (3 questions). Despite the differences between the questions and fields of the mentioned questionnaires, these questionnaires have questions with the same topic, which indicates the negative effects of stuttering on people's lives regardless of the cultural and social differences of different societies. For instance, all three mentioned questionnaires have items that investigate the negative impacts of stuttering on communication, education, self-confidence, job, and psychological-physical health of PWS.

Conclusion

In this study, a suitable instrument was developed based on interviews with PWS, experts, and reviewing the relevant scientific literature to assess the QoL of PWS. Moreover, its psychometric properties were also examined. The SRQoLQ for PWS with 32 items is a valid and reliable questionnaire that clinicians and researchers can use for clinical or research purposes in the area of assessing and treating stuttering. The SRQoLQ can help clinicians identify areas of concern and develop strate-

gies to improve QoL in PWS. However, more research is needed to fully examine the psychometric properties of the SRQoLQ because it is a new instrument in this field. Overall, this is an important development in the field of stuttering research and can provide valuable insights into improving the QoL of PWS.

Study limitations

This study faced some limitations. Some of the psychometric properties of the SRQoLQ were not evaluated in the study. Therefore, it is advised to conduct further research to determine the construct validity (exploratory factor analysis) and other psychometric features of the SRQoLQ. It is suggested to use this questionnaire to assess the QoL of PWS with various levels of stuttering severity and to identify the factors impacting the QoL to be able to use it in future studies.

Table 3. Demographic characteristics of the participants (n=83)

| Variables | Mean±SD/No. (%) | |
|-----------|--------------------|----------|
| Age (y) | 29.07±7.28 | |
| Gender | Male | 53(63.9) |
| | Female | 30(36.1) |
| Education | Diploma and below | 11(13.3) |
| | Associates' degree | 9(10.8) |
| | Bachelor's degree | 35(42.2) |
| | Master's degree | 24(28.9) |
| | Doctoral and above | 4(4.8) |

Iranian Rehabilitation Journal

Table 4. The results of the reliability using internal consistency (n=83) and test re-test (n=30)

| No. | Domains | Mean±SD (n=83) | Cronbach α of the Questionnaire After Removing the Item (n=83) | Intraclass Correlation Coefficient (n=30) | Confidence Interval |
|-----|------------------------|-------------------|--|--|---------------------|
| 1 | General condition | 3.43±1.24 | 0.961 | 0.884 | 0.77-0.94 |
| 2 | | 3.84±1.11 | 0.962 | 0.926 | 0.85-0.96 |
| 3 | | 4.18±1.07 | 0.961 | 0.723 | 0.42-0.86 |
| 4 | Psychological-physical | 3.3±1.34 | 0.963 | 0.645 | 0.83-0.26 |
| 5 | | 3.52±1.29 | 0.962 | 0.903 | 0.8-0.95 |
| 6 | | 3.69±2.1 | 0.961 | 0.842 | 0.69-0.92 |
| 7 | | 3.58±1.25 | 0.961 | 0.879 | 0.94-0.76 |
| 8 | | 3.45±1.3 | 0.962 | 0.666 | 0.41-0.82 |
| 9 | | 3.44±1.43 | 0.962 | 0.811 | 0.6-0.91 |
| 10 | | 2.91±1.45 | 0.963 | 0.828 | 0.67-0.91 |
| 11 | | 3.97±1.14 | 0.962 | 0.905 | 0.81-0.95 |
| 12 | | 3.55±1.36 | 0.961 | 0.721 | 0.41-0.86 |
| 13 | | 3.58±1.33 | 0.963 | 0.6 | 0.18-0.81 |
| 14 | 3.03±1.29 | 0.962 | 0.785 | 0.59-0.89 | |
| 15 | Family situation | 3.12±1.38 | 0.961 | 0.875 | 0.75-0.93 |
| 16 | | 3.77±1.27 | 0.961 | 0.859 | 0.72-0.93 |
| 17 | | 4.17±0.99 | 0.962 | 0.648 | 0.38-0.81 |
| 18 | | 3.45±1.33 | 0.962 | 0.641 | 0.25-0.82 |
| 19 | Social relationships | 2.34±1.31 | 0.963 | 0.675 | 0.42-0.83 |
| 20 | | 3.3±1.22 | 0.961 | 0.839 | 0.69-0.92 |
| 21 | | 3.75±1.23 | 0.961 | 0.757 | 0.55-0.87 |
| 22 | | 3.19±1.34 | 0.962 | 0.630 | 0.35-0.80 |
| 23 | | 3.34±1.16 | 0.961 | 0.885 | 0.77-0.94 |
| 24 | | 3.52±1.26 | 0.961 | 0.779 | 0.58-0.88 |
| 25 | | 3.51±1.35 | 0.962 | 0.822 | 0.66-0.91 |
| 26 | | 3.09±1.23 | 0.961 | 0.9 | 0.81-0.95 |
| 27 | | 2.88±1.33 | 0.962 | 0.682 | 0.43-0.83 |
| 28 | Job-educational status | 3.3±1.27 | 0.963 | 0.648 | 0.38-0.81 |
| 29 | | 4±1.11 | 0.962 | 0.946 | 0.89-0.97 |
| 30 | | 3.71±1.23 | 0.961 | 0.938 | 0.87-0.97 |
| 31 | | 3.26±1.27 | 0.961 | 0.851 | 0.71-0.92 |
| 32 | | 3.49±1.24 | 0.961 | 0.727 | 0.49-0.86 |

Table 5. The final version of the SRQoLQ

| No. | Questions | Strongly Disagree | Disagree | Neither Disagree nor Agree | Agree | Strongly Agree | |
|---|-----------|--|----------|----------------------------|-------|----------------|---|
| General Condition | 1 | I feel that I am not satisfied with my life due to stuttering. | 1 | 2 | 3 | 4 | 5 |
| | 2 | I feel that stuttering has reduced my QoL. | 1 | 2 | 3 | 4 | 5 |
| | 3 | I feel that stuttering has prevented me from achieving my goals in life. | 1 | 2 | 3 | 4 | 5 |
| Psychological-physical Condition | 4 | I feel that stuttering has affected my mental health. | 1 | 2 | 3 | 4 | 5 |
| | 5 | I feel that stuttering has reduced my self-confidence. | 1 | 2 | 3 | 4 | 5 |
| | 6 | Stuttering does not affect my daily activities. | 1 | 2 | 3 | 4 | 5 |
| | 7 | Stuttering occurrence is annoying for me. | 1 | 2 | 3 | 4 | 5 |
| | 8 | I am afraid to speak because of the possibility of stuttering. | 1 | 2 | 3 | 4 | 5 |
| | 9 | I feel that I have less peace in life due to stuttering. | 1 | 2 | 3 | 4 | 5 |
| | 10 | I get anxious when stuttering occurs. | 1 | 2 | 3 | 4 | 5 |
| | 11 | I feel depressed because of stuttering. | 1 | 2 | 3 | 4 | 5 |
| | 12 | I feel that my enjoyment of life is affected by stuttering. | 1 | 2 | 3 | 4 | 5 |
| | 13 | Stuttering has not reduced my happiness. | 1 | 2 | 3 | 4 | 5 |
| | 14 | Due to stuttering, I compare myself with others more. | 1 | 2 | 3 | 4 | 5 |
| Family Situation | 15 | Stuttering affects my relationship with my wife/husband (or someone I am in a romantic relationship with). | 1 | 2 | 3 | 4 | 5 |
| | 16 | Stuttering affects my relationships with my family members. | 1 | 2 | 3 | 4 | 5 |
| | 17 | Stuttering affects my decision to get married (or start a romantic relationship). | 1 | 2 | 3 | 4 | 5 |
| | 18 | Due to stuttering, I attend less family activities. | 1 | 2 | 3 | 4 | 5 |
| Social Relationships | 19 | Stuttering has not affected my social relations with strangers. | 1 | 2 | 3 | 4 | 5 |
| | 20 | I avoid speaking because of the possibility of stuttering. | 1 | 2 | 3 | 4 | 5 |
| | 21 | Due to stuttering, I have problems expressing my wishes. | 1 | 2 | 3 | 4 | 5 |
| | 22 | Stuttering affects my interaction with my friends. | 1 | 2 | 3 | 4 | 5 |
| | 23 | Stuttering affects my interaction with the opposite sex. | 1 | 2 | 3 | 4 | 5 |
| | 24 | Due to stuttering, I don't defend my right in some situations. | 1 | 2 | 3 | 4 | 5 |
| | 25 | Due to stuttering, I have trouble making phone calls. | 1 | 2 | 3 | 4 | 5 |
| | 26 | Stuttering affects my ability to communicate. | 1 | 2 | 3 | 4 | 5 |
| | 27 | Due to stuttering, I give up early in everyday discussions. | 1 | 2 | 3 | 4 | 5 |

| No. | Questions | Strongly Disagree | Disagree | Neither Disagree nor Agree | Agree | Strongly Agree |
|------------------------|--|-------------------|----------|----------------------------|-------|----------------|
| Job-educational Status | 28 Stuttering has not limited me in choosing a job. | 1 | 2 | 3 | 4 | 5 |
| | 29 Due to stuttering, I have lost good situations (like job and education) in my life. | 1 | 2 | 3 | 4 | 5 |
| | 30 Stuttering affects my performance at university or in training classes. | 1 | 2 | 3 | 4 | 5 |
| | 31 Stuttering is not an obstacle to progress and promotion of my career. | 1 | 2 | 3 | 4 | 5 |
| | 32 Stuttering does not affect my performance at work. | 1 | 2 | 3 | 4 | 5 |

Iranian Rehabilitation Journal

Description: This questionnaire asks you about the effects of stuttering on your quality of life. Please read all the questions in the questionnaire and answer them carefully. If a question does not concern to you, ignore it and answer the next question.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of [Semnan University of Medical Sciences](#) (No.: IR.SEMUMS.REC.1401.058). All study participants were explained the study's goals and were given assurances regarding the privacy of their data. People had the option to withdraw from the study at any moment, and participation in it was entirely optional. The participants who agreed to voluntarily engage in this study lastly signed the written consent forms.

Funding

This study was derived from the master's thesis of Mobina Sadat Hosseini, approved by [Semnan University of Medical Sciences](#).

Authors' contributions

Conceptualization: Banafshe Mansuri, Seyed Abolfazl Tohidast, Mobina Sadat Hosseini and Masoomeh Salmani; Methodology: Seyed Abolfazl Tohidast, Banafshe Mansuri and Farhad Sakhai; Investigation: Mobina Sadat Hosseini and Seyed Abolfazl Tohidast; Funding acquisition: Seyed Abolfazl Tohidast; Writing: All authors.

Conflict of interest

The authors declared no conflict of interest.

Acknowledgments

The participants in this study, including people who stutter and speech-language pathologists, are gratefully acknowledged by the authors.

References

- [1] Mansuri B, Shahbodaghi MR, Tohidast SA, Kamali M. [Comparing the quality of life in adults who stutter with their normal counterparts (Persian)]. *Journal of Research in Rehabilitation Sciences* 2013; 9: 318-27. [Link]
- [2] Bajaj G, Varghese AL, Bhat JS, Deepthi J. Assessment of quality of life of people who stutter: A cross-sectional study. *Rehabilitation Process and Outcome*. 2014; 3. [DOI:10.4137/RPO.S19058]
- [3] Mehdizadeh Behtash M, Mansuri B, Salmani M, Tohidast SA, Zarjini R, Scherer RC. Development and evaluation of the psychometric properties of the caregiver burden scale for parents of children who stutter (CBS-PCWS). *Journal of Fluency Disorders*. 2022; 73:105921. [DOI:10.1016/j.jfludis.2022.105921] [PMID]
- [4] Carter A, Breen L, Yaruss JS, Beilby J. Self-efficacy and quality of life in adults who stutter. *Journal of Fluency Disorders*. 2017; 54:14-23. [DOI:10.1016/j.jfludis.2017.09.004] [PMID]
- [5] Salehpoor A, Latifi Z, Tohidast SA. Evaluating parents' reactions to children's stuttering using a Persian version of Reaction to Speech Disfluency Scale. *International Journal of Pediatric Otorhinolaryngology*. 2020; 134:110076. [DOI:10.1016/j.ijporl.2020.110076] [PMID]
- [6] Beilby JM, Byrnes ML, Meagher EL, Yaruss JS. The impact of stuttering on adults who stutter and their partners. *Journal of Fluency Disorders*. 2013; 38(1):14-29. [DOI:10.1016/j.jfludis.2012.12.001] [PMID]
- [7] Craig A, Blumgart E, Tran Y. The impact of stuttering on the quality of life in adults who stutter. *Journal of Fluency Disorders*. 2009; 34(2):61-71. [DOI:10.1016/j.jfludis.2009.05.002] [PMID]
- [8] Klompas M, Ross E. Life experiences of people who stutter, and the perceived impact of stuttering on quality of life: Personal accounts of South African individuals. *Journal of Fluency Disorders*. 2004; 29(4):275-305. [DOI:10.1016/j.jfludis.2004.10.001] [PMID]

- [9] Yaruss JS, Quesal RW. Overall Assessment of the Speaker's Experience of Stuttering (OASES): Documenting multiple outcomes in stuttering treatment. *Journal of Fluency Disorders*. 2006; 31(2):90-115. [DOI:10.1016/j.jfludis.2006.02.002] [PMID]
- [10] Tohidast SA, Mansouri B, Jalaei S, Daryabari SM. A review on attitude assessment instruments designed for people who stutter. *Journal of Research in Rehabilitation Sciences*. 2013; 8(7):1266-76. [Link]
- [11] Yadegari F, Shirazi TS, Howell P, Nilipour R, Shafiei M, Shafiei B, et al. Persian overall assessment of the speaker's experience of stuttering for adults: The impact of stuttering on the Persian-Speaking adults who stutter. *Iranian Rehabilitation Journal*. 2018; 16 (2):131-8. [DOI:10.32598/irj.16.2.131]
- [12] Hofstede G. The cultural relativity of the quality of life concept. *The Academy of Management Review*. 1984; 9(3):389-98. [DOI:10.2307/258280]
- [13] Kazemi M, Nasrabadi AN, Hasanpour M, Hassankhani H, Mills J. Experience of Iranian persons receiving hemodialysis: A descriptive, exploratory study. *Nursing & Health Sciences*. 2011; 13(1):88-93. [DOI:10.1111/j.1442-2018.2011.00586.x] [PMID]
- [14] Nayak S, Shiflett SC, Eshun S, Levine FM. Culture and gender effects in pain beliefs and the prediction of pain tolerance. *Cross-Cultural Research*. 2000; 34(2):135-51. [DOI:10.1177/106939710003400203]
- [15] Krischke S, Weigelt S, Hoppe U, Köllner V, Klotz M, Eysholdt U, et al. Quality of life in dysphonic patients. *Journal of Voice*. 2005; 19(1):132-7. [DOI:10.1016/j.jvoice.2004.01.007] [PMID]
- [16] Tohidast SA, Mansuri B, Bagheri R, Azimi H. Determining pain in patients with voice disorders: A qualitative study. *Logopedics Phoniatrics Vocology*. 2021; 46(4):155-62. [DOI:10.1080/14015439.2020.1791249] [PMID]
- [17] Graneheim UH, Lundman B. Qualitative content analysis in nursing research: Concepts, procedures, and measures to achieve trustworthiness. *Nurse Education Today*. 2004; 24(2):105-12. [DOI:10.1016/j.nedt.2003.10.001] [PMID]
- [18] Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qualitative Health Research*. 2005; 15(9):1277-88. [DOI:10.1177/1049732305276687] [PMID]
- [19] Lawshe CH. A quantitative approach to content validity. *Personnel Psychology*. 1975; 28(4):563-75. [DOI:10.1111/j.1744-6570.1975.tb01393.x]
- [20] Tohidast SA, Ghelichi L, Kamali M, Ebadi A, Shavaki YA, Shafaroodi N, et al. Development and psychometric evaluation of speech and language pathology evidence-based practice questionnaire (SLP-EBPQ). *Evidence Based Care Journal*. 2018; 8(4):61-74. [Link]
- [21] Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Research in Nursing & Health*. 2007; 30(4):459-67. [DOI:10.1002/nur.20199] [PMID]
- [22] Saei Ghare Naz M, Ebadi A, Darooneh T, Rashidi Fakari F, Kholosi Badr F, Ghasemi V, et al. Cross-cultural adaptation and psychometric evaluation of the Pap smear belief questionnaire in Iranian women. *Evidence Based Care*. 2018; 8:27-34. [Link]
- [23] Streiner DL, Norman GR, Cairney J. Health measurement scales: A practical guide to their development and use. Oxford: Oxford University Press; 2015. [DOI:10.1093/med/9780199685219.001.0001]
- [24] DeVellis RF, Thorpe CT. Scale development: Theory and applications. California: Sage Publications; 2021. [Link]

Appendix 1. Questions asked from experts in the qualitative content validity stage

Is the title of the questionnaire appropriate?

Are the objects of the questionnaire suitable for the purpose of the instruments?

Is there a need to reconsider the items?

Is there a need to delete the item?

Is it necessary to add an item to the questionnaire?

Is the method of scoring the test appropriate?

Do you have any other suggestions?