



## Research Paper

# Validity and Reliability of the Persian Version of the Swallowing Outcomes After Laryngectomy Questionnaire



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## ABSTRACT

**Background and Objectives:** There are various tools to identify problems caused by swallowing disorders in people with total laryngectomy. In this study, the validity and reliability of the Persian version of the “swallowing outcomes after laryngectomy (SOAL) questionnaire” in laryngectomy patients were determined.

**Methods:** This cross-sectional and descriptive-analytical study was conducted on patients referred to hospitals of Tehran and Iran Universities of Medical Sciences. Sampling was done using a simple non-probability method and the sample size was 70 individuals.

**Results:** Exploratory factor analysis showed an initial commonality of 1 for all items and an extracted commonality of more than 0.4 for all items, indicating the variables’ explanatory power by the items. In total, 5 factors exhibited high eigenvalues. The first factor (5.035) and the fifth factor (1.165) accounted for more than 73% of the total variance. The intra-class correlation coefficient (ICC) and Cronbach’s  $\alpha$  values were 0.819, indicating a favorable internal reliability. Also, the test re-test reliability measurement using Cronbach’s  $\alpha$  showed a significant value of 0.823. The results of the total item correlation indicated that all items, except for items 15, 16, and 17, had a correlation above 0.3 with the total score.

**Conclusion:** Considering the findings related to validity and reliability, the time required to complete the questionnaire, the small number of questions, the clarity and simplicity of the questions, and the ease of scoring, which are considered to be the most important aspects of the practicality of the questionnaire, the SOAL Questionnaire is deemed a suitable tool for clinical settings.

**Keywords:** Total laryngectomy, Swallowing outcomes, Validity, Reliability

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↑ *What is “already known” in this topic:*

*Questionnaires for assessing swallowing disorders in laryngectomies are available in other languages.*

→ *What this article adds:*

*In this study, a Persian version of a questionnaire for assessing swallowing disorders in laryngectomy patients was developed with available psychometric properties.*

## Introduction

**A** total laryngectomy is a surgical procedure in which the larynx is completely removed, the airway is separated, and breathing is performed through a stoma [1]. Total laryngectomy is routinely used in the treatment of advanced or recurrent laryngeal cancers. It involves the removal of the larynx and hyoid bone, and several functional consequences may occur as a result of the surgery, one of which is swallowing difficulties [2]. Normal swallowing involves a set of physiological behaviors that result in the safe and effective movement of food, liquid, or other substances from the mouth to the stomach [3]. Dysphagia, in contrast, is a term derived from the Greek word for difficulty in eating [4] and is defined as a clear impairment or difficulty in swallowing that results in an abnormal delay in the passage of liquids or food morsels. This delay may occur during the oral, pharyngeal, or esophageal stages of swallowing [5].

Total laryngectomy can be performed either independently or in conjunction with radiotherapy, with or without chemotherapy. Radiotherapy can also cause an increase in fibrotic tissue. This increase can cause swallowing difficulties for years after treatment. It is important to note that swallowing problems tend to increase with age [6], and individuals who have undergone a total laryngectomy also tend to be older on average [7]. The prevalence of swallowing problems in people who have total laryngectomy has been reported to be 72% [8]. The severity of swallowing problems in people with head and neck cancer can be influenced by the extent of the larynx resection [9] and the structures involved, the surgical technique and reconstruction, and the degree of residual movement of the structures [10].

Although complete separation of the respiratory and digestive tracts eliminates the risk of aspiration and there is

no risk of respiratory infection, there are changes in the swallowing process during total laryngectomy. Swallowing problems in these individuals include poor formation and transport of food boluses, increased oral and pharyngeal transit times, material retention in the oral cavity, and difficulty in transporting food to the esophagus and stomach [2, 9]. They may also face challenges swallowing dry foods, leading to dietary modifications and prolonged feeding times. For instance, they might be restricted to pureed foods [11] or rely on nutritional supplements, experience a sensation of food sticking in their throat, require repeated swallowing [2], and have impaired taste and smell identification [12]. As a result, swallowing disorders in total laryngectomy patients cause weight loss and nutritional deficiencies, negatively affecting their quality of life [2], and also impose psychosocial limitations [12]. These patients may be referred to speech pathologists due to swallowing problems. In such scenarios, and considering the circumstances of these individuals, a rapid and accessible assessment tool in this domain is both necessary and essential. Such a tool could assist speech and language pathologists in identifying problems arising from swallowing disorders in individuals who have undergone a total laryngectomy.

Several tools exist for assessing swallowing problems in patients, encompassing both devices and questionnaires/tests. Although devices, such as videofluoroscopic swallow study (VFSS) and flexible endoscopic evaluation of swallowing (FEES) are highly accurate, their use in patients with total laryngectomy has limitations. For example, access to these devices may be difficult, or the larynx may have been completely removed during surgery. In addition, the use of these devices requires specialized training for therapists, and the use of barium increases the risk of radiation exposure [13, 14]. Therefore, patient self-reports can serve as a valuable tool for initial diagnosis and screening of swallowing problems associated with head and neck cancers, and questionnaires are instruments designed to collect these reports [14, 15].

To date, several questionnaires, the Swallowing Quality of Life questionnaire (SWAL-QOL) [16], SWAL-CARE [17], and the Sydney swallowing questionnaire (SSQ) [16], have been developed and utilized to assess swallowing problems in patients. However, all of these questionnaires have been developed for people with a larynx, and swallowing problems caused by laryngectomy have not been considered in their development [17, 18]. Therefore, these questionnaires are not comprehensive tools for determining swallowing skills and identifying post-laryngectomy issues [7]. Until the creation of the “swallowing outcomes after laryngectomy (SOAL) questionnaire” by Gavander et al. a valid, specialized tool for assessing swallowing skills after total laryngectomy was unavailable [19].

The SOAL has 17 questions and targets the problems that people may experience after laryngectomy. These questions are similar to those in the SWAL-QOL [16] and Dysphagia handicap index (DHI) [20] or MD Anderson dysphagia inventory. A key distinction is that this questionnaire also assesses the degree to which a patient’s problem is bothersome [7], a factor not addressed in other swallowing questionnaires. This particular section can aid in the initial diagnosis and identification of patients’ swallowing problems. This questionnaire was designed through a study of 110 patients across 4 different hospitals, and individuals who required assistance to complete the questionnaire were excluded from the study [7]. The purpose of this questionnaire was to screen for swallowing problems in individuals who had undergone a total laryngectomy [7].

Recognizing that the SOAL questionnaire is an appropriate measurement tool for assessing swallowing outcomes post-laryngectomy, and can also be employed to gauge the complication of swallowing problems in total laryngectomy patients within Iran. Furthermore, considering that this tool has not been translated and its validity and reliability have not been examined in a domestic patient sample, this study aimed to translate the questionnaire and determine the validity and reliability of the Persian version of the SOAL questionnaire in laryngectomy patients. This endeavor seeks to fulfill the needs of specialists in this field.

## Materials and Methods

This cross-sectional and descriptive-analytical study aimed to determine the psychometric properties of the Persian version of the SOAL questionnaire.

### Step 1: Instrument translation

The first step was instrument translation. The translation was carried out in two stages: Pre-translation and translation. In the pre-translation stage, permission was obtained from the original developer to translate the questionnaire without any associated costs, followed by the translation stage. In this study, the standard The International Quality of Life Assessment (IQOLA) method was used to translate and equate the SOAL questionnaire. In the translation stage from English to Persian, the original English version of the scale was translated into Persian by two translators whose native language was Persian and had sufficient experience and proficiency in translating English texts (translators 1 and 2). These two translators were also asked to prepare a list of possible alternative translations for some words, phrases, or sentences in the scale, if necessary. Each of the translators rated each of every instruction and recommendation in the scale on a 100-point visual scale in terms of difficulty. Then, the quality of the translation was assessed by two other translators (translators 3 and 4). Both translators were native Persian speakers, and yet both of them had sufficient proficiency in both English and Persian. These translators rated the quality of the translation for each question in the scale. At this stage, the quality of the translation referred to the desirability of the phrases and sentences in terms of clarity (using simple and understandable words), the use of common language (avoiding technical, specialized, and artificial terms), conceptual uniformity (maintaining the conceptual content of the original scale), and overall translation quality. Therefore, translators 3 and 4 assigned 4 scores on 100-point scales for each of the questions, answers, and recommendations of the Persian version of the SOAL questionnaire (Appendix 1).

In these visual scales, a score of zero indicated completely unsatisfactory quality, while 100 signified completely satisfactory translation quality. The criterion for deciding on the unsatisfactory quality of translations was an average score lower than 90. At the end of this stage, a Persian version was obtained, which was considered to be of satisfactory quality by translators 1 to 4.

Subsequently, two additional translators, both fluent in Persian and English, were tasked with re-translating this initial Persian version back into English. Through several meetings involving the researcher and the research team, an agreement was reached on a common English translation by comparing the two versions produced by these translators.

In the next stage, the version prepared in the previous stage was sent to the main developer to be matched with the original version in English. By matching the original version with the prepared version, a final Persian version of the SOAL questionnaire with appropriate and satisfactory translation quality was created. It should be noted that, in order to adapt to cultural differences, question 4 of the food questionnaire, which originally mentioned “shepherd’s pie,” was replaced with a similar equivalent, “minced meat”, due to its absence in Iranian food culture. Additionally, question 2 was removed because patients rarely use dentures. Finally, question 17 of the questionnaire, under the “feel self-conscious” section, was interpreted as “embarrassment”.

### Step 2: Validity and reliability of the questionnaire

In the second stage of this study, after receiving the code of ethics and necessary permits, the researcher referred to the relevant hospitals. The study location was hospitals affiliated with Tehran and [Iran Universities of Medical Sciences](#), over a six-month period, from June to December 2022. The Persian version of the questionnaire was provided to the research sample. The method for answering the questions was explained, and assistance was provided if needed for completing the questionnaire.

To determine the test re-test reliability, two weeks after the initial assessment, the questionnaire was given to 20 patients with complete laryngectomy to answer the questionnaire again. After the end of sampling, the obtained data were entered into SPSS software, version 22 for statistical analysis. For the descriptive analysis, the frequency, Mean±SD, maximum, and minimum values of the variables were used. The Kolmogorov-Smirnov test was employed to assess the conformity of the distribution of these variables with the theoretical normal distribution. In the inferential section, the construct validity of the Persian version of the questionnaire was examined using factor analysis. The reliability of the Persian version of the questionnaire was calculated by determining the internal consistency coefficient (ICC) at the item level using Cronbach’s  $\alpha$  coefficient. The reliability of its Persian version was examined in terms of internal consistency, using the correlation coefficient of each item with the total score.

### Statistical population

The study population was all patients who had undergone a total laryngectomy, with the study sample drawn from individuals referring to the considered hospitals.

The inclusion criteria were as follows: Age between 18 and 90 years, having undergone total laryngectomy surgery, a minimum of 3 months having passed since tumor surgery [21, 22] to allow for the resolution of transient complications caused by treatment for all three patient groups (laryngectomy alone, laryngectomy with chemotherapy, laryngectomy with radiotherapy, and laryngectomy with both chemotherapy and radiotherapy), no history of head and neck surgery other than laryngectomy, no history of swallowing disorder before laryngectomy surgery, and no history of brain injury. Exclusion criteria included the inability to understand the questionnaire questions and failure to complete the questionnaire.

### Sample and sample size determination

Sampling was done using a simple non-probability method. In this method, patients were selected from hospitals affiliated with Tehran and [Iran Universities of Medical Sciences](#) over a period of 6 months based on inclusion and exclusion criteria. According to Terwee et al. [21], regarding the psychometric properties of questionnaires that examine health status, a sample size of 5 individuals per question is necessary, with 20 of these participants being involved in a re-test. Considering the 17 questions in the questionnaire, 85 individuals ( $17 \times 5 = 85$ ) were needed. However, due to limitations, the final sample consisted of 70 patients.

### Results

In order to determine the level of translation difficulty, average comprehension difficulty scores below 25 were considered as indicating easy translations, scores between 25 and 30 were considered relatively easy translations, and scores above 30 were considered difficult translations. At this stage, according to the aforementioned criteria, the questions, answers, and recommendations of the Persian version of the questionnaire were determined to possess a favorable level of translation quality (average score between 80 and 90).

Then, in order to determine content validity both qualitatively and quantitatively, the Persian version was reviewed by 5 speech-language pathologists who had at least 5 years of experience in assessing and treating feeding and swallowing disorders. They assessed the usefulness and necessity of the items, after which the quantitative evaluation was performed using the Lawshe table and the Likert scale (Table 1).

**Table 1.** CVR and CVI

Questions	CVR					CVI				
	Assessor 1	Assessor 2	Assessor 3	Assessor 4	Assessor 5	Assessor 1	Assessor 2	Assessor 3	Assessor 4	Assessor 5
1	1	1	1	1	1	4	2	4	3	2
2	1	1	1	1	1	4	3	4	4	3
3	1	1	1	1	1	3	4	4	3	4
4	1	1	1	1	1	4	2	4	4	4
5	1	1	1	1	1	4	2	4	4	4
6	1	1	1	1	1	4	3	4	3	4
7	1	1	1	1	1	4	4	4	3	4
8	1	1	1	1	1	3	3	3	3	3
9	1	1	1	1	1	4	2	4	4	4
10	1	1	1	1	1	4	3	4	4	4
11	1	1	1	1	1	3	2	4	4	4
12	1	1	1	1	1	4	3	4	4	3
13	1	1	1	1	1	3	2	4	4	4
14	1	1	1	1	1	4	3	4	4	4
15	1	1	1	1	1	4	2	4	4	4
16	1	1	1	1	1	4	2	4	3	4
17	1	1	1	1	1	3	2	4	4	3
Total	1					0.8				

Content validity was evaluated using two methods: Content validity ratio (CVR) and content validity index (CVI). The calculation of the CVR showed that the content validity ratio for all items exceeded the CVR value listed in the Lawshe table for a 5-member expert evaluation

panel, which is 0.99, and therefore was higher than the acceptable value.

The Waltz and Basel method was used to examine the CVI, in which experts determine the “relevance”, “clar-

**Table 2.** Patient opinion based on the clarity, difficulty, and understandability of the questionnaire

Patient	Status	Patient	Status
1	Capable of understanding	6	Capable of understanding
2	Capable of understanding	7	Capable of understanding
3	Capable of understanding	8	Capable of understanding
4	Capable of understanding	9	Capable of understanding
5	Capable of understanding	10	Capable of understanding

**Table 3.** Demographic characteristics of patients with total laryngectomy

Variables		Mean±SD/No. (%)
Age (y)		63.23±8.12
Gender	Male	57(81.14)
	Female	13(18.6)
Time since surgery (m)		19.09±15.72
Type of diet	Normal	28(40)
	Changed	24(34.3)
	No oral feeding	18(25.7)
Type of treatment	Laryngectomy	24(34.3)
	Laryngectomy+chemotherapy	18(25.7)
	Laryngectomy+radiotherapy	13(18.6)
	Laryngectomy+radiotherapy+chemotherapy	15(21.4)

ity” and “simplicity” of each item based on a 4-point Likert scale. The relevance of each item is rated as follows: 1 “not relevant,” 2 “relatively relevant,” 3 “relevant,” and 4 “completely relevant.” Similarly, simplicity is rated from 1 “not simple,” 2 “relatively simple,” 3 “simple,” to 4 “simple and relevant,” and clarity is rated from 1 “not clear,” 2 “relatively clear,” 3 “clear,” to 4 “clear and relevant.” The minimum acceptable CVI value is 0.79, and any item with a CVI lower than 0.79 should be removed. At this stage, the researcher calculated the average scores assigned by the experts (ranging from 1 to 4). For one of the experts, the average score was below 3, while the average scores of the remaining experts ranged between 3 and 4. By applying the results obtained to the formula, it was determined that the CVI value was 0.8, which indicates the appropriate content validity of the intervention package developed by the researcher. Therefore, the content validity of the questionnaire was confirmed.

Next, to determine face validity, the Persian version of the questionnaire was evaluated by 10 total laryngectomy patients for clarity, difficulty, and comprehensibility. After the translated version was finalized, it was used for data collection. All patients had no difficulty in understanding the questions within the questionnaire (Table 2).

Table 3 reports the demographic information of patients who underwent total laryngectomy, such as age, gender, type of treatment, and type of nutrition. In this

study, 70 patients with total laryngectomy (57 males and 13 females) with a mean age of 63.23±8.12 years were studied. The mean duration since surgery was 19.09±15.72 months. Regarding diet type, 28 patients (40%) had a normal diet, 24 patients (34.3%) had a modified diet, and 18 patients (25.7%) had no oral nutrition. The treatment types were as follows: Laryngectomy plus chemotherapy in 24 patients (34.3%), laryngectomy plus radiotherapy in 18 patients (25.7%), laryngectomy plus chemotherapy and radiotherapy in 13 patients (18.6%), and laryngectomy plus chemotherapy and radiotherapy in 15 patients (21.4%).

The results of the construct validity study, conducted using factor analysis, were examined after performing the KMO test (as an indicator of sampling adequacy) and the Bartlett test (to ensure the correlation matrix is not zero). These tests showed a Kaiser-Meyer-Olkin (KMO) index value greater than 0.6, specifically 0.819, indicating adequate sample size. The Bartlett test value was equal to 136, which was significant. Since in exploratory factor analysis, the KMO value must be close to 1 and the Bartlett test value must be significant in order to use this analysis, it can be concluded that the use of exploratory factor analysis to examine the construct validity was justified. The results of the exploratory factor analysis showed two features of primary commonality and extracted commonality of the items. The primary commonality for all items was 1, and the extracted commonality for all items was higher than 0.4. This suggests

**Table 4.** Eigenvalue and variance of the determined factors

Questions	Special Amount			Sum of Squares of Factor Loadings		
	Total	Percentage of Variance	Cumulative Percentage	Total	Percentage of Variance	Cumulative Percentage
1	7.357	43.275	43.275	5.035	29.616	29.616
2	1.745	10.264	53.539	3.153	18.546	48.162
3	1.209	7.113	60.652	1.639	9.64	57.801
4	1.144	6.73	67.382	1.484	8.728	66.529
5	1.02	5.997	73.379	1.165	6.85	73.379
6	0.97	5.708	79.087			
7	0.632	3.716	82.803			
8	0.601	3.535	86.338			
9	0.516	3.034	89.372			
10	0.422	2.483	91.856			
11	0.375	2.205	94.061			
12	0.233	1.368	95.428			
13	0.224	1.318	96.746			
14	0.202	1.191	97.937			
15	0.15	0.88	98.818			
16	0.11	0.647	99.465			
17	0.091	0.535	100			

that the items possess the necessary ability to explain the variables under study. In this study, a total of 5 factors had high eigenvalues (Table 4). The first factor had an eigenvalue of 5.035 and the fifth factor had an eigenvalue of 1.165, which together account for more than 73% of the total variance.

To determine internal consistency, the intra-class correlation coefficient (ICC) and Cronbach's  $\alpha$  were calculated, and both indices yielded a value of 0.819, which indicates desirable internal reliability. The test re-test method was also employed to examine the reliability of the questionnaire. Test re-test repeatability was measured using Cronbach's  $\alpha$ , which yielded a significant value of 0.823. Also, the item-total correlation method was used to examine the correlation of each item with the total score. According to the results obtained (Table 5), the correlation of all items with the total score, except for items 15, 16, and 17, was above 0.3.

## Discussion

Since evidence-based approaches are one of the basic principles in clinical activities, it is essential to have reliable and accurate tools for assessment and treatment. Our goal in this study was to provide a Persian version of the SOAL Questionnaire. In the content validity section of the tool, the results were consistent with the study by Anjos et al.. In their article, they discussed the translation and cultural adaptation of the tool, reporting validity values of 0.98, 1, and 0.88 for the tool across three sections [22]. In this study, the CVR index for the entire scale was 1, and the CVI index was 0.8. Although these values are slightly lower than those reported in their study, they confirm the content validity of the translated tool. The reliability of the scale, calculated using the ICC and Cronbach's  $\alpha$  showed a value of 0.819. The test re-test reliability using Cronbach's  $\alpha$  also showed a significant value of 0.823. Similar studies have reported this value as 0.73 [7].

**Table 5.** Correlation values between each item and the total score

Question	Item-total Correlation
1	0.76
2	0.79
3	0.745
4	0.695
5	0.645
6	0.663
7	0.686
8	0.621
9	0.492
10	0.619
11	0.611
12	0.513
13	0.573
14	0.737
15	0.248
16	0.177
17	0.251

According to the results, the correlation of all items was appropriate and these results were in line with those of previous studies. The validity and reliability of this tool have also been confirmed in similar studies [19, 23]. In the study by Govender et al. researchers concluded that the SOAL Questionnaire has the potential to be a simple and accessible screening tool to identify swallowing problems during long-term follow-up [19]. Previous studies have recommended addressing differences between cultures and languages during cross-cultural translation and adaptation, rather than merely translating the original instrument literally [24]. This approach is essential for considering the diversity of populations across different cultures and lifestyle contexts [25].

Accordingly, in the present study, a multi-stage process was used in translating the instrument into Persian, including translation from English to Persian, determining the level of difficulty in understanding the translated sections, preparing the initial version, evaluating the quality of the translation with the opinions of two evaluators, re-

translation into English, matching the translation with the opinions of the questionnaire designer, and evaluating the content and face validity of the instrument to ensure that the final questionnaire was fully adapted to the cultural context of Iranian society.

The high validity of the Persian version of the questionnaire indicates that this scale is easy and understandable for speech and language pathologists, and they can use this instrument to screen for swallowing problems in people with total laryngectomy without requiring additional training or specialized courses. Considering the examination of other reliability aspects of this questionnaire in its Persian version, this instrument can be used with enhanced credibility for both clinical and research applications.

## Conclusion

The high validity of the Persian version of the SOAL questionnaire indicates that this scale is easy and understandable for speech and language pathologists, and they

can use this tool to screen for swallowing problems in people with total laryngectomy without requiring specialized training or courses. Considering the examination of other reliability measures for this questionnaire in its Persian version, this tool can be employed with high validity for both clinical and research applications.

## Ethical Considerations

### Compliance with ethical guidelines

This study was approved by the Research Ethics Committee of [Iran Universities of Medical Sciences](#), Tehran, Iran (Code: IR.IUMS.REC.1402.380).

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### Authors' contributions

Conceptualization: Farhad Torabinezhad and Leila Ghelichi; Methodology and validation: Leila Ghelichi and Nahid Jalilevand; Data curation and formal analysis: Leila Ghelichi; Investigation: Mehdi Askari and Keyvan Aghazadeh; Resources: Mona Ebrahimipour and Mehdi Askari; Software and writing the original draft: Mehdi Askari; Funding acquisition, project administration, visualization review and editing: Farhad Torabinezhad; Supervision: Farhad Torabinezhad and Keyvan Aghazadeh.

### Conflict of interest

The authors declared no conflict of interest.

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## Appendix 1.

### پرسشنامه مشکلات بلع بعد از لارنجکتومی

پرسشنامه بیمار .....

برای هر یک از پرسش های زیر پاسخی را علامت بزنید که با تجربه شما در روزهای اخیر متناسب تر است.

ردیف	پرسش ها	خیبر	کم	زیاد
۱	به نظر خودتان، در حال حاضر مشکل بلع دارید؟			
۲	آیا در نوشیدن مایعات رقیق (چای، آب، آب میوه) مشکلی دارید؟ مربوط به نشت مایع از پروتز صدایتان نباشد.			
۳	آیا در خوردن مایعات غلیظ (سوپ، میلک شیک، مکمل های نوشیدنی) مشکل دارید؟			
۴	آیا در خوردن غذاهای نرم / کوبیده شده (ماکارونی با پنیر، گوشت کوبیده) مشکل دارید؟			
۵	آیا در خوردن غذاهای جامد خشک (بیسکویت، نان) مشکل دارید؟			
۶	آیا مایعات در هنگام نوشیدن در گلوئی شما باقی می ماندند؟			
۷	آیا غذا در هنگام خوردن در گلوئی شما باقی می ماندند؟			
۸	آیا وقتی غذایی می خورید یا نوشیدنی ای می نوشید، از طریق دهان یا بینی تان برمی گردد؟			
۹	آیا برای اینکه غذا از گلویتان پایین برود، باید همراهش نوشیدنی بنوشید؟			
۱۰	آیا وقتی دهانتان پر از غذاست باید چندین بار آن را قورت دهید تا غذا یا نوشیدنی پایین برود؟			
۱۱	آیا از غذاهای خاصی به دلیل عدم توانایی در بلع آنها اجتناب میکنید؟			
۱۲	آیا بیشتر از قبل طول میکشد غذای خود را تمام کنید؟			
۱۳	آیا نسبت به قبل از غذا خوردن کمتر لذت می برید؟			
۱۴	آیا مقدار غذای هر وعده شما کم شده است؟			
۱۵	آیا اشتهایتان کم شده است چون نمی توانید غذا را به صورت عادی بپوشانید یا مزه کنید؟			
۱۶	آیا به دلیل خشکی دهان تان، غذا خوردن برایتان سخت تر شده است؟			
۱۷	آیا از غذا خوردن با افراد دیگر خجالت می کشید؟			
نمره کل				

Ref: Validity and reliability of the Persian version of the Post-laryngectomy Swallowing Outcomes Questionnaire in patients with total laryngectomy