



## Original Article

## Evaluation of the Reliability and Validity of Actors' Vocal Hygiene Knowledge Questionnaire

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### ABSTRACT

**Background:** One's voice is one of the most important tools for professional voice users, especially actors. Actors have limited knowledge of vocal hygiene that leads to vocal abuse and misuse of vocal behavior. For this reason, special care must be taken by this group in the form of vocal hygiene. Currently, no validated instrument determines knowledge levels of vocal hygiene education in actors as professional voice users. The "Assessment of actors' vocal hygiene knowledge" questionnaire is designed to measure actors' awareness of vocal hygiene. The purpose of this study was to investigate the validity and reliability of the "Assessment of actors' vocal hygiene knowledge".

**Methods:** This study was a methodological research that was conducted in two phases of designing and evaluating the validity and reliability of the "Assessment of actors' vocal hygiene knowledge" questionnaire. The participants in this study were 150 actors (91 men and 59 women) ranging in age from 18 to 45 years (mean age: 26.13 years and SD=4.7). In this study, content validity ratio (CVR) and content validity index (CVI) was used to assess content validity. The reliability was examined using Cronbach's alpha and test-retest.

**Results:** All test items had good content validity (CVR>0.62 and CVI>0.79). Cronbach's alpha coefficient for the whole test was 0.75. The questionnaire also had a high test-retest reliability including intra-class correlation coefficient (ICC0.91=) with 95% confidence interval.

**Conclusion:** The results of this study indicate that the "Assessment of actors' vocal hygiene knowledge" questionnaire has good validity and reliability for actors.

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### Introduction

Professional voice users refer to a group of people whose job success depends on their voice health and quality [1]. One of the subdivisions of this group is theatrical actors and the mildest cases of voice problems cause serious harm to their profession because, in addition to

performing using a range of emotions, they sometimes have to speak loud enough so that the audience can hear them. At times, depending on the type of role assigned, the person on stage may have to shout, cry, laugh, and scream, which may place an excessive load on the vocal cords, which can lead to voice problems such as dysphonia. Due to this, the actor is likely to be forced to cancel his performance depending on the severity of the problem, which will, in addition to the occupational problems, cause psychological damage [2-4].

D'haeseleer observed moderate dysphonia in a study

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on vocal quality and vocal complaints of actors. In this study, it was found that a half of actors have vocal complaints and have severe weakness in vocal health knowledge as proven after completing the questionnaire of Voice Handicap Index (VHI), vocal tract discomfort (VTD), Corporal Pain Scale [5]. Lerner carried out a study on the prevalence of acoustic disorders in actors and revealed abnormalities such as incomplete glottal closure, laryngeal hyperfunction, and decreased mucosal wave [1].

Zeine and Waltar used the "Questionnaire for Performing Artists" and surveyed interest and knowledge levels of vocal function and dysfunction of actors in three groups (professional, non-professional and student). The "Questionnaire for Performing Artists" consisted of nine parts; part one included background information, part two: the role of the speech-language pathologist with regard to the vocal mechanism, part three: actor's perceived knowledge levels in the vocal hygiene field, part four: actor's interest in expanding knowledge in vocal health and its care, part five: abusive or non-abusive behavior of the vocal mechanism, parts six and seven: vocal anatomy and physiology, vocal hygiene, and functional vocal disorders, part eight: vocal habits when phlegm was evident in the throat and when hoarseness was experienced, part nine: questions about the importance of acting in their lives. Their findings showed that all three groups had low knowledge of vocal hygiene, although professional actors received a higher score than the other two groups [2].

Vocal hygiene in professional voice users can be used to reduce vocal problems as well as a therapeutic strategy for actors. Major topics considered in vocal hygiene include examining the amount and type of use of voice, reducing vocal traumatic behaviors, and improving lifestyle to promote vocal health [6]. Measuring actors' knowledge of vocal hygiene helps us assess their strengths and weaknesses in different areas of vocal hygiene and thereby inform them according to their needs. So far, no research has been conducted in Iran to evaluate this group's knowledge of vocal hygiene, which may be due to the lack of an appropriate tool to assess actors' knowledge of vocal hygiene. The purpose of this study was to design and evaluate the validity and reliability of a questionnaire to assess actors' knowledge of professional vocal hygiene.

## Methods

This methodological research was carried out in two phases of designing and evaluating the validity and reliability of the questionnaire "Assessment of actors' vocal hygiene knowledge" (Appendix 1). This questionnaire is a researcher-made questionnaire based on the "Questionnaire for Performing Artists" designed by Zeine and Waltar [2]. The Questionnaire for Performing Artists' questions has been revised based on the opinion of two speech and language pathologists with more than 10 years of experience in treatment and education in the field and according to the needs of the target population, and some questions

have been added or deleted from the questionnaire. The questionnaire consists of five sub-tests; the first part includes demographic characteristics and medical and art history, the second part assesses actors' knowledge from the pathological role of speech and language in relation to vocal mechanisms, the third part assesses the knowledge of voice abuse and misuse and non-abusive behaviors, the fourth part includes the knowledge of the phonation mechanism and the fifth part includes the laryngeal pathology. Thus, the information obtained from the completion of the third, fourth and fifth sections was directly related to the issue of vocal hygiene. In this questionnaire, the three-level Likert method was used for scoring and the scores range from 0 to 2 so that the higher score of the participant in each section reflects the higher awareness of the individual. Also, if the participants in each section choose the correct answer, 2 scores will be calculated, and if the answer is wrong, the score will be zero and if they select the "do not know" option, 1 score will be calculated for them. It should be noted that the design of the "do not know" option in this questionnaire was considered because of reducing the effect of using "guess" in choosing correct and incorrect options by participants. To investigate qualitative validity, questions were provided to 10 speech and language pathologists with a history of treatment and education in the field of voice and faculty members to apply their corrective view on grammar, making sentences, and phrase placement. To investigate the content validity of the questionnaire, content validity ratio and content validity index were used. Experts were asked to investigate each question based on a three-part range "essential, useful but inessential, inessential" range" to check content validity ratio and finally the answers were calculated based on the CVR formula (Ratio 1); the minimum content validity coefficient depends on the number of experts, which in this study was 0.62 based on the judgment of 10 experts using the content validity ratio (CVR) coefficient [7, 8]. In other words, if the calculated CVR for each item is equal to or greater than 0.62, the item's content validity will be verified.

Ratio 1:

$$CVR = \frac{(N_e - \frac{N}{2})}{(\frac{N}{2})}$$

$N_e$  = the number of panelists indicating "essential"

$N$  = the total number of panelists.

Content validity index (CVI) was assessed based on three criteria of relevance, simplicity, and fluency, clarity and transparency of each question. Experts were asked to examine each question based on a quadratic spectrum, and then the content validity index was calculated using the CVI formula (Ratio 2). According to the number of experts, the acceptable criterion for evaluating the validity of the questionnaire based on the CVI index is more than 0.79 [9].

Ratio 2:

$$CVI = \frac{\sum \text{CVR for all retained items}}{\text{retained items numbers}}$$

Internal consistency and repeatability were used to assess the reliability of the questionnaire. After explaining the objectives of the study, all participants gave informed consent to participate in the study. The internal consistency coefficient (Cronbach's alpha) was used to calculate the internal reliability of the questionnaire questions. To calculate the internal consistency coefficient, 150 actors were asked to complete the questionnaire. If the Cronbach's alpha value is above 0.7, the questionnaire can be used for research purposes [10]. The test-retest method and intra-class correlation coefficient (ICC) were used to assess the repeatability of the questionnaire over time. 20 participants of 150 participants in the study were asked to complete the questionnaire and were again given a questionnaire after one week. If the correlation is higher than 0.75, it can be said that the tool has a reliability feature [11]. The Kolmogorov-Smirnov test was used to examine the normal distribution of variables. The results of this test showed ( $P > 0.05$ ) the variables have a normal distribution. Data were analyzed by SPSS software version 22. The significant level was considered 0.05.

After explaining the aims and methods of this study, all participants filled out and signed the consent forms. The study protocol was approved by the local university.

## Results

Participants in this study were in an age range from 18 to 45 years (mean age: 26.13 years and  $SD=4.7$ ). Participants included 60.7% men and 39.3% women, all actors with at least 10 stage performances. The 40-question questionnaire "Assessment of actors' vocal hygiene knowledge" was designed based on the Zeine and Waltar Study Questionnaire with 61 questions [2] and based on scientific resources and expert opinions. In the CVR study, according to 10 experts, all 40 questions had a CVR greater than 0.62. Also the CVI for all questions was above 0.79 and approved.

Cronbach's alpha coefficient was used to assess the internal consistency of the questionnaire, which was calculated at 0.75 for the whole tool. Table 1 presents the Cronbach's alpha coefficient for each of the 4 sections of the questionnaire separately and the whole questionnaire. With the help of this index, it was proved that the questionnaire "Assessment of actors' vocal hygiene knowledge" has reliable internal validity.

The intra-class correlation coefficient (ICC) of the questionnaire "Assessment of actors' vocal hygiene knowledge" from the test-retest test with a 7-day interval and 95% confidence interval for the total of 40 questions was 0.91, indicating the appropriate reliability of time and repeatability of the questionnaire. Table 2 presents the (ICC) for each of the four sections of the questionnaire separately and the whole questionnaire.

## Discussion

The purpose of this study was to investigate the validity and reliability of the questionnaire "Assessment of actors' vocal hygiene knowledge". The present study was the first study that has been implemented to evaluate the validity and reliability of the questionnaire "Assessment of actors' vocal hygiene knowledge" and no similar research has been done so far. In the study, Zeine and Waltar, in which questionnaire "Assessment of actors' vocal knowledge" is designed based on their study questionnaire, the purpose of the study was to measure the level of interest and knowledge of actors in vocal knowledge and the validity and reliability about the questionnaire was not reported [2]. Based on the results of this study, it can be said that this questionnaire has appropriate content validity. According to the results of Cronbach's alpha for the questionnaire items, it can be stated that there is an acceptable internal consistency in this questionnaire. Also, based on the results obtained from the correlation coefficient for the whole questionnaire, it can be said that the present questionnaire is highly correlated.

We believe that the questionnaire "Assessment of actors' vocal hygiene knowledge" is a useful clinical instrument that may help to evaluate the vocal health knowledge of those who use their voice professionally, and to provide them with vocal education on their needs.

Given the scarcity of studies in this field and the importance of assessing the vocal health category in professional voice users, it is recommended to conduct further research in this area and with different target populations such as singers, panegyrist, Quran narrators, and teachers.

## Conclusion

The questionnaire "Assessment of actors' vocal

**Table 1:** The results of Cronbach's alpha for the questionnaire "Assessment of actors' vocal hygiene knowledge"

	The role of speech and language pathologist	Voice abuse and non-abusive behaviors	Phonation mechanism	Laryngeal pathology	Total
Cronbach's alpha	0.73	0.71	0.71	0.73	0.75

**Table 2:** The Intra-class correlation coefficient of "Assessment of actors' vocal hygiene knowledge" with 95% confidence interval

	The role of speech and Language pathologist	Voice abuse and Non-abusive behaviors	Phonation mechanism	Laryngeal pathology	Total
Value ICC	0.76	0.76	0.94	0.87	0.91
P value	<0.001	<0.001	<0.001	<0.001	<0.001
High limit	0.89	0.89	0.97	0.95	0.96
Low limit	0.49	0.49	0.86	0.72	0.80

hygiene knowledge” has good validity, internal consistency, repeatability, and validity. Therefore, the present questionnaire can be used in research focused on measuring vocal hygiene.

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**Conflict of interest:** None declared.

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