Psychometric Properties of Voice Activity Participation Profile—Persian Version (VAPPP)

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Summary: Objectives. Individuals with voice disorders may experience limits in activity and restricted participation in daily activities. The aim of this study was to investigate the psychometric properties of the Voice Activity Participation Profile—Persian Version (VAPPP), a questionnaire which specifically investigates activity limitation and participation restriction in Persian-speaking individuals with voice disorders.

Method. We completed a translation procedure according to World Health Organization guidelines, prior to administering the questionnaire to 208 participants (156 patients with dysphonia and 52 controls), each of whom completed the questionnaire. We examined various psychometric properties including item analysis, factor analysis, internal consistency, discriminant validity, criterion-related validity, and test-retest reliability were investigated for this questionnaire.

Results. Confirmatory factor analysis revealed that the 27 items on the VAPPP were distributed across four factors and that the first question, which assesses self-perceived dysphonia severity, was grouped separately. All the four subscales and total VAPPP have high internal consistency and test–retest reliability based on Cronbach's alpha coefficients and the intraclass correlation coefficient (ICC). Job effects ($\alpha = 0.85$; ICC = 0.96), daily communication effects ($\alpha = 0.96$; ICC = 0.83), social communication effects ($\alpha = 0.91$; ICC = 0.93), emotional effects ($\alpha = 0.94$; ICC = 0.76), and total score ($\alpha = 0.97$; ICC = 0.88) are presented. VAPPP scores in patients with dysphonia were significantly different from those of the healthy control group ($P < 0.001$). The VAPPP total score has a high correlation to the Voice Handicap Index ($r = 0.86$; $P < 0.001$)

Conclusion. The VAPPP is a reliable and valid tool for evaluating the quality of life of patients with dysphonia in Iran.

Key Words: Voice–Quality of life–Psychometric properties–Voice Activity Participation Profile—Persian Version–Dysphonia.

INTRODUCTION

The prevalence of voice disorders is estimated to be 3%–9% in the United States,[1] with effects on communication, quality of life (QOL), and subjective social, economic, and emotional functioning.[2–5] There are different procedures for assessing voice disorders including acoustic, audio-perceptual, aerodynamic, and imaging methods,[6] mainly grouped as objective and subjective assessments.[7] Objective voice assessments assess voice quality[2,8] and include instruments to examine voice production.[9] However, there is increasing evidence that objective assessments cannot determine voice disorder-related effects on daily living or functional participation and perceived handicap, which patients experience because of dysphonia.[5,10–12] Because of this, subjective QOL assessments emerged. Speech and language pathologists use subjective assessments to quantify the effects of voice disorders. One such assessment involves measuring QOL in patients with voice disorders.[2,13] These tools can help us to quantify disability level in a way that objective measures are unable to.[14]

Self-reported voice measures quantify the impact of voice disorders on QOL in patients with dysphonia.[14,15] World Health Organization (WHO) recommendations for health status assessments hold that these types of assessments should be used in clinical settings.[12] Tools that exist for measuring QOL in patients with dysphonia are the Voice Handicap index (VHI),[16] Voice-Related Quality of Life (V-RQOL),[17] Voice Activity Participation Profile (VAPP),[5] and Iranian Voice Quality of Life Profile (IVQLP).[18] The VHI is a self-report questionnaire that contains 30 items to assess QOL in patients with dysphonia.[16] It is a reliable and valid tool[19] for investigating the effects of various therapeutic procedures in this population.[13]

Ma and Yiu (2001) developed the (VAPP) as a QOL assessment tool to quantify the effects of dysphonia on patients' activities and participation, based on WHO ICIDH-2 Beta-1 guidelines. The VAPP consists of 28 items in five sections that examine the *severity of the voice disorder* (Section 1), *job* (Section 2, four items), *daily communication* (Section 3, 12 items), *social communication* (Section 4, four items), and *emotions* (Section 5, seven items). Participation restriction and activity limitation are two QOL features addressed by the VAPP. This VAPP was originally developed in Chinese,[5] and then translated and adapted for use with Finnish,[20] Brazilian,[21] Italian,[14] and Korean populations.[22] Most of the above-mentioned instruments are written in English and require adaptation and cultural and linguistic validation for use with non-English-speaking patients.[7,14,23] Although there are some Persian assessment tools such as the Persian version of the VHI, [19]the Persian version of the V-RQOL,[17] and the IVQLP,[18] this tool (VAPP) is the only questionnaire that measures activity

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limitation and participation restriction. These critical issues are identified within the International Classification of Functionality, Incapacity, and Health by the WHO. Activity limitation and participation restriction are relatively new concepts introduced through the new ICIDH-2 model. Of all 28 items in this questionnaire, 16 items measure daily communication effects (12 items) and social communication effects (four items). Most items focus on activity limitation and participation restriction, and there are a high number of items in these two sections compared with the whole of questionnaire. These concepts were not included in former tools such as the VRQOL and the VHI, and the VAPP was developed after these concepts emerged. Knowing about activity limitation and participation restriction helps speech and language pathologists determine intervention direction.[5]

We decided to adapt and validate the VAPP as a self-report QOL measure to Persian because of its focus on activity limitation and participation restriction; so the purpose of this study was to investigate the psychometric properties of the Persian version of the VAPP in people with voice disorders, for research and clinical purposes.

METHOD

The present work is a methodological and cross-sectional descriptive study evaluating the psychoanalytical features of the VAPP, a 28-item questionnaire that measures voice activity limitation and participation restriction in patients with dysphonia. The items are rated on a visual analog scale (VAS; as a horizontal line 100 mm long) representing a score from 0 to 10. Items are distributed over five sections, and each section produces a score: self-perceived voice problem (one question); job (four questions); daily communication (12 questions); social communication (four questions); and emotion (seven questions). The minimum possible total score is zero, and the maximum is 280.[5] Patients younger than 18 years and those who had received voice therapy within the two preceding were excluded from the study.

There are different guidelines for questionnaire adaptation, such as criteria recommended by the Scientific Advisory Committee of Medical Outcomes Trust[14] and the WHO guidelines for QOL assessments.[24] Generally, a multistep process is recommended.[7,14] This process involves forward translation, back translation, committee review, and a pretesting step.[7,14,25]

Translation procedure

After obtaining permission from the developers,[5] a standard translation of the 28-item questionnaire into Persian was completed by two native translators according to WHO guidelines. We then combined and integrated the initial translations into one unified document. Three expert voice therapists, with at least 5 years of experience, assisted during this stage, so that the best phrases were chosen. To control the quality of the translation, a translator who was bilingual in English and Persian translated the final version from Persian to English. Then, we submitted the reverse-translated English version to the above-mentioned expert panel for an examination and discussion of any discrepancies between the two versions. Finally, the Persian version of the questionnaire was revised again by expert translators to remove any grammatical or semantic discrepancies. The final version evaluates the impact of dysphonia on an individual's QOL and is called the Voice Activity and Participation Profile—Persian Version (VAPPP).

TABLE 1.
Videostroboscopic Findings in Participants with Voice Disorders

Pathology	Number (%)	Pathology	Number (%)
Polyps	14(6.7)	MTD	18(8.7)
Nodules	11(5.3)	Laryngitis	16(7.7)
True vocal fold cysts	4(1.9)	ADSD	9(4.3)
Sulcus vocalis	1(0.5)	Cancer	32(15.4)
True vocal fold paralysis	11(5.3)	ABSD	1(0.5)

Participants

We recruited patients with voice disorders and healthy controls without voice disorders for this study. We selected patients with dysphonia from among all patients referred to three otorhinolaryngology clinics in Shiraz, Tehran (Amir-Alam Hospital), and Mashhad. All patients were diagnosed with a voice disorder by an otorhinolaryngologist and speech and language pathologist, and none had undergone any previous voice treatment. Every attempt was made to recruit patients with different types of voice disorders (Table 1).

All participants provided written consent for study participation. This study was approved by the Ethic Committee of Shiraz University of Medical Sciences.

Psychometric properties of the VAPPP

Face and content validity of the VAPPP

Face validity was determined in a qualitative manner. The VAPPP scale was presented to 15 adult patients with voice disorders (seven women and eight men). They read all 28 items and answered them. Patients were also asked to identify items that were not applicable or easy to understand. This step was essential for ensuring the questionnaire's quality and obtaining appropriate feedback from individuals responding to the translated questions.[26] The content validity of the questionnaire was determined qualitatively by expert specialists.

Item analysis

The correlation between the total score of the items within a questionnaire and each item separately is the *discrimination coefficient*. The higher an item's discrimination coefficient, the more discriminative the item. The item's role in test reliability was reviewed by examining the internal consistency coefficient after item elimination. That is to say, the items were determined inappropriate if Cronbach's alpha coefficient increased item elimination, and the item was determined appropriate if the alpha coefficient decreased.