Validation and Adaptation of the Singing Voice Handicap Index for Egyptian Singing Voice

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Summary: Background. Measuring the severity of a voice disorder is difficult. This can be achieved by both subjective and objective measures. The Voice Handicap Index is the most known and used self-rating tool for voice disorders. The Classical Singing Handicap Index (CSHI) is a self-administered questionnaire measuring the impact of vocal deviation on the quality of life of singers.
Objectives. The objective of this study was to develop an Arabic version of the CSHI and to test its validity and reliability in Egyptian singers with different singing styles with normal voice and with voice disorders.
Methods. The interpreted version was administered to 70 Egyptian singers including artistic singers (classical and popular) and specialized singers (Quran reciters and priests) who were divided into 40 asymptomatic singers (control group) and 30 singers with voice disorders. Participants' responses were statistically analyzed to assess the validity and reliability, and to compare the patient group with the control group.
Results and Conclusions. Quran reciters, patients with no previous professional training, and patients with vocal fold lesions demonstrated the highest scores. The Arabic version of CSHI is found to be a reliable, valid, and sensitive self-assessment tool that can be used in the clinical practice for the evaluation of the impact of voice disorders on singing voice.
Key Words: Voice Handicap Index–Egyptian singers–singing voice–voice disorders–nonorganic voice problems.

INTRODUCTION

In professional voice usage, the relation between vocal disorder and quality of life seems to be complicated. In some cases, for example teachers, a vocal deviation may not restrict professional activity, whereas in other cases, for example singers, a small deviation may cause a big impact in personal aspects (physical, mental, social, emotional, and communication) as well as in professional aspects.[1]

Measuring the severity of a voice disorder is difficult. This can be achieved by both subjective and objective measures. An example of subjective measures is the auditory-perceptual assessment (APA) using the modified GRBAS (Grade, Roughness, Breathiness, Asthenia, Strain) scale.[2] Subjective measures also include the different instruments of self-assessment for voice problems such as the Voice Handicap Index (VHI)[3] and the Voice Activity and Participation Profile.[4] On the other hand, objective measures of voice characteristics include acoustic and aerodynamic measurements besides the Dysphonia Severity Index.[5] However, these objective measures do not consider the patient's perspective regarding his or her vocal function.[6]

The VHI[3] is the most known and used self-rating tool for voice disorders.[7] It has been shown to be a valid and reliable instrument for the assessment of patients' self-perceived voice handicap.[3] However, its sensitivity to evaluate singers is poor, because the associated factors to subject perception of own vocal handicap in singing voice are not addressed within the tool, and it does not regard the consequence of dysphonia in the life of singers.[8,9]

To address this population, many versions of the VHI were adapted to singing voice.[10] Examples include the Singing VHI (SVHI),[8] the Classical Singing Handicap Index (CSHI) for classical singing,[11] the Modern Singing Handicap Index for modern singing,[12] the SVHI-10,[13] the Swedish version of the VHI adapted for singers,[14] and S-VHI.[15]

Currently, there is no published Arabic version of the SVHI addressing the severity of the voice problem in Arabic singers. The aim of this work was to develop an Arabic version of the CSHI (Arabic [A]-CSHI) and to evaluate its internal consistency, reliability, clinical validity, and sensitivity.

MATERIALS/SUBJECTS AND METHODS

Development of A-CSHI

The authors chose the CSHI to be applied to Egyptian singers as its items suited the Egyptian culture. The CSHI is a self-administered questionnaire that consists of 30 items divided into three subscales: disability, handicap, and impairment. The disability subscale corresponds to the functional domain and refers to the impact of voice disorders in professional activities. The handicap subscale corresponds to the emotional domain and relates to the psychological impact of voice problems. The impairment subscale corresponds to the physical domain, associated with self-perception of characteristics of vocal emission. Each subscale consists of 10 items answered through a five-point scale (where 0 = never, 1 = almost never, 2 = sometimes, 3 = almost always, and 4 = always). The scores for each subscale are found through simple summation of raw scores, which total to 40 points. The scores of the three subscales are summed to obtain the total score for each individual with a maximum total of 120 points. The higher the score is, the greater the severity of the voice handicap.[16]

The 30 items of the Brazilian version of CSHI were translated into English then Arabic by a qualified professional interpreter who is familiar with American English and Arabic

languages. Three Egyptian bilingual experienced phoniatricians reviewed the interpreted test to make sure that it was adapted to the Egyptian culture.

The A-CSHI was pilot tested with 10 Egyptian singers (five Quran reciters, three classical singers, and two popular singers). The A-CSHI was then amended according to the phoniatricians' suggestions to make the phrases clearer.

Subjects
The study was conducted on 70 Egyptian singers including artistic singers (classical and popular) and specialized singers (Quran reciters and priests). They were arranged into two groups.

Group I (asymptomatic/control group)
Group I was composed of 40 singers who were not complaining of any voice problems. They included 16 Quran reciters (40%), 10 priests (25%), 7 classical singers (17.5%), and 7 popular singers (17.5%). Of the 40 singers, 31 were men (77.5%) and nine were women (22.5%) and their ages ranged from 18 to 54 (X = 34.48 ± 11.54) years.

Group II (patient group)
Group II was composed of 30 singers with voice complaints, who attended the phoniatric outpatient clinic at Mansoura University hospital or were recruited from their occupational places. They included 17 Quran reciters (56.7%), 2 priests (6.7%), 8 classical singers (26.7%), and 3 popular singers (10%). Of the patient group, 26 were men (86.7%) and four were women (13.3%) and their ages ranged from 17 to 57 (X = 33.07 ± 11.26) years.

Application of A-CSHI
Both groups were subjected to detailed history taking with emphasis on personal history, smoking history, presence or absence of phonasthenic manifestations, and whether the patient received professional training or not. Additionally, the patients from group II were subjected to APA of their voices and endoscopic evaluations of their larynges. The control and patient groups were asked to respond to the final form of the A-CSHI twice with a 2-week interval.

Statistical analysis
SPSS 15.0 (IBM corporation, USA) was used for all statistical analyses. Normally distributed data were presented as mean ± standard deviation (SD). Qualitative data were presented as number and percent. A comparison between groups was done by chi-square test. Student *t* test was applied to compare between two groups. *F* test (one-way analysis of variance) was used to compare between more than two groups. *P* value was considered significant if ≤0.05. Pearson correlation coefficient was used to detect linear relationship between two quantitative variables.

RESULTS
Descriptive statistics
Nonsignificant difference was found between the patient group and the control group as regard age, gender, and job (singing style) ($P > 0.05$). Twenty-six control subjects (65%) and 18 patients (60%) reported previous professional vocal training. Fifteen control subjects (37.5%) and 10 patients (33.5%) were smokers (Table 1).

APA of the patient group revealed that 18 patients (60%) experienced dysphonia, predominantly of the strained leaky character. Twelve patients (40%) were diagnosed to have hyperfunctional dysphonia, 12 patients (40%) had phonasthenic symptoms only, and 6 (20%) patients had Minimal Associated Pathological Lesions in the vocal folds where two cases showed vocal fold polyp, two cases had contact granuloma, one case had vocal fold nodules, and one case had Reinke's edema (Table 2).

Reliability and validity of A-CSHI
Reliability of A-CSHI
Test-retest reliability. All subjects were asked to respond to the final form of the A-CSHI twice with a 2-week interval.

TABLE 1.
Demographic Data of the Studied Groups

	Group I (Control) (n = 40)	Group II (Patient) (n = 30)	Test of Significance	P
Age (mean ± SD)	34.48 ± 11.54	33.07 ± 11.26	$t = 0.510$*	0.611
Gender				
Men	31 (77.5%)	26 (86.7%)	$\chi^2 = 0.953$**	0.329
Women	9 (22.5%)	4 (13.3%)		
Job				
Quran reciter	16 (40%)	17 (56.7%)		
Priest	10 (25%)	2 (6.7%)	$\chi^2 = 5.718$**	0.126
Classical singer	7 (17.5%)	8 (26.7%)		
Popular singer	7 (17.5%)	3 (10%)		
Professional training	26 (65%)	18 (60%)	$\chi^2 = 0.184$**	0.668
Smoking	15 (37.5%)	10 (33.3%)	$\chi^2 = 0.130$**	0.719

Note: P > 0.05, nonsignificant.
* Student *t* test.
** χ^2, chi-square test.