

# Adaptation and Validation of the Kannada Version of the Singing Voice Handicap Index

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**Summary: Objective.** The present study aimed to adapt and validate the Singing Voice Handicap Index (SVHI) into Kannada language using standard procedures.

**Study Design.** This is a cross-sectional study.

**Methods.** The original English version of SVHI was translated into Kannada. It was administered on 106 Indian classical singers, of whom 22 complained of voice problems. Its internal consistency was determined using Cronbach's alpha coefficient ( $\alpha$ ), test-retest reliability using Pearson's product moment correlation and paired *t* test, and the difference in mean scores by independent sample *t* test.

**Results.** The results revealed that the Kannada SVHI exhibited an excellent internal consistency ( $\alpha = 0.96$ ) with a high item-to-total correlation. Further, excellent test-retest reliability ( $r = 0.99$ ) and significant differences in SVHI scores were also obtained by singers with and without a voice problem ( $t = 12.93$ ,  $df = 104$ ,  $P = 0.005$ ).

**Conclusion.** The Kannada SVHI is a valid and reliable tool for self-reported assessment of singers with voice problems. It will provide a valuable insight into the singing-related voice problems as perceived by the singers themselves.

**Key Words:** Singing Voice Handicap Index–Kannada–Indian classical singers–Self-reported questionnaire–Voice problems.

## INTRODUCTION

Voice disorders can have a handicapping impact on the quality of life of a person.<sup>1</sup> This impact might differ from person to person depending on the requirements from voice.<sup>2</sup> Patient-reported outcome measures (PROMs) are used to quantify this impact on the quality of life, as well as help guide therapeutic outcomes and decisions. PROMs include patient self-reported questionnaires that assess some aspects of health status in the form of overall quality of life or specific domains such as physical, social, psychological, and economic aspects.<sup>3</sup>

Singers form a special group of professional voice users who are at risk of developing voice problems that affect not only their speaking but also their singing voice. Studies have reported of voice problems in singers, such as dryness, vocal fatigue, throat tightness, choking sensation, reduced pitch range, discomfort, strain, hoarseness, pain, voice breaks, and loss of voice.<sup>4-6</sup> These voice problems have a greater impact on their quality of life as compared with non-singers.<sup>7,8</sup>

The Voice Handicap Index was adapted for use in the evaluation of singing voice.<sup>7</sup> However, it has been reported to have poor sensitivity to evaluate singing voice problems.<sup>8-10</sup> Therefore, the need for a more specific self-reported instrument was identified to better explore the intricacies of an impact of voice problems in singers. This led to the adaptation of Voice Handicap Index for use in singers,<sup>7</sup> as well as to the development of other language versions such as French,<sup>11</sup> Swedish (RHI-S),<sup>12</sup> and German.<sup>13</sup> Additionally, certain questionnaires have been developed exclusively for singers, such as Singing Voice

Handicap Index (SVHI),<sup>14</sup> Singing Voice Handicap Index-10,<sup>15</sup> and Evaluation of Ability to Sing Easily,<sup>16</sup> in the English language. The Modern Singing Voice Handicap Index<sup>17</sup> and Classical Singing Voice Handicap Index<sup>18</sup> are instruments available in Brazilian Portuguese language for modern and classical singers, respectively. Abou-Elsaad et al<sup>19</sup> have recently adapted and validated the Arabic version of Classical Singing Voice Handicap Index.

SVHI was developed and validated as a specific questionnaire to assess singing voice under physical, social, emotional, and economic domains. It is a psychometrically sound tool that helps identify specific singing problems, and is sensitive to clinical changes as well as treatment outcomes.<sup>9</sup> SVHI has been reported to be valid with high internal consistency and test-retest reliability.<sup>14</sup> It has been successfully adapted and validated in several languages, such as Spanish,<sup>20</sup> Portuguese,<sup>21</sup> German,<sup>22</sup> Korean,<sup>23</sup> Italian,<sup>24</sup> and Turkish.<sup>25</sup>

Indian music is a blend of culture, spirituality, philosophy, psychology, and aesthetics. It is unique regarding its structure, temperament, and technique, evolving a blend of melody (raga) and rhythm (tala). Indian classical singing can be broadly classified into two forms: Hindustani classical, which is popular in the northern region of India; and Carnatic classical, which is popular in the southern region. Limited studies have been carried out in this population particularly highlighting their voice problems.<sup>26-28</sup> There are no reports of using SVHI in Indian classical singers (ICSs) to investigate their self-reported voice problems. Hence, there is a need for psychometrically valid questionnaires to be made available in different Indian languages to better understand the self-reported voice problems in these singers. Kannada is a Dravidian language mainly spoken in the state of Karnataka as well as some neighboring states. It ranks at number 32 among the top 100 spoken languages of the world, with over 38 million speakers.<sup>29</sup> It was felt that translation and validation of SVHI in Kannada would be useful to assess the impact of voice problems in ICSs speaking Kannada.

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The aim of the present study was to translate and validate the English version of SVHI into the Kannada language, an official language of Karnataka state, for use as a self-report tool for assessing singing voice handicap.

## METHODS

The study was approved by the Kasturba Hospital Institutional Ethics Committee (22/2014).

### Development of the Kannada version of SVHI

Written permission was obtained from the original author to translate and validate the SVHI<sup>14</sup> into the Kannada language. A standard parallel back-translation procedure was used.<sup>30,31</sup> The English SVHI was translated into Kannada by five proficient translators. The translated versions were then provided to five different proficient speakers of the language to back-translate into English. These translators were not provided with any information about the original English version. Further, the translated Kannada versions were compared and compiled together to formulate a final common questionnaire. This version was provided to a professional translator and three speech-language pathologists proficient in both English and Kannada to assess the language and sentence structure. The changes were limited to linguistic and cultural requirements, with no deletions or additions to the questionnaire. To assess the content familiarity, the final version of Kannada SVHI was provided to ten ICS (five Hindustani classical and five Carnatic classical). Following this procedure, the Kannada SVHI was developed (Appendix S1). In the 36-item questionnaire, each item needs to be individually scored using a 5-point Likert rating scale from 0 (never) to 4 (always). The total raw scores range from 0 to 144, with higher scores indicative of higher self-perceived singing voice handicap.<sup>14</sup>

### Participants

The study was carried out on 106 ICS from different regions of Karnataka. They were arranged into two groups:

Group I, control group (with no voice problems): Group I was composed of 84 singers with no complaints of voice problems. Of these, 15 (18%) were men and 69 (82%) were women. Their ages ranged from 18 to 63 years (mean:  $30.46 \pm 12.65$ ). The mean number of years of singing training and experience was 11 years ( $\pm 9.31$ ).

Group II: Group II was composed of 22 singers who complained of voice problems. Of these, 4 (18%) were men and 18 (82%) were women. Their ages ranged from 19 to 55 years (mean:  $34.77 \pm 12.38$ ). The mean number of years of singing training and experience was 11 years ( $\pm 9.60$ ). The details of these singers are shown in Table 1.

### Administration of the questionnaire

All the participants were subjected to a detailed case history taking that includes questions regarding demographic information (age, gender), singing-related information (years of singing training), and complaints of singing voice problems (duration and vocal symptoms). For the second group, laryngeal examina-

**TABLE 1.**  
Classification of Participants in Group II Based on Voice Problem and Pathology

Voice Problem and Pathology	Number
Early nodular changes	4
Edematous vocal folds	3
Vocal cord polyp	1
Reinke's edema	1
Sulcus vocalis	1
Phonatory gap with congested frontal and maxillary sinus	1
Tonsillitis	2
Laryngitis	5
Rhinitis	1
Laryngopharyngeal reflux	1
Voice changes due to thyroid imbalance	2

tion and auditory perceptual evaluation were additionally carried out. All the participants in Group II presented with dysphonic voices based on the auditory perceptual evaluation, and the presence of voice problems was confirmed by laryngeal examination. All the participants underwent indirect laryngoscopy, and video stroboscopy for 10 of them. All the singers were administered the Kannada version of SVHI. The singers were asked to fill in the questionnaire, with no assistance provided. A second copy of the questionnaire was provided to 25% ( $n = 27$ ) of the singers after 7–10 days to assess test-retest reliability. This time, an interval was given to make the participants' recall of their previous responses to the questionnaire difficult.<sup>14</sup>

### Analysis

Descriptive statistics was used to summarize the responses to demographic and singing-related information. Cronbach's alpha coefficient was used to test the internal consistency or homogeneity of the questionnaire; the item-to-total correlation was calculated for all the items of the questionnaire. Pearson's product moment correlation was used to assess the test-retest reliability of the total scores of SVHI. Paired *t* test was also used to compare the mean scores obtained during test and retest. The total scores were compared using independent sample *t* test for singers with and without voice problems. All statistical analyses were performed using *SPSS Statistics* 15.0 (SPSS Inc., South East Asia, Bangalore, India).

## RESULTS

The study included 106 ICSs, of whom 22 complained of voice problems, whereas 84 did not complain of any difficulty. All the singers could complete the questionnaire in less than 10 minutes without any assistance.

### Internal consistency

Cronbach's alpha ( $\alpha$ ) coefficient was used to test the internal consistency or homogeneity of the questionnaire, with  $\alpha$  closer to 1 indicative of higher internal consistency. The internal consistency was very high (Cronbach's  $\alpha = 0.96$ ) for the Kannada

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