Cross-Cultural Adaptation and Validation of the Voice Handicap Index into Thai

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Background: *The voice handicap index (VHI) is one of the most utilized instruments for measuring a patient's self-assessment of voice severity. The VHI has been translated into several languages, but not in Thai.*

Objective: *To examine the psychometric properties of a Thai translation of the voice Handicap Index (VHI) and assess the applicability in the screening diagnosis.*

Material and Method: *After receiving permission from the American Speech Language Hearing Association (ASHA), the original VHI had been translated and adapted to Thai by forward and backward standard translation. Eighty-five patients with voice disorders, divided in four groups according to the etiology of the diseases (neurogenic, structural, functional, and inflammatory), and 30 asymptomatic subjects were included in the present study. Internal consistency was analyzed through Cronbach's α coefficient. For the VHI test-retest reliability analysis, the Thai VHI was completed twice by 22 patients and assessed through the intraclass correlation coefficient. For clinical validity evaluation, the VHI scores from the pathological group were compared with the control group and compared among the four different pathological groups. The cutoff point for distinguishing the normal from the patient group was assessed by ROC analysis. Effects of age and gender on VHI scores were also evaluated.*

Results: *The Thai VHI showed a significant high internal consistency and test-retest reliability (Cronbach's $\alpha = 0.96$ and $r = 0.843$, respectively). Mann-Whitney U test was used to compare the control group and pathological groups and revealed significant difference in total scores and its three domains scores ($p<0.001$). ROC analysis demonstrated that a VHI score of 13 should be considered the threshold for revealing the impact of quality of life in voice disorder patients. Age and gender were not affect the VHI scores in both control and patient groups.*

Conclusion: *The Thai VHI has high reliability and validity. The Thai version of VHI is considered to be a self-assessment tool for the severity of voice disorders in Thai patients.*

Keywords: *Voice handicap index, Validity, Reliability, Thai version*

J Med Assoc Thai 2015; 98 (12): 1199-208
Full text. e-Journal: *http://www.jmatonline.com*

Clinical assessment of dysphonic patient requires integration of many variables. Similar voice problem affects individuals unequally in physical, functional, emotional, or social aspects. Objective evaluations such as physical examination, perceptual, and acoustic analysis are important information but cannot evaluate the impacts on quality of life[1,2].

Nowadays, the evaluation of impairment or disability is emphasized as recommended by the European Laryngological Society in approaching these voice disorder patients[3]. The Voice Handicap Index (VHI), Voice-Related Quality of Life (V-RQOL), Voice Symptom Scale, and VHI-10 are commonly used in many voice centers[4-7]. The VHI, proposed by Jacobson, is one of the most common instruments used to evaluate self-perceived voice problem. Its 30 questions assess all aspects of psychosocial impact of voice disorder and include three domains, emotional, functional, and physical. Each domain contains 10 items. Each item has a five-point scale ranging from 0 to 4 (never to always). Therefore, the total score ranges from 0 to 120. The V-RQOL is a 10-questions instrument divided into two domains, social-emotional (4 items), and physical functioning (6 items). Total raw scores range from 10 to 50 and have to be calculated using an algorithm to a standardize scale of 0 to 100, where higher scores indicate higher quality of life[5]. Some study found that the VHI and V-RQOL are highly correlated; however, they suggested that the two instruments are not interchangeable for individuals by using scores from conversion equation[8].

The VHI questionnaire has been translated and adapted to native cultures in several languages[9-21].

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It has reliable results for voice assessment and for the pre- and post-treatment follow-up[22,23]. Even if it is the most frequent published voice questionnaire in the literature, there are not diverse translations in East Asian countries, which have a different sense of languages and cultures compared with European and Middle-East countries[24-28]. Therefore, the aims of the present study were to develop the Thai version of the VHI and its clinical application in patients with dysphonia.

Material and Method

Development of Thai VHI

The present study was approved by the Institutional Review Board of the Royal Thai Army Medical Department and Ethical Committee. This study also requested and got permission from the American Speech Language Hearing Association (ASHA). The original English version of the VHI was translated by forward-backward translation technique. First, the English version of the VHI was translated into Thai by two Thai bilingual experienced phoneticians, independently of each other and the items with divergent translations were discussed until a consensus was reached regarding the translation. The questionnaires were back-translated into English by the Translation Unit, Faculty of Arts, Chulalongkorn University and compared with the original items by a qualified professional translator familiar with American English and Thai. The Thai version of the VHI was then pilot-tested with 30 Thai subjects, 15 voice disorder patients, and 15 normal people. Subsequently, the VHI was adapted according to their suggestions after reviewing the pilot data. The final Thai version of VHI is presented in the appendices.

Participants

Patients with voice disorders visiting the Voice Clinic at Phramongkutklao Hospital, Bangkok, Thailand, were invited to participate in the study after given consents. The patients were divided in four groups according to the etiology of the disease by otolaryngologists. The patients were categorized on the telescopic or laryngeal videostroboscopic findings into neurogenic, structural, inflammatory, and functional group. The neurogenic group included vocal fold palsy, spasmodic dysphonia, and Parkinson's disease. The structural group included vocal fold lesions, such as vocal polyps, nodules, laryngeal carcinoma. The inflammatory group included laryngitis either caused by infection or laryngopharyngeal reflux. Finally, the functional group included muscle tension dysphonia and hypokinetic dysphonia.

The control group composed of normal adults participated in the study. These subjects were collected from persons accompanying the voice disorder patients, those attending the ENT department for reasons other than voice disorder, and clinical staff members. The subjects in the control group reported no history of voice complaints or treatment for a voice disorder on the day of assessment or for at least one month before the study date.

Validation

The Thai VHI was validated using content validity that was assessed by five independent, experienced, and bilingual Otolaryngologists in Phramongkutklao Hospital. They judged all items of the final Thai version for language and cultural appropriateness as being completely relevant to the purpose for which it was meant. Content validity was determined by Index of Item-Objectives Concordance (IOC).

For the VHI clinical validity assessment, the VH total scores and its three subscales scores obtained from the four groups of the patients (neurogenic, structural, inflammatory, and functional) were compared with the normal control group.

Reliability

The Thai VHI was administered to the voice-disordered group and the control group, given a full chance to fill them up independently without any assistance.

The internal consistency of the Thai VHI was analyzed through Cronbach's alpha coefficient. A value greater than 0.7 was considered as satisfactory and a value greater than 0.8 was considered as "good", and greater than 0.9 was "excellent". To confirm the internal consistency of the Thai VHI, using the Spearman rank correlation coefficient, a correlation was done between the score of each domain and the total VHI score as well as the score of each domain and its individual items.

For the VHI test-retest reliability analysis, the Thai VHI was completed by the patients. The subjects answered the Thai VHI twice with an interval of approximately two weeks. The test-retest reliability was assessed by estimating the intraclass correlation coefficient (ICC) for the total VHI, as well as for the separate domain scores. Systematic differences

between test and retest were analyzed with Wilcoxon's sign rank test.

In the present study, for evaluation of the ability of VHI to distinguish the normal and pathology group, Mann-Whitney U test was used for comparison between the control and the patient groups and among the different pathological groups (the non-parametric data). The VHI scores obtained in male and female patients were also compared by Mann-Whitney U test. Finally, the correlation between VHI scores and age were assessed by Spearman correlation coefficient. A p-value <0.05 was considered as statistically significant. The Stata/MP12 statistical software was used for all statistical analysis.

Results

Eighty-five patients included in the present study (39 males and 46 females) with mean age of 51 years (range 18-86 years). The patients were divided into four groups according to the etiology of the diseases. The distributions of these disorders among the study group were demonstrated in Table 1.

The control group consisting of 30 Thai normal adults participated in the study. The mean age of the control group was 31 years (range 22-63 years). There were eight males and 22 females.

All of the subjects completed the VHI without any need of assistance. The time required to fill in the questionnaire was approximately 10 to 15 minutes. The mean VHI score derived from the controls and the patients were reported in Table 2. The average physical domain score was higher than average scores in the functional and emotional domains. There was statistically significant difference between the patients and the control groups, in both overall VHI score and each of the functional, physical, and emotional domains scores separately (p<0.001). For the total and three domain scores of the four pathological groups, the functional dysphonia group scored highest, followed by the neurogenic, structural, and inflammatory groups.

Internal consistency analysis

The overall estimated internal consistency of the total VHI for the patients was excellent ($\alpha = 0.96$) while for the three domains, functional, physical, and emotional, the internal consistency were 0.892, 0.917, and 0.925 respectively. In the control group, the internal consistency was satisfactory for the overall score ($\alpha = 0.72$), while it ranged from 0.733 to 0.742 for the three domains.

The estimated correlation coefficient between the score of each domain and the total VHI score was significantly high (r = 0.94, 0.95, and 0.94 for the functional, physical, and emotional, respectively) (Table 3). At the same time, there was a highly significant correlation between the score of each domain and its individual item scores (ranged from r = 0.708-0.921, except for F10 item in functional

Table 1. Demographic factors of the participants

	Total (n)	Male (n)	Female (n)	Mean age ± SD (range) (year)
Control group	30	8	22	30.63±9.25 (22-63)
Patient group	85	39	46	50.59±15.24 (18-86)
Neurogenic cause	15	6	9	53.33±13.21 (38-86)
Structural cause	32	21	11	49.66±17.89 (20-78)
Inflammatory cause	34	8	26	48.97±13.45 (18-75)
Functional cause	4	4	-	61.50±12.50 (43-70)

Table 2. A summary of the median score for the functional, physical, and emotional domains and overall score in the four different groups of dysphonic patients and in the control group

Groups	Functional median (P_{25},P_{75})	Physical median (P_{25},P_{75})	Emotional median (P_{25},P_{75})	Total median (P_{25},P_{75})
Control group	2 (1,3)	2 (0,3)	0 (0,1)	4 (2,6)
Patient group	17 (8,22)*	21 (14,28)*	12 (6,20)*	46 (32,67)*
Neurogenic cause	21 (13,27)	22 (17,29)	16 (6,23)	67 (43,82)
Structural cause	18.5 (10,22)	23 (18,30)	16.5 (7,24)	57.5 (37.5,72)
Inflammatory cause	10.5 (5,18)	16.5 (8,23)	9 (3,13)	34.5 (22,53)
Functional cause	21 (13,28)	23.5 (16,33.5)	22 (12,32)	69 (41,93.5)

* Significant difference p<0.001 between patient and control group

domain that had correlation coefficient (r) = 0.050). These demonstrated the high reliability of each domain and individual items.

Test-retest reliability analysis

Twenty-two patients completed the VHI twice over a period of two weeks. The mean VHI score in the retest condition was higher than mean score in the first test but there was no statistically significant difference. Good test-retest reliability was found for the total scores as well as for the three separate domain scores (Table 4).

Base on the ROC scores, Fig. 1 showed that the good discrimination between the control and patient group, giving an area of 0.9757. The cutoff point, at which total VHI sensitivity reached its maximal value (91.76%) at the highest level of specificity (96.67%), was assumed to be 13. This represented that in 100 patients with voice pathologies, 91.76 would have a positive result while among the 100 normal subjects and 96.67 would have a negative VHI test.

The effect of age had no statistically significant correlation to either the individual domain scores or the overall VHI scores. For gender, the mean VHI score in male patients was 53.10, and 47.83 in females. Although males had higher VHI scores than females, the effect of gender was not statistically significant (Mann-Whitney U test, *p*-value ranged from 0.23 to 0.95).

Table 3. Spearman rank correlation coefficient between the score of each domain and total voice handicap index (VHI) score

Domain	Total	Functional	Physical
Total	-	-	-
Functional	0.941*	-	-
Physical	0.950*	0.848*	-
Emotional	0.942*	0.853*	0.853*

* Significant correlation at the 0.01 level

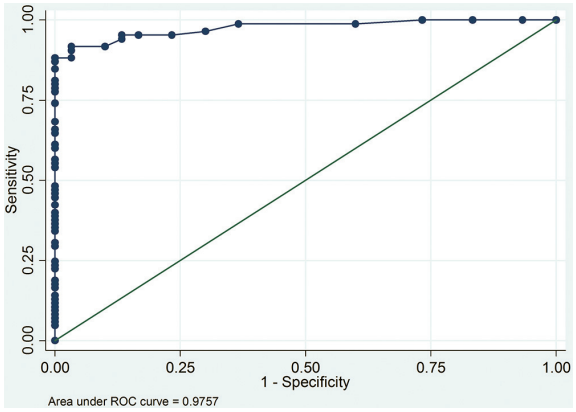

Fig. 1 ROC analysis curve of sensitivity and specificity by controls versus patients.

The content validity for the present study was very good by the IOC >0.8. The clinical validity of Thai VHI to identify the control group from the four pathologic groups of patients was reported in Table 5. A significant difference was found between the total and three domain scores of the control group and each four voice disorder groups. No statistically significant difference was found when the scores were compared among four pathologic groups. Although the VHI cannot distinguish or identify specific diseases, the inflammatory group showed significantly lower scores than those found in the neurogenic and structural dysphonia group.

Discussion

The present study aimed to assess the psychometric properties and application of the Thai VHI to use as the screening tool for voice dysfunction and evaluation of the functional and the psychosocial impact in various voice disorders. The VHI scores, both total and subscale scores, of the four groups of patients (neurogenic, structural, inflammatory, and functional causes) were compared with the scores of the control group with no vocal pathologies.

Table 4. Test-retest VHI score in the patients (Wilcoxon's sign rank test)

	Before median (P_{25},P_{75})	After median (P_{25},P_{75})	*p*-value	ICC	*p*-value
Functional	15.5 (6,23)	18.5 (8,23)	0.364	0.885	<0.001
Physical	17.5 (14,25)	20 (14,27)	0.271	0.836	<0.001
Emotional	11 (6,19)	12.5 (6,22)	0.840	0.756	<0.001
Total	43 (26,68)	47.5 (36,69)	0.588	0.843	<0.001

ICC = intraclass correlation coefficient

Table 5. Comparison between VHI scores of the control group and the four different groups of patients (Mann-Whitney U test)

Compared groups	Total VHI	Functional VHI	Physical VHI	Emotional VHI
Control vs. neurogenic	<0.001*	<0.001*	<0.001*	<0.001*
Control vs. structural	<0.001*	<0.001*	<0.001*	<0.001*
Control vs. inflammatory	<0.001*	<0.001*	<0.001*	<0.001*
Control vs. functional	0.001*	0.001*	0.001*	<0.001*
Neurogenic vs. structural	0.501	0.361	0.873	0.927
Neurogenic vs. inflammatory	0.005*	0.011*	0.019*	0.027*
Neurogenic vs. functional	0.484	0.881	0.920	0.394
Structural vs. inflammatory	0.004*	0.013*	0.008*	0.010*
Structural vs. functional	0.465	0.496	0.801	0.290
Inflammatory vs. functional	0.074	0.105	0.160	0.032*

* Significant difference

The results showed high reliability of VHI questionnaire by revealing the strong internal consistency with high Cronbach's α coefficient for total scores in patient group and control group (0.96 and 0.72 respectively) including across the P, E, and F domain in both groups (ranging from 0.733 to 0.925). High correlations were found between each three subdomains as well as between the subdomains and the total scores (Table 3). These mean that all of the subscales can represent the existence of the result. Test-retest reliability also had high intraclass correlation coefficient both total score and subscale score (Table 4). These levels of reliability were corresponded with the previous studies by Jacobson et al[4] and other studies using other languages[9,12,20,27].

Data from the present study reveals that the VHI is a sensitive tool to identify patients with voice disorders. The total VHI and its three domains in patient groups had significantly higher than the control groups, which agree with several studies[11-16,19]. The applicability of the VHI as the screening questionnaire for voice dysfunction was also investigated. The result indicates that a VHI cutoff point of 13 should be used to identify patients with voice-related problems from non-significant voice problem ones. This value gives the best sensitivity of 91.76 with the best specificity of 96.67, which is one of the best sensitivity and specificity obtained compared with the previous literature. This cutoff point of 13 is closed to the results reported by Niebudek-Bogusz et al[29] and Grässel et al[30] in the Polish and German version who reported the cutoff points at 12 and from Moradi et al[31] with the cutoff point 14.5 among Persian speakers. Another value postulated by Van Gogh et al[32] found that level of 15 points should indicate the borderline of the VHI test. These values had some difference from the cutoff score of 19 from Norwegian version, reported by Karlsen et al[33] that that value included approximately 95% of the patients and 10% of the controls. Ohlsson and Dotevall[20] used 20 points as a cutoff score for Swedish VHI, giving a sensitivity of 77% and a specificity of 87%. It should be emphasized that these cutoff levels differ considerably from the original value of 30 by Jacobson et al[4] which is the upper limit of the range assumed clinically to be corresponding to 'mild voice impairment'.

For domain analysis, in patient group, physical domain scores were found to be higher than functional and emotional domain scores. This finding is in agreement with previous report[10-12,25,31]. The explanation may be that the patients can perceive the deteriorations of physical symptoms in daily life easier than functional or emotional issues. In this circumstance, they might understand more about items of the physical subset than the others. The mean score from the emotional domain was the lowest similar to the mentioned researches. Some example of lower score was from E 6 question "Because of my voice, I fell handicapped". From the viewpoint of most Thai people, they do not value the voice disorder as the handicap.

According to the type of voice disorder, the functional dysphonia group had the highest VHI scores, followed by neurogenic, structural, and inflammatory group. This was in agreement with Xu et al[26] and Taguchi et al[27] from Mandarin China and Japan. This

finding suggested that functional dysphonia patients had more functional and emotional-psychological impact in their daily life. This should be the indication for treatment of this group to give them more psychological concern to get satisfactory treatment outcome. Nevertheless, others report[7,12,14,25,31] found that neurogenic group especially glottal insufficiency patients had the highest scores. Those patients considered that they had great disturbance in quality of life from severe breathiness and difficulty speaking. However, from the present study, no significance difference in VHI score was found between the functional dysphonia and neurogenic group. Although the significant differences in the scores were found in neurogenic and inflammatory group, and in functional and inflammatory group, overall findings suggest that only VHI scores cannot distinguish among these four different pathological groups.

From the present study, in the voice disorder group and control group, age, and gender were not correlated to the total VHI score and to the three subscales (F, P, and E) which were in accordance to some past reports[12,21,28,34]. These results indicate that both Thai men and women with voice disorders, their quality of life are also affected. Even in languages that use morphology linguistic marker for gender e.g., Italian language, there is no gender difference in VHI scores from that result[28]. There were some studies reported that females scored higher than males[12,27,35] (the statistical data were not shown in most studies) which were explained by greater voice demand in females and lower level of hyaluronic acid in superficial layer of lamina propria than males[36,37]. For the age variable, although the subjects in the control group in the present study were not age matched to the voice disorder group, the effect of age did not influent the VHI scores in both groups.

The advantage of VHI is that all aspects of functional, physical, and emotional domain are assessed. The patients can score the restriction of their social activities, perception of their own voice mental state. The physicians can get information and start conventional treatments from each aspect. In case of patient with high emotional subscore, the counseling can be direct introduced to decrease psychological burden.

Conclusion

The Thai VHI has good reliability and validity and suitable tool for evaluating the impact on quality of life in voice disorder patients. It can be easily administered and gives the additional information on difference aspects of the burden. The value of 13 in the total score should be considered as a threshold for voice handicap in Thai patients.

What is already known on this topic?

The VHI is one of the most common instruments used to objectify self-perceived voice problem. Its 30 questions are decided to assess all aspects of psychosocial impact of voice disorder include three domains, emotional, functional, and physical domain. The VHI questionnaire has been translated and adapted to native cultures in several languages because of its reliable results for voice assessment and for the pre and post treatment follow-up. However, there are no diverse translations into the East Asian countries which have different languages and cultures compared to the European countries.

What this study adds?

The Thai version of the VHI was developed and its clinical application in patients with dysphonia was applied. According to the type of voice disorder, the functional dysphonia group had the highest VHI scores, followed by neurogenic, structural, and inflammatory group. This should be the indication for treatment to get satisfactory outcome and the counseling can be directly introduced to decrease psychological burden.

Potential conflicts of interest

None.

References

1. Lundstrom E, Hammarberg B, Munck-Wikland E. Voice handicap and health-related quality of life in laryngectomees: assessments with the use of VHI and EORTC questionnaires. Folia Phoniatr Logop 2009; 61: 83-92.
2. Murry T, Medrado R, Hogikyan ND, Aviv JE. The relationship between ratings of voice quality and quality of life measures. J Voice 2004; 18: 183-92.
3. DeJonckere PH, Crevier-Buchman L, Marie JP, Moerman M, Remacle M, Woisard V. Implementation of the European Laryngological Society (ELS) basic protocol for assessing voice treatment effect. Rev Laryngol Otol Rhinol (Bord) 2003; 124: 279-83.
4. Jacobson BH, Johnson A, Grywalski C. The Voice Handicap Index (VHI): development and

validation. Am J Speech Lang Pathol 1997; 6: 66-70.
5. Hogikyan ND, Sethuraman G. Validation of an instrument to measure voice-related quality of life (V-RQOL). J Voice 1999; 13: 557-69.
6. Deary IJ, Wilson JA, Carding PN, MacKenzie K. VoiSS: a patient-derived Voice Symptom Scale. J Psychosom Res 2003; 54: 483-9.
7. Rosen CA, Lee AS, Osborne J, Zullo T, Murry T. Development and validation of the voice handicap index-10. Laryngoscope 2004; 114: 1549-56.
8. Portone CR, Hapner ER, McGregor L, Otto K, Johns MM III. Correlation of the Voice Handicap Index (VHI) and the Voice-Related Quality of Life Measure (V-RQOL). J Voice 2007; 21: 723-7.
9. Behlau M, Alves Dos Santos LM, Oliveira G. Cross-cultural adaptation and validation of the voice handicap index into Brazilian Portuguese. J Voice 2011; 25: 354-9.
10. Guimaraes I, Abberton E. An investigation of the Voice Handicap Index with speakers of Portuguese: preliminary data. J Voice 2004; 18: 71-82.
11. Hakkesteegt MM, Wieringa MH, Gerritsma EJ, Feenstra L. Reproducibility of the Dutch version of the Voice Handicap Index. Folia Phoniatr Logop 2006; 58: 132-8.
12. Helidoni ME, Murry T, Moschandreas J, Lionis C, Printza A, Velegrakis GA. Cross-cultural adaptation and validation of the voice handicap index into Greek. J Voice 2010; 24: 221-7.
13. Kiliç MA, Okur E, Yildirim I, Oğüt F, Denizoğlu I, Kizilay A, et al. Reliability and validity of the Turkish version of the Voice Handicap Index. Kulak Burun Bogaz Ihtis Derg 2008; 18: 139-47.
14. Lam PK, Chan KM, Ho WK, Kwong E, Yiu EM, Wei WI. Cross-cultural adaptation and validation of the Chinese Voice Handicap Index-10. Laryngoscope 2006; 116: 1192-8.
15. Nawka T, Wiesmann U, Gonnermann U. Validation of the German version of the Voice Handicap Index. HNO 2003; 51: 921-30.
16. Núñez-Batalla F, Corte-Santos P, Señaris-González B, Llorente-Pendás JL, Górriz-Gil C, Suárez-Nieto C. Adaptation and validation to the Spanish of the Voice Handicap Index (VHI-30) and its shortened version (VHI-10). Acta Otorrinolaringol Esp 2007; 58: 386-92.
17. Pruszewicz A, Obrebowski A, Wiskirska- Woźnica B, Wojnowski W. Complex voice assessment--Polish version of the Voice Handicap Index (VHI). Otolaryngol Pol 2004; 58: 547-9.
18. Verdonck-de Leeuw IM, Kuik DJ, De Bodt M, Guimaraes I, Holmberg EB, Nawka T, et al. Validation of the voice handicap index by assessing equivalence of European translations. Folia Phoniatr Logop 2008; 60: 173-8.
19. Woisard V, Bodin S, Puech M. The Voice Handicap Index: impact of the translation in French on the validation. Rev Laryngol Otol Rhinol (Bord) 2004; 125: 307-12.
20. Ohlsson AC, Dotevall H. Voice handicap index in Swedish. Logoped Phoniatr Vocol 2009; 34: 60-6.
21. Malki KH, Mesallam TA, Farahat M, Bukhari M, Murry T. Validation and cultural modification of Arabic voice handicap index. Eur Arch Otorhinolaryngol 2010; 267: 1743-51.
22. Stomeo F, Tosin E, Morolli F, Bianchini C, Ciorba A, Pastore A, et al. Comparison of subjective and objective tools in transoral laser cordectomy for early glottic cancer: importance of voice handicap index. Int J Immunopathol Pharmacol 2013; 26: 445-51.
23. Sanuki T, Yumoto E, Kodama N, Minoda R, Kumai Y. Long-term voice handicap index after type II thyroplasty using titanium bridges for adductor spasmodic dysphonia. Auris Nasus Larynx 2014; 41: 285-9.
24. Datta R, Sethi A, Singh S, Nilakantan A, Venkatesh M D. Translation and validation of the voice handicap index in Hindi. J Laryngol Voice 2011; 1: 12-7.
25. Hsiung MW, Lu P, Kang BH, Wang HW. Measurement and validation of the voice handicap index in voice-disordered patients in Taiwan. J Laryngol Otol 2003; 117: 478-81.
26. Xu W, Han D, Li H, Hu R, Zhang L. Application of the Mandarin Chinese version of the Voice Handicap Index. J Voice 2010; 24: 702-7.
27. Taguchi A, Mise K, Nishikubo K, Hyodo M, Shiromoto O. Japanese version of voice handicap index for subjective evaluation of voice disorder. J Voice 2012; 26: 668-9.
28. Schindler A, Ottaviani F, Mozzanica F, Bachmann C, Favero E, Schettino I, et al. Cross-cultural adaptation and validation of the voice handicap index into Italian. J Voice 2010; 24: 708-14.
29. Niebudek-Bogusz E, Kuzanska A, Woznicka E, Sliwinska-Kowalska M. Assessment of the voice handicap index as a screening tool in dysphonic patients. Folia Phoniatr Logop 2011; 63: 269-72.
30. Grässel E, Hoppe U, Rosanowski F. Grading of the voice handicap index. HNO 2008; 56: 1221-8.

31. Moradi N, Pourshahbaz A, Soltani M, Javadipour S. Cutoff point at voice handicap index used to screen voice disorders among persian speakers. J Voice 2013; 27: 130.
32. Van Gogh CD, Mahieu HF, Kuik DJ, Rinkel RN, Langendijk JA, Verdonck-de Leeuw IM. Voice in early glottic cancer compared to benign voice pathology. Eur Arch Otorhinolaryngol 2007; 264: 1033-8.
33. Karlsen T, Grieg AR, Heimdal JH, Aarstad HJ. Cross-cultural adaption and translation of the voice handicap index into Norwegian. Folia Phoniatr Logop 2012; 64: 234-40.
34. Amir O, Ashkenazi O, Leibovitzh T, Michael O, Tavor Y, Wolf M. Applying the Voice Handicap Index (VHI) to dysphonic and nondysphonic Hebrew speakers. J Voice 2006; 20: 318-24.
35. Rosen CA, Murry T. Voice handicap index in singers. J Voice 2000; 14: 370-7.
36. Tavares EL, Martins RH. Vocal evaluation in teachers with or without symptoms. J Voice 2007; 21: 407-14.
37. Butler JE, Hammond TH, Gray SD. Gender-related differences of hyaluronic acid distribution in the human vocal fold. Laryngoscope 2001; 111: 907-11.

การสร้างและการประเมินความถูกต้องของแบบสอบถาม Voice Handicap Index ฉบับภาษาไทย

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ภูมิหลัง: *Voice Handicap Index (VHI) เป็นแบบสอบถามผลกระทบด้านคุณภาพชีวิตที่ใช้ประเมินความผิดปกติของเสียงที่ได้รับการแปลเป็นภาษาต่าง ๆ มากที่สุดทั่วโลกแต่ยังไม่มีการศึกษาแปลเป็นภาษาไทย*

วัตถุประสงค์: *เพื่อศึกษาความเที่ยงและความตรงแบบสอบถาม VHI ฉบับภาษาไทยและนำมาประยุกต์ในการวินิจฉัยผู้ป่วย*

วัสดุและวิธีการ: *หลังจากได้รับอนุญาตในการแปล VHI จาก American Speech Language Hearing Association (ASHA) ประเทศสหรัฐอเมริกาแล้ว แบบสอบถามVHIได้รับการแปลเป็นภาษาไทยโดยใช้วิธี forward and backward translation ตามวิธีมาตรฐานโดยกลุ่มที่ใช้ศึกษาประกอบด้วยผู้ป่วยที่มีปัญหาด้านสายเสียง 85 ราย ซึ่งแบ่งเป็น 4 กลุ่ม คือ สาเหตุจากระบบประสาท จากก้อนเนื้องอก จากวิธีออกเสียงผิดปกติ และจากการอักเสบ นอกจากนั้น มีกลุ่มควบคุมประกอบด้วยผู้ป่วย 30 ราย ซึ่งไม่มีโรคใด ๆ ด้านสายเสียง ความเที่ยงของแบบสอบถามวัดโดย Cronbach's α coefficient รวมทั้งการทำแบบสอบถาม 2 ครั้ง จากผู้ป่วย 22 ราย ในกรณีความตรง วัดโดยความสามารถของแบบสอบถามในการจำแนกผู้ป่วยทั้ง 4 กลุ่ม ออกจากกลุ่มคนปกติ รวมทั้งวัดจากความตรงตามเนื้อหา ส่วนค่าคะแนนที่เป็นจุดจำแนกระหว่างคนปกติกับผู้ป่วย ใช้ค่าคะแนนผลรวม VHI >13 จากค่า ROC และศึกษาถึงผลกระทบจากปัจจัยอายุและเพศด้วย*

ผลการศึกษา: *แบบสอบถาม VHI ฉบับภาษาไทยมีค่าความถูกต้องและค่าความเชื่อถือได้ในระดับ "ดีมาก" เมื่อพิจารณาจากความถูกต้องตามเนื้อหา การวัดความสอดคล้องภายในและการวัดความคงที่ (IOC >0.8, Cronbach's α = 0.96 และ r = 0.843 ตามลำดับ) พบว่า ผลคะแนนของแบบสอบถามระหว่างกลุ่มคนปกติกับกลุ่มผู้ป่วยมีค่าความแตกต่างอย่างมีนัยสำคัญทางสถิติ โดยคะแนนในกลุ่มคนปกติมีค่าที่น้อยกว่ากลุ่มผู้ป่วยทั้ง 4 กลุ่ม อย่างชัดเจน (p<0.001) อายุและเพศ ไม่มีผลต่อค่า VHI*

สรุป: *แบบสอบถามประเมินตนเอง VHI ฉบับภาษาไทยนี้ มีความถูกต้องและความเชื่อถือได้ระดับดีมาก สามารถนำไปใช้เพื่อช่วยประเมินผลกระทบด้านคุณภาพชีวิตจากโรคด้านสายเสียงและจำแนกผู้ป่วยที่มีเสียงผิดปกติจากคนปกติได้*

Appendix 1. Voice handicap index

VOICE HANDICAP INDEX

Name: _____ Date: _____

These are statements that many people have used to describe their voices and the effects of their voices on their lives. Circle the response that indicates how frequently you have the same experience.

0 - never 1 - almost never 2 - sometimes 3 - almost always 4 - always

Part I-F	
My voice makes it difficult for people to hear me.	0 1 2 3 4
People have difficulty understanding me in a noisy room.	0 1 2 3 4
My family has difficulty hearing me when I call them throughout the house.	0 1 2 3 4
I use the phone less often than I would like to.	0 1 2 3 4
I tend to avoid groups of people because of my voice.	0 1 2 3 4
I speak with friends, neighbors, or relatives less often because of my voice.	0 1 2 3 4
People ask me to repeat myself when speaking face-to-face.	0 1 2 3 4
My voice difficulties restrict my personal and social life.	0 1 2 3 4
I feel left out of conversations because of my voice.	0 1 2 3 4
My voice problem causes me to lose income.	0 1 2 3 4
	SUBTOTAL _____
Part II-P	
I run out of air when I talk.	0 1 2 3 4
The sound of my voice varies throughout the day.	0 1 2 3 4
People ask, “What’s wrong with your voice?”	0 1 2 3 4
My voice sounds creaky and dry.	0 1 2 3 4
I feel as though I have to strain to produce voice.	0 1 2 3 4
The clarity of my voice is unpredictable.	0 1 2 3 4
I try to change my voice to sound different.	0 1 2 3 4
I use a great deal of effort to speak.	0 1 2 3 4
My voice is worse in the evening.	0 1 2 3 4
My voice “gives out” on me in the middle of speaking.	0 1 2 3 4
	SUBTOTAL _____
Part III-E	
I am tense when talking to others because of my voice.	0 1 2 3 4
People seem irritated with my voice.	0 1 2 3 4
I find other people don’t understand my voice problem.	0 1 2 3 4
My voice problem upsets me.	0 1 2 3 4
I am less outgoing because of my voice problem.	0 1 2 3 4
My voice makes me feels handicapped.	0 1 2 3 4
I feel annoyed when people ask me to repeat.	0 1 2 3 4
I feel embarrassed when people ask me to repeat.	0 1 2 3 4
My voice makes me feel incompetent.	0 1 2 3 4
I am ashamed of my voice problem.	0 1 2 3 4
	SUBTOTAL _____
	TOTAL _____

Appendix 2. Thai version of voice handicap index

แบบสอบถามประเมินความผิดปกติของเสียง voice handicap index (VHI)

ข้อความข้างล่างนี้เป็นสิ่งที่คนทั่วไปใช้อธิบายลักษณะเสียงของพวกเขาและผลกระทบของเสียงที่มีต่อการใช้ชีวิตประจำวัน กรุณาวงกลมคำตอบที่บ่งบอกถึงความถี่ของลักษณะดังกล่าวที่เกิดขึ้นกับคุณ ในเหตุการณ์ดังต่อไปนี้

0 = ไม่เคย 1 = เกือบไม่เคย 2 = บางครั้ง 3 = เกือบทุกครั้ง 4 = ทุกครั้ง

ส่วนที่ 1

1.	บุคคลทั่วไปฟังเสียงพูดของฉันด้วยความยากลำบาก	0 1 2 3 4
2.	บุคคลอื่นเข้าใจคำพูดของฉันได้ลำบากในห้องที่มีเสียงรบกวน	0 1 2 3 4
3.	ครอบครัวของฉันมีปัญหาในการได้ยินฉันเมื่อฉันส่งเสียงเรียกจากส่วนอื่นของบ้าน	0 1 2 3 4
4.	ฉันใช้โทรศัพท์น้อยลงกว่าที่ฉันต้องการ	0 1 2 3 4
5.	ฉันมักจะหลบเลี่ยงพบกลุ่มผู้คนเนื่องจากปัญหาเสียงของฉัน	0 1 2 3 4
6.	ฉันพูดคุยกับเพื่อน,เพื่อนบ้าน,หรือญาติ น้อยกว่าที่ควรเนื่องจากปัญหาเสียงของฉัน	0 1 2 3 4
7.	เมื่อฉันสนทนาต่อหน้าบุคคลอื่น เขามักขอให้ฉันพูดซ้ำ	0 1 2 3 4
8.	ปัญหาทางเสียงของฉัน มีผลต่อชีวิตฉันทั้งด้านส่วนตัวและสังคม	0 1 2 3 4
9.	ฉันรู้สึกถูกแยกออกจากวงสนทนา เนื่องจากปัญหาเรื่องเสียงของฉัน	0 1 2 3 4
10.	ปัญหาเรื่องเสียง ทำให้ฉันต้องสูญเสียรายได้	0 1 2 3 4

ส่วนที่ 2

1.	ลมในการเปล่งเสียงของฉันหายไปเวลาฉันพูด	0 1 2 3 4
2.	เสียงของฉันมีการเปลี่ยนแปลงขึ้นลงในระหว่างวัน	0 1 2 3 4
3.	บุคคลอื่นมักถามฉันว่า “เสียงของคุณเป็นอะไร”	0 1 2 3 4
4.	เสียงของฉันแหบแห้ง	0 1 2 3 4
5.	ฉันรู้สึกต้องพยายามเค้นเสียงในการพูด	0 1 2 3 4
6.	ความชัดเจนของเสียงฉัน ไม่สามารถคาดเดาได้	0 1 2 3 4
7.	ฉันพยายามเปลี่ยนเสียงพูดให้แตกต่างไปจากเดิม	0 1 2 3 4
8.	ฉันใช้ความพยายามอย่างมากในการพูด	0 1 2 3 4
9.	เสียงของฉันแย่ลงกว่าเดิมในเวลาเย็น	0 1 2 3 4
10.	เสียงของฉันหายไปในช่วงระหว่างการพูด	0 1 2 3 4

ส่วนที่ 3

1.	ฉันรู้สึกเครียดเวลาพูดกับบุคคลอื่นเนื่องจากเสียงของฉัน	0 1 2 3 4
2.	บุคคลอื่นรู้สึกรำคาญเสียงพูดของฉัน	0 1 2 3 4
3.	บุคคลอื่นไม่เข้าใจปัญหาเสียงของฉัน	0 1 2 3 4
4.	ปัญหาเรื่องเสียงของฉันทำให้ฉันรู้สึกหงุดหงิด รำคาญใจ	0 1 2 3 4
5.	ปัญหาเรื่องเสียงของฉันทำให้ฉันออกจากบ้านลดลง	0 1 2 3 4
6.	เสียงของฉันทำให้ฉันรู้สึกเสมือนเป็นบุคคลทุพพลภาพ	0 1 2 3 4
7.	ฉันรู้สึกรำคาญเมื่อมีคนขอให้ฉันพูดซ้ำ	0 1 2 3 4
8.	ฉันรู้สึกอายเมื่อมีคนขอให้ฉันพูดซ้ำ	0 1 2 3 4
9.	เสียงของฉันทำให้ฉันรู้สึกด้อยความสามารถ	0 1 2 3 4
10.	ฉันรู้สึกอับอายเกี่ยวกับปัญหาเสียงของฉัน	0 1 2 3 4

รวมคะแนนส่วนที่ 1……..

รวมคะแนนส่วนที่ 2……..

รวมคะแนนส่วนที่ 3……..

รวมคะแนนทั้งหมด……..