

ORIGINAL ARTICLE

HEALTH EFFICACY AND ASSERTIVENESS SCALE IN MALAY LANGUAGE: A VALIDATION STUDY

Mohd Nazir Mohd Nazori¹, Rohani Ismail*¹, Nur Syahmina Rasudin¹, Rosminah Mohamed¹, Norhayati Mohd Noor², Zailiza Sulli³, Noor Azliah Ahmad Zainuri⁴, Masitah Mohamed⁵ and Ashvini Jayapalan⁶

¹School of Health Sciences, Universiti Sains Malaysia

²School of Medical Sciences, Universiti Sains Malaysia

³Hulu Langat Health District Office, Kementerian Kesihatan Malaysia

⁴Petaling Health District Office, Kementerian Kesihatan Malaysia

⁵Klang Health District Office, Kementerian Kesihatan Malaysia

⁶Gombak Health District Office, Kementerian Kesihatan Malaysia

*Corresponding author: Rohani Ismail

Email: rohanis@usm.my

ABSTRACT

Modern medical practice emphasises mutual decision-making between healthcare professionals and patients. This pre-requisites health self-efficacy and health assertiveness in patients. However, lack of general health self-efficacy and health assertiveness measure limits research in the local setting. This study aimed to translate and validate Health Efficacy and Assertiveness Scale (HEAS) into Malay language. Malay version of HEAS was obtained through back-to-back translation process. This was tested for factorial validity via exploratory (EFA) and confirmatory factor analysis (CFA) using structural equation modelling. Reliability was established using Cronbach's alpha. Five items measured health self-efficacy whereas eight items measured health assertiveness on two subdimensions (assert to be informed and assert opinion). Reliability index was 0.76 for health self-efficacy and 0.73 for health assertiveness. CFA on health efficacy measurement model reporting fit indices: χ^2/df 1.28, comparative fit index (CFI) 0.96, Tucker-Lewis's index (TLI) 0.94, and root mean-square error of approximation (RMSEA) was 0.07. CFA on health assertiveness revealed improved fit indices: χ^2/df was 1.52, comparative fit index (CFI) 0.94, Tucker-Lewis's index (TLI) 0.91, and root mean-square error of approximation (RMSEA) was 0.10. Thus, the Malay HEAS questionnaire established acceptable factorial validity and good reliability on Cronbach's alpha. Universal nature of the items allowed use in different population and health scenarios.

Keywords: Health self-efficacy, health assertiveness, questionnaire validation, health efficacy and assertiveness scale, structural equation modelling

INTRODUCTION

The modern medical practice has moved toward shared decision-making between patients and healthcare professionals. Integral to this improvement was the principle of autonomy as deemed to be a basic human right and informed consent as promoted by modern medical ethics¹. Patients are now an active player in deciding their health needs. Almost all patients reported their need for health knowledge before making decision on their treatment. However, this demand does not operate uniformly in terms of the amount of knowledge patients want to know. It depends on several factors such as the level of cognition and locus of control. Bandura (1993) has proposed individual measure their ability to perform a task (in this context, understanding health knowledge) to form a belief called self-efficacy. Self-efficacy was defined as "people's beliefs in their capabilities to produce given attainments"³. The importance of self-efficacy has been shown to lead to longer effort and better performance amongst individual in performing the task⁴ and this has been replicated across different cultures and tasks⁵. Those with high level of self-efficacy will be able to endure the process and seek better understanding of the

complex health knowledge before making a decision. Self-efficacy was also instrumental in deciding action to be taken as proposed in the Extended Parallel Process Model (EPPM) and as well as significant contribution in major health behaviour theories such as Health Belief Model and Theory of Planned Behaviour⁶. For example, EPPM proposed that when an individual perceived threat is significant, they will start to assess their self-efficacy to handle the threat. Choice of action depends on the level of self-efficacy and perceived efficacy of the act to reduce or prevent the threat. Therefore, the ability to measure self-efficacy in the context of health situation is very important to predict action. For example, a study on acceptance of human papillomavirus vaccination amongst men has shown moderating influence of self-efficacy on knowledge and vaccination intention⁷.

Those with high self-efficacy will act consistently with the knowledge they have in accepting vaccination. Rimal & Real (2003) also reported that level of self-efficacy drives the individual to seek more health knowledge. Those with high self-efficacy (coupled with appropriate level of risk perception) will be motivated to think, find, and use health knowledge on cardiovascular

disease. Overall, the importance of self-efficacy towards health in general is evidenced by previous research.

Assertiveness is also crucial in the process of deciding in a health situation. Assertiveness can be defined as “the direct and appropriate communication of a person’s needs, wants and opinions without punishing, threatening, putting down others, and doing this without fear during the process”⁹. In the context of shared decision-making process, this assertive communication is an important ability to lead towards informed consent. Several researches have shown that healthcare professionals are the most trusted source for health knowledge^{10,11}. Therefore, assertiveness will allow patients to engage their healthcare professionals to obtain health knowledge. Patients with high assertiveness will be able to request descriptive knowledge, sources of information, explanation of tests done, and discuss their health situation with healthcare professionals. This reflects an active role played by the patient as an agent in determining the right decision. Especially within the current modern practice of medicine, Keij et al. (2020) outlined that assertive communication is a crucial element in patient’s readiness for a shared decision-making. Patients with high assertiveness can ask question, express their feelings, values, and opinion regarding their health situation. This will allow both healthcare professional and patient hold a shared basis to consider the options available. Assertive patients also received better attention and care by the healthcare professional¹³. Patients that are able to communicate their needs received better assessment of their tumour staging and suggestion of treatment alternatives. Assertion of needs may be interpreted by healthcare professionals as the patient’s commitment, motivation, and energy towards achieving better health. Therefore, influencing healthcare professional’s behaviour in supporting such patients.

In the Malaysian context, self-efficacy has been studied in relation to type 2 diabetes mellitus, hypertension, stroke, medication use, smoking cessation, methadone treatment, and mental health¹⁴⁻²¹. Across health scenarios, the role of self-efficacy has been shown to be significant. For example, Devarajoo & Chinna (2017) reported that self-efficacy predicted diabetes self-care practice amongst patients in Hulu Selangor. There were no significant differences in level of self-efficacy according to demographic characteristics. In another context, Appalasaamy et al. (2019) reported that stroke patients with low medication-related self-efficacy were more likely to show poor compliance to medication. This also contributed to low level of health knowledge regarding how and when to take medication as well as the purpose of each medication. In the two studies,

a spectrum of impact to treatment has been proven caused by differing level of self-efficacy. Those with low self-efficacy tend to have low health knowledge (Appalasaamy et al., 2019). Self-efficacy also shown significant contribution towards preventive behaviour such as breast self-examination, exercise, and dengue prevention habits²²⁻²⁴. Those with high level of self-efficacy reported higher acceptance and practice of these preventive health behaviour. For example, Isa et al. (2013) reported that the success of educational intervention on dengue prevention depends on the level of self-efficacy. Several strategies have shown to improve health knowledge on dengue and its prevention but the impact towards dengue prevention behaviour was fully mediated by self-efficacy. This finding signifies that self-efficacy is important, not only in seeking health knowledge, but also in adoption of health behaviour consistent with the health knowledge.

Unfortunately, research on assertiveness in the Malaysian health context was non-existent despite rigorous searches on Science Direct, Scopus, Taylor & Francis, PubMed and Google Scholar. This may indicate that such variable has yet being considered as an important factor towards improving health knowledge and health decision-making. All of the studies in the Malaysian context measured self-efficacy as part of specific health situations (eg: type 2 diabetes, stroke, medication use, etc.). Though it is useful in that specific health situation, the utilisation of the measure is also limited to it. This limits the quantitative study of self-efficacy in other health situations. As such, this research aims to translate and validate Health Efficacy and Assertiveness Scale²⁵ that operationalise self-efficacy and assertiveness as a general construct in health situation.

METHODS

The HEAS original instrument consists of seven items measuring health self-efficacy and 14 items measuring health assertiveness, both on a unidimensional scale. The original instrument was validated amongst adult in the USA reporting good content, face, factorial, and concurrent validity. The original instrument’s reliability was established using Cronbach’s alpha reporting index of 0.91 and 0.90 for health self-efficacy and health assertiveness, respectively. Translation of Health Efficacy and Assertiveness Scale (HEAS) followed a back-to-back translation method as outlined by Beaton et al. (1998): (a) translation, (b) synthesis, (c) back translation, (d) expert committee review, (e) pretesting and (f) submission and appraisal.

Translation was done by two linguists proficient in both English and Malay with professional qualification in English producing two drafts (T1 and T2). Translators were provided with a

section to describe their difficulty, confusion, or alternative wording for each item. Two translators and one of the authors sit down to discuss differences in T1 and T2 drafts, input in comment section and agree on a unified version (designated as T12). Back translation of T12 draft was done by two linguists proficient in both English and Malay but unaware to the original questionnaire. This resulted in two back translation drafts designated as BT1 and BT2. All translation drafts and original questionnaire were discussed by an expert committee comprising of four translators, one healthcare professional and one psychologist. Differences in translation were discussed and a final version of the item was agreed. All translated items were then administered on pregnant mothers that were randomly chosen from one primary health clinic and one rural health clinics from districts of Petaling, Klang, Gombak and Hulu Langat. Exploratory factor analysis (EFA) utilised principal component analysis based on Eigenvalues of 1.0 and Varimax rotation. Reliability index of items was calculated using Cronbach's alpha. Items were removed to achieve reliability index of 0.7 on Cronbach's alpha. Items fulfilling the criteria above were retained for confirmatory factor analysis (CFA). Selected respondents were interviewed for their thought and understanding of the items. Modification was made as necessary before further data collection was done. Validation study was carried out on pregnant mothers from randomly selected primary and rural health clinics in the district of Petaling, Klang, Gombak and Hulu Langat. A minimum sample size of 220 respondents were targetted according to 1 item to 20 respondents rule-of-thumb for CFA²⁷. The questionnaire comprised of demographic

information, and the translated items for HEAS. Factorial validity was established using confirmatory factor analysis using SPSS Amos version 27. Goodness-of-fit was assessed according to several fit indices such as $\chi^2/df < 3.0$, comparative fit index (CFI) > 0.90 , Tucker-Lewis's index (TLI) > 0.90 , and root mean-square error of approximation (RMSEA) < 0.08 . Changes to the model was made based on modification indices to improve model fit.

Ethical approval was obtained from Medical Research Ethics Committee [NMRR-19-4053-50796 (IIR)] and Universiti Sains Malaysia Ethics Review Board [USM/JEPeM/19100566].

RESULT

Translation process resulted in one item measuring assertiveness was discarded as it does not reflect the healthcare system in Malaysia. The final list of items consists of seven items measuring health self-efficacy and 13 items measuring health assertiveness.

Demographics of sample

A total of 108 respondents answered the questionnaire for exploratory study and 416 respondents answered the questionnaire for confirmatory study. Majority of respondents in the confirmatory study were Malays with 338 respondents (84%), has university-level education (68.8%), earn less than RM6,000 per month (72.6%), and household income was reported to be less than RM6,000 (71%). Majority of respondents has one child (40.4%). These demographic details are summarized in the Table 1 below.

Table 1a Demographic details

Demography	Frequency	Percentage (%)
Age	30.56 (mean)	4.90 (sd)
Ethnicity		
Malay	338	84
Chinese	24	6
Indian	24	6
Indigenous	16	4
Education level		
Primary school	6	1.5
Secondary school	104	25.2
Vocational Certificate	18	4.4
Diploma	104	25.2
Degree	148	35.9
Master	29	7.0
PhD	3	0.7
Personal Income		
No income	89	21.6
Less than RM 3,000	183	44.4
RM 3,001 to RM 6,000	116	28.2
RM 6,001 to RM 9,000	21	5.1
RM 9,001 to RM 12,000	3	0.7

Table 1b Demographic details

Household Income		
No income	1	.2
Less than RM 3,000	114	28.4
RM 3,001 to RM 6,000	170	42.4
RM 6,001 to RM 9,000	69	17.2
RM 9,001 to RM 15,000	34	8.5
More than RM 15,000	8	2.0
Number of children		
0	100	26.6
1	152	40.4
2	71	18.9
3	35	9.3
4	14	3.7
5	2	0.5
6	2	0.5

The validation data of this study is on the following sample characteristics. Data was obtained from majority Malays. Respondents have university-level education (diploma or degree) and with a significant representation from those with secondary school-level education. Personal income was represented almost equally from no income, less than RM 3,000 and RM 3,001 to RM 6,000. Household income reported significant representation from earning less than RM 3,000 with a fifth respondents without any household income. Majority of mothers do not have other children, which may indicate first pregnancy (as suggested

by lower median or mean age among them). Theoretically, they do not have any prior experience in deciding for child vaccination.

Exploratory factor analysis

Kaiser-Meyer-Olkin test showed sample was adequate for factor analysis and Bartlett’s test of sphericity was significant, indicating presence of common factors. Table 3 below summarized the factor loadings, factor, and Cronbach’s alpha for items measuring health self-efficacy and health assertiveness.

Table 2 Psychometric properties of items

Dimension	Item Code	Factor loading	Factor	Cronbach’s alpha
Health self-efficacy	HEQ1	0.38	Removed	0.76
	HEQ2	0.60	1	
	HEQ3	0.64	1	
	HEQ4	0.71	1	
	HEQ5	0.75	1	
	HEQ6	0.80	1	
	HEQ7	0.65	1	
Health assertiveness	HAQ1	0.72	1	0.73
	HAQ2	0.69	1	
	HAQ3	0.88	2	
	HAQ4	0.12	Removed	
	HAQ5	0.76	1	
	HAQ6	0.80	2	
	HAQ7	0.74	1	
	HAQ8	0.54	2	
	HAQ9	0.29	Removed	
	HAQ10	0.70	1	
	HAQ11	0.31	Removed	
	HAQ12	0.84	1	
	HAQ13	0.62	1	

Items measuring health self-efficacy loaded onto a single factor. Item HEQ1 produce factor loading below 0.50 and was removed. The remaining items produce a Cronbach’s alpha value of 0.76. Initial factor analysis for health assertiveness items showed item HAQ4, HAQ9, and HAQ119 have factor loading less than 0.50. These items were removed one at a time and factor analysis was repeated. Final items that

measure health assertiveness loaded onto two factors. Item HAQ1, HAQ2, HAQ5, HAQ7, HAQ10, HAQ12, and HAQ13 loaded onto Factor 1 named assert being informed. Item HAQ3, HAQ6, and HAQ8 loaded onto Factor 2 named assert opinion. All factor loadings for the final health assertiveness items were above 0.50 and produced a Cronbach’s alpha value of 0.73.

Confirmatory factor analysis

Confirmatory factor analysis was done on the first-order and second-order measurement model for health self-efficacy and health assertiveness, respectively. Initial analysis of first-order model for health self-efficacy revealed item HEQ7 reporting factor loading less than 0.50. This item was removed and reanalysis produce initial fit indices: χ^2/df was 1.64, comparative fit index (CFI) 0.90, Tucker-Lewis's index (TLI) 0.87, and root mean-square error of approximation (RMSEA) was 0.11. Modification indices revealed covariance between residuals. This was covaried and analysis was repeated.

Improvement was seen to the modified measurement model reporting fit indices: χ^2/df 1.28, comparative fit index (CFI) 0.96, Tucker-Lewis's index (TLI) 0.94, and root mean-square error of approximation (RMSEA) was 0.07.

Initial analysis of second-order model for health assertiveness revealed fit indices: χ^2/df was 1.86, comparative fit index (CFI) 0.88, Tucker-Lewis's index (TLI) 0.84, and root mean-square error of approximation (RMSEA) was 0.13. All factor loadings were > 0.5. Modification indices suggested regression from HAQ3 (assert opinion) towards HAQ13 and HAQ5 (both assert to be informed). Item HAQ13 and HAQ5 were removed stepwise, and analysis was repeated.

Final analysis retained eight items and revealed improved fit indices. Modification indices revealed covariance between error terms of item HAQ2 and HAQ10. This was covaried and analysis was repeated. Final analysis revealed improved fit indices: χ^2/df was 1.52, comparative fit index (CFI) 0.94, Tucker-Lewis's index (TLI) 0.91, and root mean-square error of approximation (RMSEA) was 0.10.

Table 3 Fit indices for HEAS measurement model

Construct	χ^2/df	CFI	TLI	RMSEA
Health self-efficacy	1.28	0.96	0.94	0.07
Health assertiveness	1.52	0.94	0.91	0.10

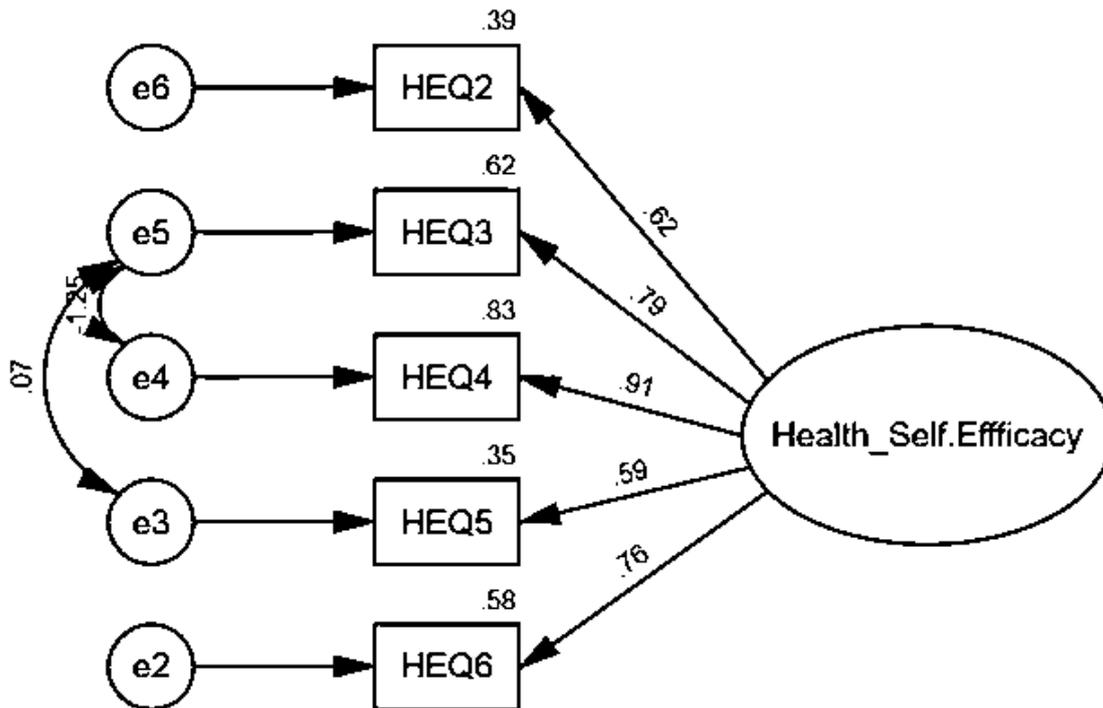


Figure 1 Measurement model for health self-efficacy

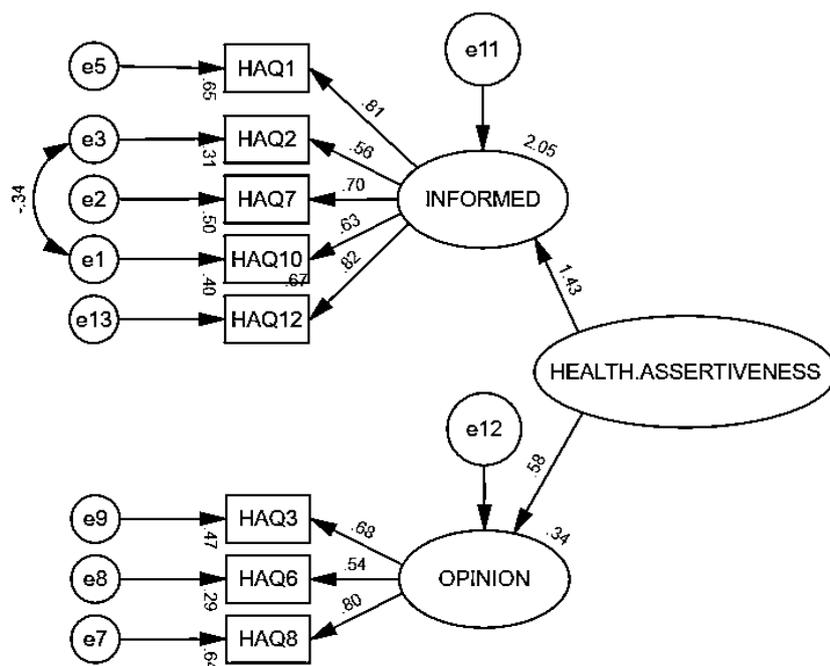


Figure 2 Measurement model for health assertiveness

DISCUSSION

Contrary to the original instrument, the number of items measuring health self-efficacy and health assertiveness is lesser and items in health assertiveness loaded onto two subdimensions. Items measuring health assertiveness loaded onto assert to be informed and assert opinion. This may reflect a cultural or health system differences that present between the population in Malaysia and USA.

There was also a significant positive relationship between health self-efficacy and health assertiveness. This is consistent with findings of the original instrument²⁵. In the publication of the original instrument, health self-efficacy and health assertiveness showed significant relationship within the same instrument and against other similar instruments. Such relationship suggests that individuals with stronger belief in their ability to manage their health situation (health self-efficacy) will have a better ability to assert their belief through several health-related actions (health assertiveness). This is also consistent with findings of Bandura & Locke (2003) reporting those individuals with higher self-efficacy showed better performance in the given task.

Generality of the items allow application across population and health scenarios. This will enable the understanding of how psychological profile impact health-related outcomes amongst different population and scenario. This is especially true in health scenario that lack its own self-efficacy measures unlike available measures in type 2 diabetes mellitus,

hypertension, smoking, and other scenarios listed above. However, application of this measure must appreciate the lack of representation within the items to measure a particular health scenario. Tasks involved in a health scenario may not be represented fully by this instrument. Bandura & Locke (2003) iterated that any self-efficacy measure should be specific to a task, capturing both the perceived ability to perform the act and perceived outcome from the act.

Situation during data collection has limited the reach to chosen sampling sites. Out of four chosen data collection sites, only two was able to be accessed whilst the other two sites reported high community cases of Covid-19. Weighing the risk to access the sites and benefit of immediate data collection, those sites were excluded and not replaced. Therefore, exploratory study data was restricted to Malays, those with university-level education, and lower income level. These demographic details are not representative of the population in the four districts in this study. Confirmatory study was done involving all randomly chosen sampling sites. However, the ethnic distribution of the samples is not representative of whole of Selangor. There was also significant aggregation of certain ethnicity in certain districts and locations within district. Future research should either focus on sites with higher population of other ethnic (eg: Chinese and Indian) or employed a quota sampling method to select respondents. Data from such studies can provide cross-validation to the existing validation data. Data collection also employed a self-administered survey using pen and paper.

Respondents with reading or writing disabilities were not included. As such, the instrument was not validated for these populations. Future study should purposefully aim this population as they tend to access similar healthcare services as the population of this study.

Test-retest reliability was not established in this study due to the limited time frame to execute this research. Ideally, future research can improve and provide evidence of test-retest reliability to demonstrate the stability of the translated instrument.

CONCLUSION

The HEAS Malay version showed good factorial validity and acceptable reliability on Cronbach's alpha. The instrument should be used in future research to expand the knowledge on health self-efficacy and health assertiveness in different population and health scenarios.

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Conflict of interest

I declare no conflict of interest with the outcome of research.

Ethical approval

This research has obtained ethical approval form Medical Research Ethics Committee NMRR-19-4053-50796 (IIR) and Universiti Sains Malaysia Ethics Review Board USM/JEPeM/19100566.

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