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ORIGINAL ARTICLE

Validation of the Communication Skills Attitude Scale (CSAS) Questionnaire in a Cohort of Malaysian Medical Students

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ABSTRACT

Introduction: The Communication Skills Attitude Scale (CSAS) assesses medical students' attitudes towards learning communication skills and had been widely utilised all over the world. This questionnaire has 26 items framed within two subscales. This study aimed to examine the validity and reliability of the CSAS among medical students in Universiti Teknologi MARA (UiTM). **Methods:** This was a cross sectional questionnaire validation study among 171 first year medical students from UiTM. The CSAS had undergone content and face validation, followed by psychometric analysis using principal component analysis to assess construct validity. Internal consistency was evaluated using Cronbach alpha. **Results:** Factor analysis confirmed the original two-subscale structure of the CSAS (positive attitude scale, PAS and negative attitude scale, NAS). A total of 4 items were removed due to poor factor loading (1 item from PAS and 3 items from NAS). The final validated CSAS consisted of 22 items, 14 and 8 items for the PAS and NAS respectively. Cronbach alphas calculated were 0.862 for the PAS and 0.565 for the NAS. **Conclusion:** This study produced a validated and reliable CSAS to measure the attitude of UiTM medical students towards learning communication skills. Given the low internal reliability of the NAS in this study, future studies should include translating and validating the CSAS into the Malay language to improve its psychometric properties. Future studies should also include medical students from the three major ethnic groups and other medical schools in Malaysia to improve the generalisability of the CSAS.

KEYWORDS: Communication skills, attitudes, undergraduate, medical students, medical education.

INTRODUCTION

Communication is an integral instinct of all living beings. Communication skill is defined as the ability to convey or share ideas and feelings effectively [1]. Effective communication is also one of the important skills for healthcare providers to master in order to deliver high quality patient care. Doctors communicate with a wide range of people including other doctors, nursing staff, allied health practitioners, administration staff, patients and their family members or caregivers. Doctor-patient communication involves taking a history, explaining a diagnosis or prognosis, giving instruction for treatments, and counseling [2].

The Patient-Centered Care Model underscored the importance of healthcare communication which includes interpersonal skills and doctor-patient interaction [3]. This model stressed the importance of viewing the patient as a person whereby they are well informed and involved at every step of their health journey. The medical decision-making is shared between the patient and doctor, taking into consideration their social context and expectations [3]. To achieve the goal of the Patient-Centered Care Model, doctors need to be able to communicate effectively so patients' needs are well understood.

The benefits of effective doctor-patient communication are well documented. These included improved patient understanding and recall of information, satisfaction with care, adherence to prescribed treatment, and provider satisfaction [4]. Good communication skills among doctors have also been linked to lower utilization of health care resources and fewer malpractice lawsuits [5].

The root cause of various malpractice claims to the medical regulatory bodies were related to a breakdown in the doctor-patient communication [6]. This is due to widespread deficits in communication and interpersonal skills as reported in the literature [7].

As a result, the UK General Medical Council (GMC) and the Australian Health Practitioner Regulation Agency (AHPRA) have stressed the importance of acquiring good communication skills in medical students and doctors [8,9]. The Malaysian Medical Council in their Ten Golden Rules of Good Medical Practice included a recommendation for doctors to maintain good communication between doctors and patients [10]. The Malaysian Medical Council also stated in its 2015 Guidelines for Accreditation of the Malaysian undergraduate medical education programme that upon completion of the medical course, the graduate should be able to "*Communicate clearly, considerately and sensitively with patients, relatives, colleagues, nurses and other health professionals and the general public"* [11]. Hence, a significant number of medical schools have enhanced their curriculum to put more emphasis on teaching communication skills.

Various medical schools have established communication skills curriculum in their undergraduate programme. However, many are struggling to assess the effectiveness of the programme. One of the gold standard assessment methods is to directly observe the interaction between medical student and patient. Unfortunately, this method requires standardisation to minimise inter-observer variability and is also labourious to conduct on a wide scale basis. Therefore, many medical schools have resorted to measuring attitude towards learning communication skills as a surrogate measurement of behaviour. This is evident by the reasoned action approach (RAA) by Fishbein and Ajzen which described attitude as a subcomponent to predict intention and behaviour [12].

One of the most commonly used tools to assess attitude towards learning communication skills is the Communication Skills Attitude Scale (CSAS) [13]. It was developed by Rees, Sheard and Davies [13] in 2002, as a response to the GMC's recommendation to produce doctors who can communicate effectively [8]. The CSAS items were developed based on a qualitative study conducted using focus group methodology involving medical students from the University of Nottingham [14]. This questionnaire had been translated and validated in at least five languages worldwide [15-19].

In Malaysia, the CSAS had been validated on a cohort of medical students in a public university [20]. The study population included medical students from the three major ethnic groups in Malaysia which were Malay, Chinese and Indian. In Universiti Teknologi MARA (UiTM), communication skills teaching for undergraduate medical students commenced since 2006 as part of the Early Clinical Exposure (ECE) programme. There is a need for a validated tool to measure the impact of this programme which includes improvement in their attitude towards learning communication skills. Therefore, this study aimed to examine the validity and reliability of the CSAS among medical students in UiTM.

METHODS

Study design

This was a cross sectional questionnaire validation study which was conducted in two parts based on established guidelines [21]. Part 1 was the content and face validation of the CSAS, and part 2 was the field testing and psychometric analysis of the questionnaire.

Questionnaire

The CSAS consisted of 26 items framed within 2 subscales which were the Positive Attitude Scale (PAS) and Negative Attitude Scale (NAS) [13]. Each subscale contained 13 items. The PAS items (4,5,7,9,10,12,14,16,18,21,22,23,25) and NAS items (1,2,3,6,8,11,13,15,17,19,20,24,26) were scored using a 5-point Likert Scale ranging from 1 (Strongly disagree) to 5 (Strongly agree) [13]. The CSAS demonstrated good internal consistency for the PAS ($\alpha = 0.873$) and the NAS ($\alpha = 0.805$) [13]. The test-retest reliability as measured by the intraclass correlation coefficient (ICC) was 0.646 ($p<0.001$) for the PAS and 0.771 ($p<0.001$) for the NAS. Both subscales were scored individually. The scores for both scales range from 13 to 65, with higher score indicating stronger attitude [22].

The demographic details included in the questionnaire were the year of study, age, gender, ethnicity, first language, parents' occupation, gross family income and education-related items such as type of secondary school.

Participants

A total of 180 first year medical students of UiTM were invited to participate in this study.

Procedure

Part 1

The first part was the content and face validation. Content validation was performed by an expert panel consisting of four medical lecturers who are experts in communication skills teaching. The CSAS was face validated on ten medical students from Year 1 and 2. Each item was found to be satisfactory during content and face validation and no modification was made.

Part 2

The second part was the field testing and psychometric analysis. The sample size was determined using the item to subject ratio. The recommended item-to-subject ratio ranged from 1:3 [23] to 1:20 [24]. In this study, a ratio of 1:5 was selected. The CSAS has 26 items, therefore, the study aimed to recruit 156 participants taking into consideration a 20% non-responder rate.

Universal sampling method was used. The questionnaires were distributed to all Year 1 medical students in a lecture hall. A brief explanation and written information about the study were given before the questionnaires were distributed. In the briefing, the students were informed that by completing and returning the questionnaire, they agree to participate in the study. Hence, implied consent was obtained when students returned their questionnaires. Participation was voluntary and nine students did not consent to participate and did not return their questionnaires. The students were given 20 minutes to complete the questionnaire before the lecture session started. The questionnaires were collected at the end of the session and they were checked for completeness.

Ethical approval was obtained from the UiTM Medical Ethics Committee prior to the conduct of the study. The researchers obtained permission from the original developer of the questionnaire, Professor Charlotte Rees prior to the commencement of the study.

Statistical analysis

The data were analyzed using Statistical Package for the Social Sciences (SPSS version 24.0). The descriptive analysis was presented as frequencies and percentages. The construct validity of the CSAS was assessed by principal component analysis (PCA) with direct oblimin rotation.

The Keiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were used to determine the sampling adequacy and the suitablity of data for factor analysis, respectively. The minimum KMO value of 0.6 (range 0 to 1) and a significant Bartlett's test of sphericity with p-value <0.05 are recommended for the data to be considered appropriate for factor analysis [25].

The final factor retentions were based on Kaiser's criterion with eigenvalues > 1, inspection of the Scree plot, and Parallel analysis [25,26] using Monte Carlo PCA for parallel analysis. Item retention was based on a minimum factor loading of 0.3 [26].

The internal consistency and reliability of the CSAS were examined using the Cronbach alpha coefficient. An alpha value between 0.7 - 0.9 is considered acceptable [27].

RESULTS

Descriptive data

Out of 180 questionnaires distributed, 171 students returned the questionnaires (95% response rate), with 99.4% being Malay and 70.2% being female. The participants' age ranged from 18 to 22 years (median age = 19). The sociodemographic and education characteristics of the participants are presented in Table 1.

All 26 items from the CSAS were included in the principal component analysis with direct oblimin rotation. The Keiser-Meyer-Olkin measure confirmed the sampling adequacy for factor analysis (KMO = 0.793). The Bartlett's test of sphericity achieved statistical significance ($p < 0.05$) confirming the suitability of the data for further factor analysis.

The initial analysis showed eight factors with eigenvalues greater than 1, accounting for 59.39% of the variance. The Scree plot showed inflexion at factor three, suggesting two factors to retain. This was further supported by the Parallel analysis which revealed two factors with eigenvalues more than the corresponding values generated by the Monte Carlo PCA software. Based on these, two factors were retained. The factor

analysis was repeated by fixing the number of factors to two. Table 2 shows the factor loadings on the rotated pattern matrix of the two factors.

Table 1 Demographic and education characteristics of the participants

Demographic and education characteristics	**Total (n = 171) n (%)**
Age (years)	
Median (IQR)	19 (0)
Range	18-22
Gender	
Male	51(29.8)
Female	120(70.2)
Ethnicity	
Malay	170 (99.4)
Non-Malay	1 (0.6)
Family income	
<RM 2500	78 (45.6)
RM 2500 – 5000	44 (25.7)
>RM 5000	49 (28.7)
First language	
Malay	166 (97.1)
Others	5 (2.9)
Self-rated proficiency in English language	
Good - Excellent	62 (36.2)
Average	95 (55.6)
Poor – Fair	14 (8.2)
Students' ratings of their own communication skills	
Good - Excellent	55 (32.2)
Average	96 (56.1)
Poor – Fair	20 (11.7)
Barriers to communication skills learning	
Language barrier	
No	52 (30.4)
Yes	119 (69.6)
Lack of role modeling	
No	118(69.0)
Yes	53 (31.0)
Lack of motivation	
No	94 (55.0)
Yes	77 (45.0)
No barrier	
No	152 (88.9)
Yes	19 (11.1)
Do students think their communication skills need improving?	
Yes	170 (99.4)
No	1 (0.6)

Table 2 Rotated pattern matrix

Pattern Matrix		
	Factor	
Items	**1**	**2**
9. Learning communication skills has helped or will help facilitate my team-working skills.	**0.736**	0.09
25. Learning communication skills is important because my ability to communicate is a lifelong skill.	**0.722**	0.008
21. I think it's really useful learning communication skills on the medical degree.	**0.669**	0.085
10. Learning communication skills has improved my ability to communicate with patients.	**0.665**	0.182
23. Learning communication skills is applicable to learning medicine.	**0.65**	0.164
26. Communication skills learning should be left to psychology students, not medical students.	**-0.635**	0.281
16. Learning communication skills has helped or will help me recognise patients' rights regarding confidentiality and informed consent.	**0.609**	0.082
14. Learning communication skills has helped or will help me respect my colleagues.	**0.597**	0.061
12. Learning communication skills is fun.	**0.593**	-0.124
5. Learning communication skills has helped or will help me respect patients.	**0.586**	0.108
18. When applying for medicine, I thought it was a really good idea to learn communication skills.	**0.576**	-0.043
7. Learning communication skills is interesting.	**0.521**	-0.053
19. I don't need good communication skills to be a doctor.	**-0.475**	0.225
4. Developing my communication skills is just as important as developing my knowledge of medicine.	**0.363**	-0.137
1. In order to be a good doctor I must have good communication skills.	0.296	-0.168
24. I find it difficult to take communication skills learning seriously.	-0.132	**0.582**
20. I find it hard to admit to having some problems with my communication skills.	-0.061	**0.527**
22. My ability to pass exams will get me through medical school rather than my ability to communicate.	-0.033	**0.511**
3. Nobody is going to fail their medical degree for having poor communication skills.	-0.027	**0.458**
8. I can't be bothered to turn up to sessions on communication skills.	0.071	**0.45**
6. I haven't got time to learn communication skills.	-0.132	**0.443**
17. Communication skills teaching would have a better image if it sounded more like a science subject.	0.076	**0.389**
2. I can't see the point in learning communication skills.	-0.347	**0.382**
15. I find it difficult to trust information about communication skills given to me by non-clinical lecturers.	0.107	0.269
11. Communication skills teaching states the obvious and then complicates it.	0.149	0.16
13. Learning communication skills is too easy.	0.136	-0.148

According to the pattern matrix, all items that loaded onto factor 1 (Items 9, 25, 21, 10, 23, 26, 16, 14, 12, 5, 18, 7, 19, 4) were positive statement items, except items 19 and 26. These two items loaded strongly on factor 1, with factor loadings of 0.475 and 0.635 respectively. Item 19 and 26 also demonstrated good corrected item-total correlation, r=0.44 and r= 0.597, respectively. Based on these reasons, items 19 and 26 were maintained in factor 1. Item 1 loaded poorly on factor 1 therefore it was removed. Majority of the items which loaded on factor 1 were positive statement items, therefore this factor was labelled as the Positive Attitude Scale (PAS). The final 14 items in the PAS were items 9, 25, 21, 10, 23, 26, 16, 14, 12, 5, 18, 7, 19 and 4.

All items that loaded adequately on factor 2 were negative statement items with factor loadings ranging from 0.380 to 0.582. Items 11, 13 and 15 loaded poorly therefore they were removed. This decision was further supported by the poor corrected item-total correlation, item 11 (r= 0.089), item 13 (r=0.117) and item 15 (r=0.129). Item 2 loaded on both factor 1 and 2. This item loaded higher and conceptually fitted into factor 2. It also contributed to an improvement of the internal consistency for factor 2, therefore, it was retained in this factor. All items which loaded onto factor 2 were negative statement items, therefore this factor was labelled as the Negative Attitude Scale (NAS). The final eight items in the NAS were items 24, 20, 22, 3, 8, 6, 17 and 2.

Reliability

From the 22 items included in the reliability analysis, 14 were PAS items and 8 were NAS items. Items 19 and 26 loaded negatively on the PAS, therefore the scores were reversed in the calculation of the Cronbach alpha coefficient. The final reliability score for the PAS was $\alpha = 0.862$ and the NAS was $\alpha = 0.565$. Table 3 shows Cronbach alpha and corrected item-total correlation for the PAS and NAS.

Table 3 Cronbach alpha and corrected item-total correlation for the PAS and NAS

Subscale	Cronbach Alpha	Items	Corrected Item-Total Correlation	Cronbach Alpha if Item Deleted
PAS	0.862	9	0.659	0.845
		25	0.639	0.847
		21	0.571	0.850
		10	0.535	0.851
		23	0.536	0.852
		16	0.507	0.853
		14	0.517	0.853
		12	0.527	0.852
		5	0.483	0.854
		18	0.492	0.854
		7	0.455	0.856
		4	0.330	0.863
		19rev	0.440	0.857
		26rev	0.597	0.848
NAS	0.565	24	0.346	0.508
		20	0.303	0.522
		22	0.311	0.520
		3	0.264	0.536
		8	0.250	0.539
		6	0.260	0.536
		17	0.168	0.569
		2	0.309	0.523

DISCUSSION

This study produced a validated and reliable CSAS to measure the attitude of medical students in UiTM towards learning communication skills. The CSAS has undergone rigorous processes in which the content, face and construct validation, as well as reliability analysis were conducted according to well established guidelines [21].

The results from this analysis supported the original subscale structure of the 26-item CSAS developed by Rees, Sheard and Davies [13] which were the PAS and NAS. The final validated CSAS in this study consisted of 22 items, with 14 PAS and 8 NAS items. Other adaptation and validation studies also supported the two subscale structure of the CSAS [16-19].

Item 1 from the PAS and items 11, 13 and 15 from the NAS were removed due to poor factor loading. Previous validation studies have also shown that item 13 (*Learning communication skills is too easy*) was weak and was subsequently removed [17, 19]. It loaded poorly on both factors in our analysis, suggesting poor correlation with either subscales.

Our factor analysis showed that items 19 and 26 loaded strongly on PAS, although these were negative

statements. These items also demonstrated good corrected item-total correlation to the PAS, therefore, they were retained in PAS. Molinuevo and Torrubia also reported that items 19 and 26 loaded on the PAS in their study [17]. However, they removed these items due to a loading difference of less than 0.10 and because the items loaded higher on the unexpected factor [17].

Table 4 shows the composition of items and reliability of the PAS and NAS from other studies in comparison to our study. The total number of PAS items in this study is 14 which were comparable to other studies [17, 18]. This study demonstrated good reliability of the PAS ($\alpha = 0.862$) which is consistent with validation studies performed in other countries [16-19].

However, the internal reliability of the NAS in our study is lower ($\alpha = 0.565$) compared to other studies [16-19]. In general, a scale that has a smaller number of items tends to produce a lower alpha value [25]. Our 8-item NAS showed poor corrected item-total correlation of less than 0.3 for items 3, 6, 8 and 17, which indicated that these items have poor correlation with the overall score from the NAS subscale. This, along with the smaller number of items, could explain the lower Cronbach alpha for the NAS subscale in our study. To improve the alpha value of the NAS, the CSAS could be translated into the Malay language to overcome linguistic barriers in our cohort of medical students whose first language is Malay.

This finding was also observed in studies done by Marambe [28] and Shankar [29]. Marambe reported alpha values between 0.340-0.620 [28], while Shankar reported an alpha value of 0.546 for the NAS [29]. Both of these studies utilised the questionnaire in its original English language, similar to our study. This finding supported the need to translate the CSAS into the local language to improve its psychometric properties especially in the context of students who do not speak English as their first language.

Ullah also utilized CSAS in its original English version in a cohort of Malaysian medical students [20]. Their study reported internal consistencies of 0.875 and 0.748 for the PAS and NAS, respectively. However, the racial demography of their study population was different (61% Malays, 36% Chinese and 3% Indian) compared to our study population (99.4% Malays). This could explain the different findings between the two cohorts of medical students in Malaysia.

The item composition for the PAS and NAS varied widely across various studies. The differences in item composition in each subscale were likely to be due to the different interpretation of the items in various languages.

Table 4 Item composition and reliability of the PAS and NAS

CSAS	PAS			NAS		
	Total items	**Items**	**Cronbach alpha**	**Total items**	**Items**	**Cronbach alpha**
Rees et al 2002 [13]	13	4,5,7,9,10,12,14, 16,18,21,22,23,25	0.873	13	1,2,3,6,8,11,13,15, 17,19,20,24,26	0.805
Baharudin et al 2017 (this study)	14	4,5,7,9,10,12,14, 16,18,19,21,23,25,26	0.875	8	2,3,6,8,17,20,22,24	0.565
Busch et al 2015 [19]	7	4,5,9,10,14,16,23	0.838	12	2,6,7,11,12,15,17, 19,21,24,25,26	0.864
Ullah et al 2012 [20]	15	1,2,4,5,7,9,10,12, 14,15,16,18,19,21,26	0.875	8	3,6,8,11,17,22,23, 24	0.748
Koponen et al 2012 [18]	13	4,5,7,9,10,12,14, 16,18,21,22,23,25	0.882 -0.895	13	1,2,3,6,8,11,13,15, 17,19,20,24,26	0.794 – 0.828
Molinuevo & Torrubia 2011 [17]	13	1,4,5,7,9,10,12,14,16,18,21,23,25	0.830	10	2,3,6,8,11,15,17,20 ,22,24	0.640
Harlak et al 2008 [16]	15	1,4,5,7,8,9,10,12, 13,14,16,18,21,23,25	0.920	11	2,3,6,11,15,17,19, 20,22,24,26	0.710

Study limitation

One of the limitations of this study is the low internal reliability of the NAS. This could be explained by the utilization of the questionnaire in its original English version to medical students who do not speak English as their first language. An objective measure such as the Malaysian University English Test (MUET) score should be collected to gauge their English proficiency if the original CSAS was to be used. This can help to distinguish if English language proficiency may affect their understanding of the questionnaire. Future studies should consider translating and validating the CSAS into the Malay language. This should include assessing the test-retest reliability of the scale over time.

Another limitation of this study is the generalisability of its finding. Almost all of our study population consisted of Malay medical students whose first language is Malay. Therefore, the finding of this study can only be generalised to this population. Future studies should include medical students from the three major ethnic groups and other medical schools in Malaysia to improve the generalisability of the CSAS.

CONCLUSION

This study produced a validated and reliable CSAS to measure the attitude of medical students in UiTM towards learning communication skills. Future studies should include translating and validating the CSAS into the Malay language to improve the psychometric properties of the NAS. In order to improve the generalisability of the CSAS, future studies should also include medical students from the three major ethnic groups and other medical schools in Malaysia.

Conflict of interest

Authors declare none.

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