Adaptation of the Communication Skills Attitude Scale (CSAS) to Surgical Residents in China

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BACKGROUND: In modern China, conflicts between doctors and patients with their families have become increasingly serious. Lack of communication skills is one of the major challenges faced by many residents. Surgical residents' attitudes toward communication are of great significance to communication skills learning. The Communication Skills Attitude Scale (CSAS) is a widely validated and popularly used tool for assessing the attitudes of medical students toward communication skills. The aim of this study was to develop a Chinese version of the CSAS in order to explore attitudes toward communication skills among Chinese surgical residents and to test the psychometric properties of the modified instrument.

METHODS: 1490 surgical residents among PGY1 to PGY3 were recruited in September 2017 to evaluate attitudes toward communication skills using the Chinese version of the CSAS in China. The reliability of the questionnaire and of each factor was assessed by Cronbach's α coefficients. Principal component analysis was used to evaluate construct validity. Statistical analysis was performed using SPSS 22.0.

RESULTS: Of 1490 surgical residents of PGY1 to PGY3, 1420 (95.03%) residents completed the questionnaires satisfactorily. An overall Cronbach's α coefficient of the CSAS was 0.919. The results of principal component analysis showed that the 2-factor structure, which explained 49.06% of the variance, produced an acceptable fit. Stratified analysis by demographic variables suggested that there may be differences based on gender and study year of residency in attitudes toward learning communication skills.

CONCLUSIONS: The data suggest that the Chinese version of CSAS developed to assess surgery residents are feasible and provide valid and reliable evidence. Further research is necessary to explore and understand attitudes toward communication skills of surgical residents in China. (J Surg Ed 76:329–336. © 2018 The Authors. Published by Elsevier Inc. on behalf of Association of Program Directors in Surgery. This is an open access article under the CC BY-NC-ND license. (http://creativecommons.org/licenses/by-nc-nd/4.0/))

KEY WORDS: Communication Skill, Medical Education, Surgical Resident, Communication Skills Attitude Scale (CSAS)

COMPETENCIES: Patient Care, Medical Knowledge, Practice-Based Learning and Improvement, Interpersonal and Communication Skills, Professionalism, Systems-Based Practice

INTRODUCTION

The Accreditation Council for Graduate Medical Education requires residency programs to train residents in 6 core competencies including patient care, system-based practice, interpersonal and communication skills (CS), professionalism, medical knowledge, and practice-based learning.[1] While China's first formal clinical residency program following the Johns Hopkins model started in 1921 at the Peking Union Medical College Hospital, the importance of utilizing this model in residency education did not gain the attention it deserved. In 2013, the State Health and Family Planning Commission, along with 6 additional government ministries in China, jointly launched the standardized residency training (SRT) program to guarantee quality of medical care as a national strategy.[2] The SRT program consists of 3 years of residency training after 5 years of medical school

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(leading to a bachelor degree). The SRT represents China's commitment to achieving high national quality standards and the SRT will become compulsory for all doctors practicing in China by 2020.[3]

In modern China, conflicts between doctors and patients have become increasingly serious,[4,5] as numerous cases in which patients or their family members hurt doctors and nurses due to medical arguments and poor communication between doctors and patients has become the main cause of medical disputes and medical malpractice complaints. A survey from the Chinese Association of Physicians found that for all medical disputes involving physicians, less than 20% were due to technical mistakes, with more than 80% linked to doctor's behavior toward the patient, communication skills, and medical ethics, among other issues.[6] Unfortunately, few medical schools in China provide students with professional communication curricula,[7] which may lead to a lack of professional knowledge of communication skills among residents. These skills are particularly important as residents will frequently be involved in conflicts with patients and their families during doctor-patient communications. As residents often appear to be nervous or timid, experience burnout, and are insecure regarding their medical expertise in clinical rotation,[8,9] communication skills training for residents will likely be optimally received prior to beginning clinical rotations. Studies have indicated that residents' attitudes toward learning communication skills play an important role in the success of communication skills training.[10] Therefore, it is a top priority to examine effective evaluation tools to explore the attitude of current residents in China toward learning communication skills.

The most widely used tool for measuring the attitude of CS is the communication skills attitude scale (CSAS), developed by Rees in 2002[11] as a tool measure surgical residents' attitudes toward learning CS. The CSAS includes a 2-factor scale, namely positive and negative attitudes. During the last decade, assessments at medical schools in the United Kingdom,[11] Norway,[12] South Korea,[13] Germany,[14] Turkey,[15] Western Saudi Arabia,[16] and other countries[17] showed that the scale had good reliability and validity. The purpose of this study is to adapt the Chinese version of the CSAS to residents and to test the psychometric properties of the modified instrument.

METHODS

Participants and Procedures

The SRT program is a 3-year clinical practice rotation for medical students and graduates with at least a Master's Degree in China. The current survey used a cluster sampling method to recruit a sample of 1490 surgical residents of PGY1 to PGY3 from 14 cities in the Liaoning province in China. The cross-sectional study was performed in September 2017. All surgical residents were evaluated with the CSAS questionnaire on the Liaoning province resident training management website. Participants were provided with the self-report questionnaires to complete individually. The overall response after the reminder was 1456 out of 1490 residents (97.7%;question 1)

Instrument

The study included a 2-part questionnaire: part A requested sociodemographic data such as age, gender, study year, and education level; part B used a validated scale developed by Rees to measure students' attitudes toward CS. The scale is the most widely used tool for assessing student attitudes toward CS learning.[11] The scale was divided into 2 subscales: positive attitudes and negative attitudes. Each of these scales used a 5-point Likert scale with opinions ranging from "strongly agree" to "strongly disagree." The scores for each scale ranged from 13 to 65, with higher scores revealing stronger positive or negative attitudes toward learning CS. The translation process was carried out in accordance with the rules for cross-cultural adaptation.[18] Forward translation of the CSAS was independently performed by 2 professional translators (1 medical and 1 nonmedical professional translator). Following discussion and eventual consensus among the translators and the principal investigator, a single working Chinese version was created. A total of 2 new bilingual translators, blind to the original English version, back translated the working Chinese version into English. A professional bilingual expert in medical education compared both of these back-translated English versions with the original version of CSAS to derive a final version, which did not differ from the original version after translation. An expert committee was formed, consisting of researchers, translators, and CS teachers. Following a committee discussion regarding the translated version, an approved version was created for field testing. The approved Chinese version of the CSAS was pretested on 60 surgical residents, selected to be representative in population age, sex, and education level. During the pretesting, participants were asked to complete the Chinese version of the CSAS. Following the pretest, minor corrections were made to improve the sentence structure of the instructions to make it easier to understand, and the final Chinese version of the CSAS was completed.

Ethical Considerations

All enrolled surgical residents gave web-based informed consent and were informed of the purpose of the research. The study was approved by the ethical committee of China Medical University.

Data Analysis

All missing data were replaced by the median. Cronbach's α was calculated for the entire questionnaire and for each of the subscales to evaluate internal consistency, with a coefficient of $\geq$0.70 was considered to be an acceptable level of internal consistency.[19] In order to determine the structure underlying the CSAS, factor analysis using principal component analysis with direct oblimin rotation was used.[20] Subscales were constructed based on factor loading, with scores reversed where necessary. To determine which items would be included in their respective factors, we decided a priori to include items that loaded at more than 0.40 on one factor and at least 0.10 lower on another factor (question 5).[21] The data was analyzed using SPSS version 22.0 (SPSS Inc., Chicago, Illinois) for Windows and a p value of $<$0.05 was considered to be statistically significant.

RESULTS

Sociodemographic Characteristics of Surgical Residents

Of the 1490 surgical residents invited to participate in the study, 1420 (95.30%) completed the questionnaire. The subjects' age ranged from 22 to 30 years (mean = 25.9 years). The demographic characteristics of the sample are shown in Table 1(question 6).

Reliability of the CSAS

After reversing the scores for some items, Chronbach's α of 0.919 yielded an acceptable internal consistency. Both factors were confirmed adequate internal consistency, with coefficients of $\alpha = 0.891$ and $\alpha = 0.923$ for the positive attitudes and negative attitudes scales, respectively(question 2).

TABLE 1. Demographic Characteristics of the Study Sample (n = 1420; question 6)

Demographic factor	Number	Percentage (%)
Study year		
PGY1	383	27.0
PGY2	389	27.4
PGY3	648	45.6
Gender		
Male	1280	90.1
Female	140	0.9
Education level		
Bachelor's degree	937	65.9
Master's degree or Above	483	34.1

Factor Structure

Kaiser-Meyer-Olkin measure of sampling adequacy was 0.917 and Bartlett's test of sphericity yielded a p value of $<$0.001, both suggesting that the factor analysis was acceptable. Exploratory factor analysis revealed factors with eigenvalues greater than 1, accounting for 49.06% of the variance (question 5). The original validation offered a 2-factor solution with 14 items and 12 items for the positive and negative attitudes scales, respectively. A 2-factor solution based on the results is reported in the rotated component matrix (Table 2).

Factor 1 was comprised of 12 items (items 1, 4, 5, 7, 9, 10, 12, 14, 16-18, 21, 23, and 25). We named this factor "positive attitudes" because all the items reflect positive attitudes about learning communication skills in the residents' medical practice. Factor 2 had 12 items (items 2, 3, 6, 8, 11, 13, 15, 19, 20, 22, 24, and 26), all of which were negatively phrased. We named this factor "negative attitudes" because all the items reflect negative attitudes about learning communications in the residents' medical practice (question 2).

Item Mean Values Stratified by Demographic Variables

The scores of both subscales and total scale by demographic subgroups are presented in Table 3. There was no statistically significance by gender, study year, and education level for most items in the factor 1 "Positive attitudes." But in factor 2 "Negative attitudes," there were significant differences between males and females in the mean value of some items. Female residents scored lower than their male counterparts in some items. PGY1 residents scored higher than PGY3 residents on some items in the factor 2.

DISCUSSION

The present study confirmed that the Chinese version of the CSAS was reliable and valid to assess surgical residents' attitudes toward learning CS. The results indicated that a 2-factor solution was appropriate for identifying the components of surgical residents' attitudes toward learning CS. The "positive attitudes" and "negative attitudes" factors explained a major part of the variance. The "positive attitudes" factor showed no significant differences by any of the demographic variables for most items, however, the "negative attitudes" factor demonstrated significant differences in some items by gender, study year, and education level.

Factor analysis revealed that CSAS had 2 factors that were different from those in the CSAS used in the South Korea (Facilitating interpersonal skills, Importance within a medical context, Motivation, Assessment, and

TABLE 2. Rotated Component Matrix

Item	Factor	
	1	2
1 In order to be a good doctor, I must have good CS.	**0.731**	−0.067
4 Developing my CS is just as important as developing my knowledge of medicine.	**0.819**	−0.082
5 Learning CS has helped me or will help me respect patients.	**0.852**	−0.086
7 Learning communication skills is interesting.	**0.810**	−0.029
9 Learning CS has helped or will facilitate my team working skills.	**0.890**	−0.083
10 Learning CS has improved my ability to communicate with patients.	**0.883**	−0.091
12 Learning CS is fun.	**0.833**	−0.036
14 Learning CS has helped or will help me respect my colleagues.	**0.877**	−0.044
16 Learning CS has helped or will help me recognize patients' rights regarding confidentiality and informed consent.	**0.829**	0.012
17 CS teaching would have a better image if it sounded more like a science subject.†	**0.715**	0.090
18 When applying for medicine, I thought it was a really good idea to learn communication skills.	**0.900**	−0.041
21 I think it's really useful learning communication skills for medical degree	**0.777**	−0.190
23 Learning CS is applicable to learning medicine.	**0.800**	0.016
25 Learning CS is important because my ability to communicate is a lifelong skill.	**0.880**	−0.067
2 I can't see the point in learning CS.†	0.040	**0.853**
3 Nobody is going to fall their medical degree for having poor communication skills.	0.065	**0.727**
6 I haven't got time to learn CS.†	0.002	**0.873**
8 I can't be bothered to turn up to sessions on CS.†	−0.043	**0.882**
11 CS teaches the obvious and then complicates it.†	0.015	**0.818**
13 Learning CS is too easy.†	0.141	**0.733**
15 I find it difficult to trust information about CS given to me by non-clinical lecturers.†	0.075	**0.757**
19 I don't need good CS to be a doctor.†	−0.008	**0.878**
20 I find it hard to admit to having some problems with my communication skills.	0.175	**0.677**
22 My ability to pass exams will get me through medical school rather than my ability to communicate.	0.220	**0.628**
24 I find it difficult to take CS learning seriously.†	0.025	**0.849**
26 CS learning should be left to psychology students, not medical students.†	0.005	**0.867**

†Items are negative, and the scores were reversed before factor analysis.

Overconfidence)[13] and in Norway (Learning, Importance, Respect),[12] but that were similar with a previous study conducted in the United Kingdom (Positive and Negative attitudes).[11] Although the extracted factors between these countries varied, all factors showed that CS learning facilitates communication with colleagues and patients, which allows the students to respect their counterparts (items 5, 9, 10, 14, and 16). While the current study yielded the same factor dimensions as that of the UK scholars' study, the number of item in each factor differs. For example, item 1 (in order to be a good doctor, I must have good CS.) and item 17 (CS teaching would be more appealing if it sounded more like a science subject) were marked as "positive attitudes" according to their factor loads (0.731, 0.715) in our study, but were labeled as "negative attitude" items in the UK study. Conversely, item 22 (my ability to pass exams will get me through medical school rather than my ability to communicate) loaded to the "negative attitudes" factor, but was in the "positive attitudes" factor in the UK study. These differences may be accounted for by differences due to translation or could be the result of different cultural backgrounds and variations in the processes used in different countries to develop CS curricula. All of the items loaded on factor 1 and factor 2 with weights >0.6, suggesting that the structural validity of the scale was good. Cronbach's α for the positive and negative attitude subscales were both above 0.8, indicating that the subscales possessed satisfactory internal consistency (question 2; question 5).

We also examined the mean value of the responses for each item in each factor stratifying by demographic subgroups, and we found significant differences between males and females in the mean value of the responses for some items of "negative attitudes" factor. Female residents had lower scores than the male residents for some items of "negative attitudes" factor. Previous research found that the female students are more positive and enthusiastic than the male students in communication skills.[22] Senior residents scored lower in some items of the negative attitude dimension, indicating that they have better awareness of understanding the importance of communication during medical rotations. This is also illustrated by the fact that residents with postgraduate degrees and above have a better understanding of CS than residents with a bachelor's degree.

This study also has limitations. The sample was only derived from one province in China, resulting in a study population that might not be representative of all

TABLE 3. Item Mean Values Stratified by Demographic Variables for Each of the 2 Factors (N = 1420)

Item #	Gender			Study year				Education level		
	Male (N = 1280)	Female (N = 140)	T	PGY1 (N = 383)	PGY2 (N = 389)	PGY3 (N = 648)	F	Bachelor's degree (N = 937)	Master's degree or Above (N = 483)	T
Factor 1:Positive attitudes										
1 In order to be a good doctor, I must have good CS.	4.54	4.60	0.819	4.56	4.59	4.50	1.226	4.56	4.58	0.719
4 Developing my CS is just as important as developing my knowledge of medicine.	4.46	4.50	0.532	4.47	4.53	4.42	2.258	4.45	4.48	0.663
5 Learning CS has helped me or will help me respect patients.	4.45	4.48	0.385	4.49	4.48	4.42	1.133	4.46	4.49	0.412
7 Learning communication skills is interesting.	4.25	4.15	1.260	4.23	4.28	4.23	0.383	4.23	4.21	1.321
9 Learning CS has helped or will facilitate my team working skills.	4.44	4.44	0.025	4.47	4.48	4.39	1.878	4.45	4.46	0.031
10 Learning CS has improved my ability to communicate with patients.	4.45	4.47	0.331	4.45	4.49	4.43	0.667	4.46	4.44	0.361
12 Learning CS is fun.	4.21	4.14	0.857	4.17	4.21	4.22	0.461	4.18	4.22	0.901
14 Learning CS has helped or will help me respect my colleagues.	4.34	4.38	0.497	4.37	4.38	4.31	0.945	4.36	4.38	0.601
16 Learning CS has helped or will help me recognize patients' rights regarding confidentiality and informed consent.	4.26	4.35	1.213	4.27	4.28	4.26	0.062	4.27	4.28	0.997
17 CS teaching would have a better image if it sounded more like a science subject.†	4.09	3.96	1.528	4.00	4.14	4.09	1.967	4.08	4.12	1.331
18 When applying for medicine, I thought it was a really good idea to learn communication skills.	4.34	4.39	0.696	4.33	4.38	4.33	0.510	4.35	4.36	0.716
21 I think it's really useful learning communication skills for medical degree	4.35	4.41	0.812	4.34	4.42	4.33	1.287	4.38	4.37	0.672
23 Learning CS is applicable to learning medicine.	4.20	4.24	0.411	4.22	4.25	4.17	0.781	4.23	4.21	0.611
25 Learning CS is important because my ability to communicate is a lifelong skill.	4.36	4.46	0.397	4.37	4.40	4.35	0.403	4.37	4.38	0.417
Mean for positive attitudes	4.34	4.36	0.219	4.34	4.38	4.32	0.427	4.35	4.36	0.433
Factor 2:Negative attitudes										
2 I can't see the point in learning CS.†	2.06	1.71	2.826	2.18	1.92	1.87	7.730**	1.89	1.98	2.826
3 Nobody is going to fall their medical degree for having poor communication skills.†	2.83	2.58	2.095*	2.92	2.76	2.65	5.234**	2.79	2.82	2.095*
6 I haven't got time to learn CS.†	2.34	2.15	1.557	2.41	2.22	2.26	2.958	2.3	2.28	1.557
8 I can't be bothered to turn up to sessions on CS.†	2.31	2.09	1.885	2.38	2.2	2.23	2.716	2.28	2.27	1.885
11 CS teaches the obvious and then complicates it.†	2.58	2.37	1.652	2.59	2.56	2.52	0.226	2.59	2.58	1.652
13 Learning CS is too easy.†	2.79	2.58	1.898	2.78	2.78	2.73	0.176	2.75	2.8	1.898
15 I find it difficult to trust information about CS given to me by non-clinical lecturers.†	2.83	2.84	0.082	2.91	2.79	2.75	1.745	2.77	2.78	0.082
19 I don't need good CS to be a doctor.†	2.16	1.93	1.957*	2.27	2.05	2.01	5.751**	2.11	2.01	1.957*
	3.07	2.88	1.765	3.08	3.02	3.04	0.261	3.05	3.03	1.765

(*continued on next page*)

TABLE 3 *(CONTINUED)*

Item #	Gender			Study year				Education level		
	Male (N = 1280)	Female (N = 140)	T	PGY1 (N = 383)	PGY2 (N = 389)	PGY3 (N = 648)	F	Bachelor's degree (N = 937)	Master's degree or Above (N = 483)	T
20 I find it hard to admit to having some problems with my communication skills.										
22 My ability to pass exams will get me through medical school rather than my ability to communicate.	1.70	1.56	1.918*	3.37	3.27	3.27	1.155	3.30	3.29	1.118
24 I find it difficult to take CS learning seriously.†	2.51	2.29	1.861	2.58	2.34	2.40	4.293*	2.49	2.52	1.861
26 CS learning should be left to psychology students, not medical students.†	2.29	2.05	0.001*	2.38	2.20	2.14	4.671*	2.29	2.18	0.061*
Mean for Negative attitudes	2.59	2.41	1.961*	2.65	2.51	2.50	4.551*	2.54	2.56	1.997

†Item was negatively phrased.
*$p < 0.05$.
**$p < 0.01$.

Chinese surgical residents. So the study population is not demographically diverse enough to be representative of all Chinese surgical residents. And further research could improve representative of the sample by expanding sample diversity. In addition, the study subjects did not include the ones who refused to participate. Those who did not participate may hold a negative attitude, it maybe bring selective bias of the sample in the study (question 1).

The results of our study have both theoretical and practical implications. First, the importance of CS in school should be emphasized early in the curriculum of junior medical students in order to motivate them. Second, appropriate content and methods for teaching CS should be developed. Increasing the rate of surgical residents' participation and improving their communication skills is vital to their success, as it may bring about many positive outcomes, including increased patient satisfaction and patient compliance.[23,24] Third, in the teaching of CS, we should actively use standardized patients to participate in teaching, and gave students effective feedback timely by using mixed teaching approach including video teaching and the checklist teaching, and encourage students to carry out reflective exercises by videos (question 3). Finally, student interest in learning communication skills was influenced by many factors, including teaching methods, the effectiveness of teaching content, the usefulness in clinical practice, etc. It is suggested that the malleability of students' attitudes can be used as an evaluation indicator to evaluate the effectiveness of the training before and after CS training.

CONCLUSIONS

The Chinese version of the CSAS is an acceptable instrument for evaluating a large sample of Chinese surgical residents. The scale can help measure the changes in attitudes among Chinese surgical residents toward learning CS and explore the relationship between surgical residents' attitudes and other influencing factors, thus making it possible to promote the training of CS to reform the teaching curriculum. Further investigation is necessary to explore and understand attitudes toward communication skills of surgical residents in China.

CONTRIBUTORS

XY designed the research. YZ and XZ participated in the data collection. YZ and YS wrote the manuscript. YZ and GJ participated in data analysis. All authors read and approved the final manuscript.

ETHICS APPROVAL

The study was approved by the ethical committee of China Medical University.

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SUPPLEMENTARY INFORMATION

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