Evaluation of residents in professionalism and communication skills in south China

Bo Qu, MD, PhD, Yuhong Zhao, MD, PhD, Baozhi Sun, MD, PhD.

ABSTRACT

الأهداف: تقييم الكفاءات المهنية ومهارات التواصل التي يتمتع بها الأطباء المقيمون في جنوب الصين.

الطريقة: أُجريت هذه الدراسة المقطعية في ثمان مستشفيات مُوزعة على 4 مقاطعات في جنوب الصين وذلك خلال الفترة من أكتوبر إلى ديسمبر 2007م، وشمل التقييم 148 طبيباً مقيماً. لقد قمنا باعتماد التقييم ذو 360 درجة أو التقييم الدائري (360-degree evaluation) (وهو برنامج إداري مصنف لتقييم الموظفين والذي تم أخذه من مجموعة الخدمات التعليمية التابعة لمنظمة أريزونا للتعليم الطبي) حيث تم توزيع أوراق الاستبيان على العناصر التالية: تقييم الطبيب المعالج، وتقييم المقيم لنفسه، وتقييم زملائه له، وتقييم الممرضات، وتقييم المرضى، وتقييم أعضاء الإدارة. لقد قمنا بإدخال كافة البيانات في قاعدة البيانات الحاسوبية ومن ثم تم تحليلها باستخدام النسخة 13 من برنامج التحليل الإحصائي (SPSS).

النتائج: أشارت النتائج إلى وجود اتساق داخلي بين أدوات التقييم وذلك حسب ما أظهره معامل ألفا كرونباخ لقياس الاتساق الداخلي (Cronbach's alpha >0.90)، فيما كانت نتائج طريقة تحليل المكونات الأساسية باستخدام التدوير المتعامد (varimax rotation) كالتالي: 70.68% لتقييم الطبيب المعالج، و 76.13% لتقييم الطبيب المقيم لنفسه، و 77.02% لتقييم الممرضات، و 76.37% لتقييم المرضى، و 75.51% لتقييم أعضاء الإدارة، و 72.05% لتقييم زملاء الطبيب المقيم وكانت هذه النسب من أصل مجموع التباين، وبعد التقييم تم ملاحظة وجود اختلافات كبيرة بين آراء من قاموا بهذا التقييم ($p<0.05$).

خاتمة: أشارت الدراسة إلى مدى ثبات اختبار 360 درجة أو الاختبار الدائري وذلك عند تقييم الكفاءات المهنية ومهارات التواصل التي يتمتع بها الأطباء المقيمون. وقد يستفيد الأطباء المقيمون من هذه المعلومات كمرجع يحسنون به أدائهم.

Objectives: To evaluate the resident doctors' competency in professionalism and communication skills in south China.

Methods: We conducted this cross-sectional study in 8 hospitals, in 4 provinces of southern China from October to December 2007. The evaluation included 148 resident doctors. A 360-degree instrument from Education Outcomes Service Group (EOS group) of the Arizona Medical Education Consortium was developed and used by the attending physicians, residents, and their peers, nurses, patients, and office staff in this study. All data were entered into a computerized database and analyzed using the Statistical Package for Social Sciences version 13.0 (SPSS Inc., Chicago, IL, USA) for Windows®.

Results: Our results indicated that the instruments are internally consistent (Cronbach's alpha >0.90). The principal components analysis with varimax rotation for the attending-, resident self-evaluation, nurse-, patient-, office staff- and resident peer-rated questionnaires explained 70.68%, 76.13%, 77.02%, 76.37%, 75.51%, and 72.05% of the total variance. Significant differences ($p<0.05$) were found among different evaluators.

Conclusions: The 360-degree instrument appears to be reliable in evaluating a residents' competency in professionalism and communication skills. Information from the assessment may provide feedback to residents.

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From the Department of Epidemiology and Statistics (Qu), School of Public Health, Department of Academic Administration (Zhao), School of Continuing Education, and the Research Center for Medical Education (Sun), China Medical University, Shenyang, China.

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Address correspondence and reprint request to: Dr. Baozhi Sun, Research Center for Medical Education, China Medical University, 92 North Second Road, Shenyang 110001, China. Tel. +86 (24) 23256666 Ext. 5466. Fax. +86 (24) 23261090. E-mail: baozhisun6666@163.com

In recent years, China has witnessed more and more intense doctor-patient conflicts.[1] The Accreditation Council for Graduate Medical Education (ACGME) initiated the outcome project to increase the emphasis on educational outcomes in the accreditation of residency programs.[2,3] In February 1999, the ACGME endorsed the 6 general competencies for residents: 1) medical knowledge, 2) patient care, 3) professionalism, 4) practice-based learning and improvement, 5) systems-based practice, and 6) interpersonal and communication skills.[4] However, China's medical education plan still lacks a specific evaluation standard for professionalism and communication skills according to the "basic requirements and standard" given by the Institute for International Medical Education (IIME). Residency programs must develop curricula and provide educational experience to develop these competencies. Hence, changes are necessary to improve residency training programs.[5,6] Andrzej Wojtczak, the president of IIME, emphasized that a standard should be integrated with the exams taken by medical students regardless of whether the standard was established on an international or local level.[7] Therefore, an evaluation standard for professionalism and communication skills of residents that fits China's situation might demonstrate tremendous practical meaning in solving China's doctor-patient conflicts, and facilitate the globalization of medical education in this country and the development of a harmonious society. It is very important to develop a valid and reliable evaluation instrument to assess the competencies of professionalism, interpersonal skills, and communication skills. The 360-degree evaluation is capable of presenting a comprehensive measurement on the performance of executives, which urges those executives to improve their performance through multi-aspect feedback. Since the late 20th century, the 360-degree evaluation has been applied to many issues in medical education. One example was the evaluation of the training performance, and the quality of medical services of resident doctors.[8-10] The 360-degree global rating evaluation consists of measurement tools that are completed by various groups of people who have had the opportunity to interact with a resident and observe the resident's performance of a skill.[11] To demonstrate professionalism, interpersonal, and communication skills, residents must be able to exchange information effectively and participate in a team with attending physicians, patients, nurses, office staff, and their resident peers.

Developing good professionalism, interpersonal skills, and communication skills are not only essential for effective day-to-day functions in all human beings, but is of critical value for a physician.[12,13] Only through good communication, interpersonal skills, and professionalism could a physician effectively demonstrate the acquisition and appropriate use of the other competencies, such as patient care, medical knowledge, and systems-based practice.[14] In this study, we sought to test the reliability of the 360-degree evaluation instrument in assessing a resident's professionalism, interpersonal skills, and communication skills.

Methods. To evaluate the training performance of China's resident doctors in professionalism and communication skills, the North China Center of Medical Education Development (NCCMED), which is a Department of Education at China Medical University, carried out an evaluation of professionalism and communication skills. We conducted a cross-sectional study among the first affiliated hospital of Nanjing Medical University, the first affiliated hospital of Chongqing Medical University, the first affiliated hospital of Luzhou Medical College, the first affiliated hospital of Zunyi Medical College, the first affiliated hospital of Hainan Medical College, the first affiliated hospital of Guangzhou Medical College, the second affiliated hospital of Guangzhou Medical College and the third affiliated hospital of Guangzhou Medical College in Jiangsu Province, Sichuan province, Guandong Province, and Hainan Province of southern China between October 2007 and December 2007.

The evaluation was taken by 148 resident doctors who started their career in 2007. All inquirers received unified training offered by the NCCMED, and sealed questionnaires were dispatched to evaluators by inquirers at the same time. The evaluators then returned the completed and sealed questionnaires. After processing, the completed questionnaires were submitted to the NCCMED.

The 360-degree instrument of professionalism, interpersonal skills, and communication skills from Education Outcomes Service Group (EOS group) of the Arizona Medical Education Consortium was developed for use by attending physicians, residents, nurses, patients, office staff, and resident peers.[15] The different evaluators have different questionnaires that are designed to evaluate the resident's professionalism, interpersonal skills, and communication skills, scored on a scale of 1-5. On this scale, any particular behavior, or action was graded on an ascending scale of frequency: 1 = "never" and 5 = "always."[16] The best score was 5. Questionnaires included "negative" statements, such as "Is condescending to you or patients/families." To keep the scores on the same ascending interpretation scale, these negative statements were scored in the reverse ranking order.[17] A score of 5 meant "never" and a score of one meant "always." Thus, the best professionalism scores of attending physicians, residents, nurses, patients,

office staff, and resident peers are 80, 80, 95, 35, 55, and 80. The best interpersonal and communication skill scores of attending physicians, residents, nurses, patients, office staff, and resident peers are 25, 25, 35, 35, 20, and 25.

Completed questionnaires were collected and collated by category. All data were entered into a computerized database and analyzed using SPSS version 13.0 (SPSS Inc., Chicago, IL, USA) for Windows®. The missing data were replaced by median imputation when necessary. We examined questionnaires and ratings from 6 perspectives: attending, the resident him- or herself, nurse, patient, office staff, and resident peer, using descriptive statistics. We tested internal consistency using Cronbach's alpha. We used principal components analysis with varimax rotation to study the structure of the questionnaires. We examined the inter-rater reliability of all 6 questionnaires. The rank order of the residents was calculated from the mean total scores given by each category of evaluator(s).[18] Reliability among scores given by different categories of evaluators was calculated by deriving the Pearson correlation coefficient. A p-value of <0.05 (2-tailed) was considered significant for the correlation coefficient.

The study received approval from the NCCMED Health Research Ethics Board. The Ethical Approval was sealed with a stamp of the Institute signed by the Chairman of the Ethical Committee. All participants provided written informed consent, which was obtained before participating in the study.

Results. Table 1 shows the basic information of the residents from the 8 hospitals. Cronbach's alpha for the attending-, resident self-evaluation, nurse-, patient-, office staff- and resident peer-rated questionnaires were 0.92, 0.92, 0.94, 0.93, 0.92 and 0.91. A coefficient above 0.80 indicates adequate internal consistency and reliability. Validity of each questionnaire was confirmed by clinical professors as well as the patient's satisfaction department of the medical center before we began collecting data.[19] We asked the professors and the patient satisfaction department to evaluate whether each statement helped to measure different components of professionalism, interpersonal skills, and communication skills (content validity). The scoring scale aimed to quantify these behaviors (face validity). To ensure that all data remained strictly confidential, each resident was assigned a code that was used in all result tables and data analysis. The principal components analysis with varimax rotation for the attending-, resident self-evaluation, nurse-, patient-, office staff- and resident peer-rated questionnaires explained 70.68%, 76.13%, 77.02%, 76.37%, 75.51%, and 72.05% of the total variance.

The evaluation results of residents' competency in professionalism show that the scores of attending physicians, resident self-evaluation, nurses, patients, office staff, and resident peers are different across the 8 hospitals (**Table 2**). The evaluation results of a resident's competency in interpersonal and communication skills at 8 hospitals in southern China show that the scores of attending physicians (23.43±1.88), resident self-evaluation (23.73±1.48), nurses (32.81±2.83), patients (32.00±2.86), office staff (18.73±1.53), and resident peers (22.88-24.55) are different at the 8 hospitals (**Table 3**). **Tables 4 & 5** show the correlation between the attending physicians, resident self-evaluation, nurses, patients, office staff, and resident peers.

Discussion. The ACGME requires residency programs to train residents in 6 competencies and to develop methods to evaluate these competencies. Professionalism, interpersonal skills, and communication skills are essential to demonstrating the development of the other competencies such as patient care and medical knowledge. This research adopted a

Table 1 - The basic information of residents from 8 hospitals in China.

Hospital	Number of residents	Gender	
		Male	Female
First affiliated hospital of Chongqing Medical University	13	7	6
First affiliated hospital of Luzhou Medical College	10	5	5
First affiliated hospital of Nanjing Medical University	36	20	16
First affiliated hospital of Zunyi Medical College	34	17	17
First affiliated hospital of Hainan Medical College	18	4	14
First affiliated hospital of Guangzhou Medical College	18	4	14
Second affiliated hospital of Guangzhou Medical College	11	9	2
Third affiliated hospital of Guangzhou Medical College	8	6	2
Total	**148**	**72**	**76**

Table 2 - The evaluation results of residents' competency in professionalism at 8 hospitals in southern China.

Resident	Attending	Resident self	Nurse	Patient	Office staff	Resident peer
First affiliated hospital of Chongqing Medical University	76.64 ± 3.08	77.62 ±1.81	87.97 ± 6.77	33.13 (3.10	50.77 ± 3.16	75.71 ± 2.94
First affiliated hospital of Luzhou Medical College	76.68 ± 3.26	76.67 ± 4.55	86.81± 9.76	32.41 (4.51	50.86 ± 4.63	76.45 ± 3.62
First affiliated hospital of Nanjing Medical University	78.63 ± 2.13	78.29 ± 2.56	91.92 ± 2.96	34.38 (1.50	52.92 ± 1.73	77.27 ± 2.82
First affiliated hospital of Zunyi Medical College	73.41 ± 6.64	76.00 ± 4.21	88.33 ± 8.31	32.58 (3.98	52.71 ± 3.24	76.01 ± 5.61
First affiliated hospital of Hainan Medical College	75.91 ± 4.09	76.14 ± 5.01	88.48 ± 7.84	32.85 (4.39	51.42 ± 6.58	75.20 ± 6.03
First affiliated hospital of Guangzhou Medical College	76.11 ± 3.50	76.53 ± 3.79	91.21 ± 3.19	34.13 (1.77	52.28 ± 4.17	76.53 ± 4.16
Second affiliated hospital of Guangzhou Medical College	76.33 ± 5.49	76.72 ± 3.74	90.39 ± 5.67	32.58 (4.22	52.81 ± 2.09	75.41 ± 4.44
Third affiliated hospital of Guangzhou Medical College	76.73 ± 3.85	75.93 ± 3.81	87.38 ± 7.01	33.28 (2.97	51.25 ± 5.68	77.34 ± 4.82
Total	**76.25 ± 4.57**	**76.93 ± 3.68**	**89.39 ± 6.59**	**33.29 (3.33**	**52.07 (3.82**	**76.28 ± 4.34**

Values are in mean ± SD

Table 3 - The evaluation results of residents' competency in interpersonal and communication skills at 8 hospitals in southern China.

Resident	Attending	Resident self	Nurse	Patient	Office staff	Resident peer
First affiliated hospital of Chongqing Medical University	23.50 ± 1.23	24.03 ± 1.10	32.64 ± 1.31	31.32 ± 2.45	18.94 ± 1.06	23.33 ± 1.46
First affiliated hospital of Luzhou Medical College	22.59 ± 1.51	23.16 ± 1.76	31.42 ± 2.57	31.82 ± 3.31	18.49 ± 1.23	23.64 ± 1.59
First affiliated hospital of Nanjing Medical University	24.19 ± 1.41	24.19 ± 1.37	33.73 ± 3.35	32.88 ± 2.32	18.75 ± 0.82	23.70 ± 1.79
First affiliated hospital of Zunyi Medical College	22.93 ± 1.74	23.48 ± 1.69	32.51 ± 2.85	31.45 ± 3.49	18.74 ± 0.27	22.93 ± 2.11
First affiliated hospital of Hainan Medical College	23.72 ± 1.76	23.44 ± 0.89	32.72 ± 2.36	32.56 ± 3.11	18.72 ± 0.37	23.27 ± 2.63
First affiliated hospital of Guangzhou Medical College	23.22 ± 0.93	23.83 ± 1.38	33.22 ± 2.64	31.72 ± 2.73	18.61 ± 1.11	23.11 ± 2.05
Second affiliated hospital of Guangzhou Medical College	23.45 ± 1.48	23.51 ± 1.08	32.64 ± 3.60	31.82 ± 2.60	18.81 ± 1.55	22.54 ± 2.16
Third affiliated hospital of Guangzhou Medical College	23.00 ± 1.32	23.38 ± 0.92	32.13 ± 2.79	32.25 ± 3.01	18.62 ± 0.78	23.87 ± 2.47
Total	**23.43 ± 1.88**	**23.73 (1.48**	**32.81 ± 2.83**	**32.00 ± 2.86**	**18.73 ± 1.53**	**23.29 ± 1.99**

Values are in mean ± SD

Table 4 - Pearson correlation (*p*-value) matrix from a 360-degree evaluation of residents' professionalism.

Variables	Attending	Resident self	Nurse	Patient	Office staff	Resident peer
Attending	1					
Resident self	0.415†	1				
Nurse	0.366†	0.456†	1			
Patient	0.193*	0.373†	0.484†	1		
Office staff	0.158*	0.188*	0.202†	0.105	1	
Resident peer	0.359†	0.446†	0.140	0.222†	0.166*	1

*correlation is significant at the 0.05 level (2-tailed), †correlation is significant at the 0.01 level (2-tailed)

Table 5 - Pearson correlation (*p*-value) matrix from a 360-degree evaluation of residents' interpersonal and communication skills.

Variables	Attending	Resident self	Nurse	Patient	Office staff	Resident peer
Attending	1					
Resident self	0.480*	1				
Nurse	0.392*	0.401*	1			
Patient	0.321*	0.373*	0.524*	1		
Office staff	0.274*	0.206*	0.232*	0.065	1	
Resident peer	0.264*	0.363*	0.212*	0.230*	0.105	1

*Correlation is significant at the 0.01 level (2-tailed)

360-degree evaluation method by using the Arizona Medical Education Consortium's (U.S.) 360-degree feedback form for professionalism and communication skills as a reference to evaluate the professionalism, interpersonal and communication skills of the resident doctors by inquiring resident doctors, advisers, colleagues, executives, nurses and patients. The 360-degree evaluation has been recognized in the ACGME's Toolbox of Assessment Methods as second only to surveying patients (SPs) during an Objective Structured Clinical Examination (OSCE). The "best" method as recommended by the Toolbox includes only one class of evaluator.[16,20,21] Compared to traditional evaluation methods, the 360-degree evaluation method is more accurate and reliable. The advantages of the 360-degree evaluation method can be fully noticed in the development of individual capacity and fair evaluation. It is possible that residents interact differently with patients than they do with attending physicians, nurses, office staff, and resident peers. In this regard, the 360 degree evaluation tool can obtain anonymous feedback from a wide spectrum of evaluators.[22] The research discovered that the 8 hospitals received different scores. Since the 8 hospitals has lower professionalism and communication skill scores, causation analysis suggests the possibility of insufficient emphasis on the development of professionalism and communication skills. Therefore, it is recommended that the hospital strengthens its training to improve professionalism and communication skills as part of the training that is prepared for resident doctors. Another possible reason for the lower scores could be the disunity in the rating standard, in which case it is recommended that hospitals carry out a unified training program for the evaluators to unify the rating standard with other cooperative hospitals. The research also discovered that resident doctors' self-evaluation scores in professionalism and communications are higher than those provided by other groups. This finding indicated that the results could be inaccurate, which showed that the general agreement among other groups would not hold true for residents evaluating themselves. Other researchers have shown that self-evaluations are not valid.[23,24] Analysis of the data showed a correlation among the different evaluators in professionalism, ranging from 0.105–0.484. The results of correlation showed that the agreement among different evaluators, which meant if the resident obtained higher scores by an evaluator, he or she also got higher scores by others. A resident who ranked low with the nurses also ranked low with others. Evaluations from advisers had a relatively high relevancy between self-evaluations and resident peer, patients, and nurse. Evaluations from executives had a relatively low relevancy with evaluations from other personnel, which could be a result of executives' different view in evaluation. Similarly, evaluations from patients had a relatively low relevancy with evaluations from office staff, namely 0.105, which also indicated that patients and doctors have different views about those issues. For example, patients may not agree that medical practitioners have already met the requirements for professionalism. This could be the root of China's deteriorated doctor-patient relationship. Therefore, it prompts us to establish a patient-oriented tenet in the professionalism training of resident doctors, and give the best effort to satisfy the demand of patients, since only by doing so can we improve the professionalism of domestic resident doctors and create a harmonious doctor-patient relationship. The correlation among the different evaluators in interpersonal and communication skills ranged from 0.065–0.480. There was a general inconsistency among different categories of evaluators for each resident. The analysis of causation indicates that this could be caused by the lack of specific and feasible requirements or standards in the current medical education plan concerning basic quality of the graduates of clinical medical students. Furthermore, the domain of communication skills is basically blank and lacking in the contents of communication skills. Hence, medical practitioners' blurred recognition of communication skills results in a low relevancy in each valuator's scores. The 360-degree evaluation method is a significant and effective evaluation method, and it will surely provide desirable support to medical education and teaching evaluation if it were applied in a scientific, reasonable, and appropriate manner. Therefore, it can be concluded that the method has great prospects for application in medical education, teaching, and administration.[25]

A follow-up study to determine which statements were the most reliable across different evaluators, how the residents used their data, the changes they made as a result of the feedback and their perceptions of this type of assessment is certainly warranted and was undertaken in the resident training program. The effect of feedback will be evaluated next year. The effect of such feedback and suggestions may then reflect on the scores, which will be obtained next year. In this way, a progressive improvement in professionalism, interpersonal skills, and communication skills could be encouraged and measured.

There are limitations in the study. Data testing were confined to residents at 8 hospitals, in 4 provinces of southern China. We do not know whether residents in other parts of China would have similar performance profiles. The 360 degree process can create feelings of anxiety, stress, and exposure to both participants and evaluators.

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