

The Correlation between Written and Practical Assessments of Communication Skills among the First Year Medical Students

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Abstract

Background: Communication is a core clinical skill that is essential for clinical competence. Practical assessments, such as Objective Structured Clinical Examinations (OSCEs) commonly assess communication skills among undergraduates; however organizing an OSCE is an expensive and complex process. Faculty of Medicine Unjani University uses essay format tests in communication skills assessments of the first year communication block. The evidence of written assessment in communication skills is still very limited.

Objective: To study the correlation between written and practical assessments of communication skills among the first year medical students; to study the validity and reliability of written assessments to assess communication skills.

Methods: A cross sectional study was conducted among the first year students in the Faculty of Medicine, Unjani University. At the end of the communication block, students faced a written assessment comprised of Modified Essay Questions (MEQ) and a practical assessment in one station with a simulated patient where the performance at the station was videotaped. There were two examiners for each assessment.

Result: Kappa coefficient for inter-rater reliability of MEQ was 0.707 and practical assessment was 0.735. The correlation coefficient between written and practical assessments from the two examiners ranged between 0.063 – 0.127, n=120, p>0.01. On the item level, correlation coefficient in building initial rapport was -0,067, identifying the reason(s) for consultation was 0.030 and gathering information was 0.107. This result showed a low concurrent validity of the written test in assessing communication skills.

Conclusion: Written assessments cannot predict the students' communication skills competence. Written assessments have a high reliability, nevertheless they have a low validity to assess communication skills.

Key words: communication skills, assessment, Modified Essay Questions, practical and written test

Introduction

An effective doctor-patient communication has a positive relationship with the higher rates of patient recovery, therapy compliance, and lower rates of medical malpractice.

Communication has been identified as an essential clinical skill and is included in most medical education curricula (Rider *et al.*, 2006; Laidlaw *et al.*, 2002).

There are many conceptual frameworks that guide teachers in the teaching and assessment of communication skills; Arizona Clinical Interview Rating Scale (ACIR), Calgary-Cambridge Observation Guides (CCOG), SEGUE Framework (Set the stage; Elicit Information; Give Information; Understand patient's perspective; End the encounter), and MAAS—Global Rating List for Consultation Skills of Doctors (Schirmer *et al.*, 2005; Kurtz *et al.*, 2005; Makoul, 2001).

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In compiling the medical curriculum, Hulsman *et al.*, (1999) and Kurtz (2005) have emphasized the importance of teaching and assessing communication skills gradually throughout the curriculum. Windish (2005) has described a communication curriculum, with CCOG as the conceptual framework. It teaches basic communication skills by building rapport, giving open-ended questions and active listening skills. Baerheim *et al.*, (2007) and Morrows *et al.*, (2009) report that early clinical approach can improve communication skills performances during the next level of education.

It is important to assess communication skills to ensure the achievement of competent communication. Aspegren (1999) has mentioned that communication skills assessment may be done as students' perception, written reports, written tests on medical interviews, Objective Structured Clinical Examinations (OSCE), self-rating scales, direct observations, video observations, patients' perceptions and the number of patient recoveries. Hulsman *et al.*, (1999) argue that successful communication skills assessment is done at three levels; (1) Subjective perception about knowledge on the manner of communication which can be achieved by a written test or a self evaluation, (2) Objective assessment of communication skills, e.g with OSCE, (3) Assessing an output aspect of communication process, e.g simulated patient's perception. Hulsman *et al.*, (2004) has reported the frequent use of OSCEs to assess communication skills at undergraduate level. However according to Kelly and Murphy (2002), OSCE incurs a higher cost for its preparation, implementation and organization including the training of stimulated patients and observers.

Several studies describe the use of written tests in assessing communication skills. Humphirs and Kaney (2000) developed a video-based written assessment method, Objective Structured Video Examination (OSVE). In OSVE, students watch a videotaped doctor-patient communication and then answer written questions using their observations and communication skills knowledge. This method can be facilitated by Computer Assisted Assessment (CAA) (Hulsman *et al.*, 2004).

The Communication block is the second block in first year curriculum of the Faculty of Medicine, Unjani University. Its aim is to study the basic communication skills applied in the

integrated block during the next steps of education. At the end of this block, communication skills are assessed using written assessments. Concurrent validity of this test can be evaluated by correlating the results of the written and practical assessments.

Methods

A total of 153 first year students of the Faculty of Medicine, Unjani University who had recently completed the communication block, participated in the study. However, during the study, three students had incomplete attendance for the practical assessment. Due to technical problems with one camera during practical assessment sessions, only 120 sessions were examined.

A set of Modified Essay Questions (MEQ) and a scoring rubric for the written assessment and a checklist for the practical assessment station were developed. Both instruments assessed three points of basic communication skills, i.e. building rapport, identifying consultation reason(s) and gathering information. Before the study began, a qualitative content validity was done on instruments.

Modified Essay Question (MEQ)

MEQ is a scenario based written test where structured questions are given in a predetermined sequence. MEQs are designed to test decision making skills, ability to identify issues and resolving them logically. Students were given a MEQ set with three part questions in three separate papers. Each new part question was administered only after the previous one was answered. students wrote the answers in three separate papers, and were not allowed to return to the previous answer, once they got the next question. Questions included in MEQ were,

Paper 1. Question in *building a rapport*:

You are a general practitioner who practices in a private clinic. How do you build your initial rapport with the patient?

Paper 2. Question in *identifying consultation reason(s)*:

You have already fetched the patient a seat and introduced yourself. Then, you ask the patient's identity and put concern on the patient's condition.

"The patient's name is Heriswanto; he is 30 years, lives in Cimahi and works as an

employee in a factory. The patient looks sad, not spirited, and weak.”

How do you explore the consultation reason(s) in this patient?

Paper 3. Question in gathering information:

After you know the reasons about his visit, you will gather more and further information. Below is the reason why the patient visits you:

“The patient complains that he has got a severe headache since several days ago. His wife passed away a month ago. He has to take care of his two-year-old daughter alone since then. He also complains that he has concentration difficulty on his job.”

Write your ways to gather information on the patient, such as giving questions, listening, conducting reflection, and making a summary on the conversation with the patient. Give your questions that you will raise with the possibility of the patient’s answers from the above condition.

Objective Structured Clinical Examination (OSCE)

As the practical examination, a single OSCE station for basic communication skills was developed. Students played the role of a doctor, and demonstrated their communication skills with standardized patients (SP). All performances were videotaped, and judged by two examiners. The observation checklist was developed to ensure the standard among examiners, and it consisted of (1) *Building*

rapport. greet patients and ask the patients’ name/identity; Conduct self-introduction, explain the purpose of the session, ask the patients’ informed consent if necessary. (2) *Identify patients’ complaints* or problems which the patients want to speak by using appropriate opening questions; (3) *Gathering information*: Give open and closed questions correctly (commenced with open-questions and detail with closed-questions); Listen with full attention to the patients’ statements without interrupting; Conduct reflection on the content of the conversation; Conduct reflection on the patients’ appropriate feelings; Use appropriate nonverbal elements; Make a summary on the content of the conversation.

The assessment took place on two consecutive days; on the first day, students were given a MEQ and on the second day students were videotaped in the OSCE station with a simulated patient. Both assessments were scored on a numerical scale (0-100) by two examiners. The reliability of written and practical assessments was determined by consistency from two examiners (*inter-rater reliability*). The correlation between written and practical assessment results were analyzed using Pearson’s correlation.

Results

Reliability of written and practical assessment

The reliability of written and practical assessments was determined by inter-rater reliability. The results are presented in table 1. Both the practical and written assessments showed good inter-rater reliability.

Table 1: Inter-rater reliability in written test grade

Data	Written test		Practical test	
	Percentage Agreement	Kappa Coefficient	Percentage Agreement	Kappa Coefficient
Total grade	82.1 %	0.707	77.5 %	0.735
Question item 1 Building initial rapport	97.7 %	0.877	90 %	0.750
Question item 2 Identifying consultation reason(s)	85 %	0.808	97.6 %	0.858
Question item 3 Gathering information	94.1 %	0.835	90.6 %	0.799

Written and Practical assessment correlation as a Concurrent validity

The correlation between results of MEQ and practical assessment from the two examiners ranged between 0.063 to 0.127 with $p > 0.01$.

On the item level shown in Table 3, correlation coefficient in building rapport was -0.067, identifying consultation reason(s) was 0.030, and gathering information was 0.107. All p-values were > 0.01 (Table 2).

Table 2: Inter-variable of Pearson correlation test result

Variable	Statistic	MEQ 1	MEQ 2	OSCE 1	OSCE 2
MEQ 1	Correlation Coef.	1.00	0.963**	0.063	0.100
	Sig. (2-tailed)		0.000	0.496	0.275
MEQ 2	Correlation Coef.	0.963**	1.00	0.088	0.127
	Sig. (2-tailed)	0.000		0.337	0.168
OSCE 1	Correlation Coef.	0.063	0.088	1.00	0.956**
	Sig. (2-tailed)	0.496	0.337		0.000
OSCE 2	Correlation Coef.	0.100	0.127	0.956**	1.00
	Sig. (2-tailed)	0.275	0.168	0.000	

** significance level 0.01, MEQ 1: written assessment from 1st examiner, MEQ 2: written assessment from 2nd examiner, OSCE 1: practical assessment from 1st examiner, OSCE 2: practical assessment from 2nd examiner

Table 3: Correlation coefficient on item level

Mean	Statistic	M1	M2	M3	O1	O2	O3
M1	Correlation Coef.	1	-0,024	-0,107	-0,067	0,028	0,003
	Sig. (2-tailed)		0,794	0,243	0,467	0,759	0,972
M2	Correlation Coef.	-0,024	1	-0,001	-0,015	0,030	-0,014
	Sig. (2-tailed)	0,794		0,989	0,871	0,745	0,878
M3	Correlation Coef.	-0,107	-0,001	1	-0,052	0,245**	0,107
	Sig. (2-tailed)	0,243	0,989		0,576	0,007	0,245
O1	Correlation Coef.	-0,067	-0,015	-0,052	1	0,168	0,153
	Sig. (2-tailed)	0,467	0,871	0,576		0,067	0,094
O2	Correlation Coef.	0,028	0,030	0,245**	0,168	1	0,062
	Sig. (2-tailed)	0,759	0,745	0,007	0,067		0,499
O3	Correlation Coef.	0,003	-0,014	0,107	0,153	0,062	1
	Sig. (2-tailed)	0,972	0,878	0,245	0,094	0,499	

M1: mean result of written assessment on building rapport, M2: mean result of written assessment on identifying consultation result, M3: mean result of written assessment on gathering information, O1: mean result of practical assessment on building rapport, O2: mean result of practical assessment on identifying consultation result, O3: mean result of practical assessment on gathering information

The correlation between MEQ and practical assessment was not significant. This indicates that written assessment could not predict the performance of communication skills in practical assessment as a 'criterion'. Thus, written assessment had a low concurrent validity to assess communication skills.

Discussion

When determining an appropriate assessment method for communication skills, aspects of validity and reliability have to be considered. Shumway and Harden (2005) have defined validity as the degree to which an instrument measures what it is supposed to measure. Before the study began, content validity was checked by reviewing the representativeness of MEQ items and checklist items. Although the inter-rater reliability of MEQs in this study was good (0.73), the evidence of concurrent validity of MEQs to assess communication skills was low. It's indicated by the insignificant correlation between written and practical assessments.

The basic communication theory mentions that the communication process is influenced by many factors such as knowledge, self-concept, ethical and cultural factors. These factors have a role in interpreting an idea (Dwyer, 2005; Ali *et al.*, 2006). Spitzberg (1983) supports this theory that one's performance in communication is influenced by knowledge and motivation. In relation with educational process, Miller's pyramid can explain that knowledge (*knows* and *knows how*) is a foundation of skills (*shows* and *does*). In communication skills, Hulsman (2004) states that building communication skills requires a detailed '*knows how*' level, i.e., '*knows why and when*' and '*integration*' levels. Those theories support an opinion that there should be a significant relation between knowledge and performance that can be presented in written and practical assessment of communication skills.

However, according to Van Dalen *et al.*, (2002) there has been a lower correlation between written and practical assessments in communication skills compared to correlation between written and practical assessments of other clinical skills. Furthermore, van der Vleuten (1989, cited by Van Dalen *et al.*, 2002) explains that the correlation can increase in the final year of education. Norcini and Lipner (2000) have also demonstrated a low correlation between student's ability in written and practical tests in communication skills.

Humpirs and Kaney (2001) in their cohort study showed that OSVE in the first year is a low predictor of OSCE of communication skills in the next year. However Individual factors, i.e. student's personality, influence more on ensuring communication skills competence (Van Dalen *et al.*, 2002).

The results of this study show similar evidence that there is a low or insignificant correlation between the result of written and practical assessment of communication skills. McCrosney (1983) states that communication competence is "*the ability in applying knowledge in a communication practice on a certain situation*". Based on the definition, it is possible that someone has a high level of knowledge about communication but cannot communicate well, because they cannot apply the knowledge in communication performance.

Kurtz (2005) mentions that communication skills are different from other clinical skills. As a consequence, he suggested that communication teaching methods should be prioritized based on a skills element, while the cognitive element provides the students with the understanding of communication concept, skills elements should be prioritized in main assessment methods, i.e. practical or performance-based assessment. Cognitive or written assessment can support the practical assessment to know the student's understanding on communication concept.

This study also showed that on the item level, the lowest correlation was in building rapport. In this item, the assessment points were (1) Greeting and asking patients' identity, and (2) Self introducing and explaining objective of the session. It might indicate that individual factors in building rapport skills were higher than identifying the reason and gathering information skills.

Conclusion

The written assessments could not predict students' performance in communication skills. Even though written tests are reliable, they have a low validity in assessing performance of communication skills.

Recommendations

Further research may be used to describe the correlation between written and practical assessments in a longitudinal study from the first until last year of education. The assessment instrument of practical test can be added by simulated patient's perception.

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