Qualitative Differences Between Traditional and Rural-Longitudinal Medical Student OSCE Performance

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Background and Objectives: *To ensure adequate observation, supervision, and mentoring of trainees, long-term preceptorships or apprenticeships are being reestablished in medical education. Equivalence in academic performance has been demonstrated between longitudinal students in the Rural Physician Associate Program (RPAP), who spend 9 months in a rural community during their third year of medical school, and their peers who complete their clerkships at different hospitals and clinics (traditional). We qualitatively reviewed the end of session Objective Structured Clinical Examination (OSCE) for both groups and compared their performances.* Methods: *The high and low performers on four OSCE scenarios (cough, dysuria in a teen, preventive care in an older male, medication reconciliation) for two cohorts of students: longitudinal (n=47) and traditional primary care clerkship students (n=60) were selected for review. These 16 videotapes were reviewed independently by three researchers. The themes and subthemes were discussed over four meetings.* Results: *Both high and low scoring longitudinal students demonstrated more consistent use of rapport building skills. Longitudinal students appeared to have an effective pattern in their patient interactions and were more rehearsed at explaining preventive care recommendations such as the pros and cons of the prostate-specific antigen (PSA) test. Traditional students displayed a more complete mastery of the adolescent interview and followed a mnemonic taught during lecture.* Conclusions: *Qualitative assessment of OSCE data reveals information not captured in the quantitative scores. In this study, longitudinal students demonstrated better mastery of rapport building and content knowledge and had an effective routine to their patient encounters not evident in the traditional students' scenarios.*

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Recent reflections about the current state of medical education have called for more emphasis on the social, economic, and political aspects of health care delivery. To ensure adequate observation, supervision, and mentoring of trainees, long-term preceptorships or apprenticeships are being reestablished.[1-3] The Rural Physician Associate Program (RPAP), founded in 1971, is one of the oldest longitudinal continuity medical school clerkships in the country. It is described in detail elsewhere.[4-6] Equivalency in academic performance in medical school has been demonstrated between students in RPAP and the traditional Twin Cities clerkships[7-9] Moreover, RPAP students are seen as desirable first-year residents by program directors who comment in our curriculum meetings that they function more comfortably and autonomously than their peers as fourth-year medical students and as beginning interns.

Traditional students spend their 8-week primary care clerkship with physicians in the metro area and attend weekly small-group sessions at the medical school about various primary care topics. The same Objective Structured Clinical Examination (OSCE) is used to evaluate both traditional and RPAP students. Traditional students take the OSCE at the end of their 8-week clerkship and RPAP/ longitudinal students at the end of their 9-month experience. OSCEs are routinely videotaped. Standardized patients assess the student at the conclusion of the session. OSCE scores, including knowledge and communication, were similar between the two groups for 4 years.[9] There are no significant age or gender differences between the two groups [9,10]

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but significantly fewer longitudinal students are not Caucasian (19% versus 8%, $P<.00$).[9]

Early quantitative evaluations of the RPAP Program suggested that RPAP students displayed more confidence in biological knowledge and behavioral and professional skills than traditional students.[11] Later studies compared the confidence levels on clinical skills and management of common clinical problems between the two groups (33 RPAP and 35 traditional students).[8] Scores were similar, but traditional students were significantly more confident about topics that were covered in their clerkship curriculum, such as assessing for domestic abuse and knowledge about health plans.[8] Both of these studies focused on quantitative data. Neither of these studies included use of qualitative data or review of OSCE videotapes.

The purpose of this study was to assess the qualitative differences in end of third-year OSCE performance between RPAP (longitudinal) and Twin City (traditional) medical students.

Methods

The videotapes of 16 students were selected from two student cohorts: the RPAP class for 2008–2009 (n=47) referred to as longitudinal and a combination of two groups of traditional primary care clerkship students near the end of their third year of medical school (n=60). Both cohorts were at similar stages in their training. The same OSCE was used to assess both cohorts, with the same faculty and standardized patients conducting the exams. Four of the 15 stations were selected because they tested a range of content and communication skills with patients of different ages. Cough assessed the student's differential for cough and ability to deal with the patient's concern about cancer. Dysuria tested the student's comfort with asking about sexuality and sexually transmitted infections and their skills in screening teens for risky behaviors. Health Care Maintenance in a 60-year-old male evaluated the student's knowledge about the pros and cons of colonoscopy, prostate-specific antigen (PSA), and other preventive screening for this population. Medication Reconciliation examined the student's ability to evaluate medication compliance and identify the use of over-the-counter and herbal products. The highest and lowest scorer in each scenario from each cohort was selected for videotape review of his or her performance, resulting in 16 videotapes, eight from each cohort.

Three family physicians who teach in the medical school reviewed the videotapes independently. Each tape lasted approximately 15 minutes and included the entire encounter between the student and the standardized patient: entering the room, introduction, interviewing and data gathering, discussing a plan, and closure. Only one researcher (TZ), who serves as faculty in the longitudinal program, knew which program the students were associated with. The traditional clerkship director (DP) was partially blinded, recognizing a few of the students. The third physician reviewer, an independent community preceptor (KO), was blinded to both cohorts. All faculty had expertise in OSCE evaluation and in doctor-patient communication curricula. We were guided by IH, a nationally renowned expert in qualitative methods and education evaluation who provided us with a process to follow and critiqued our findings.

We met to discuss the themes observed in the videotapes four times, following the constant comparative approach of qualitative analysis.[12] Our discussions were audiotaped, and TZ took notes. We adopted KO's format for dissecting the interviews, which included a grid for each scenario with the major themes identified across the top and a row for each student. Comments about each student's performance related to the themes were listed. For example, one theme was rapport building and in the associated box we recorded the student's rapport-building activities. During our third meeting, we identified subthemes for each main theme, and TZ revealed which cohort the students were in. When we reached consensus on the subthemes, we divided up the videotapes and reviewed all the performances again, examining each for the presence or absence of our subthemes and comparing the frequency of our observations between the two cohorts. We met a fourth time to discuss our findings.

IRB approval was obtained, and students consented to participate prior to taking their end-of-session OSCE. All but two agreed to participate.

Results

The themes included how the student opened the interview, rapport-building skills, data-gathering skills, how the student explained the possibilities and differential, the student's content knowledge, if the student assessed the patient's comprehension, how the student concluded the session, and the student's professionalism. All students integrated rapport building and cognitive demands in the interview. Most displayed good communications skills, such as introducing themselves, shaking hands, using the patient's name, making eye contact, and using effective non-verbal communication. At times they appeared to run through mental checklists and were preoccupied with the differential; most failed to check the understanding of the patient. The results are organized in the discussion of the two major thematic areas: rapport building techniques and content knowledge.

Rapport Building

Rapport building skills included introducing self, using the patient's name, deliberately making eye contact, spending time talking before taking notes, exhibiting noticeably helpful nonverbal behaviors, spending time discussing nonmedical content, reacting appropriately

to patient's nonmedical comments, and closing the encounter as one ends a conversation. Longitudinal students engaged in more rapport-building activities than the traditional students. Both longitudinal high and low scorers engaged in more informal "chat" at the beginning, during the interview, and during the physical exam. All longitudinal students identified themselves on entering the room, and most used the patient's name during the encounter. In contrast, traditional students were often more brusque and awkward. One traditional high scorer did not introduce herself or ask the patient's name. She asked, "How are you?" and began to question the patient.

Content Knowledge

Content Knowledge included using an algorithm to guide questioning, answering any patient questions correctly and confidently, using medication names correctly, knowledgeable about medication side-effects, knowledgeable about appropriate diagnostic and preventive testing, developing an appropriate differential diagnosis, and effectively communicating clinical priorities for care. Longitudinal students seemed to have an effective pattern in their interactions with patients more often than the traditional students. Both high and low longitudinal scorers appeared better rehearsed at explaining preventive care recommendations including what a colonoscopy involved, the dilemma related to PSA testing, and the value of preventive care. A high scoring longitudinal student gave an eloquent explanation of the pros and cons of PSA screening and linked the importance of lipid screening to the patient's family history. A low scoring longitudinal student had an easy conversational manner and encouraged the reticent early 60s male patient to "think of preventive care like an oil change." However, this student focused on relationship building, covering limited amounts of the content in the allotted 15-minute time block. Although he ran out of time, he concluded the interview appropriately, inviting the patient back for a follow-up visit. In comparison, the low scoring traditional students' explanations were less flowing, more hesitant, included awkward pauses, and included more frequent use of medical jargon.

Both the high and low scoring traditional students had more complete mastery of the content for the adolescent interview, completing a comprehensive teen risk assessment with the HEADDSSS mnemonic (home/habits, education/employment, activities, diet, drugs, sex, suicide, and safety) and addressing confidentiality. Traditional students had attended a didactic session on the teen interview. The top longitudinal student covered the essential risk assessment areas, but neither longitudinal student broached confidentiality. In summary, longitudinal students were more consistently good performers across the board; traditional students demonstrated higher variability with more highs and more lows.

Discussion

A qualitative analysis of longitudinal and traditional students' OSCE performance showed that longitudinal students demonstrated better rapport building and content knowledge in some domains and appeared to have an effective routine to their patient encounters. These details were not captured in the quantitative analysis, also presented in this journal.[9] The OSCE scores suggested that there was no significant differences in the performance of the two cohorts of students in decision making or communication.[9] Our findings support Rose's conclusions that OSCEs include valuable qualitative data for assessing students that is not captured in the quantitative scores.[13]

The longitudinal program has three components that are different from the experience of the traditional students: (1) 9 months in one location compared with 8 weeks, (2) continuity in one hospital/clinic location, and (3) the same primary care preceptor for 9 months. Students do not change locations every 4 to 8 weeks; their primary care and required specialty clerkships are in the same location for 9 months. They are encouraged to spend a half day a week with their primary preceptor when completing their other clerkships requirements. As a result, longitudinal students have the opportunity to follow patients through an illness process such as the visit to the ER, surgery for an acute abdomen, the post-operative visit, and the return to the primary care provider for their other chronic health issues. The longitudinal experience also allows for more consistent mentoring. In addition, longitudinal students' patient encounter logs surpass the LCME ED-2 standards established by the University of Minnesota.[14] Because traditional rotations log patient encounters differently, it is impossible to compare the number of patient encounters logged by the two groups.

The qualitative analyses suggest that something about the longitudinal experience allows students to integrate the elements of the interview and exam into a smooth flow, more so than traditional students. This was true for both high and low longitudinal scorers. All longitudinal students surpassed traditional students in ensuring the patient's comfort and building rapport. According to Rose, this kind of "routine" comes with repeated experience.[13] Patient satisfaction is associated with rapport-building skills and a routine enables the clinician to make the most of the first minute.[15] The authors hypothesize that longitudinal students have more patient contact, especially during their primary care and family medicine clerkships, which results in development of an effective routine for patient encounters.

More often than traditional students, longitudinal students appeared to move from the role of Reporter

into Interpreter and Manager, the goals of the clerkship year.[16] As a Reporter, the student gathers data. The Interpreter knows what to look for and selectively prioritizes and analyzes the information to create a differential diagnosis. Managing includes working with the patient on diagnostic and therapeutic decisions, such as which preventive screening tests they want to have. All longitudinal students did better than traditional students at helping the male patient consider his preventive care options and covering the broad differential for cough, while answering the patient's questions accurately. For medication reconciliation, the top scoring longitudinal student demonstrated better content knowledge and responses to the patient's concerns than all of the other students (low scoring longitudinal and high and low scoring traditional).

The differences in students' content knowledge may relate to the lectures attended by traditional students and the patient population in the longitudinal students' communities. Traditional students have lectures from the best in their field on special topics such as adolescent care, domestic violence assessment, medication interactions, and geriatrics. Longitudinal students have access to these lectures online. However, only 15 of the 47 longitudinal students reviewed the on-line lectures, averaging 47 minutes viewed of just under 12 total hours of material. Longitudinal faculty hypothesize that students feel they don't need to review the material since they have so much clinical exposure. As a result, longitudinal students are dependent for development of content knowledge on the range of their preceptor's panel of patients and his or her skills for addressing the patients' concerns. Visits by 60-something white males are common in rural clinics, but adolescents are less frequently encountered in some practices, especially if the preceptor is a middle-age male who has aged with his practice. Our data suggest that the longitudinal curriculum may need to do a better job of educating students on the appropriate topics to cover for patients such as teens, with whom they may have limited encounters or have preceptors who are less skilled with addressing the needs of adolescents.

There are limitations to this study. Although the standardized patients in the scenarios are routinely used in the OSCE, two or three different individuals were involved in each scenario. For example three different actors were involved in the four dysuria scenarios that we reviewed. Many of the standardized patients are used year after year and become familiar with the expected medical content. As a result they are not focused solely on the student's communication and rapport-building skills but also look for evidence of questions related to the possible differential for the chief complaint. This may explain why the standardized patients rated the high scoring traditional students so highly even though their communication and rapport building skills were lacking. The physicians reviewing the videotapes sometimes questioned the scores that were assigned by the standardized patients, particularly in the area of rapport building.

Prior to our review we discussed our biases. These included the pervasive opinion that students who participated in the longitudinal program possessed a poise, confidence, and practical knowledge at the end of their 9-month longitudinal experience that surpassed that of their metro-trained colleagues. However, only TZ knew which student was in which cohort. All three physicians brought their content expertise to the observations, for example, knowing if the medical logic was appropriate or inappropriate in the encounters. As faculty or adjunct faculty, all worked with medical students and had additional training in communication skills.

In conclusion, the longitudinal program provides an educational experience that allows students to excel in rapport building and to develop an effective routine and flow in their patient encounters. They may not perform as well in special content areas, such as the adolescent interview in this study, because many do not review the online lectures available to them, and they may see fewer adolescent patients in their settings. Overall, the qualitative analysis of the students' OSCE performance reveals competencies not captured in the quantitative scoring, both demonstrating the value of qualitative approaches in performance assessment and program evaluation and the value of the longitudinal experience.

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