

Early Clinical Experiences from Students' Perspectives: A Qualitative Study of Narratives

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Abstract

Purpose

To gain insight into how early clinical experiences contribute to medical students' professional development.

Method

Qualitative content analysis of second-year Mayo Medical School students' reflective journal essays pertaining to their first experiences with inpatients (from 2002 to 2004) was done using a grounded theory approach. The apprenticeship model of professional learning (knowledge and cognitive abilities, technical skills, and ethical standards) and perspectives from learning theory provided the conceptual framework. Major themes were

identified, and member checking and interrater reliability was assessed to support the validity and reliability of the content analysis.

Results

Four major themes related to the purposes that the early clinical experiences with patients served for students were identified in analysis of reflections from 76 students (participation rate 95%). The themes were issues related to relationships and learning in early encounters with hospitalized patients; integration with learning in the entire curriculum; aspects of doctoring learned; and affiliation with the physician role and professional

development. Select quotes illustrate these themes and provide thick description. Member checking supported the analysis; interrater reliability was 91%.

Conclusions

Early hospital-based clinical experiences provide opportunities for apprenticeships in the habits of the head, hand, and heart. Medical students' growth and learning occurs within these apprenticeship domains through contextual experiential learning.

Acad Med. 2007; 82:979-988.

The importance of clinical skills education for medical students is well established.¹ Yet, the recent paradigm shift from a focus on educational processes to learner outcomes has highlighted ongoing deficiencies in students' clinical skills,¹⁻⁶ despite decades of calls for revamping the clinical skills curriculum in medical schools.^{2,3,7-9} Recently, there has been pressure to reemphasize training and evaluation of clinical skills,¹⁰ with the Report of the Ad Hoc Committee of Deans from the Association of American Medical Colleges (AAMC) stressing that patient-centered clinical experiences should occur early in the curriculum,¹¹ and the AAMC Task Force on the Clinical Skills

Education of Medical Students calling for clinical skills training throughout the four-year curriculum.²

Although early clinical experiences (i.e., during the first two years of medical school) fulfill suggested strategies for affecting reform,¹¹ there is limited evidence of their outcomes. Typically, such early clinical experiences involve English-speaking patients who provide consent to be interviewed and examined by a medical student and who are able cognitively to participate. Most, but not all,¹²⁻¹⁴ studies reporting such outcomes have been single-institution evaluations of a wide variety of early clinical experiences scattered throughout years one and two. Methods of evaluation have focused mostly on student and faculty perceptions¹³⁻²¹ and on clinical skills examinations,^{13,22-26} with a few relying also on grades,²² residency match results,^{12,22} student interviews,^{18,21,27} focus groups,²⁸ or analysis of students' narrative accounts.²⁹ These studies have found early clinical experience to be perceived positively by students^{14,16-21,28} and associated with acquisition of clinical knowledge and skills^{13,14,20,24-26} and confidence,^{16,28} improved third-year

clerkship performance,^{14,22,23} changes in career plans,^{12,15,21,22} and increased motivation for studying basic sciences.^{16,21,27,28} Although these are positive outcomes, more insight into how these early clinical experiences affect the professional development of students is needed to better justify taking time away from basic sciences and going through the difficulties of arranging early clinical experiences.^{13,30,31}

In this study, we used Lee Shulman's³² conceptual framework of professional learning to explore the interrelated functions that early clinical experiences serve for students. Shulman proposes that professional learning needs to be balanced among three apprenticeships: the cognitive apprenticeship, where the student develops the knowledge and understanding to think like a physician; the practical apprenticeship, where the student learns to perform like a physician; and the moral apprenticeship, where the student learns to practice medicine with integrity and respectability. Shulman advocates that professional education needs to intertwine "habits of head (knowledge and cognitive abilities),

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habits of hand (technical skills), and habits of heart (ethical standards).^{29,33}

Method

Study design

During the 2002–2003 and 2003–2004 academic years, all second-year medical students at Mayo Medical School (MMS) were required to complete weekly reflective writing assignments during their eight-week, on-campus Internal Medicine course. Although the students were free to reflect on any part of their experience, the following questions from *The Skillful Teacher: On Technique, Trust, and Responsiveness in the Classroom* were provided for students to consider: (1) What activity this week was the most interesting and fun for you? (2) Describe when you felt most affirmed/valued this week; (3) What was your most frustrating experience this week? What made it distressing? (4) When did you feel demeaned or patronized? and (5) What insight into your learning process or emotional response did you gain?²⁴ Students e-mailed their reflections to the course director (L.N.D.), and she responded back to the entire class with a summary reflection of what they were experiencing. At times, she communicated directly with students who raised questions or concerns in their reflections. Students were informed to not include any patient-identifying information (e.g., name, clinic number) in their writings.

The second-year Internal Medicine course is an early clinical experience that follows the first-year Introduction to Patient course. The first-year course teaches patient-interview techniques and approaches to the physical examination using a combination of lecture, small-group discussion, and peer physical exams. During the second-year course, students are assigned to an internal medicine or related subspecialist physician and are exposed to hospital-based medicine for the first time. One morning a week, students individually interview and examine consenting patients admitted to the internal medicine, cardiology, gastroenterology, pulmonary, or neurology services. Students are not allowed to access patients' medical records. The next day, they present their inpatient work-up with differential diagnosis and initial plan to their preceptor and one or two peers.

Immediately afterward, the small group typically returns to the patient's bedside to ask additional questions and confirm findings. An additional half day every week is spent examining hospitalized patients with abnormal physical examination findings, with the same preceptor and small group.

In 2005, students who had completed the Internal Medicine course (i.e., who had been in their second-year between the academic years of 2002–2003 and 2003–2004) were contacted via e-mail and asked for permission to have their reflective writing assignments analyzed for research purposes, to gain insight into students' early clinical experiences. The students were assured that all reflections would be deidentified to ensure their privacy, and that any quotes used to illustrate key themes would be devoid of personally identifying elements. Students were asked to respond via e-mail to grant permission for their reflections to be used in this study. The Mayo Clinic institutional review board approved the study.

Data analysis

A grounded theory approach was used to complete the content analysis^{35,36} of reflections in which students described experiences with patients. Our intent was to analyze the role of interactions with patients in the professional development of preclinical medical students. Therefore, reflections about interactions with preceptors and/or peers were excluded from the analysis. Using a process of constant comparative analyses,³⁶ themes and categories were identified by the primary author (L.N.D.) and labeled with codes for facilitation of analysis. The unit of analysis was sentences and words. Methods of analysis included counting comments within each category. Exemplar quotes were selected to illustrate major themes and provide thick description. Quotes were corrected for grammatical errors, and, at times, syntax was changed (indicated by brackets) to improve readability.

During content analysis, using a grounded theory approach, there is a continuous process of using initial conceptual frameworks, analyzing data, and supporting those conceptual frameworks, or abandoning them and using others. As reflections were read, the value of Shulman's apprenticeship model

of professional development became apparent, as did perspectives from learning theory. Both of these conceptual frameworks were applied during interpretation of results and, on completing the analysis, were found to provide a powerful interpretive framework for the data.

Member checking, a common technique to support validity of content analysis,³⁷ was completed by four MMS graduates who were also participants in the study. To support reliability, two authors (C.H.R. and I.B.H.) read the same eight (10%) randomly selected students' reflective writings and applied the primary author's coding schema. The level of agreement among the three authors was 91%, and no new themes were identified.

Results

Out of 80 eligible medical students, 76 provided consent for their reflections to be analyzed (participation rate 95%). Table 1 shows the demographic characteristics of this sample. There were no statistically significant differences in the gender, age, and curriculum (i.e., MD, MD–PhD, or MD–OMS) between nonparticipants and participants. Among the participants, a mean of 6.77 reflections (range 3–8, SD 1.1) were completed. Of these reflections, a mean of 4.73 (range 0–8, SD 2.2) contained narratives about patients. Four of 76 participants' reflections did not include comments relevant to patient encounters and were not coded.

From reading students' reflections about their experiences with patients, four major themes were identified that described the purposes that early clinical experiences with patients served for students: issues related to relationships and learning in early encounters with hospitalized patients, integration with learning in the entire curriculum, aspects of doctoring learned, and affiliation with the physician role and professional development.

Issues related to relationships and learning in early encounters with hospitalized patients

Relationships with patients loomed large in students' reflections. Many reflections painted patients in a positive light, with descriptors such as *wonderful*, *gracious*,

Table 1
Demographic Characteristics of Second-Year Mayo Medical School Students Reflecting on Early Clinical Experiences, 2002 to 2004*

Category	Total	Participants	Nonparticipants	P value
Gender				.62
Male	41	36	1	
Female	43	40	3	
Curriculum				.63
MD	69	65	4	
MD-PhD	12	12	0	
MD-OMS	3	3	0	
Time of year of course				.73
Fall	29	28	1	
Winter	28	27	1	
Spring	27	25	2	
Age				.81
25-30	70	67	3	
31-36	12	11	1	
>36	1	1	0	
Missing	1	1	0	
State of primary residence				
Minnesota	24	23	1	1
Race				
Caucasian	62	59	3	1
Non-Caucasian†	18	17	1	

* A χ^2 analysis was done to compare 2002-2004 second-year Mayo Medical School students who did and did not consent to have their reflective writing assignments included in this content analysis. Caution should be exercised in interpretation, because some cells contained fewer than five.

† Non-Caucasian students included six African-Americans; eight Asians (two Pakistani, two Pacific Islanders, one Korean, one Vietnamese, one Japanese, and one Chinese); three Mexican Americans; and one Native American.

and *enthusiastic*. Students were impressed with patients' generosity toward them, with their time, and with their bodies as instruments for student learning. In turn, students generally found them to be patient, cooperative, and receptive to interacting with students and having students learn from them. A typical comment is, "Having that kind of diagnosis, you would think he would be unwilling to be poked and prodded by ignorant med[ical] students, but he let us come in and stay as long as we needed."

Students wrote that they enjoyed learning from patients and found the experiences to be profoundly valuable for their learning. One student commented that "med[ical] school gets so overwhelming. But I can honestly say that seeing patients every week has helped to keep me sane." Patient-driven learning was viewed as an effective and powerful way to learn, as this comment exemplifies: "Nothing can compare to time spent with a patient. I learn more from speaking with patients

than I ever did from a textbook." Despite these personal learning benefits, comments reflecting concern about patients' losses as a result of students' needs were prevalent. Students initially perceived that they took away valuable time from patients and their families, made patients needlessly tired, were an imposition, and inflicted unnecessary pain without the patient gaining anything in return.

As a result of this perceived imbalance between taking and giving, students wrote that they felt uncomfortable and were reluctant to spend the time needed to complete the physical examination. As a result, some prematurely curtailed their interactions with patients and their physical examinations. One comment reflective of this conflict is, "I feel grateful for their willingness to participate, but feel equally unnerved by performing somewhat painful procedures or exams with no benefit to the patient whatsoever."

This experience of conflict and its consequences was alleviated over time for some students, as many patients thanked students for visiting, listening, and being comprehensive in their exams, and gave students positive feedback about their performance and career potential. Comments of appreciation, such as, "When we were leaving, he grabbed my preceptor's arm and with tears welling up in his eyes, nodded to me and said, 'you've got a good one here,' and then he tearfully thanked me for coming by," eased students' sense of conflict about taking without giving, made them less reluctant to examine patients, and made them feel valued.

Students speculated about why patients consent to be part of their early clinical experience. Patients were commonly viewed by students as altruistic. For example, a student wrote, "She let us examine her belly and absolutely lit up to tell us how thankful she was to be able to help us. Neat to see people find value in their suffering as a tool to help a stranger." Patients' altruism increased students' sense of personal responsibility to learn. Also, students increasingly realized that they provided significant value to patients as they observed patients gain companionship and relief from loneliness, valuable support, reassurance, and information about such things as causes of symptoms, medications, how to change health behaviors, and free community resources. Students discovered that even with their incomplete knowledge and skill set, they could provide significant therapeutic benefits for patients. A student wrote, "It was a good feeling to know that in some small way we had helped this man come to terms with his condition and put him in the frame of mind to want to continue to live." Three students actually picked up a new relevant clue to a patient's diagnosis, including atrial fibrillation that resulted in cardioversion. A student commented, "That was the first time we felt less like parasites and more like we might actually be helping someone."

Paralleling their awareness of patients' gains, students commented about how their contributions to patient care helped them feel useful, positive, and reassured that patients' losses (i.e., time away from family, loss of privacy, fatigue, and pain) were outweighed by their gains, and that they were worthy of patients' time. One

student commented, “I had experienced a variety of feelings . . . a small degree of discomfort at my incapacity to help, moved by his willingness to open very deep and tender parts of his soul, and a sense of peace and purposefulness in being able to help another person in however small a way.”

Integration with learning in the entire curriculum

Many reflections focused on how interactions with hospitalized patients and basic science coursework complemented each other and contributed significantly to both their clinical and basic science knowledge. In addition, students commented that their early clinical experiences provided motivation for learning and for their continuing quest to become physicians. For example, one student wrote, “I’m surprised how much I’m interested in reading about various conditions when I have to defend my opinions with regard to a specific person and that person’s life.”

Clinical experiences also provided students with the experiential context for content taught in basic science courses and opportunities to apply it. Experiencing the relevance of basic science content excited them, affirmed their knowledge, and reinforced the value of the curriculum. A student wrote, “I had just learned about the HCV [hepatitis C virus] and cryoglobulinemia the week before, and [it] felt so good to be able to practically apply what I had learned . . . to see the fruits of labor, so to speak.” Integration of classroom and clinical experiences promoted synthesis of knowledge. For example, a student wrote, “The rotation requires integration of so many different disciplines, whereas so far in medical school topics have been discretely segmented into ‘renal problems’ or ‘skin problems.’” Similarly, students commented about how the interdependence of classroom and clinical experiences provided them with perspectives to guide their classroom learning. Finally, the amalgamation of knowledge from classroom and clinical experiences strengthened their understanding, consolidated knowledge, and facilitated retention. For example, one student wrote: “It is amazing how seeing a patient with a disease really burns it [the disease] into your memory.”

Aspects of doctoring learned

By serving as a bridge between the Introduction to the Patient course in the first year and the third-year clinical clerkships, the second-year Internal Medicine course is designed to facilitate longitudinal clinical knowledge and skills development. Indicative of such a process are students’ comments pertaining to building relationships with patients, gaining empathetic understanding, learning the tasks of doctoring, and understanding barriers to overcome.

Patient–physician relationship. The clinical experiences taught students valuable lessons about the patient–physician relationship. Students wrote that these relationships are important to the diagnostic process and bring both meaning and frustration to physicians’ professional lives. At times, they experienced difficulties appropriately setting boundaries and establishing the patient–physician relationship because of their age or gender. Comments included, “They both saw me as around their granddaughter’s age, and therefore did not take me seriously,” and “I still got plenty of ‘oh, so you’re going to be a nurse?’ comments.”

Despite these barriers, students gained insight into how to facilitate patient–physician relationships, commenting about the importance of good communication, acting in a professional manner, investing time in building relationships, and sharing commonalities.

Insight into patients’ plight. Students wrote about the impact on them of seeing the plight of patients, at times a result of patients’ own behaviors, and of meeting people who had difficult and different lives from their own. Students also noted how their lives differed from many of their patients, culturally and in terms of social support networks. A student wrote, “[The patient said:] ‘it gets lonely when everyone you have ever known is dead.’ I could not even imagine. . . .” In turn, students reflected about how to interact with patients with empathetic understanding. A student wrote:

The idea that home would be worse than being in the hospital isn’t something that I had thought about before . . . but it must happen more than rarely . . . to people who have no one at home to go to, few friends still living, an abusive home, etc. It made me more aware to see this . . .

and I hope to remember it as I care for individuals in the hospital . . . to treat them with kindness and to remember that they may be getting more care . . . in the hospital than they have had in years.

The experience of being in a hospital room with an inpatient for several hours gave students insight into what it is like to be a patient. Students remarked that there were frequent, unpredictable arrivals of health care providers and trips in wheelchairs for various tests that had at times not been explained to the patient in advance. Students further observed that patients had to make difficult health care decisions. A student commented, “He was faced with the choice of either letting his disease take its course or having an operation that was rather high risk at his age and stage.”

Students also wrote about patients’ reactions to their diseases—experiencing fear, sadness, and disappointment, but also being optimistic, despite very difficult situations. They noted that patients’ reactions to illness were at times age dependent or diagnosis dependent. In reaction to their clinical experiences, students wrote that they were reminded of life’s fragility, and they reflected about how they might personally deal with illness if it came their way. A student remarked, “It’s great to see patients giving us all an example of how to keep things in perspective and what is truly important in life.” Another student mentioned the power of the human spirit, commenting, “It’s still rough to hear about all these patients’ struggles and pains in life, but uplifting as well to see how much the human body and spirit can handle.”

Learning the patient work-up. From the experience of taking histories from inpatients, students wrote about gaining knowledge about the importance of the history, how patients describe symptoms and report medical histories, the consequences of patients not understanding their disease, and questions that are relevant to the chief complaint and differential diagnosis. History-taking skills of directing the interview, time management, and adjusting the interview style were practiced with patients during this rotation. Students found it rewarding to apply the lessons they had learned in the first-year interviewing course and noticed improvement in their interviewing skills,

exemplified by this comment: “At the beginning, I felt so stupid asking every question in the book, and not having any rhyme or reason to the order. Now, I can actually tailor my questions to the problem at hand, and end up with a reasonable idea of the problem.”

Students also wrote about how the experience of examining hospitalized patients improved their physical examination skills by allowing them the opportunity to practice and build on skills learned during the first-year course. They commented about gaining knowledge about physical exam maneuvers, physical signs of diseases, and the power of observation; how to adjust the physical examination for patients’ illnesses; and how they progressed from seeing, feeling, and hearing “normal” physical examination findings to detecting “abnormal” findings.

After taking a history and examining patients, students generated a differential diagnosis. This was a process of discovery and self-directed learning, characterized variously by different students as piecing together, teasing out, integrating, and constructing. Students learned the value of a broad differential as they observed that diseases can present variably and that “red herrings” can obscure a correct diagnosis. A student commented, “Things don’t often present in the classic way, and when they do, it still may not be what you suspect.” Although only a rudimentary plan of care was expected from students, some mentioned the need to balance thoroughness with efficiency and cost concerns, and the need to treat with the whole person in mind. Students commented about insights into their learning processes they had gained from doing the patient work-up, particularly the need for repetition. A student wrote, “The more you see or hear something, the deeper it sinks in . . . practice makes perfect.”

Lessons from challenging situations

Death and dying. There were many more discussions about patients who had deteriorated, died, or were dying than about patients who improved. Some students wrote that it was their first experience talking with someone who was dying or who had recently received bad news, as shown in this comment: “This was my first experience with seeing a patient receive bad news. I was just a fly

on the wall, but this is something that will stick with me.” Students commented about some patients being fearful of pain and reacting emotionally to bad news, whereas others were accepting of death. These experiences evoked a wide range of feelings, such as sadness and distress. For example, a student commented,

The most distressing experiences involve patients who learn of a devastating diagnosis. . . . I have yet to become immune to the emotions surrounding these experiences, nor do I hope to, but they are incredibly moving and painful. . . . The terror and fear that fill patients when they hear that the physician is considering cancer is painful to watch. . . . I expected these difficulties, but their constant or daily happenings are often overwhelming and draining.

Talking with patients about death and dying was difficult for students because they felt unprepared for such conversations and struggled with asking questions pertinent to how the patient was coping. These experiences prompted some students to reflect on their own mortality: “I feel like death and sickness surrounds me, and I can’t seem to get any of the patients out of my mind. I think about their mortality, and I think a lot about my own. I go home and all I want to do is assert how *alive* I am, but then I have to study.”

Additionally, some students gained insight into themselves, their own learning needs, patient care needs at the end of life, and the limitations of medicine. One such student wrote,

We met a woman with a rare type of abdominal cancer that is uniformly fatal and she can’t eat now because of bowel obstruction. She is being fed through a tube directly into her intestine and she tells us that she loves to cook. . . . Just that one glimpse into her life made a huge impact on me for some reason, and . . . the lesson I was supposed to be learning about her cancer and what it felt like in the abdominal wall seemed so trivial compared to her suffering and our inability to do anything.

Learning from difficult patient interactions. Despite attendings securing patients’ consent for the student interviews and physical examinations, a handful of clinical experiences were difficult for students with respect to interactions with uncooperative patients, or patients who behaved inappropriately. Even these challenging situations were

valuable to students: some sought advice, for instance, about how to handle male patients being overly affectionate or commenting on the students’ physical attractiveness, whereas others took a problem-solving approach. The following comment reflects one student’s reaction to, and learning from, such a situation:

All in all, the comments he made were meant to disturb me and interrupt the flow of my history and physical. . . . I found that not getting rattled helped me get through the exam without too much trouble. . . . In this way, I was able to handle this confrontational patient and get the information I needed.

Learning from challenges of the hospital environment. Students commonly discussed hospital-environment barriers to completing their tasks of taking the history and conducting a thorough physical examination. Many were frustrated by frequent interruptions (as previously discussed). Students wrote that these interruptions impaired their concentration, extended the time required to complete the assignment, and adversely affected the quality of the history and physical examination. Patients’ characteristics such as hearing loss, dysarthria, being a poor historian, illness, pain, and obesity were additional barriers. One student wrote, “He also taught me the value of patience . . . that once I took the time to speak slow, loud and low, I unveiled a gem of a patient and person.” Students also found having family members in the room and, hence, multiple historians, difficult at times.

In addition to environmental and patient-related barriers, students wrote about personal barriers such as their reluctance to use patients for their own gain (as previously discussed) and the tendency to shy away from asking difficult questions and performing certain parts of the physical examination. A student commenting about personal barriers and learning related to overcoming these barriers wrote, “I danced around asking him exactly what had happened, hoping he would volunteer it. Since he didn’t, I assumed it was a really sensitive topic. [The attending] simply asked my patient—who was more than willing to discuss his accident. I was trying to be sensitive to the patient, but apparently I was the one who was more touchy about the subject.”

Although these barriers caused frustration, distress, and confusion, students commented about the insights they gained from dealing with these situations. Students realized that they needed to take their time, speak loudly, ask clarifying questions, and work up courage to ask all relevant questions.

Affiliation with physician role and professional development

In addition to opportunities to integrate classroom and clinical learning, and to develop the clinical skills of doctoring, these early clinical experiences with hospitalized patients provided important opportunities for students' professional development. Although some students felt slightly nervous before each patient session, they generally realized that they enjoyed doctoring tasks and roles. They wrote about how much they liked being in the hospital interacting with patients, and establishing rapport, taking histories, doing physical examinations, discovering the differential diagnosis, and sharing knowledge. They found patients to be interesting and found themselves to be excited about interacting with patients. A student wrote, "I really felt like I connected with him. . . . It was so good to experience this human side of medicine, an experience that is too rare in the first few years of med school."

Not only did students describe their enjoyment of doctoring, they also described their pleasure with the competence and confidence gained as a result of such experiences.

Analogously, clinical experiences with hospitalized patients provided students with perspectives and experience to help guide them in their career decisions. They described feeling affirmed in their decision to pursue medicine and felt better able to consider career options, desired practice characteristics, and specialty preferences.

Students' comments also reflected their stage in the process of acculturation, evolving from lay person to physician. They saw illness through the eyes of patients, not doctors, and many struggled to control their emotions. Typical comments are "I'm realizing how hard it is to listen to a patient without also becoming too much a part of it" and "I guess the reason why I was so affected by this is that I could relate very easily to

her. . . . I could even imagine myself in her shoes and that was hard." In contrast, some students made a conscious decision to diminish emotional entanglement with patients because of concerns about their consequences. Such students commented, "I feel sad for the patients, and that makes it hard for me to stay focused at times. But, I am trying to realize that my strength will help them more in the end than my emotionality . . . so I am working on it," and "I'm supposed to go home and eat lunch like nothing happened having just examined the abdomen of some poor lady dying from an incurable cancer? . . . It is learning how to distance myself from the really sick patients I see only for a short time that will be the most difficult thing for me on this rotation."

The distance, however, helped to give students different professional perspectives. One student, indicating a public health/resource perspective, wrote, "I am left feeling really bad for the patient as she seems distraught but I'm also a bit dismayed by how many resources and how much money went into her evaluation."

During this process of identity development, students recognized the challenge, power, privilege, and responsibility of being a physician. Challenges included working with terminally ill patients and putting oneself at risk from communicable diseases. Power came from the patient-physician relationship, the associated trust that patients place in their physician, and the physicians' role as decision makers, at times, for their patients. A sense of privilege stemmed from being part of other peoples' lives and the impact that physicians' actions and words have on patients. Responsibility came from feeling accountable to others in need. For example, a student commented, "There is an intimacy with patients that is different than the average interaction. Many of the patients we have seen have opened up about very real and emotional things in their lives. It is an honor and a responsibility that patients give us."

Results of member checking

Four students (two male and two female) reviewed the themes identified in the narratives and their interpretation. They agreed with the interpretations and thought the examples representative. One

student commented that as she read her colleagues' statements she realized how similar her feelings were to those of her classmates, and yet she had felt isolated during this stage of her training, thinking that her feelings were unique. She commented, "I wonder what could be done to reduce some of the walls that keep us from emotionally reaching out to one another as we flounder to become physicians and struggle through the joys and hardships of medical training." Two students commented about areas not covered in the thematic review. One student thought that student and faculty behaviors, interactions between peers and between peers and attendings, and issues related to feedback should also have been included in the analysis. Although these themes would likely fit into the context of *Aspects of Doctoring Learned*, the journal entries had only been reviewed for comments pertaining to individual learners' encounters with patients. We agree that interactions with and between peers and faculty are also important in professional development, and we plan to complete such a major analysis in a subsequent study.

Discussion

In the setting of a hospital-based clinical experience with selected patients, these second-year students' reflections suggest that early clinical experiences provide opportunities for apprenticeships in the habits of the head, hands, and heart.³² The narratives are rich in descriptions of what Shulman calls the *apprenticeship of the head*, descriptions of how they gained knowledge and understanding from the active processes of history taking, conducting physical examinations, and generating differential diagnoses, and of applying basic sciences knowledge through problem solving and reflection. Constructivist learning theorists, such as Dewey,³⁸ support the view that active, hands-on problem-solving tasks (such as the medical work-up) lead to construction of knowledge as a consequence of recalling previous knowledge, thinking about it in the context of patients, rebuilding it, and actively applying new knowledge. Dewey maintained that experiences are a means of knowledge acquisition and that if experiences "arouse curiosity, strengthen initiative, and set up desires and purposes that are sufficiently intense," the capacity for growth and learning is great.³⁸

Students' comments suggest that these conditions are present and that these preclinical experiences provide a cognitive apprenticeship that helps them develop their knowledge, understanding, and ability to think like a physician.

Students provided numerous examples of how their early clinical experiences brought about acquisition of practical skills, the domain that Shulman calls the *apprenticeship of the hand*. Their comments demonstrated the process of establishing a patient–physician relationship, dealing with challenging situations, overcoming barriers, and performing technical doctoring skills (e.g., take a history, conduct a physical examination). Constructivist learning theory is important in this apprenticeship domain in interpreting development of doctoring skills.³⁹ Through experiential learning, students applied their skills, modified their techniques according to feedback and outcomes, and subsequently used their modified skills and monitored for effects.

Students' reflections were also saturated with descriptions of lessons learned from their early clinical experiences that seem to fall in the moral domain—what Shulman refers to as the *apprenticeship of the heart*. Many comments were made pertaining to empathic relationships with patients (e.g., patients' losses and gains, sense of conflict, patients' reactions to death and dying, difficulty talking with dying patients, students' emotional reactions, patients' emotional reactions to illness, patient-centered perspectives); patients' needs, lives, and experiences; and life's fragility and the power of the human spirit—and all of these fall into the domain of the apprenticeship of the heart, of professional emotional and moral development. Comments about student-related barriers to the medical work-up, about one's role as a student (e.g., personal gains, contributing to care) and developing as a physician (e.g., acculturation, challenge, power, privilege, responsibility), and about career choice (e.g., value of patient–physician relationships, enjoying tasks of doctoring and being in the hospital, affirmation of career choice) signaled that “habits of heart” are being learned and that a practice of integrity and respectability is launching.

One concern, repeatedly expressed, was the emotional conflict of using patients

for students' own learning while not directly contributing to patients' care. This conflict distressed students and led some to curtail their interactions with a patient and attempts to complete the physical examination. In turn, students discovered reasons why patients consented, how patients actually gained from the experience, and that they could contribute to patient care through their relationship with the patient. These realizations diffused the tension they had initially experienced. Suchman and Matthews'⁴⁰ article on the therapeutic dimension of the patient–physician relationship touches similarly on this concept of physicians' feeling immense rewards, personal value, and happiness from using their knowledge and skill to connect with patients and lessen their suffering, with the patients gaining relief from their isolation and despair. It was a revelation to some students that actively listening, sharing knowledge, being empathic and encouraging, and reassuring patients promotes the healing effects of the clinical encounter.^{39,41} Finding an effective way to help students become more self-aware of their therapeutic potential is an important next step for learning “habits of heart.”

Perspectives from learning theory help explain how students progress through each of the three intertwining apprenticeships. Students wrote about experiences that prompted activation of prior knowledge, skills, and beliefs; self-directed reading and reflection; experimentation; and practical application of new knowledge and skills during subsequent medical work-ups. By going through the sequence of these activities (referred to as *concrete experience, reflective observation, abstract conceptualization, and active experimentation* by Kolb),^{42,43} learning occurs, and, thus, students acquire physicians' habits of the head, hand, and heart progressively throughout the preclinical experience. Literature on principles of learning and characteristics of the adult learner^{38,44–46} also helps to explain growth in knowledge, skills, and attitudes. Students wrote about learning being active, goal oriented, contextual, and relevant, and about themselves feeling motivated, autonomous, and self-directed—all factors important to learning. They also commented about feeling valued, appreciated, and affirmed in their ability and interest in becoming

physicians and being with other physicians. The early clinical experiences nurtured self-esteem and self-efficacy (i.e., an expectancy that the required behavior to produce the outcome can be successfully executed), both of which are important to motivation and learning.^{47,48} Students' comments about developing an organizational framework and the ability to ask targeted questions, and producing more sophisticated differential diagnoses with time, reinforce that medical expertise is developing as a consequence of these early clinical experiences.⁴⁹

Limits and strengths of the study

This study has several limitations. First, the use of a sample at only one institution limits generalizability of results beyond MMS.³⁷ However, the number of reflections analyzed was large for a qualitative study, the racial and gender diversity suggests a nonhomogenous sample, and the early clinical experiences are fairly typical for medical students. Clearly, what functions early clinical experiences serve for students are likely to vary in relation to the curriculum and setting (i.e., inpatient versus outpatient) as well as by patients' characteristics (e.g., non-English speaking, cognitive or psychiatric impairment, dementia). Preclinical experiences typically involve patients who are carefully selected for their willingness and ability to facilitate students' acquisition of clinical skills, and who consent to having the student interview and examine them; thus, there is a selection bias. Students' experiences may differ depending on patients encountered. Our findings, however, can be triangulated with other researchers' findings. As in this study, others have found early clinical experiences to be perceived as positive by students,^{14,16–21,27} to reinforce students' commitment to become physicians,^{16,18,27,29} and to affect their career plans.^{12,15,21,22} Similarly, first- and second-year students elsewhere have also remarked about how clinical experience with patients gives them insight into the patient–physician relationship and physicians' privilege and power and facilitates their motivation and learning.^{18,21,27,29} Concerns among first- and second-year students generated from encountering dying patients and the limitations of medicine, from being invasive and asking sensitive questions, and from transforming from lay person to doctor, have also been observed by

others.^{29,50} In addition, comments about deriving meaning from interacting with patients, conflict between empathy and acculturating, anxiety from initial patient interaction, and a sense of guilt for using patients for the students' own learning, can be found in remarks from third- and fourth-year students.^{51–53} These similarities lend generalizability to our findings. Ultimately, the applicability of the findings and conclusions to other medical students elsewhere rests in the eyes of the reader.³⁷

Second, although students were free to write about whatever they wished, the same five questions were sent to them weekly to provide direction and stimulus for thought. These questions may have limited students' flexibility in relating their experiences and constrained the relevance of their answers.³⁷ On the other hand, the questions provided a framework that may have facilitated the comparability of responses, resulted in data being more complete on some topics, and assisted in the organization and analysis of the data,³⁷ resulting in increased potential for thematic saturation and improvement in internal validity. Additionally, the questions eliminated interviewer effect and bias.

Third, the course chair (L.N.D.) was both the recipient of students' writings and the grader of students' performances. This may have affected students' responses and candor, given the lack of anonymity. Students were assured that their responses were confidential, but it is possible that some statements, especially pertaining to career choice, were made in an attempt to generate a favorable impression even though it was specifically announced that the writing content would have no bearing (positive or negative) on the course grade. It would be ideal to have reflections sent to a neutral party; however, this is practically difficult because without the requirement to send it to the course director who provided feedback, students may be less likely to complete the reflective exercise.

Fourth, we did not analyze students' interactions with their peers and with faculty, both of which are factors in professional development. We believe, however, that such interactions are important and complex, warranting their own analysis, as expressed above. We do not believe that failure to include this

analysis in the current manuscript skews the results, because our intent was not to determine the most influential factor in early professional development but, rather, to characterize the impact of early encounters with patients.

This study has several strengths. First and foremost is the use of a powerful conceptual framework, the concept of apprenticeships, to gain insight into students' early patient encounters, explored using rigorous qualitative methods. The method used was unobtrusive, and the students' narrations were written before they knew that consent would be requested for research analysis, thereby minimizing the chance of the researcher's intent influencing the comments. Second, analyzing students' written comments to gain insight into their experiences has been demonstrated by others in settings within^{29,50–59} and outside³⁴ of medicine, and with first- and second-year students,^{29,56,57} to be useful and valid. Third, to our knowledge, ours is the largest U.S. study using a qualitative approach to explore students' clinical experiences and related perceptions, at a time when stress is high and psychological distress is prevalent among students.⁶⁰ The overarching dominance of positive comments reassures us that early clinical experience is unlikely to be a major culprit in this distress. The large sample size (for a qualitative study) and high participation rate also contributes generalizability to the results. In support of the qualitative findings that this early clinical experience taught "habits of head" and "habits of hand"³³ are other published quantitative studies of early clinical experiences suggesting resulting acquisition of clinical knowledge and skill^{13,24,25} and improved third-year clerkship performance.^{22,23} Fourth, we addressed issues related to the trustworthiness of the analysis, and the validity and reliability of the content analysis. Triangulation with the literature and respondent validation (i.e., member checking) lend credibility to our findings.⁶¹ The use of verbatim quotations conveys significant face validity.⁶² And, trustworthiness in identifying themes was supported through independent coder analyses of a sample of the data and a resultant high interrater reliability correlation. A similar approach to improve trustworthiness has been done by others.⁵¹ This approach

provides support for the applicability of our results beyond MMS.

Future goals

The process of reflecting on one's experience and writing about it seems to have brought emotional reactions and defenses to the forefront of some students' consciousness. Novack et al^{41,63} advocate for such self-awareness to facilitate personal growth and professional growth, and to support physician–healers in optimizing medical care and the sustainability of medical careers. How well writing requirements, without accompanying structured, in-depth discussions with colleagues and physicians, accomplish these goals is unknown and warrants study. Additionally, the stories told by these students will hopefully trigger research to evaluate how early clinical experiences should be optimally designed and supported to maximize their enormous potential.

Conclusion

This qualitative study has demonstrated the professional learning and development that occurs during and as a result of human suffering and disease pathology being seen firsthand, patients' personal and medical stories being heard, and classroom knowledge gaining a clinical context. Although early clinical exposure is intended to serve students, the mutuality of gain by students and patients is evident from the students' comments and is consistent with the literature,^{14,41,63–65} providing further support to the worth of such experiences.^{2,11,46}

Acknowledgments

The authors would like to thank Drs. Kathleen Hecksel, Rebekah Wheatley, David Archibald, and Aaron Krych for completing the member checking and for providing insightful comments.

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