

The Patient Perspective of Pharmacy Clerkship Students' Roles in Pharmacist-Patient Relationship Development and the Delivery of Care

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We studied patients' perceptions of pharmacy student participation in care and compared these perceptions to pharmacist-patient relationship constructs. A descriptive, cross-sectional mail survey design, with a probabilistic sample of anticoagulation clinic patients was used. The useable response rate ranged from 69 to 84 percent (97-117/140). Results revealed patients have favorable perceptions of students and their participation. These perceptions were significantly correlated with pharmacist-patient relationship constructs. More favorable perceptions of students were associated with higher patient ratings of Interpersonal Relationship Quality, and greater Collaborative Willingness with, and Felt Indebtedness toward the pharmacists. The presence of students in a practice setting likely affects patients' perceptions of care and the quality of the pharmacist-patient relationship.

INTRODUCTION

With the increasing demand of pharmacy clerkship sites(1), learning more about the effects of clerkship students at pharmacy practice sites may provide useful information to pharmacy educators and preceptors. To date, empirical studies, proposed models and commentaries addressing the impact of clerkship students largely have focused on economic costs and benefits(1-5), site work output(6-8), health care providers' use of time(4,9,10), and students' clinical contributions to patient care(5,10-15). Few have studied effects of students from the perspective of patients. Of those who have studied patient perspectives, within pharmacy and also medicine, none appear to have investigated the association between clerkship students' interpersonal patient care roles and the relationships patients have with their health care providers.

The pharmacist-patient relationship is understood to be a foundational necessity of pharmaceutical care(16) and collaborative decision-making around medication use(17). The pharmacy profession emphasizes the building of relationships as covenants between patient and pharmacist(18). In pharmacy practice settings, patient-student communication may either detract from or foster greater pharmacist-patient relationship development. Pharmacist-patient exchange may be limited by quantity and quality because of the demands students place on their preceptors and the sites themselves. However, the presence of students may offer opportunities for more active patient participation in care as they are drawn into participating in the students' experiential training. It is proposed here that student-patient interactions during clerkships are neither neutral to the pharmacist-patient relationship, nor are they unrelated to the patient's interpersonal experience of care.

We chose to explore patients' perceptions of pharmacy clerkship students and to test the associations between these perceptions and the nature of the relationship patients report

having with their pharmacists. To accomplish these goals, we summarized the relevant, published literature in medicine and pharmacy related to clerkship student participation. This literature is categorized as follows: the impact of students on providers' use of time, the role of clerkship students, and patients' perceptions of students. We also used Donabedian's conceptualization of quality health care, together with social exchange theory and its related theoretical extensions as a framework to understand the pharmacist-patient relationship and the role students may assume in the eyes of the patient.

BACKGROUND LITERATURE

Pharmacy and Medical Student Impact on How Provider Time is Spent

Researchers provide mixed results as to the time commitment needed by pharmacy clerkship preceptors(4,9,10). Tannenbaum and colleagues surveyed a national sample of community pharmacy preceptors and found 86 percent reported students motivated them to improve their level of practice(9). Only 12 percent reported student orientation and teaching took too much time. According to Anderson, about 75 percent of hospital staff and directors responding to a regional survey agreed that the time needed to precept students detracts from patient care and research activities(4). More than 50 percent of clinical staff pharmacists in this study estimated they spend 4-8 hours per day with clerkship students(4). These numbers sharply contrast the average of 4-7 hours per week found in an inpatient work measurement study of six clerkship students' activities(10). Although likely to vary, it is arguable that students influence the amount of time pharmacists spend serving as preceptors, which in turn impacts time available for preceptors to spend with patients.

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Larger observation studies in ambulatory medical practice provide a comparison of the quantity and quality of time spent by physicians with or without medical students present. In a time and motion study, Vinson and colleagues learned academic and non-academic family practitioners spent more time overall at work when students were present, but that significantly less time was spent in patient-centered activities(19). Looking specifically at the patient-centered activity of "talking to patients" (outside of history taking and procedures, etc.), the investigators found academic physicians spent less time talking with patients, while non-academic physicians spent more. Frank et al. recorded observations of ambulatory physicians' use of patient-centered time and concluded student presence did not affect the amount of time spent with patients, but rather, how time was spent(20). When students were on site, physicians spent more time structuring the interview and talking about another family member's problem, and less time providing feedback and answering questions. No significant differences were found between the amount of "chatting" or "counseling" when the clinical encounter involved a student or not, nor was patient satisfaction with the clinical encounter any different(20). Perhaps the physicians in the study facilitated relationship-building by not altering the extent to which they chat socially with patients during care provision, and by showing a willingness to discuss other matters important to the patient (e.g., family member's problems), thus building rapport and patient trust.

Whether it is the quantity or quality of time providers spend with patients, researchers reveal the time and resources devoted to training students likely influences the patient's experience with the provider. One effect may be on the provider-patient exchanged-based relationship. Within a service context, every service encounter provides opportunity for social occasions and social exchanges that contribute to interpersonal relationship developmental(21). Opportunities may be lost for furthering provider-patient relationship development if providers spend less time with patients, or if time is spent differently, when students are present. Also, time spent with students may give patients more opportunities for making comparisons between the provider and student which may influence subsequent provider-patient interaction and relationship building. In considering this, it becomes clear that the role of students, and the amount of independence students have in pharmacy clerkship sites, become important.

Pharmacy and Medical Students' Roles in Patient Care

Slack and Draugalis offer useful theoretical models for conceptualizing and explaining pharmacy student roles and contributions in the practice site(7). The Employee Model asserts clerkship students function as "less experienced colleague[s] of the practitioner"(7, p. 526), generating their own output, independent of the preceptor. In the Non-Employee Model, the student acts less independently, influencing the preceptor's output. The student supervision required within the Non-Employee Model suggests pharmacists' time spent with patients may be shortened or modified, as was demonstrated in the observational studies within medicine(10,19,20). Employee Model clerkships which foster independent interaction between student and patient(7) would likely lessen patient contact with pharmacists and influence the quality of the pharmacist-patient relationship. Also, whether patients perceive students as working independently or in conjunction with a pharmacist may influence patient perceptions of student roles.

Three pharmacy investigations show the extent to which a

limited number of pharmacy clerkship students performed and documented clinical interventions during their clerkships(10,11,15). Clearly, it is in pharmacy clerkships where students apply and integrate information learned in didactic course work to actual patient care situations(22). Researchers in pharmacy who study the roles and impact of pharmacy clerkship students often highlight the technical competency of the students rather than the interpersonal activities that also compose quality health care(23). It is arguably the interpersonal roles in delivery of care that may be noted by patients and associated with the relationship between patient and provider (pharmacist or physician).

In medicine, patients recognize and accept the interpersonal care, and less so the technical care that students are capable of delivering(24,25). Magrane and colleagues studied patients' and medical students' expectations of students' roles in providing care in an inpatient obstetrical site(24). Students had higher performance expectations for themselves, compared to patients' expectations, regarding the amount and quality of their (student) participation in the technical aspects of care. Obstetrical patients who agreed to allow a medical student to participate in their intrapartum care expected students to be capable of providing emotional support during childbirth, and subsequently rated the students higher in their empathic and support skills and lower in their medical and technical skills(24).

In a unique study, first-year medical students were placed in regular one-on-one contact with chronically ill patients to help students learn about the effects of illness on patients and their families(25). Patients' physicians evaluated student contributions to patient care. One-third reported receiving significant and new information from students related to medical care and health behaviors, patient and family background, and physician-patient relations. Although the study did not include patients' evaluations of the students with whom they interacted, the students reported learning how to listen, empathize and communicate with patients.

Patients' Perceptions of Medical Students

Although less studied in pharmacy, researchers in medicine have studied patients' perceptions of students and of the quality of care received by students, as well as patients' willingness to be seen by students. One common finding in these studies is that most patients respond favorably to students, regardless of their technical contributions to care. Patients note students' empathy, sincerity, respectfulness and tendency to use less jargon than their licensed colleagues. In a study of medical students on an inpatient surgical unit, York et al.(26) found there was no significant difference in patients' ratings of students' interpersonal aspects of care when comparing across students' differing levels of clinical experience. Over 92 percent of surveyed patients believed they had benefitted from student involvement, noting the greater amount of time spent and greater expressed concern by students compared to physicians.

Similarly, other researchers have found patients favorably responding to students and their delivery of care. In one study, hired patients were trained to evaluate first- and third-year medical students' clinical skills during a simulated encounter(27). The findings showed very favorable ratings on communication skills, general manner and respect. In actual patient care contexts, these findings have been supported and replicated. A survey of patients in an academic internal medicine clinic showed only ten percent of patient respondents dis-

liked their time with medical students, and close to half reported they enjoyed the encounters(28). In a study by King et al.(29), older adult patients were interviewed by a physician unknown to them about their attitudes toward students being present during their hospital care. Nineteen percent of the patients interviewed felt able to discuss their illness more frankly with students and nearly one-fourth felt more at ease with students than with their physicians. A study of hospital discharged patients' satisfaction with medical students(30) revealed patients were very satisfied, on average, with student's interpersonal qualities (e.g., caring, listening, understanding). Jones and colleagues(31) surveyed patients in an ambulatory general practice setting and found 71 percent would unconditionally allow a student to be present during their appointment with the physician. Open-ended questions on the survey generated mostly positive comments about the students, including claimed personal benefit from the presence of a student and descriptions of students as being supportive and having pleasant dispositions(31).

THEORETICAL FRAMEWORK

The ability and willingness to take more time with, listen to and express empathy for patients is a critical part of the interpersonal domain of quality health care described by Donabedian(23). Patients appear to take note of and appreciate the interpersonal skills of students. Perhaps while realizing the less developed technical expertise of students, patients appreciate the extra time and attention they may not receive from providers due to the latter's additional responsibilities and roles. Patients' appreciation of students may influence the quality of patient care perceived and received by the patient. Also, patients who interact with students may develop different expectations about care. Patients may change the way they choose to interact with licensed providers based on concurrent communication with students, thus influencing the quality of their relationship with the provider.

An additional role of students may be one of fulfilling a need for reciprocation by patients. Students at clerkship sites where patients know their pharmacists well may become the third party to a well-established pharmacist-patient dyad. Social exchange theory reveals relationships to be built on repeated social exchanges of resources(32-34) such as information, affirmation, and services, all varying by degree of tangibility and symbolism(35). A norm of reciprocity is believed to exist in exchange(32-34,36), and when reciprocation is difficult, indebtedness and a search for novel ways to reciprocate is believed to result(37). A third party to an established dyad can function as recipient in this exchange(37,38). For example, patients who appreciate a pharmacist who far exceeds their expectations for care, may resultantly feel indebted to this pharmacist and express a greater willingness to participate with students. Thus, patients may not only perceive students as contributing to the care they receive(24,25), when asked to participate in the education of a clerkship student, they may accept in an apparently altruistic way(24), possibly motivated by feelings of indebtedness.

Applying theoretical concepts from social exchange theory(32-37), three constructs believed to reflect components and dynamics of the pharmacist-patient relationship were proposed and used in this study. Two constructs used to capture patients'

responses to their pharmacists within the exchange context of this service-based relationship were patients' Felt Indebtedness toward, and Collaborative Willingness with, their clinic pharmacist. A third construct, Interpersonal Relationship Quality was proposed to measure patients' perceptions of their pharmacists' social exchange-based, affective qualities, focusing on the interpersonal domain of quality health care(23).

RESEARCH HYPOTHESES

Based on available research in medicine and pharmacy, we proposed the following two hypotheses:

- H1: Patients' perceptions of pharmacy clerkship students are favorable.
- H2: Patients' perceptions of pharmacy clerkship students are associated with the relationships patients have with their pharmacists at the corresponding clerkship sites.

METHODS

Study Setting and Design

An exploratory, cross-sectional investigation into the pharmacist-patient relationship in a clinic that serves as a pharmacy ambulatory clerkship site provided an opportunity to study associations between patients' perceptions of pharmacy student participation in care and patients' relationships with their pharmacists¹(39). The site of the study was a Department of Veterans Affairs (VA) ambulatory anticoagulation clinic that is managed and staffed by two pharmacists. Pharmacists at the clinic provide patients with warfarin monitoring and management services, while also providing clerkship students opportunities to learn how to interview patients and problem-solve with them in managing their medication use. In the clinic, students function under conditions resembling the Non-Employee Model(7). Students wear name tags and introduce themselves (as students) to patients prior to interview. Following student-patient interaction, students and pharmacists conference together apart from the patient. Both student and pharmacist return to the patient to formulate the assessment and plan.

The full study, reported elsewhere(39), consisted first of semi-structured interviewing of a convenience sample of clinic patients for means of exploring patients' perceptions of the pharmacist-patient relationship and its association with student involvement in the clinic. Following this, a mail questionnaire was developed for the gathering of quantitative data for statistical analysis. The data reported here were collected from this questionnaire. A probabilistic sample of 200 patients was surveyed from the population of clinic enrollees.

Data Collection and Analyses

Three pharmacist-patient relationship constructs were defined and operationalized using multi-item measures. Patients' Felt Indebtedness toward, and Collaborative Willingness with, their clinic pharmacist were measured using unipolar frequency scales ranging from Never =1 to Always =5. Following measure purification, Felt Indebtedness, defined as a patient's state of thinking and/or feeling that there is a need to reciprocate in some manner with the pharmacist, was measured using two items ("I feel I want to repay the pharmacist in some way" and "I feel I owe the pharmacist something in return"). Collaborative Willingness, defined as the patients' likelihood to self disclose and collaborate with the pharmacist, was measured with five items, including statements about patients' likelihood to ask questions of the pharmacist and talk to the pharmacist about warfarin-related, health-related and

¹The original study was conducted in this clinic and one other university-affiliated clinic. Data collection in the latter clinic did not include patient perceptions of students.

Table I. Patients' perceptions of pharmacy student participation

How much do you feel that...?	Never	A little	Sometimes	A lot	Always	M ^b	SD
... you enjoy talking with the pharmacy students who come to this clinic. (N = 116)	0.9 ^a	6.0	25.0	16.4	51.7	4.12	1.04
... your time is well spent when the students talk to you. (N= 117)	0.8	6.8	19.7	30.8	41.9	4.06	0.99
... the students add to the care you get at this clinic. (N=115)	0	11.3	18.3	26.1	44.4	4.03	1.04
... talking with the students at this clinic is a bother for you. (N= 111)	82.0	6.3	5.4	2.7	3.6	1.40	0.97
... you help the students to learn. (N = 114)	0	7.0	24.6	31.6	36.8	3.98	0.95
... if you could, you would choose not to talk with the students. (N = 112)	79.5	8.9	8.0	1.9	1.8	1.38	0.85
... when talking to the students, you try to make it easier for them. (N = 116)	1.7	5.2	12.1	28.5	52.6	4.25	0.98
... the students help you in ways that the clinic pharmacist does not. (N = 105)	49.5	22.9	16.2	6.7	4.8	1.94	1.17

^a Numbers are percentages based on response frequencies.

^b Means calculated based on scale values of: 1=Never, 2=A Little, 3=Sometimes, 4=A Lot, 5=Always.

Table II. Pearson correlation coefficients of pharmacist-patient relationship constructs (scales) with items measuring patients' perceptions of pharmacy student participation, and scale diagnostics (N = 97-115)

How much do you feel that...?	Felt indebtedness	Collaborative willingness	Interpersonal relationship quality
... you enjoy talking with the pharmacy students who come to this clinic.	0.273 ^a	0.344 ^a	0.335 ^a
... your time is well spent when the students talk to you.	0.317 ^a	0.340 ^a	0.328 ^a
... the students add to the care you get at this clinic.	0.296 ^a	0.292 ^a	0.233 ^b
... talking with the students at this clinic is a bother for you.	- 0.078	0.044	- 0.010
... you help the students to learn.	0.083	0.234 ^b	0.329 ^a
... if you could, you would choose not to talk with the students.	- 0.266 ^a	- 0.123	- 0.096
... when talking to the students, you try to make it easier for them.	0.218 ^b	0.292 ^a	0.326 ^a
... the students help you in ways that the clinic pharmacist does not.	- 0.037	0.015	- 0.164
Internal Consistency of Scales	0.773 ^c	0.812 ^d	0.980 ^d
Variance Explained (by single factor solutions)	88.6 %	59.2 %	72.4 %

Notes: Higher scores on relationship constructs indicate: greater Felt Indebtedness toward pharmacist, more Collaborative Willingness with pharmacist and more favorable rating of pharmacist's Interpersonal Relationship Quality. For more information about these constructs, see Study Methods. Individual items scale: Never = 1, A Little = 2, Sometimes = 3, A Lot = 4, Always = 5.

^a $P < 0.01$ (two-tailed).

^b $P < 0.05$ (two-tailed).

^cPearson Correlation Coefficient.

^dCronbach Coefficient Alpha.

non-health related issues. The third construct, Interpersonal Relationship Quality, was defined as the patients' perceptions of their pharmacists' social exchange-based, affective qualities including the degree of caring, trustworthiness and respectfulness displayed in the service context. It was measured using the original twenty-one items and a unipolar rating scale ranging from Awful = 1 to Outstanding = 7. Scale diagnostics were conducted on all three measures including principal component and reliability analyses.

To study patients' perceptions about pharmacy student participation in their care, eight additional questions were asked of respondents (scale ranged from Never = 1 to Always = 5. Patients were asked about their interaction (social exchange) with the pharmacy students. Questions incorporate the categories found in the literature pertaining to student impact. They ask about the time patients spend with students (e.g., "How much do you feel that your time is well spent when the students talk to you?"), the role students play in providing care (e.g., "How much do you feel that the students add to the care you get at this clinic?"), and the reactions patients have to the students themselves (e.g., "How much do you feel that you enjoy talking with the pharmacy students who come to this clinic?"). See Table I

and Table II for a complete list of the questions.

A descriptive analysis of patients' responses to these questions was conducted to examine how favorably patients perceive the pharmacy clerkship students. Pearson correlations (two-tailed, $P < 0.05$) were conducted to compare each individual item measuring patients' perceptions of student participation with each of the three pharmacist-patient relationship constructs.

RESULTS AND DISCUSSION

The overall response rate from the 200 mailed surveys was 70 percent (140/199, one survey was undeliverable). The number of responses useable for this analysis ranged from 97 to 117 of the 140 respondents who had contact with clerkship students. Respondents were instructed to answer the eight additional student-focused questions only if they had interacted with at least one pharmacy student at the clinic. All useable responses were from men with a mean age of 67.6 years (SD 8.8 years). Patient population statistics were not available for comparison.

Scale diagnostics revealed acceptable variance explained and acceptable reliability(40) with Cronbach Coefficient alpha values greater than 0.60 (see Table II). Cronbach coefficient

alphas for Collaborative Willingness and Interpersonal Relationship Quality were 0.812 and 0.980, respectively. The Pearson correlation coefficient between the two items measuring Felt Indebtedness was 0.773. The variance explained by each single factor solution ranged from 59.2 to 88.6 percent. Complete results of scale purification are reported elsewhere(39).

Patients' Perceptions of the Pharmacy Students

Responses were favorable toward student participation, consistent with studies of patients' evaluations of medical students that highlight the interpersonal domain of patient care(32,33). (See Table I for descriptive results.) Only 18 percent of respondents indicated talking with the students was at least a little bothersome for them, and 20 percent of the patients reported they would choose not to talk with the students at least a little of the time. Over 66 percent of respondents stated they enjoy talking with the students a lot or always. All but one respondent indicated at least a little enjoyment when talking with the students and that time is well spent. In terms of patient-perceived student roles, and student-patient exchange, all respondents indicated the students add to the care they receive at the clinic, at least a little, similar to findings from York et al. who found over 92 percent of patients believing they benefitted from medical student participation(32). Also, half of the patients surveyed indicated the pharmacy students help them in ways the clinic pharmacists do not.

As a means of addressing student-patient roles and the possible exchange from patient to student, patients were asked how much they feel they help the students to learn and how much they feel they try to make it easier for the students. A clear majority of the patients responded with "a lot" or "always" (68.4 and 81.1 percent, respectively) suggesting there may be some altruism on the part of patients. "Making things easier" for students may include helping the student feel comfortable and making their tasks easier by readily offering information. Both of these possibilities were confirmed in a small convenience sample of patients interviewed as part of the larger study(41). Further research is required to investigate this distinction and to determine whether patients understand what students are required to do during their clerkships.

Some patients may be more favorable toward pharmacy clerkship student interaction and more willing to interact with these students for the reason of helping the students in their education, just as patients have indicated this willingness with medical students(24,35). Magrane, Gannon and Miller suggest "faculty members, as well as students, underestimate patient altruism"(24, p. 301). Although earlier studies involved medical students and hospital inpatients, (women in labor and older adults)(24,35), our study involved pharmacy students and male veterans in an outpatient clinic. Evidence of patient altruism across different patient populations and different practice settings provides some external validity to the claim, however, further study of patient evaluation of and motivation to interact with clerkship students in other populations and settings is needed before drawing any conclusions.

Patient Perceptions of Pharmacy Students and the Pharmacist-Patient Relationship

A correlation analysis of the three pharmacist-patient relationship constructs with the eight items measuring patients' perceptions of student participation in their care reveal some significant associations (see Table II). The three relationship constructs were positively correlated (two-tailed, $P < 0.05$)

with items measuring patients' enjoyment in talking with students, and patients' feelings that time with students is both well spent and an addition to their care. These results suggest that the better the pharmacist-patient relationship in terms of high ratings of pharmacists' Interpersonal Relationship Quality and greater patient Collaborative Willingness with, and Felt Indebtedness toward their pharmacist, the more favorably patients think of the students.

Other findings seem to support social exchange theory principles. Responses to the "making things easier" question were positively correlated with the relationship variables revealing patient willingness to help students may be explained, in part, by positive experiences with their health providers in the same setting. In a sense, patients may take the opportunity to reciprocate to students (the third party in the dyad with the provider) if they feel indebted toward their providers in some way. Thus, patients who have good relationships with their pharmacists may be more willing to interact with students as a means of giving back for what they have received.

Similarly, patients' desire not to talk with students was negatively correlated with Felt Indebtedness toward their pharmacist (two-tailed, $P < 0.05$). Those patients who felt less indebted to their pharmacist for the care they receive seem to have a greater preference for not talking with the students. Interpreting this further, greater Felt Indebtedness toward a pharmacist may mean greater patient willingness to interact with students (the third party to the original pharmacist-patient dyad). Applying an extension of social exchange theory, in an exchange-based relationship dyad (pharmacist-patient), patients will search for opportunities to reciprocate and may use a third party (students) when indebtedness is high and reciprocation within the dyad is difficult(31).

IMPLICATIONS FOR PHARMACY EDUCATORS

Study findings raise, but do not address, questions of influence. Is the presence and active participation of pharmacy students influenced by pharmacist-patient interaction and rapport, or do pharmacy students somehow influence the development of, and exchange-based building of, pharmacist-patient relationships? In explaining the correlations between the pharmacist-patient relationship variables and patients' perceptions of the students, another possible explanation is that pharmacists with exceptional interpersonal skills may have a positive impact on students' development of interpersonal skills within the realm of patient care. Precepting, and the examples of pharmacist-patient interaction that students observe during clerkships, can encourage and teach students to interact well with patients, thus indirectly influencing patient perceptions and value of the students. Community pharmacy clerkship selection criteria emphasize pharmacy service availability, the patient care environment, the patient population, and the communication skills and attitudes of site preceptors(42). Those setting forth criteria also should consider the interpersonal skills demonstrated by other pharmacists on site, as well as the extent to which established pharmacist-patient relationships may add educational value for students.

When considering the extent of involvement of students in some practice sites, it is important to note those things that may be taken for granted: if the patient is bothered by seeing the student, and how the student may contribute to or detract from care beyond the technical activities. First, nearly 20 percent of the patients surveyed from this population responded to varying degrees, that if they could, they would choose not to see a

student in the clinic, at least a little bit. Some patients choose not to assume an active, collaborative role within the context of medication management(17) and may respond differently to students than more active patients. Also, whether it is because of time constraints or more personal reasons, one would imagine in some clerkship sites, patients' preferences in this regard not being noted or obtained due to oversight or inconvenience. Even in cases when patients are asked if they would mind interacting with a student, a socially desirable response may result.

We collected data in an academic clinic setting in which patients schedule appointments and are aware that the clinic serves as a clerkship site for pharmacy students at an affiliated university. In the community pharmacy setting, where introductions may not be made and care is not appointment-based, patients may not be aware they are receiving care from pharmacy clerkship students. If aware, they may not realize they have a choice to talk with the licensed pharmacist instead. Also, from the pharmacist perspective, pharmacists in nonacademic community settings may respond differently in their use of time with patients and students as was demonstrated in studies of physicians(19,20).

Half of the patients in our study claimed the pharmacy students help them in ways the clinic pharmacist does not. How the students help the patients in this way is not known. These results, however, suggest the roles and work output of the pharmacy clerkship student need to be considered in regard to the interpersonal domain of care as well as the technical. Both are indicators of students' level of professionalism(43,44). Students serving in clerkships, by convention, are presumably less capable of providing the technical aspects of patient care. Pharmacy students may be more likely to influence patient care and pharmacist-patient relations by providing some of the interpersonal aspects of care the patients need. Although investigations of student contributions to the technical aspect of care are of value, the extent to which the interpersonal aspect of care is augmented by students and the ways it may foster greater patient participation also needs to be investigated.

In the clinic studied, student output follows the Non-Employee Model(7); students are less responsible for independent work output, and may have more time than their preceptors to talk with patients. Students may be perceived as being more approachable than the pharmacists or more in need of the patients' time for learning purposes, prompting a patient's willingness to interact and behave in a collaborative manner. As students participate with patients, they may provide patients the opportunity to learn more about practice ideals of the profession and what is involved in pharmacy student education. In this way, patients may change their expectations and learn about new pharmacist roles, affecting future pharmacist-patient relationship development.

LIMITATIONS

The study is limited in its scope and generalizability due to the pharmacist-patient population and setting. Possible biases are present due to age, gender and veteran status. It was conducted in one university affiliated VA clinic in which female pharmacists provide the warfarin management and monitoring needs of mostly older, male veterans. This study focused on the interpersonal domain of care, but patients' perceptions of students may reflect variations in students' technical competency.

As with other studies, the patients studied had mostly positive perceptions of the students in the clinic. Although social

ly desirable responses are possible in this patient population, in part because care is provided without fees, variation was found among patient responses, and all response categories were used. Measures were new and require further use and validation in other populations. The wording of the eight perception of students items asking "how much" together with the frequency scale chosen may have influenced patient responses, and could be reworded to ask "how often" in subsequent use of the measure. This distinction, however, is less critical than the ultimate test of the measure that is found in its theoretically confirmed associations among the relationship variables(40, p. 9). The descriptive data with correlations provide an initial look at the issues surrounding patient perceptions of pharmacy clerkship students and their association with the pharmacist-patient relationship. Results provide reliable data, which not only support related research in medicine regarding the patient perceived value of students' interpersonal skills, but provide a starting point for studying the influence of students on developing relationships between pharmacists and patients. Future research should be considered to investigate the effects of clerkship students in a variety of pharmacy settings using a multi variate or quasi-experimental approach.

CONCLUSION

Our study was prompted by the apparent paucity of systematic, empirical research addressing the patient's perspective of pharmacy clerkship student participation in practice sites and the association between student participation and pharmacist-patient relationship development. Results appear to comply with the distinction between the interpersonal and technical domains of care and theoretical principles of reciprocity and exchange. Good pharmacist-patient relationships may impact the behavioral and attitudinal responses patients have toward students, prompting greater willingness to speak with students and be part of their education. From the other perspective, patients who enjoy the interpersonal interaction with students subsequently may alter their expectations of, and interactions with, their pharmacists in comparison to the students.

Our intent was not to generalize empirical findings, but to use them and the earlier research reviewed to generate discussion about the possible associations between student participation, patient perceived quality of care and pharmacist-patient relationship development. Based on existing literature and study findings, and in light of the profession's desire to become more patient-centered, there is an apparent need for preceptors, pharmacy educators and researchers to consider and study the impact of clerkship students on both patient care and the pharmacist-patient relationship, from the patient perspective. These issues are important, as a good relationship with pharmacists and other health care providers may foster patients' willingness to interact with students, resulting in a better clerkship learning environment, while contributing to the quality of patient care.

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