

RESEARCH ARTICLES

Comparison of Patients' Expectations and Experiences at Traditional Pharmacies and Pharmacies Offering Enhanced Advanced Pharmacy Practice Experiences

Rosemin Kassam, BScPharm, PharmD, John B. Collins, PhD, and Jonathan Berkowitz, PhD

Faculty of Pharmaceutical Sciences, University of British Columbia

Submitted July 15, 2009; accepted October 24, 2009; published June 15, 2010.

Objectives. To compare patients' expectations and experiences at pharmacies offering traditional APPE learning opportunities with those offering enhanced APPEs that incorporate pharmaceutical care activities.

Methods. A survey of anchored measures of patient satisfaction was conducted in 2 groups of APPE-affiliated community pharmacies: those participating in an enhanced APPE model versus those participating in the traditional model. The enhanced intervention included preceptor training, a comprehensive student orientation, and an extended experience at a single pharmacy rather than the traditional 2 x 4-week experience at different pharmacies.

Results. While patient expectations were similar in both traditional and enhanced APPE pharmacies, patients in enhanced pharmacies reported significantly higher in-store satisfaction and fewer service gaps. Additionally, satisfaction was significantly higher for patients who had received any form of consultation, from either pharmacist or students, than those reporting no consultations.

Conclusion. Including provision of pharmaceutical care services as part of APPEs resulted in direct and measurable improvements in patient satisfaction.

Keywords: advanced pharmacy practice experience, patient satisfaction, pharmaceutical care, community pharmacy

INTRODUCTION

Over the past decade, colleges and schools of pharmacy across the United States and Canada have undertaken significant curriculum revisions to incorporate the philosophy and practice of pharmaceutical care.^{1,2} Along with these revisions, the learning objectives and expected activities of the advanced pharmacy practice experience (APPE) component have also been revised. Today, within community pharmacy-based APPEs, students are expected to engage in activities that go well beyond dispensing and counseling to include management of acute and chronic diseases through the provision of pharmaceutical care. These processes commonly involve: conducting assessment of patients' drug and medical concerns when filling new or refill prescriptions; providing consultation on non-prescription products; providing individualized medication reviews; developing care plans; providing patient specific interventions; collaborating with other health professionals

to optimize patients' drug therapy; and monitoring patients' progress through follow-up care to ensure desired outcomes are achieved.¹⁻³

While considerable progress has been made in implementing patient-centered experiences within APPEs, many community pharmacy managers continue to do so reluctantly.⁴⁻¹² Given the limited reimbursement for pharmaceutical care services, the increased work pressures due to pharmacist shortages, the perceptions that experiential sites do not derive direct benefits from training students, and the belief that patient satisfaction is already being met based on studies involving traditional pharmacy practice models, many managers question the value of committing their pharmacists' time and effort to incorporate pharmaceutical care activities within their APPE programs.^{4,8,13-15} Hence, if pharmacy schools are to succeed in engaging community pharmacy APPE stakeholders to expand students' learning opportunities to include pharmaceutical care, APPE program evaluation will need to employ strategies that demonstrate the value of such activities. This view was echoed in 2 editorials appearing in the *Journal* that suggested colleges and schools of pharmacy will need to incorporate evaluation processes

Corresponding Author: Rosemin Kassam, BScPharm, PharmD, Faculty of Pharmaceutical Sciences, University of British Columbia, BC, Canada. Tel: 604-822-7181. E-mail: rokassam@interchange.ubc.ca

to quantify the direct value offered by APPE students at experiential sites in order for managers to commit staff time to create meaningful experiences for students.^{16,17}

As with community pharmacy APPE sites across North America, most of the community pharmacies affiliated with the University of British Columbia's (UBC) pharmacy program have yet to be convinced of the benefits of incorporating pharmaceutical care opportunities for students. Accordingly, the Structured Practice Education Program (SPEP) at the UBC Faculty of Pharmaceutical Sciences incorporated multiple measures to quantify the impact of its revised community-based APPE. Starting in 1999, the SPEP faculty undertook a collaborative and iterative process to enhance its community-based APPE by adding, deleting, and revising the syllabus, details of which have been published elsewhere.¹⁸⁻²² As part of this process, 3 recommendations were made to enhance the existing APPE: (1) the SPEP faculty was to provide preceptors with an educational program to support them in their role as educators and facilitators; (2) the SPEP faculty was to provide students with an onsite orientation program prior to the start of their APPE to ensure preparedness; and (3) the UBC Faculty was to consider restructuring its APPE from 4 weeks at 2 different community sites to 8 weeks at a single site. Working within the collaborative spirit of the new relationship between the SPEP faculty and the community pharmacy stakeholders, the partners made a strategic decision to undertake a pilot study to assess the impact of all 3 interventions at the outset, with the intent to use future studies to better understand the impact of each recommendation separately.

The partnership joined the university with 2 of Canada's national community pharmacy chains to pilot the enhanced APPE. The university agreed to develop and deliver a preceptor educational program and to undertake a series of evaluations to assess its impact. In return, the chains agreed to grant their pharmacists free time to attend an educational program and to support the costs of delivering it and evaluating its impact.

This was a two-part study. The first part of the study (published elsewhere) was to operationalize patient satisfaction with pharmaceutical care for community pharmacy-based APPE programs and to conduct psychometric analysis of the satisfaction instrument.²³ The intent of the second part, described herein, was to evaluate the impact of an enhanced APPE model on patient satisfaction. Specifically, the objectives were to: (1) contrast patients' generic expectations of pharmaceutical care services against their in-store experiences, (2) compare these expectations and experiences between those pharmacies participating in an enhanced APPE model versus a traditional (control) APPE model, (3) compare service gap patterns between

these 2 groups of pharmacies, and (4) determine the impact of the enhanced patient consultation model on patient satisfaction compared to satisfaction with the traditional model.

METHODS

A quasi-experimental, posttest-only design with a nonequivalent control group was used. The study was conducted between September 2002 and May 2003 in Vancouver, British Columbia, Canada. Ethics approval previously had been obtained through UBC's Office of Research Services.

A list was constructed enumerating all community pharmacies affiliated with the 2 national chains that (1) had histories of participating as an APPE site for UBC students and (2) had declared interest in participating in an enhanced version of the APPE model. Considering proportional representation from urban and rural setting, the first 4 pharmacies from each chain to sign up for the enhanced APPE model were invited to participate in the treatment (enhanced) arm of the study. The next cohort of pharmacies from the same 2 national chains that agreed to participate in the enhanced APPE model were matched to treatment arm pharmacies with respect to geographical location and community size, and were invited to participate in the control (traditional) arm of the study. To counter challenges of "withholding treatment," their participation in the enhanced APPE model was ensured but delayed by 1 academic year. The first 11 pharmacies agreeing to participate were recruited into the control arm. The remaining interested pharmacies were scheduled to participate in the enhanced APPE model over the subsequent 2 to 4 years. All pharmacies participated in the APPE for 8 weeks, from January to April. While most pharmacies had 2 registered preceptors, a few had 1 or 3, but these were evenly distributed between the 2 arms. While enhanced sites took 1 student for the 8-week period, the control sites took 2 students at different times, each for 4-weeks. All pharmacies received the standard C\$100 (US\$65) per 8 weeks of participation offered to all APPE sites for their teaching contributions.

Student participation in the treatment arm was voluntary. Because the design of the enhanced APPE model was new and its full impact not yet assessed, there was a potential that the enhanced learning environment would require additional commitment from students beyond participation in the control arm. The treatment APPE was advertised to all fourth-year (senior) students through e-mail and class presentations. Interested students were interviewed, recruited, and placed in geographical sites of their preference. Students in the control arm were placed according to the pharmacy school's normal placement

process, a procedure that asked students to identify their top 5 geographical regions and the school randomly assigned them to 2 pharmacies within their preferred regions.

Irrespective of the study arm in which they were enrolled, all students were expected to meet similar learning objectives and participate in the same learning activities, and were held to the same learning and performance criteria and evaluation standards. The specific competency-based skills and proposed learning activities for the community pharmacy APPE are summarized elsewhere.²³ All students were also required to participate in a mandatory 3-hour face-to-face orientation session and an online quiz reinforcing the experiential expectations prior to the start of their APPE. Additionally, each student and each preceptor received the SPEP manual that outlined these expectations, and all were equally supported through verbal telephone and written e-mail communication on an as-needed basis.

The enhanced APPE model differed from the traditional APPE model in 3 aspects: (1) unlike the traditional 2 x 4-week APPE, the enhanced APPE was delivered as an 8-week experience in a single pharmacy; (2) preceptors in the enhanced arm were offered a 2-day preceptor education program; and (3) students in the enhanced arm participated in 5 nonconsecutive days of onsite orientation prior to the start of their APPE. The first day of the preceptor educational program: (1) provided an overview of the community pharmacy APPE expectations and learning activities; (2) delivered a discussion on the pharmaceutical care philosophy, practice model, process, and tools; (3) conducted a discussion on how to facilitate clinical reasoning in students; (4) provided effective feedback and evaluation; and (5) offered tips on how to orient patients and pharmacy staff to students' roles, responsibilities and activities prior to the students' arrival. Day 2 of the preceptor education program focused on applying the pharmaceutical care principles and tools presented on day 1 to patients with asthma, using large group discussions and small-group case-based discussions. The 5 days of nonconsecutive onsite orientation allowed students the opportunity to familiarize themselves with the distribution and patient care processes at their APPE site, to initiate comprehensive pharmaceutical care with 1 patient, to present their patient work-up to their peers at the university, and to attend periodic meetings with the SPEP faculty to discuss their orientation experiences.

A 2-scale pharmacy satisfaction survey was used to assess patients' expectations and experiences with service delivery in both the treatment and control arms.²³ The survey instrument contained 15 items: an innocuous introductory item ("Staff are pleasant and courteous to me"),

followed by 14 questions representing the pharmaceutical care domain (developing a relationship, assessing patients, clarifying the role of medications, developing a pharmacy care plan, working collaboratively with other health care providers, and providing follow-up to patients) with each item phrased as a personalized service-delivery feature. On the left side of the survey instrument, the 15 items were preceded by a header directing respondents to report "Here is what I would expect in ANY pharmacy." On the right side of the survey instrument, the 15 items were repeated and preceded by the header: "Here is what I have experienced recently in THIS store." Thus, patients' expectations of and satisfaction with pharmaceutical care services in *any* pharmacy could be contrasted with their experiences in that particular pharmacy, either item-by-item or collectively as a scale total. Patients responded to survey components on a 5-point Likert letter-scale (SD = strongly disagree, D = disagree, N = neutral, A = agree, SA = strongly agree) in order to emphasize conceptual distinctions between different agreement levels. Thus, scores for individual service features, as well as certain subscores, could be computed for all 15 items.

An evaluation of the psychometric properties of the survey instrument demonstrated its reliability and validity.²³ The overall expectation index had a Cronbach's alpha of 0.89, while the in-store experience index had an alpha of 0.94, and with item-total correlations exceeding 0.5, indicating strong internal consistency and homogeneity. Validity was supported by confirmatory factor analysis, which identified 3 subscale factors explaining 60% of total variance: (1) providing personalized and preventive care; (2) providing information and education; and (3) monitoring outcomes.

Data for this current portion of the study were abstracted from part 1 of the study. Project staff members deposited bundles of blank survey instruments in participating pharmacies together with survey return boxes labelled to assure patients that their responses would be delivered directly to the research project office without being read by pharmacy personnel. Pharmacists were instructed to give survey instruments to all patients filling or refilling any asthma prescriptions, and to encourage them to complete the survey instrument and deposit it in the survey return box. Survey instruments were distributed and collected over a 4-month period, from January to April. After the survey phase was complete, follow-up telephone calls were made to selected subsets of respondents who had volunteered their names and contact information to test for survey appropriateness, ease of understanding, clarity of language, and time required to complete. A research assistant entered all the data into Excel spreadsheets.

Analysis

Statistical analysis was carried out with SPSS 15.0 for Windows (SPSS, Inc., Chicago, IL). Descriptive statistics (frequencies, means, and standard deviations) of sample characteristics were summarized. Using chi-square tests of independence, the 2 study groups (treatment group that received pharmaceutical care and control that received traditional service) were compared with respect to demographic variables and whether patients had received consultations. Two-sample *t* tests were used to compare the study groups on the satisfaction items, subscale factor scores, and overall scale score for both expectation and experience; and, for each item, subscale and overall scale, scores indicating “service gaps” were computed as the difference between expectation and experience. For ease of interpretation, all 5-point scales, computed scores and gap scores were transformed to 1-to-5 scales parallel to the original question phrasings. Service gap scores were compared for the 2 study groups using 2-sample *t* tests. The effects of 15-minute consultations on overall patient experience were similarly assessed using 2-sample *t* tests to compare study groups and 2-way analysis of variance to examine the combined effect of consultation and intervention. Finally, mean overall expectation and experience scores were compared for demographic variables using one-way analyses of variance.

RESULTS

A total of 147 patient satisfaction surveys were returned from 19 stores. Of these, 62 (42%) were from patients at 11 traditional sites (controls) and 85 (58%) were from 8 enhanced sites. Their demographic characteristics are summarized elsewhere.²³ Chi-square tests showed that the 2 study groups did not differ significantly in terms of gender, age, education, or household income.

Table 1 presents the results for expectation and experience for the enhanced and traditional groups for each subscale, for items within each subscale, and for overall scores. Results are grouped according to subscale, and ordered as they appeared on the patient satisfaction survey form.

The enhanced and traditional groups gave similar ratings on baseline expectations for “any” pharmacy, with only 1 item (“I expect pharmacists to ask me questions about my existing medical conditions”) showing significantly higher patient expectations in enhanced care settings than in traditional pharmacies ($p = 0.023$).

In terms of their in-store experiences, patients in the enhanced care group reported significantly higher overall mean satisfaction scores (3.8 ± 0.7 for enhanced vs. 3.4 ± 0.9 for traditional, $p = 0.007$); significantly higher mon-

itoring outcome ratings (3.5 ± 0.9 for enhanced vs. 2.9 ± 1.1 for traditional, $p = 0.001$); and significantly higher mean ratings on 7 individual items. For items showing no significant difference between groups, patients in the enhanced group gave higher mean ratings on all but 1 item (“I expect pharmacists to work with my doctor and me to ensure I am on the right medications”), which the traditional group rated slightly higher. While most all satisfaction ratings for the in-store experience were higher than the mid-scale “neutral/don’t care” rating, only 1 item (“I expect pharmacists to phone me or ask me between refills whether my medications are working”) was rated lower than mid-scale (2.8 out of a possible 5).

Table 2 reports “satisfaction gaps” for both study groups (differences between expectation and experience) for each subscale and items within each subscale, as well as an overall satisfaction “gap” (where a shortfall existed between expectations and experience). All items (and therefore all subscales) had positive satisfaction gaps, indicating that irrespective of the study group, the in-store experience lagged behind patients’ baseline expectations. However, for all items, the gap was smaller among patients in the enhanced care group than those in the traditional group, with the difference being significant for 4 items. In terms of overall satisfaction, patients in the enhanced group reported a significantly smaller gap than the traditional group (0.4 ± 0.6 vs. 0.7 ± 0.8 ; $p = 0.019$). There were no differences between stores representing the 2 sponsoring pharmacy chains ($p = 0.34$).

In-Store Consultations

Since consultation is an important step in performing a comprehensive assessment of a patients’ drug-therapy needs, the study groups were compared for percentage of patients reporting any consultations (asthma or other) lasting at least 15 minutes, either with an in-store pharmacist, a pharmacy student, or both. Of the 147 returned survey instruments, 116 provided complete information for both student and pharmacist consultation (ie, checked off “yes” or “no” for interacting with a student and/or pharmacist; Table 3). Among these 116 patients, 84% of patients in the traditional service group reported receiving no consultation, compared to 34% of patients in the enhanced care group ($p < 0.001$).

Of those responses who provided information on student consultations, 67% (53 out of 79) in the enhanced group reported having had a consultation with a pharmacy student (with or without a pharmacist) compared to 1% (5 out of 55) in the traditional group; but no one in the traditional group had consulted with a student alone. When patient consultation practices were compared for asthma, the target medical condition, the enhanced group patients

Table 1. Baseline Expectation and In-Store Patient Experience Measures (N=147)

| Satisfaction Items ^{a,b} | Patients' Expectations | | | Patients' Experience | | |
|--|---|--|------|---|--|-------|
| | Pharmacy With Enhanced APPE Care, Mean (SD) | Pharmacy With Traditional APPE Services, Mean (SD) | P | Pharmacy With Enhanced APPE Care, Mean (SD) | Pharmacy With Traditional APPE Services, Mean (SD) | P |
| Subscale 3: Personalized/ Collaborative/ Preventive Care | 4.5 (0.5) | 4.5 (0.4) | 0.76 | 4.1 (0.7) | 3.9 (0.8) | 0.10 |
| Pleasant, courteous pharmacy staff | 4.6 (0.6) | 4.7 (0.5) | 0.23 | 4.7 (0.7) | 4.6 (0.7) | 0.75 |
| Reasonable privacy for discussions | 4.6 (0.7) | 4.6 (0.6) | 0.71 | 4.1 (1.2) | 3.9 (1.2) | 0.31 |
| Ask if have concerns about my meds | 4.5 (0.8) | 4.3 (0.7) | 0.23 | 4.0 (1.0) | 3.6 (1.3) | 0.10 |
| Share decision-making responsibility | 4.3 (0.9) | 4.5 (0.7) | 0.33 | 3.7 (1.0) | 3.4 (1.2) | 0.15 |
| Explain what to do if side effects | 4.6 (0.7) | 4.4 (0.7) | 0.12 | 4.1 (0.9) | 3.7 (1.0) | 0.04 |
| Subscale 2: Information/Education | 4.1 (0.6) | 4.1 (0.7) | 0.70 | 3.7 (0.8) | 3.4 (1.0) | 0.11 |
| Discuss available medical options | 4.1 (1.0) | 4.1 (1.0) | 0.99 | 3.5 (1.2) | 3.4 (1.2) | 0.47 |
| Explain how med is supposed to work | 4.4 (0.7) | 4.3 (0.8) | 0.18 | 4.1 (0.9) | 3.8 (1.1) | 0.06 |
| Offer variety of info sources | 3.9 (0.9) | 3.8 (1.0) | 0.55 | 3.5 (1.0) | 3.0 (1.2) | 0.01 |
| Work with Dr. & me for best meds | 4.1 (0.9) | 4.4 (0.9) | 0.11 | 3.6 (1.1) | 3.7 (1.2) | 0.87 |
| Explain how to know meds working | 4.1 (0.9) | 3.9 (1.0) | 0.20 | 3.6 (1.1) | 3.3 (1.2) | 0.16 |
| Subscale 1: Monitor Outcomes | 3.8 (0.7) | 3.6 (0.9) | 0.11 | 3.5 (0.9) | 2.9 (1.1) | <0.01 |
| Ask about my existing conditions | 4.1 (0.9) | 3.8 (1.0) | 0.02 | 3.8 (1.0) | 3.0 (1.2) | <0.01 |
| Ask how well conditions controlled | 3.9 (0.9) | 3.7 (1.0) | 0.14 | 3.7 (1.0) | 2.8 (1.2) | <0.01 |
| Ask me questions about my meds | 4.1 (0.9) | 4.0 (0.9) | 0.51 | 3.9 (0.9) | 3.2 (1.2) | <0.01 |
| Develop a written care plan | 3.8 (0.9) | 3.7 (1.1) | 0.52 | 3.3 (1.1) | 2.8 (1.0) | 0.02 |
| Ask between refills if meds working | 3.0 (1.0) | 2.8 (1.2) | 0.22 | 3.0 (1.2) | 2.5 (1.2) | 0.02 |
| Overall Score (mean of all 15 items) | 4.2 (0.5) | 4.1 (0.6) | 0.32 | 3.8 (0.7) | 3.4 (0.9) | 0.01 |

^a Wording of items in this table has been abbreviated due to space limitations.

^b Patients rated items using a 5-point lettered scale ranging from strongly disagree to strongly agree. For statistical analysis, each response was given a corresponding numerical value based on a 5-point numbered scale; strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, strongly agree = 5.

reported significantly more consultation than the traditional group patients (84% vs.19%; $p < 0.001$).

Satisfaction with in-store experiences and satisfaction gaps were further analyzed for those patients who reported having had a consultation (Table 3). In general, overall satisfaction measures were significantly higher for patients who had received any form of consultation compared to people reporting no consultation. Curiously, the few patients ($n = 16$) in pharmacies with traditional APPE practices who reported consultations (either with a student or a pharmacist) had significantly higher in-store satisfaction scores and lower satisfaction gaps than enhanced group patients. However, for patients receiving no consultations of any kind, the enhanced group patients report greater satisfaction than in stores providing traditional pharmacy services.

DISCUSSION

When patients are viewed as “consumers,” it is appropriate to borrow a consumer model, such as the

“expectancy disconfirmation model,” from marketing theories and apply it to pharmacy service.²⁴ This model assumes that patients have a certain level of expectation when they visit their pharmacy, the extent to which these expectations are fulfilled can be measured, and there is a clear relationship between expectation and experience. Accordingly, the higher the perceived fulfillment of the expectations, the higher the patient satisfaction is. Conversely, when fulfillment is lower than the expectations, the lower the patient satisfaction is. In operational terms, “patient satisfaction” means congruence between expectations at any pharmacy and actual in-store experiences for the 15 scale items, individually or collectively. When congruence between expectation and actual experience is high, service gaps will be low. Based on this theoretical framework, this study assessed patient satisfaction in stores assigned to 1 of 2 APPE groups (enhanced and traditional groups), by evaluating the relationship between the consumer model’s variables: expectations versus how well these expectations were fulfilled as part of the in-store experience.

Table 2. Comparison of Gap by Study Group and Gap Difference Between the Study Groups (N=147)

| Satisfaction Items ^{a,b} | Gap Between Patient Expectations and Patient Experience ^c | | Gap Difference ^d | P |
|--|--|--|-----------------------------|-------|
| | Pharmacy With Enhanced APPE Care, Mean (SD) | Pharmacy With Traditional APPE Services, Mean (SD) | | |
| Subscale 3: Personalized/Collaborative/ Preventive Care | 0.5 (0.6) | 0.6 (0.8) | 0.2 | 0.12 |
| Involve me when it comes to making decisions about my medications | 0.7 (1.1) | 1.0 (1.2) | 0.3 | 0.06 |
| Reasonable privacy when I discuss my health issues with a pharmacist | 0.6 (1.2) | 0.8 (1.2) | 0.2 | 0.37 |
| Ask me if I have any concerns about my medications | 0.5 (1.0) | 0.7 (1.3) | 0.2 | 0.40 |
| Pharmacy staff to be pleasant and courteous to me | -0.0 (0.6) | 0.1 (0.9) | 0.2 | 0.21 |
| Explain what to do in case I have side effects from my medications | 0.5 (1.0) | 0.7 (1.1) | 0.1 | 0.42 |
| Subscale 2: Information/Education | 0.5 (0.7) | 0.7 (0.9) | 0.2 | 0.15 |
| Offer me a choice of information sources: Print, Video, Verbal | 0.4 (1.0) | 0.8 (1.2) | 0.4 | 0.04 |
| Work with doctor and me to ensure I am on the right medications | 0.5 (1.0) | 0.7 (1.2) | 0.2 | 0.22 |
| Discuss the different choices of medications available to treat my condition | 0.5 (1.1) | 0.7 (1.2) | 0.2 | 0.31 |
| Explain how each of my medications is supposed to help me | 0.3 (0.8) | 0.5 (1.2) | 0.2 | 0.35 |
| Explain to me how to know for sure if my medications is working | 0.6 (1.2) | 0.7 (1.0) | 0.1 | 0.72 |
| Subscale 1: Monitor Outcomes | 0.3 (0.8) | 0.7 (1.0) | 0.4 | <0.01 |
| Ask me questions about the various medications I take | 0.2 (1.1) | 0.9 (1.2) | 0.7 | <0.01 |
| Ask me how well medical conditions are controlled | 0.3 (0.9) | 0.9 (1.2) | 0.6 | <0.01 |
| Ask me questions about my existing medical conditions | 0.3 (1.0) | 0.7 (1.2) | 0.4 | 0.03 |
| Develop a specific plan to solve any problem I may be having with my medications | 0.6 (1.2) | 0.9 (1.1) | 0.3 | 0.10 |
| Phone me or ask me between refills whether my medications are working | 0.0 (1.4) | 0.3 (1.1) | 0.3 | 0.25 |
| Overall Score (mean of all 15 items) | 0.4 (0.6) | 0.7 (0.8) | 0.3 | 0.02 |

^a Items are ranked within subscales by order of highest to lowest gap difference.

^b Patients rated items using a 5-point lettered scale ranging from strongly disagree to strongly agree. For statistical analysis, each response was given a corresponding numerical value based on a 5-point numbered scale; strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, strongly agree = 5.

^c Gap was determined by subtracting patients' experience rating ("Here is what I have experienced recently in THIS store. . .") from their mean expectation rating ("Here is what I would expect in ANY pharmacy. . ."). Gap scores have been rounded off to the nearest tenth.

^d Gap difference was determined by subtracting patients expectation and experience encountered in pharmacies with traditional APPE services from the enhanced APPE pharmaceutical care services.

The first cycle of analysis confirmed that all patients participating in this study, irrespective of the study arm (enhanced or traditional), had generally high expectations for pharmaceutical care activities at baseline. Only 1 item ("I expect pharmacists to ask me questions about my

existing medical conditions") showed any significant difference between the 2 study groups. Expectations in the enhanced settings were about one-third point higher than those in traditional settings. The reason for the significant difference in the one item is not clear. For each of the

Table 3. Effect of In-Store Consultations on Patients' Experience and Patients' Satisfaction Gap With Respect to Overall Satisfaction Score

| Type of Consultation | Enhanced Experience, Mean (SD) | Control Experience, Mean (SD) | <i>P</i> ^a | Enhanced Gap, Mean (SD) ^b | Control Gap, Mean (SD) ^b | <i>P</i> ^a |
|---|--------------------------------|-------------------------------|-----------------------|--------------------------------------|-------------------------------------|-----------------------|
| For any consultation (considering all responses N=147) | | | | | | |
| With either student or pharmacist | 3.8 (0.7) n=63 | 4.3 (0.3) n=16 | <0.01 | 0.4 (0.6) n=63 | 0.0 (0.6) n=16 | 0.04 |
| For any consultation (considering only responses that provided information on both N=116) | | | | | | |
| With pharmacist ONLY | 3.6 (0.6) n=4 | 3.9 (0.7) n=5 | 0.44 | 0.1 (1.0) n=4 | 0.3 (0.3) n=5 | 0.6 |
| With student ONLY | 3.3 (0.1) n=19 | – n=0 | – | 0.7 (0.4) n=19 | – n=0 | – |
| With BOTH student and pharmacist | 4.1 (0.6) n=18 | 4.6 (0.6) n=4 | 0.13 | 0.2 (0.5) n=18 | –0.4 (0.7) n=4 | 0.08 |
| No consultation | 3.7 (0.8) n=21 | 3.0 (0.6) n=45 | <0.01 | 0.5 (0.7) n=21 | 0.9 (0.7) n=45 | 0.02 |
| For asthma consultations (N=70) | | | | | | |
| With either a student or a pharmacist | 3.7 (0.7) n=41 | 4.8 (0.4) n=4 | <0.01 | 0.5 (0.5) n=41 | 0.1 (0.5) n=4 | 0.18 |
| No consultation | 3.9 (0.8) n=8 | 3.2 (0.7) n=17 | 0.03 | 0.3 (0.6) n=8 | 0.8 (0.9) n=17 | 0.18 |

^a Comparison of the means of the 2 study groups: patients in the Enhanced APPE group versus the traditional APPE (control) group.

^b Gap was calculated as the difference between patient expectation and patient experience. (“Here is what I would expect in ANY pharmacy. . .”) minus (“Here is what I have experienced recently in THIS store. . .”).

expectation scale items and the overall expectation scale score, there were no differences due to demographic factors or differences between chain or treatment condition, providing evidence that the scale was unbiased at baseline.

Further examination of scores showed that patients had higher expectations of certain items over others. For examples, all items associated with the subscale personalized, collaborative, and preventive care, 4 of the 5 items associated with the subscale information and education, and 2 of the 5 items associated with the subscale monitoring outcomes, were associated with elevated expectation levels; rating 4 or more out of 5 possible points. As suggested in the literature, the high expectation for these items may result from perceived benefits cultivated during earlier encounters with these activities.²⁵⁻²⁷ Earlier studies examining the type of care provided by UBC students at these community sites confirmed the occurrence of such activities.^{19,21} During the APPE period, patients had their drug information questions answered by students who had ample opportunity to provide basic pharmaceutical care for

new/refill prescription and nonprescription medications, asking patients about their current medications/medical conditions and any concerns they may have, explaining the purpose of their current medications and educating them on how their medications were intended to work.

Equally important were findings that high expectations were not limited solely to activities previously encountered by patients.^{19,21} For example, expectations for items within the monitoring outcomes subscale such as “asking patients how well their medical conditions were controlled” and “pharmacists developing a specific plan to solve any problems,” were rated over 3.8 out of 5. Additionally, patients expressed no objections to pharmacists phoning or asking them between refills whether their medications worked for them, suggesting they were not adverse to this activity. Despite the fact that such comprehensive patient care activities often require additional commitment on the part of both the patient and the pharmacist and necessitate a sit-down consult to adequately discuss these aspects; patient expectations for these activities were uniformly

high.^{19-21,25,27} These observations are consistent with work done by Nau and colleagues, who suggest that patients are likely to recommend services based on perceived benefits. Patients' preferences for such activities may be associated with their perceived benefits to prevent escalation of existing problems and to minimize occurrence of new health-related problems.^{14,28}

By contrasting patients' reports about what they generally expected at *any* pharmacy with what they reported experiencing at *this* pharmacy, the research team developed a *service-gap* index to measure how well the participating APPE pharmacies within the 2 study groups were able to meet their patients' expectations; and therefore, to deliver satisfaction. While all pharmacies fell short of meeting their patients' expectations on 13 of the 14 pharmaceutical care items, pharmacies in the enhanced arm routinely outperformed the traditional pharmacies in all areas; with the differences being significant for 4 items: "offering me a choice of information sources: printed, video or verbal," "asking me questions about the various medications I take," "asking patients how well their medical conditions were controlled," and "asking questions about my existing medical conditions."

The data were further assessed to determine the impact of the 15-minute consultation on patients' satisfaction with pharmaceutical care services. The analysis suggested that engaging in a consultation with a student and a pharmacist within the past 2 months resulted in increased overall in-store experience and reduced satisfaction gaps compared to consultation with a pharmacist only, consultation with a student only, or no consultation. Comparing the effects of consultations on the overall experience mean ratings and the satisfaction gap scores between the 2 study groups, patients in the traditional services group fared significantly better than those in the enhanced services group; although the numbers of patients in the traditional services group who received any consultation was significantly smaller. Conversely, patients in the enhanced group who claimed to have received no consultations expressed greater satisfaction than patients in the traditional group. Hence, while the consultation was a more important determinant for patient satisfaction at the traditional sites, there were likely other factors in addition to consultation at the pharmacies providing enhanced care that contributed to patients' overall satisfaction.

A potential explanation for these findings is that the enhanced APPE program, through its preceptor education workshop, 5-day onsite student orientation, and delivery of the 8-week experience at 1 pharmacy site, contributed to both pharmacists' and students' abilities to provide more effective patient care; care that went beyond the consultation setting. The greater understanding of pharmaceutical care practice and APPE expectations, and the

in-depth discussions on how to effectively facilitate and support students' engagement in patient care activities characterized by the preceptor educational program in enhanced settings, likely resulted in a student learning environment more conducive to meeting patients' expectations of pharmaceutical care. Furthermore, the opportunities provided to pharmacists during the workshop's second day, such as to practice pharmaceutical care principles and tools using asthma cases in small-group discussions supported by standardized patients, probably increased the pharmacists' confidence in their own competencies, enabling them to readily engage with their patients in more comprehensive fashion as well as to support their students during this process. The greater number of patients in the enhanced services group that engaged with students compared to the traditional services group also supports this proposition.

The information gained from this survey has strengthened the Faculty's position on the new curriculum, which places greater emphasis on pharmaceutical care competencies. As a direct consequence of these results, a greater number of community pharmacy managers committed to participating in the enhanced APPE programs; thereby enabling the SPEP faculty to disseminate the enhanced model to the remaining community-based APPE sites. Although not explicitly measured, it would be reasonable to assume from this gesture that the managers perceived the observed increase in patient satisfaction with the enhanced APPE model to be of benefit to their business. This notion is supported by results from the Accenture study of customer satisfaction, which suggests that failure to meet expectations is the most common reason why customers leave their service providers.²⁹ To our knowledge, there are no published studies linking patient satisfaction with an increase in patient numbers or number of prescriptions. As pharmacy practice moves towards adopting pharmaceutical care in the community setting, futures studies will be needed to explore these relationships.

While the findings from this study were generally positive, they need to be interpreted in the context of the study methodology. The sample of community pharmacies participating in this study was select and voluntary. Hence, the increased patient expectations observed in this study may have been associated with the pharmacists' increased motivation to provide a superior level of patient care services, and patients from more mainstream pharmacies may not have demonstrated similar expectations. Another possible limitation may have been that the enhanced APPE model tested in this study consisted of a 3-prong approach: preceptor education, student orientation, and a modified 8-week APPE structure. While a mixed intervention model allowed the SPEP faculty to

meet the stakeholders' needs and request, such an approach did not allow for analysis of the individual or combined effects of each intervention. Also, the use of a quantitative survey instrument limited the research team's ability to explore what factors, other than consultation, may have contributed to patient satisfaction. This insight would be meaningful particularly among patients in the enhanced services group for which the results suggested consultation may not have been as significant a contributor compared to the traditional services group. The study included only asthma patients and these patients may differ from patients with other diseases in terms of health perceptions and experiences as well as expectations, thus limiting the generalizability of the results. Occasional instances of missing data – especially regarding demographic characteristics such as income, education, or age were small, and since demographics did not affect satisfaction significantly, they were deemed non-crucial. Finally, due to the small number of patient consults and the limited amount of student engagement with patients in the traditional group, the study could not compare and contrast the impact of student versus pharmacist consultations on patient satisfaction between the 2 study groups. Hence, future studies will need to examine the relationships between patient satisfaction and other constructs, as well as test the generalizability of the results.

CONCLUSION

Although patients' satisfaction with pharmaceutical care services has been examined in the past, relatively little research has been done to evaluate the impact of an APPE program on patient satisfaction. The current study was unique in that it used anchored and validated measures to demonstrate the benefits for community pharmacy managers of participating in an enhanced APPE program. Patients' had high expectations of receiving services related to pharmaceutical care, and an enhanced APPE program similar to the one in this study can increase the likelihood of sites meeting such expectations.

ACKNOWLEDGEMENT

We would like to thank all preceptors and students who participated in this survey and made this scholarly work possible. As well, we are indebted to the 2 national pharmacy chains that provided release-time for their pharmacists to attend the APPE training programs and that underwrote the costs of data gathering and statistical analysis.

REFERENCES

1. Accreditation Council for Pharmacy Education (ACPE). Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree [online]. <http://www.acpe-accredit.org/standards/default.asp> Accessed May 10, 2010.
2. Canadian Council for Accreditation of pharmacy programs. Accreditation, Standards And Guidelines For The Baccalaureate Degree Program in Pharmacy; 2006. <http://www.ccapp-accredit.ca/standards>. Accessed May 10, 2010.
3. Cipolle RJ, Strand LM, Morley PC. A new professional practice. In: Zollo S, Navrozv M, eds. *Pharmaceutical Care Practice*. NewYork: McGraw Hill; 1998:1-35.
4. Zaremski DG, Boyer G, Vlasses PH. A survey of advanced community pharmacy practice experiences in the final year of the PharmD curriculum at the US colleges and schools of pharmacy. *Am J Pharm Educ*. 2005;69(1):Article 2.
5. Reddick JB, Murphy JE. Evaluating the clinical interventions of students during clerkships using a cognitive services claim form. *Am J Pharm Educ*. 2000;64(1):38-43.
6. Dennehy C, Kroon LA, Byrne M, Koda-Kimble MA. Increase in number and diversity of clinical interventions by PharmD students over a clerkship rotation. *Am J Pharm Educ*. 1998;62(4):373-379.
7. Anderson RJ, Nykamp D, Miyahara RK. Documentation of pharmaceutical care activities in community pharmacies by doctor of pharmacy students. *J Pharm Pract*. 1995;VIII(2):83-88.
8. MacKinnon GE III. Analysis of pharmacy student interventions collected via an internet based system. *Am J Pharm Educ*. 2003;67(3):Article 90.
9. Willink DP, Isetts BJ. Becoming "indispensable": developing innovative community pharmacy practices. *J Am Pharm Assoc*. 2005;45:376-386.
10. Padiyara RS, McCord AD, Lurvey PL. Fourth professional year pharmacy students in the ambulatory care setting: patient perceptions and satisfaction. *J Pharm Teach*. 2006;13(2):17-37.
11. Grabe DW, Bailie GR, Manley HJ. The early patient-oriented care program as an educational tool and service. *Am J Pharm Educ*. 1998;62:279-284.
12. Hermansen CJ, Pigarelli DW, Wiederholt SB, Wiederholt JB. The patient perspective of pharmaceutical clerkship students' roles in pharmacist-patient relationship development and the delivery of care. *Am J Pharm Educ*. 2000;64:413-419.
13. Finchan JE. The need to invest in community pharmacy practice. *Am J Pharm Educ*. 2007;71(2):Article 26.
14. Nau DP, Reid LD, Lipowski EE. What makes patients think that their pharmacists' services are of value? *Am J Pharm Educ*. 1997;NS37:91-98.
15. Dugan DB. Enhancing community pharmacy through advanced pharmacy practice experiences. *Am J Pharm Educ*. 2006;70(1):Article 21.
16. Chase P. Rethinking experiential education (or does anyone want a pharmacy student). *Am J Pharm Educ*. 2007;71(2):Article 27.
17. MacKinnon GE III. Documentation: a value proposition for pharmacy education and the pharmacy profession. *Am J Pharm Educ*. 2007;71(4):Article 73.
18. Kassam R, Volume-Smith CI. Focus group methodology to develop a community pharmaceutical care clerkship program. *Am J Pharm Educ*. 2003;67(3):633-673.
19. Kassam R. Students' and preceptors' experiences and perceptions of a newly developed community pharmacy pharmaceutical care clerkship. *Pharm Educ*. 2006;6(3):179-188.
20. Kassam R. Evaluation of pharmaceutical care opportunities within an advanced pharmacy practice experience. *Am J Pharm Educ*. 2006;70(3):49.
21. Kassam R, Kwong M. An enhanced advanced pharmacy practice experience model: a value-added proposition. *Am J Pharm Educ*. 2009;73(2):25.

22. Kassam R, Poole G, Collins J. Development of an instrument to assess the impact of an enhanced experiential model on pharmacy students' learning opportunities, skills and attitudes: a retrospective comparative-experimental study. *BMC Med Educ.* 2008;8:17.
23. Kassam R, Collins JB, Berkowitz J. Developing anchored measures of patient satisfaction with pharmaceutical care delivery: experiences versus expectations. *Pat Preference Adherence.* 2009;3:113-122.
24. Baron-Epel O, Dushenat M, Friedman N. Evaluation of the consumer model: relationship between patients' expectations, perceptions and satisfaction with care. *Int J Qual Health Care.* 2001;13(4):317-323.
25. Hepler CD, Strand LM, Gagnon JP. Consumers' views towards pharmacy. *J Pharm Marketing Manage.* 1994;8:87-97.
26. Schommer JC. Patients' expectations and knowledge of patient counseling services that are available from pharmacies. *Am J Pharm Educ.* 1997;61:402-406.
27. Reid LD, Wang F, Young H, Awiphan R. Patient satisfaction and perception of the pharmacist. *J Am Pharm Assoc.* 1999;39(6):835-842.
28. Nau DP, Ried LD, Lipowski EE, Kimberlin C, Pendergast J, Spivey-Miller S. Patients' perceptions of the benefits of PC. *J Am Pharm Assoc.* 2000;40:36-40.
29. Accentura. Global customer satisfaction report. High performance in the age of age of customer centricity: Tuning in to today's customer. 2008. www.accenture.com. Accessed May 10, 2010.