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### Research Note

## Pharmacy students' perspectives on involvement in workplace-based preventative health and wellness events

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#### ABSTRACT

**Introduction:** Canadian pharmacy students have varied exposure within their academic curricula and limited opportunities for hands-on preventative health experiences prior to practicums. We aimed to explore pharmacy student perceptions of readiness to engage in patient education and assessment activities in health promotion events.

**Methods:** Under licensed pharmacist supervision, volunteer pharmacy students delivered health promotion events to University of British Columbia staff and faculty between 2017 and 2020. Students attended a one-hour, group training session with a licensed pharmacist prior to participating in four hours of service delivery. Post-event, anonymous, electronic surveys were emailed to student participants to gauge perceived change(s) in knowledge and skill development as a result of participation. Data analysis was by descriptive statistics.

**Results:** Surveys were sent to 151 pharmacy student volunteers from 2017 to 2020. A total of 69 responses were received (response rate = 45.7%), 60 of which were complete (completion rate = 39.7%). Overall, students reported a shift from feeling competent to confident in the various domains assessed as a result of participation. The majority of students strongly agreed or agreed that they were well-prepared for the event and felt supported by pharmacist supervisors.

**Conclusions:** Pharmacy students felt that participation in a brief preventative health and wellness intervention increased confidence in knowledge and patient care skills, regardless of year of study. Early exposure to health promotion activities may accelerate and enhance clinical abilities of pharmacy students while preparing them for expanding pharmacist roles.

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### Introduction

Preventative health or health promotion is the act of empowering patients with the tools necessary to prevent or self-manage medical conditions and increase health literacy.<sup>1</sup> As frontline healthcare professionals, pharmacists play an integral role in public and preventative health for the communities they serve through health education, immunization programs, and disease awareness and prevention initiatives.<sup>2</sup> The Association of Faculties of Pharmacy of Canada educational outcomes require Canadian pharmacy graduates meet key competencies that incorporate health promotion into clinical practice.<sup>3</sup> Research indicates that pharmacy student involvement in health promotion activities increases student knowledge and confidence.<sup>4-6</sup> Further, having pharmacy students make tailored care

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plans for participants of health promotion activities and create plans for follow-up enhances student critical thinking abilities.<sup>5</sup> Despite this, opportunities for exposure to, and development of, health promotion skills prior to clinical practicums is varied across pharmacy academic curricula.

For the past three years, the Pharmacists Clinic at the University of British Columbia (UBC) Faculty of Pharmaceutical Sciences, a pharmacist-led patient care clinic, has developed and facilitated various health promotion events for staff and faculty, in collaboration with the UBC Health, Wellbeing, and Benefits department. Events focus on education, assessment, and behavioural goal setting for a particular medical condition or group of risk factors. All care is provided by volunteer pharmacy students under the supervision of a licensed pharmacist. The aim of our study was to explore pharmacy student perceptions of readiness to engage in patient education and assessment activities pre- and post-participation in a health promotion event.

## Methods

UBC pharmacy students delivered preventative health and wellness events across campus from 2017 to 2020. Health topics included lung health, heart health, diabetes care, kidney health, bone health, and whole health (a holistic health event educating participants on both mental and physical health). Each health event included three stations: (1) patient interview and health education; (2) health evaluation, point-of-care testing (POCT), and/or risk score calculation; and (3) one-on-one consultation where students documented patient information in an electronic medical record and guided participants in creating action plans through behavioural goal setting. Each student was assigned a designated station per each four-hour event. Prior to participation, students received pre-readings and attended a one-hour training session led by a clinic pharmacist. These pre-readings included background information on the chosen health topic and associated risk factors and teaching points for pharmacy students to share with participants. The one-hour training sessions covered methodology for POCT and techniques for motivational interviewing (MI) and participant goal-setting. Post-event, students received an email invitation to complete an anonymous, electronic survey for quality assurance purposes. This study employed secondary use of anonymous information collected from the surveys and thus was exempt from ethics review.

Surveys were developed through expert consensus by a clinic pharmacist and research coordinator and designed to gauge self-perceived knowledge and skill development resulting from event participation. Each survey was comprised of four core questions about overall preparation required and execution of the event. Additionally, each survey had event-specific questions relating to the three stations. The surveys ranged from 15 to 28 questions depending on the nature and complexity of the topic and event. Survey questions were organized into seven overarching patient care activities for the purposes of data analysis (Fig. 1).

Patient participants (2017 to 2020) were asked at the end of each event to participate in an anonymous online survey to elucidate their opinions on the service they received and their interactions with pharmacy students.

### Statistical analysis

Categorical data were presented as percentages. Normal distribution of scores for activities pre- and post-event was assessed with Shapiro-Wilk test. Non-parametric hypothesis testing (single-tailed Wilcoxon signed-ranked test) was performed for pairwise comparison of pre- and post-scores.  $P$  values  $< .05$  were considered statistically significant. Confidence intervals were calculated with Hodges-Lehmann estimator and SSPS, version 26 (IBM Corp.) was used for statistical analysis.

## Results

From 2017 to 2020, surveys were sent to 151 student volunteers from eight different health events. A total of 69 responses were received (response rate = 45.7%), 60 of which were complete (completion rate = 39.7%). Student participants represented a mix of all academic years (year one to year four). The first four survey questions focused on students' level of agreement on the preparation and execution of the event on a five-point Likert scale. It should be noted, 12 of the surveys from two events in 2018 did not ask these four core questions about overall preparation and execution of the event. When self-identifying preparedness for each event, the majority of students ( $n = 52$ ; 91.2%) agreed that they felt well-prepared for their event after receiving pre-readings and a one-hour training session. Additionally, the majority of students ( $n = 53$ ; 93%) agreed that the amount of preparation required prior to each event was appropriate. Fifty-six students reported feeling supported by the supervising pharmacists on-site throughout the course of the event, and 96.5% ( $n = 55$ ) of students strongly agreed or agreed that the number of participants (university employees) each student was expected to interact with was manageable (Table 1).

The remaining survey questions were specifically tailored to each health and wellness event to gauge pharmacy students' level of experience performing patient care activities before and after the events. These questions asked students to rate their confidence level in knowledge and clinical skills on a five-point scale ranging from confident to incapable (Table 2). Pre-event, 11 students (19.6%) reported feeling confident in patient interviewing and information gathering; this increased to 29 students (51.8%) post-event ( $P < .001$ ). Three students (5.9%) reported feeling confident in performing POCTs prior to the events, while 18 students (35.3%) reported feeling confident performing these tests after participating in these events ( $P < .001$ ). Four students (7.8%) reported feeling confident answering participants' questions pre-event vs. 19 students (37.3%) post-event ( $P < .001$ ). Overall, more students reported feeling confident or comfortable across all patient care domains assessed post-event compared to baseline. These shifts, for the most part, were seen from one domain to the next (e.g., moving from comfortable to confident) rather than changes of multiple domains in either direction (e.g., moving from incapable to confident).

"Rate your level of experience with the following patient care activities PRIOR to and AFTER the health fair"						
Patient interviewing	Health education	Blood pressure assessment	Performing POCT	Calculating patient risk scores	Answering patient questions	Developing patient care plans
<ul style="list-style-type: none"> <li>• Patient interviewing and information gathering</li> </ul>	<ul style="list-style-type: none"> <li>• Discussing cholesterol</li> <li>• Explaining lung disease risk factors</li> <li>• Explaining diabetes risk factors</li> </ul>	<ul style="list-style-type: none"> <li>• Measuring blood pressure</li> </ul>	<ul style="list-style-type: none"> <li>• Measuring cholesterol</li> <li>• Measuring peak expiratory flow</li> <li>• Measuring HgA1C</li> <li>• Measuring serum creatinine</li> </ul>	<ul style="list-style-type: none"> <li>• Framingham Risk Score</li> <li>• Diabetes risk (CanRisk)</li> <li>• FRAX score</li> </ul>	Questions about: <ul style="list-style-type: none"> <li>• Heart health</li> <li>• Lung health</li> <li>• Diabetes</li> <li>• Kidney health</li> </ul>	Preparing a care plan for: <ul style="list-style-type: none"> <li>• Heart health</li> <li>• Lung health</li> <li>• Diabetes prevention</li> <li>• Kidney disease risk reduction</li> <li>• Setting personal goals using SMART criteria</li> </ul>

FRAX = Fracture Risk Assessment Tool; HgA1C = glycosylated hemoglobin; POCT = point-of-care testing; SMART = specific, measurable, achievable, realistic, timely.

**Fig. 1.** There are seven over-arching patient care activities evaluated in this study prior to and after each health fair. Event-specific tasks are listed below each patient care activity. Students were asked to rate their level of experience with each patient care activity before and after the event. POCT: Point of Care Testing; SMART: Specific, Measurable, Achievable, Realistic, Timely.

**Table 1**Level of agreement of pharmacy students on preparation and execution of health and wellness initiatives ( $N = 57$ ).

Statement	Agree, n (%)	Neither agree nor disagree, n (%)	Disagree, n (%)
I felt well prepared before the event	52 (91.2)	5 (8.8)	0 (0)
The amount of preparation required of me was appropriate	53 (93)	3 (5.3)	1 (1.8)
I felt supported while working in my designated station <sup>a</sup>	56 (100)	0 (0)	0 (0)
The number of participants I was required to see was appropriate	55 (96.5)	1 (1.8)	1 (1.8)

<sup>a</sup> There was one incomplete survey whereby this question was not answered, thus  $n = 56$ .

Through qualitative written survey responses, students described the value these events had on their learning and appreciated the opportunity to apply knowledge from class in a real-world situation. One student stated that they “found it to be a very valuable learning experience as [they were] able to apply relevant communication and interactive skills taught during lecture/integrated activities throughout the program so far.” Another student stated these opportunities allowed them to gain insight “into what a primary care [pharmacy practice] could look like.” Students described the novelty of the patient care activities and the skill development gained from participation. Another student stated, “It was really good to have some patient interaction which we do not get a lot of in the school year. I enjoyed practicing charting [in the medical record].” Overall, these events provided positive and rewarding learning experiences.

Additionally, during health events from 2017 to 2020, we collected quantitative feedback on a five-point Likert scale from patient participants of our preventative health events. In total, we collected 424 responses. Of these participants, 95.8% ( $n = 406$ ) agreed that they learned valuable information about their health through the event. Three hundred ninety-four participants (92.9%) agreed that their participation in the health event provided them with useful tools for improving their health. In regard to behaviour changes, 20.9% ( $n = 88$ ) of participants expressed that the health event helped them to develop a strategy for changing their health behaviours, while 34.1% ( $n = 144$ ) of participants shared that the events encouraged them to maintain already established health behaviours. Overall, participants provided positive feedback about the student-led health events and expressed the value it provided them in regard to their overall health knowledge.

## Discussion

This study evaluated pharmacy students' perspectives on the impact of participation in a brief health promotion event on development of select patient care skills. Pharmacy students from all four academic years volunteered for health promotion events and, irrespective of year, shifts in confidence with performing patient care activities occurred. In some instances, students had not yet covered the health topic of focus in their academic curriculum, however, were still able to glean important skills and knowledge to competently provide a health promotion service. The pre-reading and training provided to students prior to the event adequately prepared students of all years to provide care for participants. Previous research conducted by Wilbur<sup>4</sup> and Lee<sup>5</sup> demonstrated similar results whereby students from all academic years were included in health promotion events and experienced increases in health promotion interest and knowledge base, regardless of academic year. The skills honed through the clinic's health promotion events were broad and did not necessarily require a strong prerequisite understanding of therapeutics, but rather focused on global skills such as communication, patient assessment, and providing health education.

Pharmacy student involvement across all events increased their exposure to unique patient care activities, particularly MI, effective patient goal setting using the specific, measurable, achievable, realistic, and timely (SMART) criteria, or performing POCTs. During health events, emphasis was placed on student pharmacist collaboration with patients to develop tailored care plans, promote behavioural goal setting, and plan for follow-up with a clinical pharmacist, if required. Low self-reported pre-event student confidence in these domains may be secondary to limited exposure to these more novel patient care activities prior to practicum or pharmacist licensure. A previous study by McKeirnan et al.<sup>7</sup> evaluating pharmacy student participation in POCT training indicated a resulting increase in knowledge base and student confidence performing such tests. The authors have suggested that this increase in student confidence and knowledge would allow for greater patient accessibility to such services in the future, a finding supported by our results.<sup>7</sup>

To measure pharmacy students' self-perceived confidence in their knowledge and clinical skills pre-event and post-event, we employed a five-point scale comprising tiers to categorize students' confidence as “confident,” “comfortable,” “capable,” “uncomfortable,” and “incapable.” This method of categorizing and quantifying self-perceived confidence has been used previously by Barnett et al.<sup>8</sup> to measure pharmacy student confidence levels before and after intervention. Shifts to increasing student confidence levels were identified if more students reported feeling confident post-event. The corresponding confidence intervals derived from the data supports the certainty in our data with regard to the increase in self-perceived student confidence levels post-event.

When asked about overall experience volunteering for these events, students expressed the value these events had on their learning and development. Students articulated a strong desire for more opportunities to engage with health event participants and practice fundamental skills such as interviewing and patient assessment. While previous studies by Wilbur<sup>4</sup> and Ploylearmsang et al.<sup>6</sup> have demonstrated that health promotion events provide meaningful hands-on learning opportunities for pharmacy students, the events generally focused on one or two health conditions. Our findings demonstrate the value of pharmacy student participation in health promotion across varied health conditions or health topics. Previous qualitative research by Begley et al.<sup>9</sup> showed the most prominent theme from pharmacy students after health promotion events is improved communication abilities. Pharmacy students also noted benefit to

**Table 2**  
Pharmacy student self-perception of knowledge and clinical skills pre-/post-health promotion event participation.

Rating	Patient interviewing and information gathering <sup>a</sup>		Providing patient education <sup>a</sup>		Measuring blood pressure <sup>b</sup>		Point of care testing <sup>a</sup>		Calculating risk scores <sup>c</sup>		Answering participant questions <sup>a</sup>		Developing a patient care plan <sup>a</sup>	
	<i>n</i> = 56		<i>n</i> = 63		<i>n</i> = 43		<i>n</i> = 51		<i>n</i> = 33		<i>n</i> = 51		<i>n</i> = 56	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Confident, n (%)	11 (19.6)	29 (51.8)	8 (12.7)	26 (41.3)	12 (27.9)	19 (44.2)	3 (5.9)	18 (35.3)	7 (21.2)	14 (42.4)	4 (7.8)	19 (37.3)	2 (3.6)	9 (16.1)
Comfortable, n (%)	25 (44.6)	19 (33.9)	21 (33.3)	28 (44.4)	18 (41.9)	12 (27.9)	7 (13.7)	11 (21.6)	6 (18.2)	7 (21.2)	16 (31.4)	21 (41.2)	10 (17.9)	14 (25)
Capable, n (%)	16 (28.6)	2 (3.6)	18 (28.6)	5 (7.9)	4 (9.3)	2 (4.7)	12 (23.5)	6 (11.8)	11 (33.3)	2 (6.1)	20 (39.2)	9 (17.6)	13 (23.2)	10 (17.9)
Uncomfortable, n (%)	1 (1.8)	0 (0)	11 (17.5)	0 (0)	2 (4.7)	0 (0)	7 (13.7)	0 (0)	2 (6.1)	1 (3)	9 (17.6)	0 (0)	12 (21.4)	5 (8.9)
Incapable, n (%)	0 (0)	0 (0)	1 (1.6)	0 (0)	0 (0)	0 (0)	6 (11.8)	0 (0)	0 (0)	0 (0)	1 (2)	1 (2)	4 (7.1)	0 (0)
Does not apply, <sup>d</sup> n (%)	3 (5.4)	6 (10.7)	4 (6.3)	4 (6.3)	7 (16.3)	10 (23.3)	16 (31.4)	16 (31.4)	7 (21.2)	9 (27.3)	1 (2)	1 (2)	15 (26.8)	18 (32.1)
Median (95% CI) change in self-perceived confidence <sup>e</sup>	−0.5 (−1 to −0.5)		−1.0 (−1 to −0.5)		−0.5 (−0.5 to 0)		−1.5 (−2 to −1)		−0.5 (−1 to −0.5)		−1.0 (−1 to −0.5)		−1.0 (−1 to −0.5)	

<sup>a</sup> *P* value was <0.001.

<sup>b</sup> *P* value was 0.007.

<sup>c</sup> *P* value was 0.001.

<sup>d</sup> As students were assigned specific stations during the health and wellness events, not all students had exposure to each patient care activity. These scores were excluded from the statistical testing.

<sup>e</sup> Item was assessed across five domains (incapable, uncomfortable, capable, comfortable, and confident) with a negative change indicating movement toward a higher confidence category.

communication skills and additionally found utility of involvement in novel patient care activities such as performing POCT and motivational interviewing which they may have limited or no opportunities to practice in a real-world environment prior to licensure.

In general, participants of health events provided positive feedback, expressing the usefulness of knowledge and tools that they received. Ploylearmsang et al.<sup>6</sup> also demonstrated similar findings, whereby participants from pharmacy student-led health events provided overall positive feedback, conveying high satisfaction for pharmacy student knowledge, communication skills, and professionalism.

A limitation to our study is that the survey questions asked were not validated and student demographics were not tracked. Some students may have participated in more than one event over the course of their time as a student and felt more confident in their baseline knowledge and skills at subsequent events. Student knowledge on the health topic was not formally assessed prior to the event. Responder bias may have occurred as only more engaged students or those perceiving the experience as valuable may have been motivated to complete the survey leading to falsely positive results. Furthermore, there is an inherent volunteer bias when recruiting student volunteers. Finally, students who are more motivated and those who already have a pre-existing knowledge or interest in health promotion are more likely to participate in these events. The shifts and results identified in our study may not have been observed had participation been mandatory.

Results from this study demonstrate the value that a brief intervention such as a four-hour health promotion event can have on future healthcare practitioners. Further research and evaluation of implementation of such events or opportunities within the pharmacy academic curricula should be explored.

## Conclusions

Pharmacy students reported increased confidence in knowledge and patient care skills following participation in a brief preventative health and wellness intervention. This was observed regardless of academic year. Early exposure to health promotion activities may accelerate and enhance clinical abilities of pharmacy students while preparing them for expanding pharmacist roles. Formal incorporation of such events into pharmacy curricula should be considered.

## Disclosure(s)

None.

## Declaration of competing interest

None.

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