

INSTRUCTIONAL DESIGN AND ASSESSMENT

Student-Peer Mentoring on a Drug Information Response

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Objective. To implement a student peer-mentoring program with a drug information response assignment in an introductory pharmacy practice course.

Design. Second-year student pharmacists (P2 mentors) enrolled in an independent study course were randomly assigned first-year student pharmacists (P1 mentees) to mentor on a drug information assignment. The P2 mentors provided feedback to P1 mentees' assignment drafts. The P1 mentees had the opportunity to revise the draft prior to turning in the completed assignment to course faculty members for grading.

Assessment. Both P1 mentees and P2 mentors agreed the mentorship improved their ability to prepare a drug information response (76% and 100%, respectively). A majority of the student pharmacists would choose to be involved in the program again.

Conclusion. The student peer-mentoring program was successful in improving student pharmacists' perceptions of ability to compose a drug information response.

Keywords: mentor, peer mentoring, drug information, pharmacy education

INTRODUCTION

Providing responses to drug information questions is a critical skill for student pharmacists to develop throughout their education. The Accreditation Council for Pharmacy Education requires that doctor of pharmacy (PharmD) graduates be able to search the drug information literature, evaluate the information, and construct an organized response suitable for the requestor.¹ With the increasing number of medications and accompanying medical literature, it is important for drug information curricula in US colleges and schools of pharmacy to use instructional methods that enhance student learning and provide opportunities to practice responding to drug information questions.²

In the 4-year PharmD curriculum at The Ohio State University College of Pharmacy, drug information skills are introduced to first-year student pharmacists in a required introductory pharmacy practice course that includes a drug information response assignment. To optimize student skill building in providing a drug information response and to ensure student preparedness for opportunities to practice skills in future courses, course faculty members integrated a peer-mentoring experience into a required P1 course.

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Peer-mentoring programs can facilitate growth of both student mentees and the mentors involved. Mentees have the opportunity to gain insight from a peer who understands because he/she has gone through the same experience, while mentors practice their communication and organizational skills through interaction with the mentee.³ Key elements of a successful peer-mentoring program include mandatory participation for both mentors and mentees, oversight mediated by a faculty member, and adequate training of the mentor to serve as a valuable resource for the mentee.⁴

In professional healthcare curricula (ie, medicine, nursing, physical therapy), peer mentoring has been used to provide social and academic support, professional development, and tutoring services.⁵⁻⁷ Specific to pharmacy curricula, currently available literature involving classroom peer interaction describes the use of peer assessment,⁸⁻¹⁰ but limited data are available that characterize peer mentoring by students within colleges of pharmacy. Examples of peer mentoring among pharmacy students include first- or second-year student pharmacist mentees paired with upper class student pharmacists to assist with transition to pharmacy school or mentoring during practice experiences.^{11,12} The use of peer mentoring in pharmacy education with 1 specific assignment or skill has not been reported. This paper highlights an endeavor that involved The Ohio State University College of Pharmacy incorporating a faculty-mediated student peer-mentoring

program into a required, introductory pharmacy practice course to foster the development of drug information skills in first- and second-year student pharmacists.

DESIGN

This study was determined to be exempt from IRB approval by The Ohio State University. The P2 mentors were recruited via an e-mail sent to all P2 student pharmacists by course faculty members inviting participation for 1 hour of independent study credit. All P2 student pharmacists who enrolled in the independent study course were included in the study. The P2 mentors attended a training session delivered by course faculty members; this was a 2-hour interactive session timed prior to the start of the academic term. During this session, P2 mentors were provided an overview of the experience, a definition of student roles and responsibilities, and a timeline. Instruction on strategies for providing formative feedback and for addressing plagiarism was also provided. During the training session, P2 mentors practiced giving feedback via written comments on an example drug information response and sample evaluation rubric, and engaged in discussions on plagiarism and professional writing. Training sessions were evaluated by P2 mentors to provide feedback to course faculty members.

At the beginning of the introductory pharmacy practice course, P1 student pharmacists received instruction on accessing drug information resources, prioritizing relevant information, and formulating a response to a drug information question. To apply this knowledge, P1 student pharmacists researched and composed a formal written

response to an individually assigned drug information question that counted approximately 30% of their overall grade for the course. The P1 mentees submitted their first draft of the paper to a dropbox within the university's online course management system, then course faculty members e-mailed the P1 mentee papers to randomly assigned P2 mentors. Each P2 mentor was assigned several P1 mentee drug information papers, typically 5 to 8. The P2 mentors were given 10 days to provide written, formative feedback to each of their P1 mentees using the same grading rubric that course faculty members would use to assign a final grade. During the 10-day period, P2 mentors had an opportunity to ask course faculty members for assistance or additional guidance with their reviews if needed; course faculty members set aside specific office hours for this purpose.

The P2 mentors typically communicated their feedback to the individual P1 mentee students via e-mail. Mentor-mentee pairs could also elect to meet or communicate via e-mail to discuss the drafts further; this was optional and was decided independently by each P1 mentee and P2 mentor pair. The P1 mentees were given 2 weeks to revise their paper based on their mentor's feedback prior to final submission to course faculty members for grading (Table 1).

The P2 mentors completed 2 journaling reflection activities. The first journaling activity captured the thoughts of P2 mentors after their training, but prior to participating in any student peer-mentoring activities. This journaling activity invited P2 mentors to reflect upon their personal expectations for the experience, especially

Table 1. Timeline for a Student Peer-Mentoring Program Implemented in a Required Pharmacy Practice Experience

Week	Mentee Tasks (First-Year Student Pharmacists)	Mentor Tasks (Second-Year Student Pharmacists)	Course Topics
1	Assigned drug information question	Training session and first journaling reflection due	Course overview and responding to drug information requests
2			Accessing drug information resources
3			Professional communication
4			Clinical literature assessment
5	First draft due to P2 mentor	Received P1 mentees' drafts	Clinical literature assessment
6		Open session to consult with course faculty for assistance	Clinical literature assessment
7		Written feedback due to P1 mentees	Preparing a journal club and using the evidence
8			Using the evidence
9	Final draft due to course faculty		Medication errors and evidence based medicine
10		Second journaling reflection due	Final exam review and Final examination
11	Course evaluation survey due	Course evaluation survey due	

in relation to the mentoring relationship, and to detail both their hopes and concerns regarding the student peer-mentoring experience. The second journaling activity was completed after the P2 mentors reviewed the P1 mentees' responses. This journaling activity asked P2 mentors to describe what went well, what was difficult and/or surprising, how they would use this experience in the future, and if this experience sparked a desire for additional teaching experiences.

EVALUATION AND ASSESSMENT

We looked at 2 dimensions to evaluate the success of the student peer-mentoring program: (1) P1 mentee and P2 mentor perceptions on how the student peer-mentoring program improved P1 student pharmacists' drug information response, and (2) how the student peer-mentoring program impacted P2 mentors' perceptions of their own ability to write future drug information responses. We assessed the aforementioned dimensions using separate online surveys, one for P1 mentees and the other for P2 mentors, that asked questions about the experience. Responses were gauged using a 5-point Likert scale (1=strongly disagree to 5=strongly agree). The survey instruments gathered additional information, including participants' evaluation of the training session and demographics related to workload for P2 mentors.

Data from 2008-2011 were aggregated and a retrospective review of P1 mentees' and P2 mentors' course evaluation survey responses and P2 mentor reflections was conducted. Online survey responses were submitted anonymously, and P2 mentors' journal reflections were downloaded and de-identified prior to assessment for thematic content. Open-ended journal responses were reviewed by 2 study investigators and assigned to emerging categories after consensus among the investigators.

During the evaluation period, 521 P1 student pharmacists in 4 student cohorts completed the introductory drug information course (range 123-129 student pharmacists per year). Four hundred fifty-nine P1 mentees (88.1%) completed the course evaluation. Seventy-two P2 mentors (range 12-24 per year) participated in the independent study course, with 64 (88.9%) completing the course evaluation. To obtain an assessment of the P2 mentor task load, mentors were asked to report the number of drug information responses they personally reviewed, as well as the cumulative amount of hours they spent on their review. Demographics were analyzed using descriptive statistics and are described in Table 2.

The P1 mentees and P2 mentors agreed that participation in the student peer-mentoring experience improved their ability to prepare a drug information response (76% and 100%, respectively). Similarly, P1 mentees and P2

Table 2. Demographics of Second-Year Student Pharmacists Who Served as Student-Peer Mentors

Demographic	No. (%)
Gender	
Female	43 (67)
Male	21 (33)
Age, y	
18-21	1 (2)
22-25	49 (76)
26-29	9 (14)
30-39	5 (8)
Prior experience providing formative feedback/evaluating student performance	18 (28)
Task Load	
Number of responses reviewed	
≤ 4	13 (20)
5-6	6 (10)
7-8	32 (50)
>8	13 (20)

mentors agreed that the mentorship improved the P1 students' grade on the response (65% and 91%, respectively). Overall, the P2 mentor training sessions were perceived positively by a majority of P2 student pharmacists (Table 3). A majority of the student pharmacists would choose to be involved in the program again (79% vs100%).

Seventy P2 mentors (97.2%) completed the first journaling activity, and 67 P2 mentors (93.1%) completed the second journaling activity. Upon reviewing the P2

Table 3. Evaluation of Training Session by Second-Year Student Pharmacists Who Served as Student-Peer Mentors to First-Year Student Pharmacists^a

Topic	Agree or Strongly Agree, No. (%)
Roles and responsibilities of P1 mentee	60 (94)
Roles and responsibilities of P2 mentor	63 (98)
Roles and responsibilities of course faculty	61 (95)
Formative vs. summative feedback handout and discussion	58 (91)
Feedback using course rubric	60 (94)
Plagiarism resources and information handout	53 (83)
Plagiarism examples	50 (78)
Plagiarism discussion	56 (88)

^a Based on 5-point Likert scale (1=Strongly disagree, 5=Strongly agree).

mentors' written reflections, we identified common themes and categorized student responses (Table 4). Results of this study showed overall positive impacts for P2 and P1 student pharmacists engaged in this peer-mentoring experience.

DISCUSSION

In this example of peer mentoring of P1 student pharmacists by P2 student pharmacists, the focus was on a specific set of skills and affiliated with 1 required drug information response assignment. In using this assignment-based approach, course faculty members were able to evaluate the impact on student pharmacists' perceptions of skill development and opinions of the experience, gathered through submission of a survey instrument and written reflections.

The P1 mentees and P2 mentors responded positively regarding skill development in composing a drug information response (76% and 100%, respectively). The skills needed to respond to a drug information request are important for all future pharmacists. Continued growth and development of these skills throughout pharmacy school is integral to success in the classroom, during introductory and advanced pharmacy practice experiences, and as practicing pharmacists. The findings in this experience support the use of student-peer mentoring to enhance perceived skill

development by both the student mentors and mentees. In addition, 65% of P1 mentees and 91% of P2 mentors agreed that student-peer mentoring increased the likelihood of P1 students receiving a higher grade.

The most commonly cited challenge experienced by P2 mentors related to dealing with poor quality P1 mentee responses (45%). Course faculty members addressed this by scheduling dedicated office hours midway through the evaluation period during which P2 mentors could share concerns with them and receive guidance on providing feedback to P1 mentees on their papers. These sessions yielded valuable conversations between the mentors and course faculty members on setting expectations on assignments, plagiarism, written feedback and communication, and resources for students who spoke English as a second language.

Key limitations to this project were the small amount of data gathered from P1 mentees, as well as no assessment of the quality of the feedback provided by P2 mentors. Because data from P1 mentees was collected as part of a course evaluation survey, only 3 questions from the survey instrument addressed the student peer-mentoring program. With regards to quality of the feedback that P2 mentors provided, investigators recruited P2 student mentors based on their interest, with no screening for experience or competency prior to enrollment. While course faculty members provided live training on how to give formative feedback, they did not evaluate the appropriateness or accuracy of the written feedback provided by P2 mentors. However, several P1 mentees perceived an improvement in their ability to prepare a drug information response; thus, we concluded that some quality feedback must have been provided.

From the journaling themes identified, P2 mentees tended to desire more of a relationship with the P1 mentee than occurred in the experience (42%). Additionally, interest in teaching or precepting in the future was identified as a theme in both the first and second journal reflections submitted by P2 mentors; however, fewer expressed an interest in teaching in the second reflection (written after their peer-mentoring experience) than they did in the first reflection (27% before vs 12% after). While the writing prompt given for the first journaling exercise did not ask P2 mentors if they had an interest in teaching, the second exercise asked if participation as a student-peer mentor sparked the desire for more future teaching or precepting experience. The reasons for a lower level of interest after mentoring may relate to the P2 mentors' experience with reviewing low-quality papers and enjoying less of a relationship with their P1 mentees than originally expected.

Course faculty members felt the peer-mentoring experience was beneficial for P1 mentees and P2 mentors in

Table 4. Themes Identified From Second-Year Student Pharmacist Mentors' Written Journaling Reflections

Theme	No. (%)
First journaling activity themes (prior to mentoring activities)	
Desire for mentor-mentee relationship beyond the drug information project	22 (31)
Interest in pursuing teaching in the future	19 (27)
Concern over his/her own ability in drug information assessment and understanding	12 (17)
Concern of evaluating a sub-par draft/not a lot of time put into draft	11 (16)
Second journaling activity themes (after mentoring activities)	
Received poor response(s) that created uncertainty of how to evaluate the draft appropriately	30 (45)
Mentor-mentee relationship beyond the project was less than expected	28 (42)
Felt more confident about future ability to provide/answer drug information questions in the future	26 (39)
Evaluator commented that this particular independent study gave him/her an interest in precepting and/or teaching in the future	8 (12)

providing the opportunity for improvement in the skills involved in responding to a drug information request (P1 students) and providing additional practice in using drug information skills (P2 mentors). The structure was efficient because it allowed for course faculty members to focus on final evaluations of drug information response assignments for a grade, while allowing P1 mentees additional feedback and suggestions to improve their work. Questions that P1 students previously asked course faculty members regarding this assignment were answered by P2 students in the mentoring program. Other elements that supported its success included the delineation of clear roles and expectations for P1 mentees, P2 mentors, and course faculty members; a dedicated, live training session for the P2 mentors that reviewed how to answer a drug information response and how to give formative feedback, and the opportunity for P2 mentors to seek course faculty members' insights and assistance when putting together feedback for the P1 mentees.

SUMMARY

In this evaluation of student-peer mentoring in an introductory pharmacy practice course, the student peer-mentoring program was successful in improving both P1 and P2 student pharmacists' perceptions of ability to compose a drug information response. Future expansion of peer mentoring in this course may involve adding P1-to-P1 mentoring and further investigating factors impacting mentor interest in future teaching after engaging in peer mentoring. Opportunities for peer mentoring beyond assignment-based interactions are well documented in other health care professions related to professional

development and career transitions and are another venue for research in pharmacy education.^{6,7}

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