INSTRUCTIONAL DESIGN AND ASSESSMENT

Active-Learning Instruction on Emergency Contraception Counseling

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Objective. To increase pharmacy students' knowledge of and confidence in counseling patients regarding emergency contraception and to identify any barriers to counseling patients about emergency contraception.

Design. Approximately 200 third-year pharmacy students participated in the Women's Health Therapeutics workshop at Midwestern University Chicago College of Pharmacy. Students observed a 5-minute skit of a counseling session on emergency contraception and then were asked to pair up with a classmate and practice counseling each other regarding the use of emergency contraception following a checklist of key points.

Assessment. One hundred eighty-nine students completed pre- and post-workshop survey instruments. Students' knowledge scores increased from 86% to 93% ($p < 0.001$). Approximately 25% of the students stated they were confident in counseling patients on emergency contraception before completing the active-learning exercise compared to 58.5% after ($p < 0.001$). The most common barrier to counseling that students identified on the pre- and post-workshop survey was lack of knowledge.

Conclusion. Participation in an active-learning exercise significantly increased pharmacy students' knowledge of and confidence in counseling patients regarding emergency contraception and significantly reduced several barriers to counseling identified prior to participation.

Keywords: pharmacy students, active learning, emergency contraception

INTRODUCTION

Emergency contraception is used to reduce the risk of pregnancy following unprotected intercourse or contraceptive failure.¹ From 2006 to 2008, an estimated 10% of American women used emergency contraception.² Levonorgestrel is available by prescription for patients younger than 15 years. For patients aged 15 years and older, the product is available behind the pharmacy counter and can only be obtained by asking the pharmacist. This provides pharmacists with an opportunity to counsel patients on the use of emergency contraception and the importance of using regular birth control. Pharmacists in 9 states have the authority to dispense emergency contraception without a prescription regardless of the patient's age if working with a physician in a collaborative practice agreement.³ In order to ensure that pharmacists are comfortable with counseling patients regarding emergency contraception it is important to incorporate this information into the pharmacy curriculum.

The mechanism by which emergency contraception works has always been a controversial topic. There have been many articles published discussing the proposed pharmacology. According to the Food and Drug Administration's (FDA's) product labeling, levonorgestrel works primarily by altering tubal transport of ova and/or sperm, thus inhibiting ovulation and fertilization, and in turn inhibiting implantation. The drug is not effective once implantation has occurred. The 2 levonorgestrel dosing regimens available are a 1.5 mg tablet taken as a one-time dose (Plan B One Step) and a 0.75 mg tablet taken in 2 doses, 12 hours apart (Next Choice). With either product, the medication needs to be taken within 72 hours after unprotected intercourse for maximum efficacy.⁴ The most common adverse reactions include nausea, abdominal pain, headache, fatigue, and menstrual changes.⁵ Ulipristal (Ella), a prescription-only medication for emergency contraception, was approved in the United States in August 2010. It is administered as a 30 mg tablet taken within 120 hours after unprotected intercourse or contraceptive failure.^{4,6} Research studies within the US⁷⁻⁹ and international¹⁰⁻¹² medical communities have demonstrated that practitioner knowledge of emergency contraception is lacking. Physicians and nurses who received education on emergency contraception were more likely to counsel

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on the topic in the future.¹⁰ A study conducted among New Mexico pharmacists found that 36% of respondents incorrectly believed emergency contraception was RU-486, the “abortion pill” (in contrast to emergency contraception, RU-486 terminates a pregnancy).¹³

Barriers to patient access of emergency contraception have been identified, but in contrast, barriers to a pharmacist’s willingness to counsel on emergency contraception are not well known. A survey of pharmacists and technicians showed that patient gender was not a barrier to access.¹⁴ A study outside of the United States found that one of pharmacists’ main barriers to the provision of emergency contraception was religious opposition to use of the product.¹⁵ In a 2010 American College of Obstetricians and Gynecologists Practice Bulletin on emergency contraception, experts expressed the need for health care providers to understand barriers, especially for younger women, and their implications on clinical practice.¹⁶ It was of interest to the study investigators to assess potential pharmacy student barriers to the provision of emergency contraception counseling.

A few studies have assessed pharmacy students’ knowledge of emergency contraception. Approximately a third of pharmacy students at the University of Arkansas’s College of Pharmacy reported that they did not know the mechanism of action of levonorgestrel and only 4% knew the appropriate time frame for effectiveness. Only 26.7% agreed that they felt competent instructing patients on the appropriate use of emergency contraception. Education on emergency contraception is needed to improve pharmacy students’ knowledge, confidence, and consequently, counseling skills.

The importance of incorporating active-learning strategies into the pharmacy curriculum to increase student knowledge and confidence and meet curricular standards are well documented.¹⁸⁻²³ For example, an active-learning exercise implemented at Mercer University College of Pharmacy and Health Sciences reinforced topics covered in lecture and improved students’ comfort level in recommending nonprescription medication.²⁴

We describe an active-learning exercise that can be implemented in a large group of students using a multi-step approach (lecture, observation, and practice) on the topic of emergency contraception. The activity’s impact on third-year pharmacy students’ knowledge and self-perceived confidence was assessed. The effectiveness of using an active-learning exercise to teach a large group of students regarding a sensitive topic also was evaluated.

DESIGN

This was a cross-sectional study involving 201 third-year pharmacy students participating in the Women’s

Health Therapeutics Workshop at Midwestern University Chicago College of Pharmacy in Downers Grove, IL, in fall 2011. Emergency contraception was first introduced in the Therapeutics sequence during a 3-hour lecture on contraception. Approximately 30 minutes of that lecture was dedicated to emergency contraception. Student attendance was strongly encouraged but not required or documented. In addition to lectures in therapeutics, students were required to attend a weekly workshop. During the workshop, students worked in groups to apply course material to patient cases, clinical controversies, journal clubs, and other various formats. There were approximately 8 workshops each quarter, each 2 hours in length. The workshop on women’s health was 1 of the 8 workshops for the quarter and it occurred 1 week after the therapeutics lecture on contraception. For the workshop, students were divided into 5 groups of approximately 40 students. Each group met in a separate room with a facilitator (faculty member). This group of students was further divided into 8 groups of 5 students.

Workshop room facilitators were notified about plans to introduce the active-learning activity on emergency contraception to the workshop during the weekly pre-workshop session. The study investigators explained the intent of the project and verbally asked each facilitator to participate.

At the beginning of the workshop on emergency contraception, facilitators in each room handed students a matched pre- and post-survey instrument and explained the project. Each set of pre- and post-workshop survey instruments had been labeled ahead of time with the name of a tree (apple, ash, oak, pear, etc) to allow post-survey matching of instruments while maintaining student anonymity.

Students were asked to complete the pre-workshop survey instrument which included questions related to knowledge and beliefs regarding emergency contraception. Immediately following the pre-survey, students observed a 5-minute skit of a counseling session on emergency contraception. The workshop room facilitator and a fourth-year pharmacy student on an advanced pharmacy practice experience acted out the skit, with one of them acting as the mock patient and the other acting as the pharmacist. The skit was written by the study investigators and the same skit was performed in each of the 5 rooms for the 5 groups of students. The skit included open-ended questions posed to the mock patient, counseling on possible adverse reactions, and the importance of regular use of birth control.

Following the skit, the students were given a checklist of counseling points and asked to pair up with a classmate and practice counseling each other regarding the

use of emergency contraception. After this 5-minute active-learning activity, students were asked to complete the post-workshop survey instrument. In addition to the same questions on the pre-workshop survey, the post-workshop survey included questions about the active-learning exercise.

The observation (skit) and practice (peer counseling) part of this project, including survey administration, was approximately 30 minutes in length. After completion of the learning activity and research surveys, the students were given their required (graded) workshop assignment to work on for the remaining 90 minutes.

The students' participation in this activity was voluntary and did not impact their academic performance. This research was approved by the Institutional Review Board of Midwestern University. Survey responses were coded and entered into a database. McNemar's chi-square and paired sample *t* tests were used to compare responses for pre- and post-survey instruments.

EVALUATION AND ASSESSMENT

Out of the class of 201 students, 189 third-year pharmacy students participated in the study (3 students were absent and 9 students declined to participate). Of the 189 participants, 62% were female. Over half (58.9%) were Caucasian; 36.8% were Asian, 2.2% were Hispanic, and 1.1% were African American. The average age was 26 years $\pm$ 3.4 years. The majority of students (80%) classified themselves as single and 96% did not have children. More than half (66.1%) of students stated they currently worked at a pharmacy, with 60% working in a community pharmacy and 6% in the hospital setting. While almost half of the students (47.6%) had observed pharmacists counsel patients regarding emergency contraception in the past, 68.3% had not counseled anyone on emergency contraception prior to the active-learning activity.

Included within the pre- and post-workshop survey instruments were a series of knowledge-based questions on emergency contraception. The average percentage of correct scores on the pre-workshop survey instrument was 86% vs 93% on the post-workshop survey instrument ($p<0.001$). Over 90% of students were aware that a new product for emergency contraception was approved in 2010. Most of the students (82%) correctly identified a common side effect of emergency contraception (menstrual irregularities) on the pre-workshop survey instrument vs 92% on the post-workshop survey instrument ($p=0.003$). Most students (92%) correctly answered that male and female students over the age of 17 years can obtain levonorgestrel without a prescription and an even greater percent (97%) correctly identified this on the

post-workshop survey instrument ($p=0.013$). The majority of the class knew that ulipristal is only available by prescription (95% on the pre-survey instrument vs 100% on the post-workshop survey instrument, $p=0.004$). More than three-fourths of the class knew the generic name for Ella on both the pre- and post-workshop survey instruments. The majority of the class (98%) on both the pre- and post-workshop survey instruments identified that it is important to ask patients how much time had elapsed since intercourse to appropriately assess the need for emergency contraception. When asked to identify appropriate counseling points in a patient case, 95% of students correctly identified on the pre-survey instrument that patients should be educated that the medication does not cause abortion, should not be used for regular birth control, emergency contraception does not protect against sexually transmitted diseases, and if emesis occurs in the first few hours another course of emergency contraception may be needed vs 98% on the post-workshop survey instrument ($p=0.016$). The majority of students (78.4%) correctly identified that ulipristal is effective up to 120 hours on the pre-workshop survey instrument vs 94.6% on the post-workshop survey instrument ($p<0.001$). Female students scored higher on both surveys instruments (89% pre-workshop survey instrument and 94% post-workshop survey instrument) vs. 81% pre-workshop survey instrument and 92% post-workshop survey instrument for male students ($p<0.001$).

On the pre-workshop survey instrument (before the learning exercise), 26.1% of students indicated they were confident in counseling patients on emergency contraception vs 58.5% on the post-workshop survey instrument ($p<0.001$). More male students (61.4%) and female students (57.8%) rated their confidence as "very confident" on the post-workshop survey instrument compared to the pre-workshop survey instrument (21.4% for male students and 29.3% for female students, $p<0.001$ respectively). Also, 6.9% of students rated their ability in counseling patients on emergency contraception as excellent on the pre-workshop survey instrument compared to 36.4% on the post-workshop survey instrument ($p<0.001$).

Students were provided a set of anticipated barriers to counseling on emergency contraception. They were asked to rate the degree to which it hindered their ability to counsel on emergency contraception. Students were provided a scale of 0 to 100, with 0 representing "not a barrier" and 100 representing "it's a definite barrier." Results are listed in Table 1. Male students identified their gender as more of a barrier than did female students on the pre-workshop survey instrument (23% vs 3%, respectively, $p<0.001$). On the post-workshop survey

Table 1. Pharmacy Student Barriers to Emergency Contraception Counseling

Barriers ^a	Degree of Hindrance on Ability to Counsel		P
	Mean Score (Pre-workshop)	Mean Score (Post-workshop)	
Lack of knowledge on emergency contraception	41.0	19.8	<0.001
Student gender	11.3	8.6	0.002
Student spiritual beliefs	8.2	6.7	0.024
Nonprescription emergency contraception will discourage regular contraception use or promote unsafe sex	20.8	13.8	<0.001
Student has never seen counseling on emergency contraception	29.2	N/A ^b	

^a Scores were based on a scale of 0-100, with 0 representing “not a barrier” and 100 representing “it’s a definite barrier.”

^b Students were not questioned about this barrier on the post-survey instrument because the active-learning exercise included an observation of emergency contraception counseling.

instrument, gender remained a larger barrier to male students than female students (16% vs 4%, $p < 0.001$). However, after the active-learning exercise, male students found their gender to be significantly less of a barrier than before (23% vs 16%, $p < 0.001$).

After the active-learning activity, 95% of students indicated they were more likely to counsel patients on emergency contraception. Students also had the opportunity to write in what they felt was the most helpful part of the exercise and why. The majority of students (35%) who wrote a response indicated that observing the skit was the most helpful, followed closely by practicing counseling with their peer (24%). Other students felt that the combination of lecture, observation, and practice was beneficial (18%).

DISCUSSION

The third-year pharmacy students who participated in this activity were knowledgeable regarding emergency contraception, as indicated from pre-workshop survey results, suggesting that they may have retained this information from the lecture that they attended 1 week prior. The number of students who attended the lecture was not known as attendance was not mandated or documented. Most students correctly identified how long levonorgestrel is effective and the common side effects of emergency contraception. Their high knowledge scores may also be attributed to their community pharmacy experiences as almost half of the students had observed a pharmacist counsel a patient on emergency contraception. Surprisingly, students’ knowledge scores significantly improved on the post-workshop survey instrument despite high knowledge scores on the pre-workshop survey instrument. This supports the strength of using an active-learning exercise to reinforce concepts from lecture.

Two-thirds of the third-year pharmacy students participating in this study had never counseled a patient

regarding emergency contraception prior to the active-learning activity. This may have contributed to their perceived confidence in their ability to counsel. On the pre-workshop survey instrument, only one quarter of students indicated they were confident in counseling patients on emergency contraception. After being given the opportunity to practice this skill, students’ self-rated confidence levels increased. Although outside of the scope of this study, these results may translate to future practice, reflecting an increased willingness to counsel patients in a real world setting.

The main barrier identified on both the pre- and post-workshop survey instruments was students’ self-perceived lack of knowledge. This is similar to findings from a study at the University of Arkansas College of Pharmacy in which only 26.7% of students felt competent about educating patients regarding the use of emergency contraception.¹⁷ The authors of that study concluded that pharmacy students could benefit from additional training in use of and counseling regarding emergency contraception. In our study, 1 active-learning exercise was implemented to overcome this barrier. After viewing a 5-minute skit and the opportunity to practice counseling on emergency contraception, the students’ self-perceived barrier of lack of knowledge was significantly reduced by half.

The second greatest barrier identified in both pre- and post-survey instruments was that pharmacy students felt the use of emergency contraception would promote unsafe sex and discourage regular contraception use. To counter this barrier, the skit purposely conveyed the message that emergency contraception should not be used as a birth control method. In a study involving secret shoppers in the community setting, only 32.5% of all pharmacies discussed with patients the need for ongoing contraception use after emergency contraception use.²⁵ In a study involving New Mexico pharmacists’ beliefs and attitudes towards emergency contraception, 88.1% of pharmacists

believed that other forms of contraception should be discussed when emergency contraception is dispensed.¹³ This suggests the importance of pharmacists having knowledge and counseling skills regarding contraception and the need for these areas to be included in the pharmacy curriculum.

Pharmacy students' spiritual beliefs were not identified as a barrier to counseling on emergency contraception. While female students did not consider their own gender a barrier to providing counseling on emergency contraception, male students did. After completing the learning exercise, however, male students ranked their own gender as being less of a barrier.

Emergency contraception is considered a "hot topic" in pharmacy and because pharmacists are on the frontlines of access to care, they need to be knowledgeable in this area. As demonstrated in this study, the addition of an active-learning exercise may impact future pharmacists' willingness to counsel on emergency contraception. This is supported by almost the entire class indicating they were more likely to counsel on emergency contraception after the exercise. Students found that observing pharmacists counsel and practicing counseling were the most helpful. Although students did not comment on "why" those activities were most helpful, it reflects that students responded positively to this approach to learning.

It is important to note that the majority of these students had never counseled anyone regarding emergency contraception. Offering just 1 opportunity to observe and practice counseling on a controversial topic resulted in a greater likelihood that they would counsel patients in the future. Thus, just 1 practice session has the potential to impact patients in their future who will be seeking emergency contraception. This is similar to the results seen in the study at Mercer University College of Pharmacy and Health Sciences,²⁴ which concluded that student comfort levels improved with the combination of lecture and active-learning techniques.

Our project supports that students learn through observation and active participation. While it has been previously discussed and proven that active-learning exercises help students retain what they have learned,^{21,27} this study demonstrates that even the knowledge level of students who are already familiar with emergency contraception can be improved by using active-learning techniques. Our findings reflect the importance of pharmacy students having the opportunity to practice in an academic environment to refine and reinforce clinical knowledge and counseling skills. This prepares students for careers in community pharmacy, where pharmacists are easily accessible to provide clinical information to patients and the public.

This study makes use of a convenience sample; thus, results may not be generalized to other colleges and schools of pharmacy. The pre-workshop survey instrument was administered 5 days after the emergency contraception lecture which could have led to the high average knowledge and confidence scores on the pre-workshop survey instrument. The post-workshop survey instrument was conducted immediately after the active-learning exercise, so it is unknown whether students' gains in confidence or knowledge will endure over time. Future studies should address how long students' confidence and knowledge is maintained.

Only students' self-perceived confidence was assessed in this study. Students were given an opportunity to counsel a peer on emergency contraception using a checklist of important points to cover, but their counseling session was not assessed for accuracy or completeness. We felt that an assessment of the accuracy of the counseling was beyond the scope of this project. Without being evaluated on the content of their counseling, students may become more confident but their confidence will be based on incorrect information. We attempted to minimize this by providing the checklist, but the limitation still exists.

This activity occurred simultaneously in 5 workshop rooms. Workshop room facilitators were asked to explain the intent of the project, participate in the skit, administer the survey instruments, and monitor student participation in their room. This may have been a lot to ask faculty members to do compared to their normal weekly workshop routine. In addition, because the facilitators were not asked to count the number of students who participated in the active-learning exercise, it is unknown how many students actually practiced counseling with their peers.

Nine students declined to participate in the survey portion of the study and all of these students were in the same workshop room. Because the facilitator in each workshop room was responsible for explaining the activity and methods, there was miscommunication regarding the importance and intent of the project. Student willingness has been identified as a potential weakness for implementing active learning and some students may require "buy in" from the faculty member in order to participate.²¹ In addition, some faculty members may feel uncomfortable with active-learning techniques/methods for fear of "losing control" of the class session.²¹ These factors may have contributed to this circumstance. Prior to this activity, workshop facilitators were not asked about their confidence or comfort level in overseeing this activity in their workshop rooms, therefore, that is a limitation in our study design.

This study has several implications regarding the pharmacy curriculum. Educators may struggle with finding ways to incorporate active-learning techniques into their courses and may need a model for implementation. Time constraints may pose a potential barrier²¹ but our study demonstrates that the addition of a 5-minute demonstration in the form of a skit followed by a 5-minute practice session was easily incorporated into 1 workshop. A large class size, as proven in this study, should also not be considered a barrier. Using a time period when the students are already divided into groups and/or assembled in small rooms is advantageous for optimal viewing of the skit and ease of pairing up with another student to practice.

We created a lecture-observation-practice model, but it is not necessary to wait until a student has learned the material in a core course before introducing the observation component. Outside of the classroom, opportunities to observe pharmacists counsel on emergency contraception via introductory pharmacy practice experiences would provide exposure for first- and second-year students. Active-learning exercises, such as the one used in this study, can be incorporated in workshops and/or laboratories later in the curriculum. Addressing emergency contraception earlier and more often in the curriculum may also increase students' confidence and knowledge level in this area.

SUMMARY

An active-learning exercise significantly increased third-year pharmacy students' knowledge about and self-perceived confidence levels in counseling patients regarding emergency contraception. Students identified barriers to counseling were significantly reduced after participation in the exercise. Pharmacy students should be given the opportunity to practice in an academic environment to refine and reinforce clinical knowledge and counseling skills.

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