Students as Patients and Teachers: Evaluation of an Experiential Emergency Contraception Project

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BACKGROUND AND OBJECTIVES: Students on a required family medicine clerkship participated in an experiential project designed to teach them about emergency contraception (EC). This study describes students’ changes in knowledge and attitudes about barriers to care after assuming the patient role and presenting their findings to peers and after hearing a presentation about EC from their peers.

METHODS: This mixed-methods study used quantitative measures of knowledge and attitudes about EC before and after the students’ family medicine clerkship. Qualitative in-depth interviews were conducted with all students who self-selected the EC Project and assumed the role of a patient and then taught their peers.

RESULTS: All student groups showed improvement in knowledge and attitude scores, though gains were not statistically significant. Students who participated in the EC Project reported multiple benefits related to (1) assuming the role of the patient, (2) engaging in an experiential learning process, (3) teaching their peers, and (4) considering their future role as clinicians.

CONCLUSIONS: Our findings demonstrate that playing the role of a patient and teaching their peers are valuable learning experiences, and students can learn well during peer-taught sessions. Students increased their medical knowledge and sensitivity to the barriers that patients face and began to consider their role in improving systems of health care.

(Fam Med 2011;43(3):172-8.)

Emergency (or post-coital) contraception pills (EC) are a safe and effective treatment to prevent pregnancy after unprotected sex.¹ In 2006, a specific EC product (Plan B®) was approved for over-the-counter (OTC) sale to women ages 18 and over; in 2009, the age limit was reduced to 17 and over.² Despite this improved access, several barriers to EC use remain relevant, including lack of patient or provider knowledge, barriers in the office or clinic system, and barriers at the pharmacy.³⁵ In the context of the Patient-centered Medical Home, family physicians must be knowledgeable about EC and barriers to access, so that they can counsel their patients appropriately. To date, there have been no published studies of educational interventions in the United States specifically designed to teach medical students about EC access. To address this gap, we explored the educational impact of an experiential family medicine project in which medical students assumed the role of patients trying to access EC and then taught their peers what they learned from assuming a patient role.

The extensive literature on patient simulation and role-playing as part of undergraduate medical education includes only a few studies about medical students assuming the role of patients accessing services to learn about the patient experience.¹⁰,¹¹ No articles discussed medical students assuming the role of a patient to learn about systems barriers to accessing health care; one study described pediatric residents who took on the role of patients seeking community resources to solve complex life problems.¹² The extensive literature on peer-assisted learning (PAL) in undergraduate medical education focuses on students as cross-year tutors,¹³-¹⁵ with only a few describing medical students teaching peers at the same educational level.¹⁶,¹⁷

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This study describes the experiences of third-year medical students who participated in an experiential EC Project during their family medicine clerkship and then presented their findings to same-year peers. To our knowledge, this is the first study to (1) describe a project dedicated to teaching medical students about EC access and (2) assess medical students’ changes in knowledge and attitudes about barriers to care after assuming the patient role and presenting their findings to peers.

The primary quantitative outcomes we measured were medical students’ changes in knowledge and attitudes regarding EC access before and after the family medicine clerkship. We hypothesized that students who experienced the EC Project and presented to their peers would show the greatest gains in EC knowledge and positive attitudes, followed by the peer-educated and control groups in descending order. We used qualitative in-depth interviews to explore students’ learning both when assuming the patient role and teaching their peers, as well as the overall impact of the project on their intended future clinical practices regarding EC.

**Methods**

This study used a mixed-methods design, with qualitative interviews and quantitative pretests and posttests, to assess the educational impact of the EC Project on the knowledge and attitudes of third-year medical students. The study was a non-randomized educational trial in which students were assigned to an EC project experience group, a peer-educated group, or a control group. The study evaluated all of the students with a pre- and post-clerkship evaluation instrument, which was administered to the control group prior to the peer education sessions and to the peer-educated group after the education sessions. The in-depth interviews were conducted only with the students in the EC project group.

The research was granted an exemption from formal review by the Committee on Clinical Investigation at Albert Einstein College of Medicine (AECOM).

**Setting and Participants**

All participants were third-year medical students at a private urban medical school completing a required 1-month ambulatory family medicine clerkship between June 2007 and May 2008. In addition to didactic sessions and clinical experience in the family medicine setting, all students completed a community-based project during this clerkship. Prior to starting the clerkship, all students selected their preferred community experience from seven possible choices and worked in teams of two or three students. At the end of each rotation, each team of students presented the findings of their community experience to the entire clerkship group. Students who participated in the EC Project during their family medicine rotation met with the project advisor, reviewed the literature on EC, selected a target group, such as pharmacies or health clinics, and used an IRB-approved script to assume the role of patients asking for EC. The project outcomes, specifically data on access to EC, were presented to their peers at the end of the rotation as part of their final clerkship experience. These presentations included background information about EC and practice recommendations. There were no other formal didactic sessions covering EC during the clerkship; students learned about EC based on their individual experiences at each clinical site.

At the beginning of the clerkship, all students, including the ones on the EC project, completed a pretest assessing knowledge and attitudes about EC. At the end of the clerkship, all students completed a posttest for the same parameters. To assess and compare a change in knowledge and attitudes among students who were exposed to formal peer education on EC, as compared to those who were only exposed to EC education as part of their routine clerkship experience, we administered the posttest to half of the entire clerkship groups before they heard the EC peer presentation (control group) and to the other half of the groups after they heard the EC peer presentation. These groups were not randomized but were assigned by the research team on alternate months (Figure 1).

We collected both quantitative and qualitative data from 10 of the 12 4-week clerkship groups that rotated during the academic year. The remaining two clerkships served as pilot groups for the quantitative data. Each clerkship cycle includes approximately 12–15 students, and each rotation was given a specific identifying number.

There were no data collected on the demographics or gender of students who participated in the quantitative or qualitative aspects of the project. There is a general trend that more females self-select this project, but male students also participated. There were two scripts developed and used by students depending on the gender of the caller; female students assumed the role of a woman seeking EC for her own use, and male students assumed the role of a man seeking EC for his female partner. Phone calls were made from the department offices or students’ personal phones, allowing students the options to examine differences in access between evening hours and daytime hours or weekends and weekdays.

**Data Collection**

This project utilized quantitative and qualitative methods for data collection.

**Quantitative.** A multiple choice questionnaire, with Likert-style items, was developed by the researchers to assess third-year medical students’ knowledge and attitudes regarding EC and barriers to access. One author (MG), who has extensive experience teaching third-year students in the area of reproductive health, provided leadership on question content. A group of
clinicians participating in a 2-year Reproductive Health Fellowship under the mentorship of this author assisted with question development. The questions were developed based on the fellows’ and the author’s clinical experience, as well as a review of the current literature on EC. The questionnaire was piloted for clarity in the previous year with third-year medical students.

All students in the family medicine clerkship received the pretest/posttest questionnaire on the first and last days of the clerkship respectively, during didactic learning sessions that occurred at the College of Medicine. To minimize diffusion of treatment effects, intact clerkship groups were assigned to peer-educated and control conditions. Peer-educated clerkship students completed the posttest survey after hearing the EC peer-presentation; control group clerkship students completed their posttest before hearing the EC presentation, and the EC Project group students completed the posttest survey after completing their presentation. Generally, students in the odd numbered clerkships received the posttest before the EC student peer presentation, and students in the even numbered clerkships received the posttest after the EC student peer presentation, with some variation due to logistics. This alternating design allowed the researchers to assess the impact of the presentation on students’ knowledge and attitudes scores. Students who participated in the EC Project were assessed for pre/posttest changes independently of the other two groups.

Qualitative. A qualitative interview guide was also developed by the researchers, reviewed by the Reproductive Health Fellows, and pilot tested with third-year clerkship students for clarity and sequencing of questions in the previous year (Table 1). A public health educator/consultant, who was otherwise uninvolved with the medical students, conducted the 30-minute semi-structured interviews with each group of two to three medical students who participated in the EC Project. Interviews took place after the didactic learning session where the EC students presented their findings to their peers, on the final day of the clerkship at the College of Medicine. The interviews were digitally recorded and transcribed.

Data Analysis

Quantitative. Survey responses were combined into two scale scores reflecting knowledge of EC and attitudes toward EC prescription. Regression analyses were conducted to assess the impact of the peer presentation on knowledge and attitude toward EC. These models compared pretest to posttest scores between the control and peer-educated groups while controlling for

Table 1: Sample Questions From Interview Guide for Students Participating in Experiential Emergency Contraception Community Project

1. Tell me about which aspects of the EC Project you found most valuable for your education? Least valuable? Anything that was especially memorable?
2. Who did you talk to about EC during the project (patients, professionals, staff)? Comment on the level of knowledge about EC among the people you encountered.
3. Tell me how (what) you learned about barriers to women accessing EC?
4. What did you learn about the larger context and system of health care?
5. What does this project teach you about the role of physicians as advocates for individual patients? And about the role of physicians as advocates for systems change? Is there a role?
6. How do you think your participation in this project may influence your future practice of medicine? Do you think you would feel that way if you had NOT participated in this project?
7. Did the process of preparing to teach your peers impact your knowledge and attitudes about EC? Tell me more.
8. How would you compare this project to other educational experiences in this and other clinical clerkships?
9. This rotation focused on EC, but thinking beyond EC, have you gained knowledge or insight in any other areas? For example, what did you learn about the role of cost? The influence of pharmacists? Patients’ knowledge or lack of knowledge about access to medication?
10. How does assuming the role of the patient influence your educational experience? Is there a difference between participating in this hands-on project, versus hearing a didactic lecture on EC?
baseline scores. Due to the small sample size, the EC Project group was not included in the regression analysis, but their data are reported in Table 3 for the purposes of discussion.

Data analysis included descriptive summaries of variable distributions to verify data assumptions and examine data for outliers prior to regression analyses. Analyses were done using Stata (StataCorp. 2007. Stata Statistical Software: Release 10. College Station, TX: StataCorp LP) and SPSS (SPSS for Windows, Rel. 15.0.1.1. 2007. Chicago: SPSS Inc).

Qualitative. Two family medicine faculty members involved with the EC Project, the interviewer, and a staff researcher new to the project analyzed the qualitative data. The interviewer reviewed the transcripts and prepared summaries of the responses. The four reviewers discussed the summaries and developed a list of themes, and the interviewer coded the data according to the themes. The reviewers then merged overlapping themes and identified four salient themes.

Quantitative Results
The breakdown of the sample by study group is listed in Table 2. Matching pretest and posttest surveys were successfully collected from approximately nine students per rotation. All three student groups showed improvement in knowledge and attitude scores at posttest, with larger gains seen in overall knowledge scores (Table 3, Figures 2, 3). Students who completed the EC Project demonstrated the most marked improvement. The regression model comparing knowledge scores between peer-educated and control groups was nonsignificant (F (3, 174)=.55, P=.65), and indicated the groups did not differ significantly in terms of their gains from pretest to posttest. The regression model for attitude scores was significant, (F (3, 174)=5.39, P=.001) based on the change over time for both groups, but there were no significant group differences in gains.

Qualitative Results
Students who participated in the EC Project reported multiple benefits, which we have organized by three themes: assuming the role of the patient, engaging in an experiential learning process, and teaching their peers. We also address the impact of the project on the students as future clinicians.

1. Assuming the Role of the Patient
By assuming the role of a patient, students gained insight into what a patient might experience when trying to access EC from a pharmacy or health clinic. All student groups experienced discomfort in seeking EC, as one student relayed: “I was nervous, even though I was role-playing and…what they were saying really had nothing to do with me, I was nervous because I was taking on the role of a patient, and I don’t like calling people that I don’t know.” A student who went to pharmacies said: “There were just a lot of elderly people around, and… I didn’t want them looking at me like I was some promiscuous young girl. So I had to walk out of there, and it was just… a fake situation.”

Nearly all groups reported gaining empathy for patients who might experience discomfort in seeking EC. One student expressed this common theme: “It made me really understand how difficult that might be to pick up that phone… It’s wonderful for us if physicians say oh, well, it’s over the counter now, it should be very easy to get… But to actually have to walk into a pharmacy… made me sympatheize with patients a lot more about maybe why they don’t always go get it.” Approximately half of the groups also noted it might be more difficult for patients in marginalized positions to seek EC. One student acknowledged: “I’m educated, and what if there’s someone who isn’t and doesn’t know about the drug and is really walking into a pharmacy blindly? It can be a very intimidating experience, and it could be enough to keep them from getting it.”

2. Experiential Learning
The vast majority of groups expressed appreciation for the unique experiential aspects of the project compared to more traditional forms of learning. One student remarked: “It’s very hands on and… personalized things in a way that maybe other projects have not really done… just helps to put yourself in someone else’s place and see what it feels like… as opposed to just read about them.” Another student commented: “It had all these… objective findings, that probably I would be presented with in the lecture. But then I had all these subjective findings, you know, which type of pharmacies to go to, do crowds make it worse, female pharmacists are probably better to approach. And I don’t really know if I would get the same understanding from it… I mean, I wouldn’t.”

Most groups also appreciated the self-directed nature of the project, as one related: “I like[d] this educational experience because it was something we had to find out on our own, and we had to do the research by ourselves.”

3. Teaching Peers
Preparing their presentations and sharing their findings with peers was an important part of the learning process for many groups because it provided an opportunity to synthesize their findings. One student expressed: “I also felt that most of my knowledge came at the end of the study, when we were putting Powerpoints together… rather than when I first started making the phone calls.” Another student explained: “It helped me kind of sit down and put everything together… the presentation is important because it makes you sit down and think and piece everything together. And, more importantly, I think—I think my classmates learned something.”

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VOL. 43, NO. 3 • MARCH 2011
The majority of groups also felt an increased responsibility because they were expected to teach their peers; as one student stated: “When you have to teach people things, you actually have to really understand it, because they might ask you a question...So it’s a really great way to make sure you really know what you’re talking about.”

4. Overall Impact of EC Project
In addition to experiencing the emotional barriers, all groups developed an understanding of the logistical barriers patients might face in trying to access EC. As one student commented: “If I was in that situation, forty, fifty bucks is quite a bit of money.” Another student commented: “You can’t send out your partner, your brother, your husband to buy it [EC] for you...We found 36% of pharmacists wouldn’t sell it to men.” All groups also discussed how ethical conflicts, lack of information, or misinformation among pharmacists could play a role. However, all groups reported at least one positive experience, finding that EC was relatively available or that pharmacists had basic knowledge about EC.

Students also reflected on the project’s impact on their future practice. Many groups reported feeling more committed to discussing EC routinely with patients. One student explained: “I didn’t talk to patients about it so much [before the project]...because I’m not comfortable talking to patients on topics I don’t know much about. So now that I have information, I will talk more about it with patients.”

Most groups also discussed learning about the role of physicians as advocates, either through direct patient education or by addressing larger systems issues. One student stated: “If anyone’s really going to advocate for patients, it should be physicians...because they have the medical...[and] personal knowledge of the patients...I’ve never really been into politics or social movements, but...you see all these personal experiences, and they kind of just push you to be an advocate, because you are...the bridge between these patients’ needs and what can be done.” At the same time, not all students felt prepared to step into the advocacy arena: “To be perfectly honest, one of the lower things on my list is how to create a change within the health care system because I’m still on this steep learning curve, how to make sure I don’t kill patients every day.”

**Discussion**
Through participation in the EC Project, medical students learned important lessons specifically about EC and more generally about barriers to care and the role of physicians in addressing them. Although observing the educational presentation had no statistically significant effect on knowledge and attitudes of the peer-educated group compared to the control group, the differences observed might warrant further investigation. In addition, the descriptive
quantitative data suggest that participating in the peer-presentation and experiential project may have had positive impacts on knowledge and attitudes toward EC among students in the EC Project group. While the limitations of this project do not permit the generalization of these results, our findings warrant further research on the impact of observing peer presentations and participating in experiential projects that include peer teaching.

In qualitative interviews, students reported benefits from assuming the patient role and teaching their peers and also discussed the project’s impact on them as future providers. Students experienced discomfort in seeking EC, which increased their empathy for patients in this role. In addition, students identified other barriers patients might face, such as cost and misinformation among both patients and pharmacists. At the same time, students reported some positive experiences—that EC was either generally available or pharmacists had basic EC knowledge. In comparing the project to more traditional learning, students expressed appreciation for the experiential aspects of the project. They noted the importance of teaching peers, which was a way to synthesize their findings, and also increased their feelings of responsibility toward their learning. In thinking about their future practice, students reported a greater commitment to discussing EC routinely with patients and considering their broader role as physician advocates. All of these self-identified behaviors support patient-centered care principles central to primary care practice.

Because medical education stresses evidence and diagnosis, the patient-centeredness of care is often lost. By assuming the patient role, medical students learned to empathize with patients seeking care and understand the barriers they often face. Aligning students with patient experiences may encourage them to provide more compassionate patient-centered care, as well as advocate for both individual patients and larger system changes. This project afforded an educational opportunity for medical students to increase their EC knowledge and that of their peers, which may influence practice behaviors in the future.

There are a few limitations to this study. First, because this study reflects the experience of one urban private medical school, there may be limits to the generalizability to other settings. Second, though confidentiality was assured, students may have felt inclined to provide positive feedback regarding their experiences. To minimize this, the interviews were intentionally conducted by an outside health educator who was not involved with the institution or students. Third, demographic information was not collected from students and so we could not control for possible confounders. Fourth, whether immediate changes in knowledge and attitudes were sustained over time could not be measured within the scope of the study design but could be assessed in future studies. Fifth, since students self-selected their community projects, the students involved with the EC project may have been especially motivated to increase their knowledge about EC. However, students did not know that they would be assuming the role of patients when they selected the project, so their report of increased empathy probably reflects a true educational change.

Despite these limitations, our findings demonstrate that playing the role of a patient and teaching their peers are valuable learning experiences. Through the experience of assuming the patient role and preparing presentations for their peers, students increased their medical knowledge and sensitivity to the barriers that patients face and began to consider their role in improving systems of health care.

ACKNOWLEDGMENTS: Data included in this paper have been presented in preliminary form at the 2009 Davidoff Teaching Day at AECOM in Bronx, NY, and were presented in final form at the 2010 Society of Teachers of Family Medicine Annual Spring Conference in Vancouver.

We are grateful to the students who generously shared their time with us for surveys and interviews. We also thank Megan Greenberg for her help with research and copy editing, Finn Schubert for his help with copy editing, and Yisheng (Vincent) Huang for his contributions to the data analysis.

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