

Incorporating a Teaching Electronic Medical Record to Answer Patient-Specific Drug Information Questions in the Didactic Setting

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BACKGROUND

- The ACPE 2016 Standards for the Didactic PharmD Curriculum require health informatics, with an expectation that student pharmacists have comprehensive knowledge and are practice ready.¹ Comprehensive knowledge of health informatics includes the use of electronic medical records (EMRs).
- An estimated 37% of pharmacy schools use some type of electronic health record within didactic teaching.²⁻⁴
- Previous studies have shown improvement in student pharmacist knowledge, perceptions and confidence in health informatics when the utilization of an EMR is incorporated as part of didactic training. This integration has previously included laboratory sessions and lectures utilizing a team-based learning approach.^{5,6}

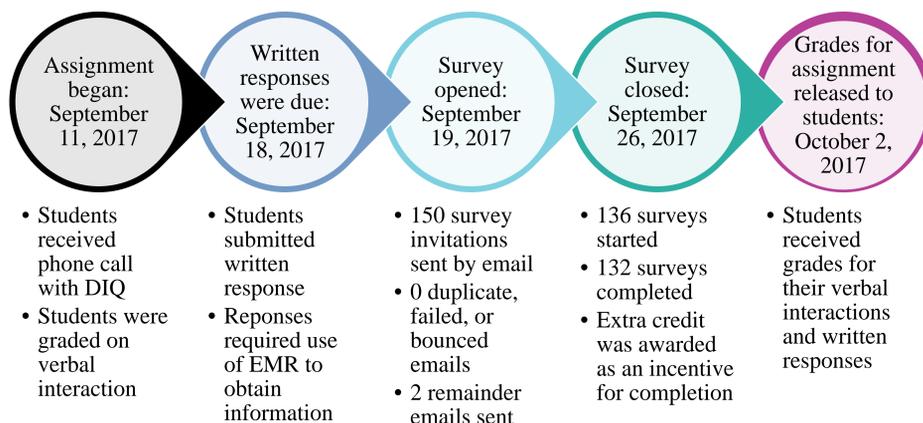
OBJECTIVES

- To incorporate an EMR within a patient-specific drug information (DI) assignment
- To assess student perceptions of EMR use in the didactic setting

METHODS

- A total of 150 second-professional year students enrolled in a drug information and literature course (PHRM 84800) at Purdue University College of Pharmacy received a patient-specific DI question (DIQ) as part of a required assignment.
- Students were required to use an EMR to obtain information to provide an accurate response. The EMR utilized was provided in partnership with Regenstrief Institute.
- Following completion of this assignment, students were invited to complete a retrospective pre-post survey instrument. (Figure 1)
- The investigators developed the survey instrument designed to collect student perceptions before and after the assignment regarding the importance of EMR access when answering patient-specific questions and the impact of didactic EMR use on their future performance and confidence.
- The survey instrument was reviewed by four drug information professors and was pretested by six reviewers that consisted of non-second year pharmacy students and pharmacists in their post-graduate training.
- The final survey instrument included 12 statements and asked respondents to rate their level of agreement with each using a 5-point Likert scale (1 = strongly agree, 2 = agree, 3 = undecided, 4 = disagree, and 5 = strongly disagree).
- Qualtrics Survey Software™ (Qualtrics Lab, Provo, Utah) was used to format and distribute the survey electronically, while maintaining the confidentiality of all participants.
- The study was granted exempt status for human subjects research by the Purdue University Investigational Review Board (IRB)

Figure 1: DI Assignment Timeline



Statistical Analysis

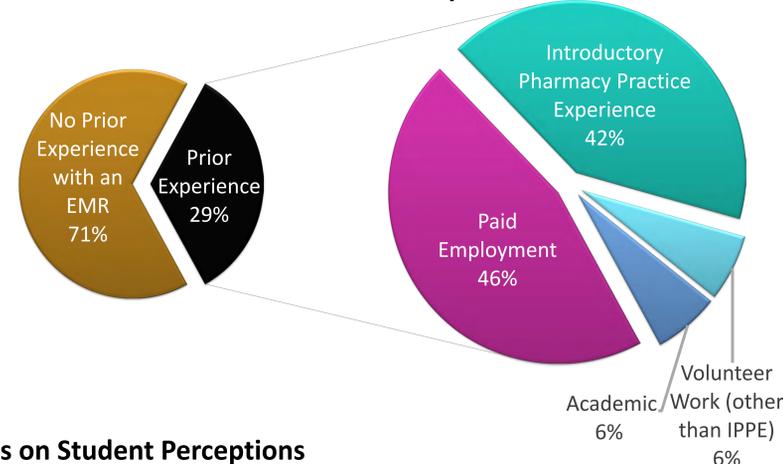
- Data obtained were reported with descriptive statistics where appropriate. Comparisons of initial and current perception mean scores for each Likert-statement response was analyzed with a Wilcoxon signed-rank test.

RESULTS

Participants

- A total of 132 students completed the survey, resulting in a response rate of 88%.
- Participants were mostly female (74%) with an average age of 22 years.
- The majority of students (71%) did not have prior experience with an EMR. (Figure 2)

Figure 2: Student Pharmacists' Previous Experience with an EMR



Effects on Student Perceptions

- After the assignment, respondents had statistically significant improvement in perceived knowledge and confidence in use of an EMR based on mean Likert Scale scores. (Table)

Table: Mean Likert Scale Scores

Likert Statement*	Mean (SD), Before	Mean (SD), After	P value
I am confident in my ability to look up and obtain patient specific information from an electronic medical record (EMR). N = 132, 128	3.49 (1.05)	2.09 (0.70)	<0.001
Access to an EMR is useful for completing the drug information question assignment. N=132, 131	2.08 (0.78)	1.63 (0.81)	<0.001
Access to patient information in an EMR is necessary to provide appropriate responses to drug information questions in pharmacy practice. N = 132, 131	2.02 (0.75)	1.44 (0.58)	<0.001
Using the teaching EMR to complete the drug information assignment will improve or has improved my knowledge of EMR systems. N = 132, 130	2.30 (0.79)	1.70 (0.80)	<0.001
Using the teaching EMR to complete the drug information assignment will improve or has improved my confidence in using EMR systems. N = 131, 130	2.34 (0.76)	1.84 (0.81)	<0.001
Student pharmacists should be exposed to EMRs during classroom coursework. N = 131, 131	1.87 (0.80)	1.42 (0.67)	<0.001
The teaching EMR used at Purdue College of Pharmacy is easy to learn and easy to navigate. N = 131, 130	3.09 (0.84)	2.60 (0.99)	<0.001
The teaching EMR used to complete the drug information assignment will improve my performance during upcoming IPPE and APPE rotations. N = 132, 131	2.33 (0.74)	1.98 (0.78)	<0.001
Access to the teaching EMR for the drug information assignment will improve or has improved my verbal score. N = 131, 130	3.05 (0.72)	2.93 (0.90)	0.03
Access to the teaching EMR for the drug information assignment will improve or has improved my written score. N = 132, 131	4.71 (3.08)	3.05 (2.70)	<0.001
The integration of the teaching EMR within the drug information course will enhance or has enhanced my overall learning experience. N = 132, 131	2.23 (0.75)	1.84 (0.73)	<0.001
It is an expectation that pharmacy graduates are ready to appropriately use health information tools, including EMRs. N = 132, 130	1.95 (0.79)	1.62 (0.80)	<0.001

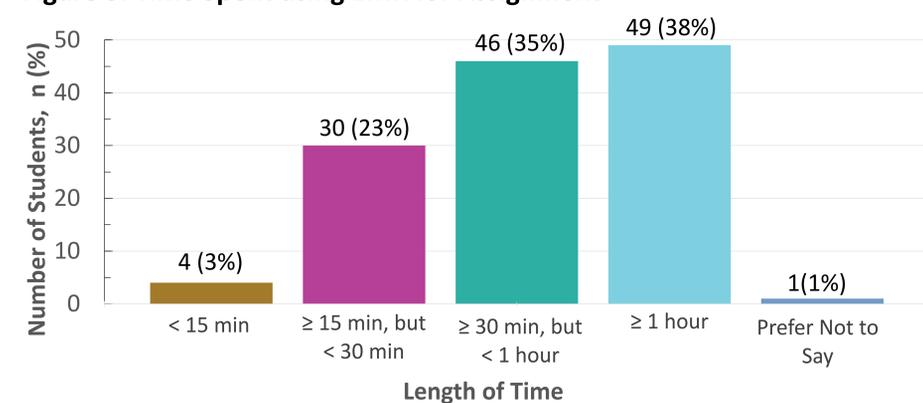
*Participants were allowed to skip questions. Responses were analyzed using the N values reported for both before and after the assignment mean Likert scale scores

RESULTS

EMR Usage

- A total of 130 students (98%) had used the EMR for the assignment.
- The time spent using the EMR for the DI assignment was greater than or equal to an hour for most respondents (38%). (Figure 3)

Figure 3: Time Spent using EMR for Assignment



CONCLUSIONS

- Implementation of an EMR within didactic instruction may serve as the first exposure to health informatics tools for students.
- Incorporation of an EMR within didactic instruction may positively impact students' knowledge and confidence of health informatics tools prior to entry into pharmacy practice as shown by the survey instrument results.
- Respondents to the survey instrument were most likely to agree that student pharmacists should be exposed to EMRs during classroom coursework after the assignment.
- After the assignment, respondents were most likely to disagree that there would be an improvement in their grade for the written portion of this assignment by using an EMR.
- Incorporation of an EMR early within didactic instruction may help students understand the importance of learning these tools prior to entry into practice.

LIMITATIONS

- This study focused on EMR use within a specific class and institution, limiting the generalizability of the study results.
- The use of a retrospective pre-post survey instrument may introduce selection and memory bias, while trying to minimize response-shift bias.
- The survey instrument focuses on short-term student perceptions; additional research that assesses perceptions in the long term and further within the pharmacy curricula is warranted to better understand the impact on integration of health informatics tools early within didactic instruction.

ACKNOWLEDGEMENTS

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