

# Educating Pharmacy Students to Improve Quality (EPIQ): A Multi-School Program Evaluation

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## Background/Objectives

- Issues of patient safety and quality improvement (QI) remain a concern for pharmacy educators.
- Holdford et al. identified a need to improve how pharmacy students are taught about medication safety and the science underlying it.<sup>1</sup>
- The Pharmacy Quality Alliance (PQA) funded the development of Educating Pharmacy Students and Pharmacists to Improve Quality (EPIQ).
- EPIQ contains curricular content and pedagogy for administration of a 3-credit class. It includes five modules: 1) status of quality improvement and reporting in U.S. health care system; 2) quality improvement concepts; 3) quality measurement; 4) quality-based interventions and incentives; and 5) application of quality improvement to the pharmacy practice setting.<sup>2</sup>
- Further program evaluation was needed *after* EPIQ was implemented at colleges of pharmacy.
- Objectives:** The objectives of this study were to: 1) evaluate the EPIQ program implementation in several doctor of pharmacy curricula; and 2) assess the instructors' and students' perceptions of the effectiveness of the EPIQ program.

## Methods

- Sample population:** Convenience sample of colleges/schools of pharmacy who had implemented the EPIQ program in their doctor of pharmacy curricula (n = 19). Of the 19 colleges of pharmacy, 7 agreed to participate in the evaluation of faculty and student perceptions.
- Faculty questionnaire data were collected from the 7 participating institutions.
- Due to IRB constraints, student data (e.g, student questionnaire results and demographics) from only 5 schools are reported.
- Student Questionnaire:** Retrospective pretest-posttest to measure students' perceptions about their knowledge and the importance of quality improvement and medication error reduction. An *a priori* of 0.05 was assumed for all analyses.
- Items 1-9 asked students to assess their perception (Weak, Fair, Good, or Very Good) of their quality improvement and medication error reduction knowledge before and after taking the EPIQ class.
- Items 10-16 asked the students to report their level of agreement (Disagree, Somewhat Disagree, Somewhat Agree, or Agree) with statements about the importance of quality improvement and medication error reduction education before and after the EPIQ class.

## Methods Cont.

- Faculty Questionnaire:** Contained both qualitative and quantitative questions regarding implementation of the EPIQ program.
- Statistical Analysis:** Analysis of student outcomes was conducted using Rasch analysis. Rasch analysis allows the evaluation of individual person measures and each item's contribution to the overall instrument.<sup>3-4</sup>
- Main outcome of interest was the change in the measure score for each student (pre to post).
- Multiple linear regression was conducted to determine if demographic characteristics (independent variables) impacted respondents change scores.
- Independent variables of interest included: gender, previous QI experience, university attended, length of class coverage, and completion of a class QI project.
- Qualitative coding approach was used to categorize comments for faculty questionnaire data as recommended by Richards including: descriptive coding, topic coding, and analytical coding.<sup>5</sup>

## Results

- A total of 347 out of 530 students (66%) across five universities responded to the EPIQ questionnaire.
- Mean age for students ranged from 26-29 years (depending on the university), and the majority of respondents were female (approximately 65%).
- Faculty opinions of the EPIQ program are displayed in **Table 1**.
- Rasch analysis results for items 1-9 on the student questionnaire are presented in **Figure 1**.
- University the student attended (p = 0.02), the completion of a class project (p = 0.03), and the length of coverage (ie, number of credit hours in the program) (p = 0.01) were positively related to students' change scores for items 1-9.
- Rasch analysis results for items 10-16 on the student questionnaire are presented in **Figure 2**.
- Previous quality improvement experience (p = 0.04) proved to positively affect students' change scores for items 10-16.

Figure 1. Items 1-9 on Student Questionnaire (n = 342)

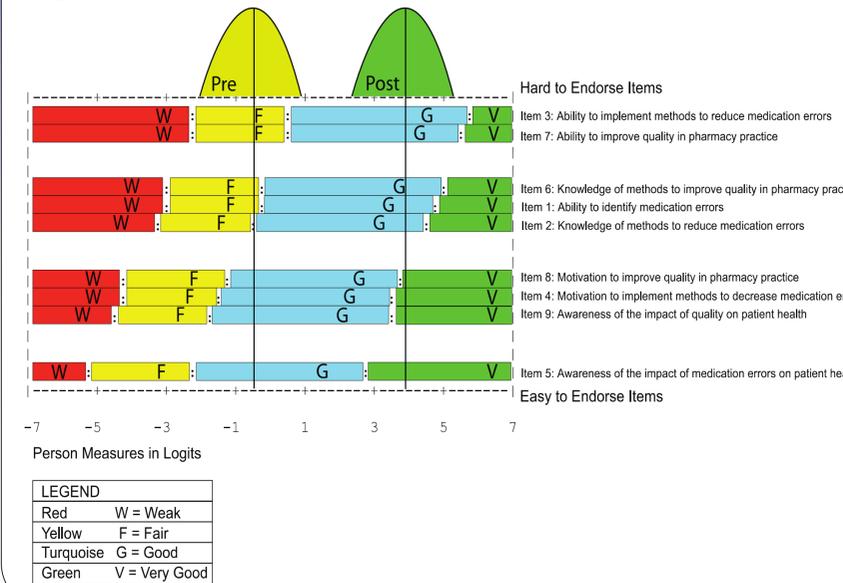


Figure 2. Items 10-16 on Student Questionnaire (n = 342)

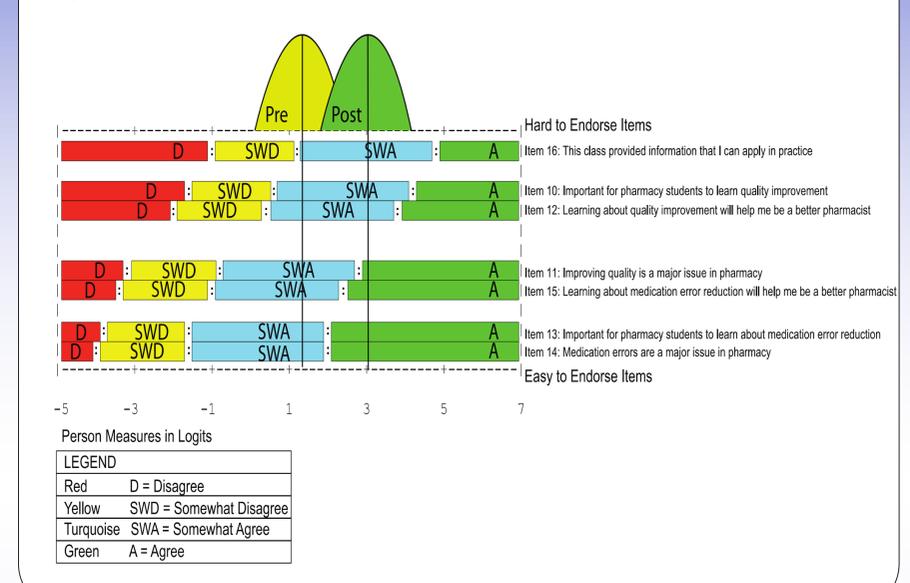


Table 1. Educator Opinions of the EPIQ Program (n = 7 schools unless otherwise noted)

	Agreement			
	Strongly Disagree	Disagree	Agree	Strongly Agree
	N	N	N	N
EPIQ material will help students become better pharmacists	0	0	1	6
It is important for pharmacy students to learn EPIQ material	0	0	1	6
EPIQ provided information that the students will use	0	0	3	4
Decreasing medication errors is a major issue	0	0	1	6
You have achieved your intended goals in teaching EPIQ content	0	0	3	4
Students achieved the outcomes I wanted them to (n=6)	0	1	3	2

## Discussion and Conclusions

- In general, respondents perceived that the EPIQ program positively impacted their ability, knowledge, motivation, and awareness of QI and medication error reduction.
- Overall, the EPIQ program was well received by faculty members. The majority reported that the quality of the EPIQ program was good or excellent and agreed or strongly agreed that EPIQ helped meet intended course goals.
- Limitations:** 1) did not include a comparator group (i.e., a university that did not implement the EPIQ program); 2) convenience sampling; 3) response bias from the 66% of students who responded; and 4) student data were not collected at all schools due to IRB restrictions.
- The EPIQ program is a viable turn-key class that can be used to help student pharmacists build their knowledge of key quality improvement and patient safety concepts.

## References

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