

# The Impact of Research Sessions on Pharmacy Students’ Perceived Understanding in Research Design and Methodology

For pharmacy students to self-assess their change in confidence in explaining or applying certain topics of research design and methodology after an educational session.

INTRODUCTION

- Pharmacy students should have high confidence in understanding research methodology.
- Using professional judgement to interpret research results and assessing the applicability is vital in practice.
- Per the 2025 ACPE standards,<sup>1</sup> “research design” is required in the PharmD curriculum. At least one research course can significantly improve a student’s attitude toward research.<sup>2</sup>
- However, additional educational sessions outside of the course may be beneficial.

METHODOLOGY

- A retrospective pre-/post-survey was administered after each of three sessions.

Table 1. Pre-/post-survey characteristics per session.

Session	1	2	3
Topics	Study design and outcome description	Pharmacoeconomics	Statistical analyses

- Question content included:
  - Demographic information (i.e., pharmacy year and research background).
  - Ten questions that ranked perceived confidence on five different concepts related to the session’s topic with a 10-point scale (1 = lowest and 10 = highest).
    - Questions 1-5 ranked confidence before the session.
    - Questions 6-10 ranked confidence after the session.
- Wilcoxon ranked-sum tests were conducted to determine statistically significant differences between pre- and post-survey responses.
- This research was deemed exempt from the university’s institutional review board.

RESULTS CONT.

Table 2. Demographics of participants.

Session		1 (n=6)	2 (n=3)	3 (n=4)
Professional Year	P1	2	1	2
	P2	3	2	1
	P3	1	0	1
Collective Years of Research Experience	0	6	3	3
	1-2	0	0	1

Table 3. Confidence rankings of participants for session 1 (n=6).

Question	Ranked Response, n							P-value
	2	3	6	7	8	9	10	
Explaining the research term “purpose”.								
Pre	-	1	0	2	2	0	1	0.0874
Post	-	0	1	1	1	2	1	
Explaining the research term “objective”.								
Pre	-	-	-	2	2	1	1	0.1573
Post	-	-	-	0	2	3	1	
Explaining the research term “primary outcome”.								
Pre	-	-	1	0	1	3	1	0.7316
Post	-	-	1	1	0	2	2	
Explaining the research term “secondary outcomes”.								
Pre	-	-	1	0	2	2	1	0.4235
Post	-	-	0	1	1	2	2	
Thinking of ways to collect data.								
Pre	1	-	-	0	3	1	1	0.1585
Post	0	-	-	1	1	3	1	

Table 4. Confidence rankings of participants for session 2 (n=3).

Question	Ranked Response, n				P-value
	7	8	9	10	
Explaining the types of costs associated with disease states.					
Pre	0	1	1	1	0.3173
Post	1	1	1	0	
Finding at least one limitation in a study not addressed by the author.					
Pre	0	1	2	-	0.1573
Post	1	1	1	-	
Interpreting the results of a study.					
Pre	0	2	1	-	0.3173
Post	1	1	1	-	
Applying the results of a study to clinical practice.					
Pre	-	3	0	-	0.3173
Post	-	2	1	-	
Finding price data for medications.					
Pre	0	1	2	-	0.3173
Post	1	1	1	-	

RESULTS CONT.

Table 5. Confidence rankings of participants for session 3 (n=4).

Question	Ranked Response, n					P-value
	3	7	8	9	10	
Explaining the research term “Type I error”.						
Pre	1	1	0	-	2	0.1615
Post	0	0	1	-	3	
Explaining the research term “Type II error”.						
Pre	1	1	0	-	2	0.1615
Post	0	0	1	-	3	
Explaining the research term “intention-to-treat”.						
Pre	1	0	1	-	2	0.1615
Post	0	1	0	-	3	
Explaining the research term “per protocol”.						
Pre	1	-	0	1	2	0.1615
Post	0	-	1	0	3	
Explaining commonly used statistical analyses.						
Pre	1	1	0	0	2	0.1615
Post	0	0	1	1	2	

DISCUSSION/CONCLUSIONS

- No significant differences in confidence were determined for any session.
- Research should carefully examine students’ perceived knowledge as it relates to 2025 ACPE Standards.
- Limitations include small sample size and unexplained high pre-session confidence in the topics.
- Future research will examine:
  - Gaining a larger attendance to each session.
  - Exploring participants' actual knowledge of these topics compared to perceived confidence in understanding.
- Fewer scale options for participants to rank their confidence e.g., 5-point scale.

<sup>1</sup> ACPE Standards. Chicago, IL: Accreditation Council for Pharmacy Education; 2025. <https://www.acpe-accredit.org/pharmd-program-accreditation/>. Accessed March 24, 2025.  
<sup>2</sup> Cailor SM, Chen AMH, Kiersma ME, Keib CN. The impact of a research course on pharmacy students’ perceptions of research and evidence-based practice. *Currents in Pharmacy Teaching and Learning*. 2017;9(1):28-36. doi:<https://doi.org/10.1016/j.cptl.2016.08.031>

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