

# RESEARCH-RELATED CURRICULUM AND ITS APPLICATIONS IN US PHARMD PROGRAMS

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## Introduction

This study was conducted to determine the importance of research based projects as part of the PharmD curriculum with accredited pharmacy programs within the United States. It is critical for current pharmacists to have the skills to be able to read and analyze current literature. As new information comes out in studies, pharmacists need to be able to evaluate the content and be able to relay the information to colleagues and into the healthcare of patients.

Other research studies have been conducted on the importance of literature review and research methods taught in the PharmD program. Past studies have shown that less than 50% of the PharmD programs in the United States have research based projects (Murphy, 1997).

The University of Arizona College of Pharmacy since 1988, has required students to complete research projects that are evaluated before graduation. The primary intent of the research project is to educate pharmacy students, the soon to be pharmacists, in the problem solving process that is a fundamental skill every healthcare professional needs. The University of Arizona College of Pharmacy does require the students to do a formal presentation of the project. This will give the students the necessary skills of public speaking and presenting a topic that they are well versed on.

## Objectives

- To quantify the number of PharmD programs that require completion of a research project.
- To describe the types of research being undertaken within PharmD programs.
- To compare current responses with those obtained from the last survey.

## Methods

- Design** This cross sectional descriptive study used data obtained from an online survey.
- Subjects** The subjects in this study were the academic affairs dean associated with each of the 138 PharmD program within the United States.
- Measures** Data were collected from a questionnaire adapted from the Murphy study in 2007. Responses from questionnaire applied as dependent variables. Descriptive variables will include size of school, location and if the research-related coursework offered is required, elective or both.

## Methods

- Data collection** A list from the American Association of the College of Pharmacy was used to identify PharmD programs. The academic affairs dean of each program were emailed a cover letter that explained the project, a link to the online survey through Qualtrics, when the survey is due and the confidentiality of the data. Procedure included sending to one person up to three times and if no response up to three phone calls over a three month period.
- Data analysis** Data were analyzed by calculating summary statistics. Comparisons between colleges with required projects to colleges without required projects were made using a Chi Square test. The a priori alpha level is 0.05

## Results

- Response rate 54% (74/137 programs); of which 22 (30%) require research project
- Participation in elective research: 33% reported <10% of student body; 34% reported 10-50% of student body
- Possible mentors: faculty (89%); preceptor (35%); other 30%
- Faculty time and support: Adequate 63%, Inadequate 26%; 12% are pursuing additional allocations
- Student groups: 18% independent effort, 21% 2-3 students, 39% 4-6 students, 22% no limit
- Example project restrictions: related to pharmacy, generate new data, cannot involve students
- Seven programs (9%) removed research requirement in past 10 years
- Reasons for removal: project quality (4.4), support (3.8), faculty opposed (3.6), students opposed (3.2), class size (1.6)

### Comparison with 2007 analysis

- No statistical difference in requirement, 30% vs 25% (p=0.374)
- More students are taking advantage of elective opportunities
- More programs have discontinued requirement (9% vs 3%)
- More integrative coursework (compared to distinct courses in past)
- Class size was the primary reason for project discontinuation in 2007

## Results

Table 1: Comparison of Research Related Coursework

Coursework	Required Research Project, N = 22 (%)	Research Project Not Required, N = 52 (%)	P-Value
Statistics	10 (45%)	19 (37%)	0.472
Literature Evaluation	12 (55%)	26 (50%)	0.720
Research Methods	8 (36%)	7 (13%)	0.025
Combination	10 (45%)	19 (37%)	0.472
Electives	4 (18%)	18 (35%)	0.157
Other	13 (59%)	6 (12%)	<0.001

Table 2: Characteristics of Mandatory Research Projects

Characteristic	Number	Percent
<b>Project Requirements</b>		
Proposal	21	95%
Submit IRB application	20	91%
Collect and analyze data	17	77%
Prepare a written report	19	86%
Present findings (e.g. poster)	18	82%
<b>Project Review Process</b>		
Proposal not required	1	5%
Reviewed by project advisor	11	50%
Reviewed by course coordinator	6	27%
Reviewed by second faculty member	1	5%
Reviewed by at least 2 faculty members	3	14%
<b>Data Collection Methods</b>		
Chart review	10	45%
Survey	20	91%
Systematic review	14	64%
Clinical parameters (e.g. BP, glucose)	18	82%
Direct observation (e.g. patients, clinicians)	9	41%
Database analyses	17	77%
Bench research	16	73%
Other	3	14%

## Conclusion

The proportion of colleges of pharmacy that offer student research experiences appears to have modestly increased in the last 10 years. However, perhaps the biggest change from the previous study was the growth in the proportion of students who complete elective research projects. The content of required research programs was quite consistent across programs and most colleges provided coursework related to research regardless of whether or not a research project is required of students. The value of student participation in research remains uncertain, however in a data-driven society, the skills will be quite useful.

## Limitations

As our group was able to get a list of US accredited PharmD programs, we were not able to get a list of individuals appointed Assistant/Associate Dean for Academic Affairs, who we would be sending the survey to. It was difficult to find a person appointed as such for several PharmD programs, and we would have to select individuals with different, but similar titles including Director of Assessment/Curriculum. This might have led to incorrect individuals being contacted, but it was always mentioned through email and phone that the survey should be forwarded to anyone they thought would be better suited to complete the survey.

The other survey limitation was being able to get responses. Two separate emails explaining the survey with it attached had been sent out over 7 weeks. We only had a 19% (26/137) response rate during that time, and when an additional third email was sent the response rose to 26% (35/137). After the lack of responses, a call script was compiled and all PharmD programs that had not yet replied were called at least once, possibly up to three times over a 3-week span. This was a great intervention as it had more than doubled our response rate to 54% (74/137). A 54% response rate would be difficult to make a broad conclusion on how research is offered in PharmD programs though, as no response was heard from slightly less than half.

## References

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