Stronger Together? Integrating Sciences and Therapeutic Courses

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Background

Pharmacy education is undergoing a significant transformation, emphasizing the integration of foundational sciences with clinical therapeutics rather than teaching these subjects separately. This shift aligns with the Accreditation Council for Pharmacy Education (ACPE) standards, which advocate for a more cohesive educational approach that bridges scientific knowledge with practical clinical skills.[1,2] In this work, we explore the current prevalence of integrated science and therapeutics courses are in U.S. pharmacy programs, compare their credit structure to traditional stand-alone courses, and examine their impact on NAPLEX pass rates.

Methods

- **Materials:** A list of all currently ACPE accredited pharmacy programs was gathered from ACPE in January 2023. Program websites were searched for curriculum. Mean NAPLEX first-time and all-time pass rates from NABP from 2020-2022 were utilized.
  - If <3 years of data, average of available years within range was used.
- **Exclusion criteria:** Programs without publicized detailed curriculum, containing course descriptions, credit hours, and sequence were excluded.
- **Credit hour ranges:** If ranges were provided, minimum credit hours were utilized.
- **Definitions**:
  - *Integrated course* – therapeutics course taught with ≥ 1 foundational science (e.g. pathophysiology, pharmacology, medicinal chemistry).

Results

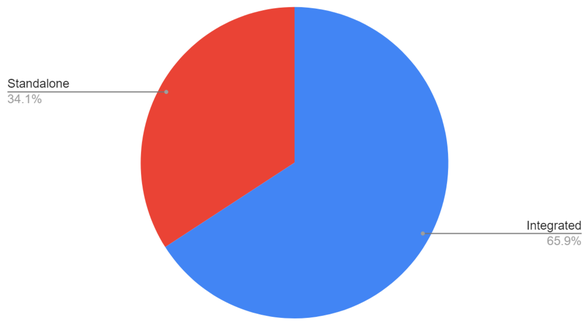

Figure 1: Most U.S. pharmacy programs utilize integrated therapeutics courses.

Results

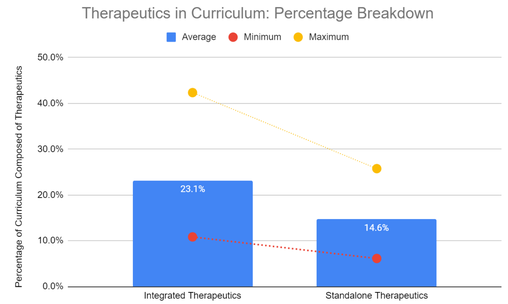

Figure 2: Greater percentages of curriculum are dedicated to therapeutics in programs with integrated delivery. Integrated percentage therapeutics: 10.8-42.3%, average = 23.1%. Standalone percentage therapeutics: 6.1-25.7%, average = 14.6%.

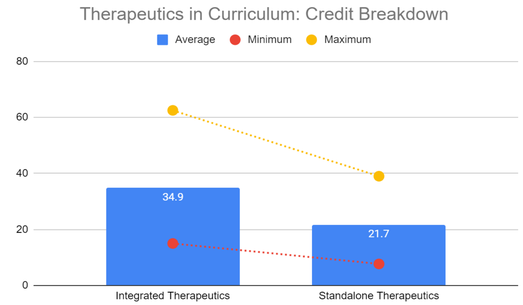

Figure 3: Greater numbers of credit hours are dedicated to therapeutics in programs with integrated delivery. Integrated therapeutics credit hours : 15-62.5, average = 34.9. Standalone therapeutics credit hours: 7.5-39, average = 21.7.

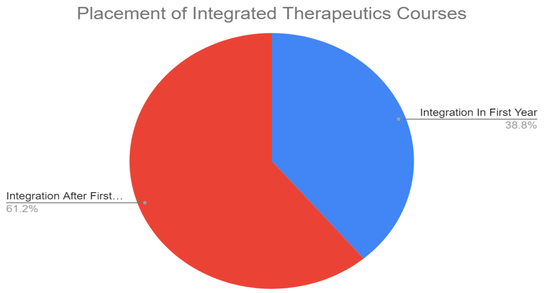

Figure 4: Most programs that have integrated therapeutics courses place them after the first professional year.

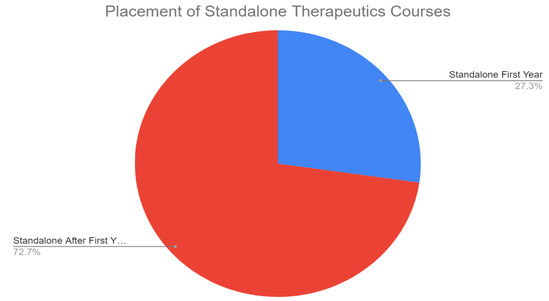

Figure 5: Most programs that have standalone therapeutics courses place them after the first professional year.

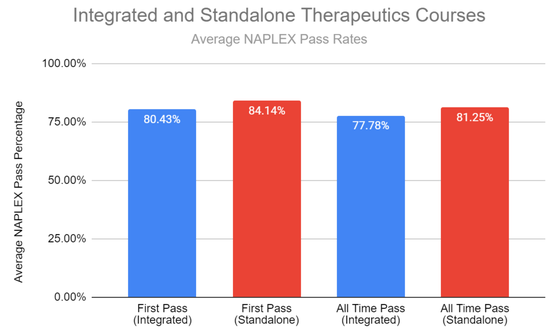

Figure 6: There are no statistical differences between first-time or all-time NAPLEX pass rates between programs with integrated and standalone therapeutics courses. First-time pass rate (p = 0.051), all-time pass rate (p = 0.087).

Conclusions

- Most programs (65.9%) deliver integrated therapeutics courses.
- Therapeutics courses are introduced after the first professional year in the majority of programs (61.2% in integrated models, 72.7% in standalone models).
- When therapeutics courses are integrated, they are more likely to begin within the first professional year than in standalone models (38.8% when integrated, 27.3% when standalone).
- No statistically significant differences exist between NAPLEX first-pass or all-time pass rates for programs with integrated therapeutics courses vs. Programs without that integration.

Implications

Therapeutics courses are integral to pharmacy education and effective patient care delivery. Integrated models aim to connect foundational sciences with clinical skills to enhance the application of theoretical knowledge in practical healthcare settings.[6]

- **Curriculum Flexibility Under ACPE Standards**: Current ACPE standards support designing curricula to execute individualized institutional philosophies. Programs can choose between integrated and standalone course structures to ensure goals are met while maintaining high standards of academic achievement and NAPLEX performance.[7] Currently, integrated curricula are increasingly adopted following previous ACPE standards.[6]
- **Student and Faculty Perceptions of Integrated Therapeutics Courses**: Research suggests that students prefer integrated courses and their perception is that information is better retained in this model. Faculty highlighted the challenges of implementing integration, including the additional time required for preparation. These insights suggest that complete integration is beneficial for students, though faculty may need more institutional support to achieve such integration effectively.[9]
- **Multiple Methods of Evaluating Students' Success as Pharmacists:** There are many ways to determine the strength of a pharmacist. Although integrated models do not result in statistically significant increases in NAPLEX pass rates, perhaps other appraisals would produce vital differences in pharmacist

Limitations

- Integration in theory vs practice
- Course description interpretation variability, 3 researchers
- Variability within the degree of integration, various subjects
- NAPLEX results are more complex than the manner of integration instruction

References

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