

# Comparison of Second and Third Year Pharmacy Students' Knowledge Retention and Self-Confidence Regarding Diabetes Management

Jennifer Wrona; Fiona Luc; Amy Kennedy, PharmD, BCACP



Pharmacy



## Introduction

- 10.5% of the United States population has diabetes with an estimated 7.3 million undiagnosed cases.<sup>1</sup>
- It is essential that patients are diagnosed early as diabetes can lead to death, end-stage kidney disease, hypertension, and glomerulonephritis.<sup>1</sup>
- Pharmacists must be confident in their diabetes knowledge as improper management can lead to devastating consequences.
- Previous studies indicate relationships between pharmacy students' confidence and knowledge.<sup>2,3</sup>

## Objectives

- To compare second and third year student pharmacists' knowledge and confidence in managing diabetes.
- To identify an association between more confidence and more accurate knowledge.

## Materials and Methods

- Emails of study details were sent to students in the University of Arizona College of Pharmacy Classes of 2022 (P3) and 2023 (P2).
- Data was collected using a Qualtrics online survey:
  - 20 questions related to confidence in managing diabetes
  - 20 knowledge-based questions related to the confidence questions
- General confidence was measured by a frequency count for each selected confidence level on a Likert scale.
  - Median and interquartile range (IQR) for confidence level were used for ordinal data.
  - A t-test was used to compare the mean number of correct questions per person in each class.
- To compare student confidence with related knowledge, answers were distilled to a binary of "confident" or "not confident" and interpreted using an odds ratio.
- Access Survey [here](#).

## Results

- 24 students participated: 6 P2s and 18 P3s.
- The frequency of confidence in managing certain areas of diabetes is seen in *Figure 1*.
  - There were no significant differences between cohorts in selecting any of the confidence categories ( $p > 0.05$ )
  - The median response of both groups was "somewhat confident" with IQRs of 0.825 points (P2s) and 0.888 points (P3s).
- In total, P2s correctly answered 30 knowledge-questions (25%), and P3s correctly answered 102 questions (28.33%), ( $p=0.62$ ).
  - Questions were adjusted for partial credit on questions with multiple answers.
    - The percent correct of adjusted questions is seen in *Figure 2*.
    - Individual P2 students averaged answering 50.33 question parts correctly (SD=5.20), compared to 54.11 question parts (SD=6.39) for the P3 students ( $p=0.176$ ).
- The distribution of confidence and accuracy is seen in *Figure 3*.
  - The odds ratio comparing how adjusted knowledge relates to confidence in both cohorts was 1.093 (95% CI: 0.924, 1.293).

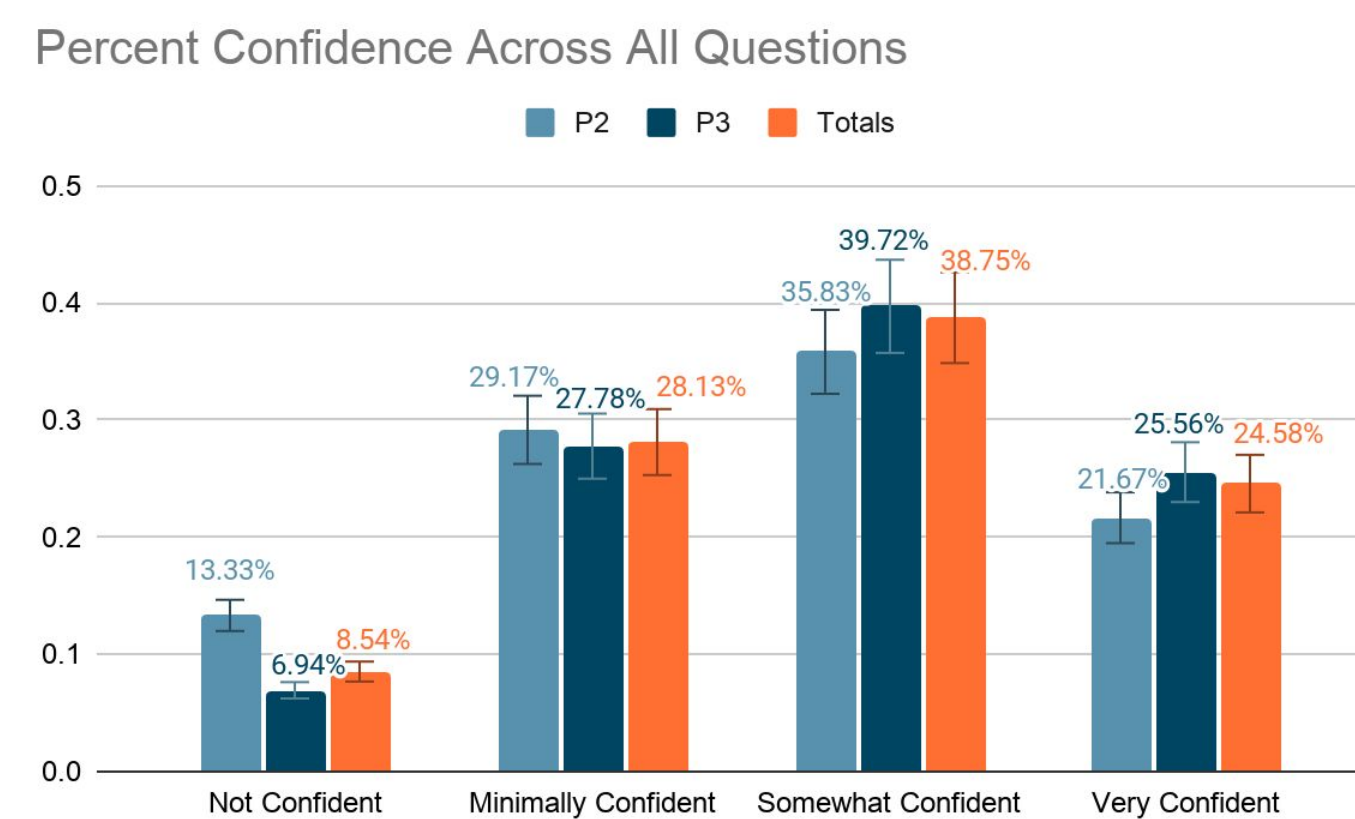


Figure 1. Percent confidence in each category of the Likert scale across all 20 areas of diabetes management in each group.

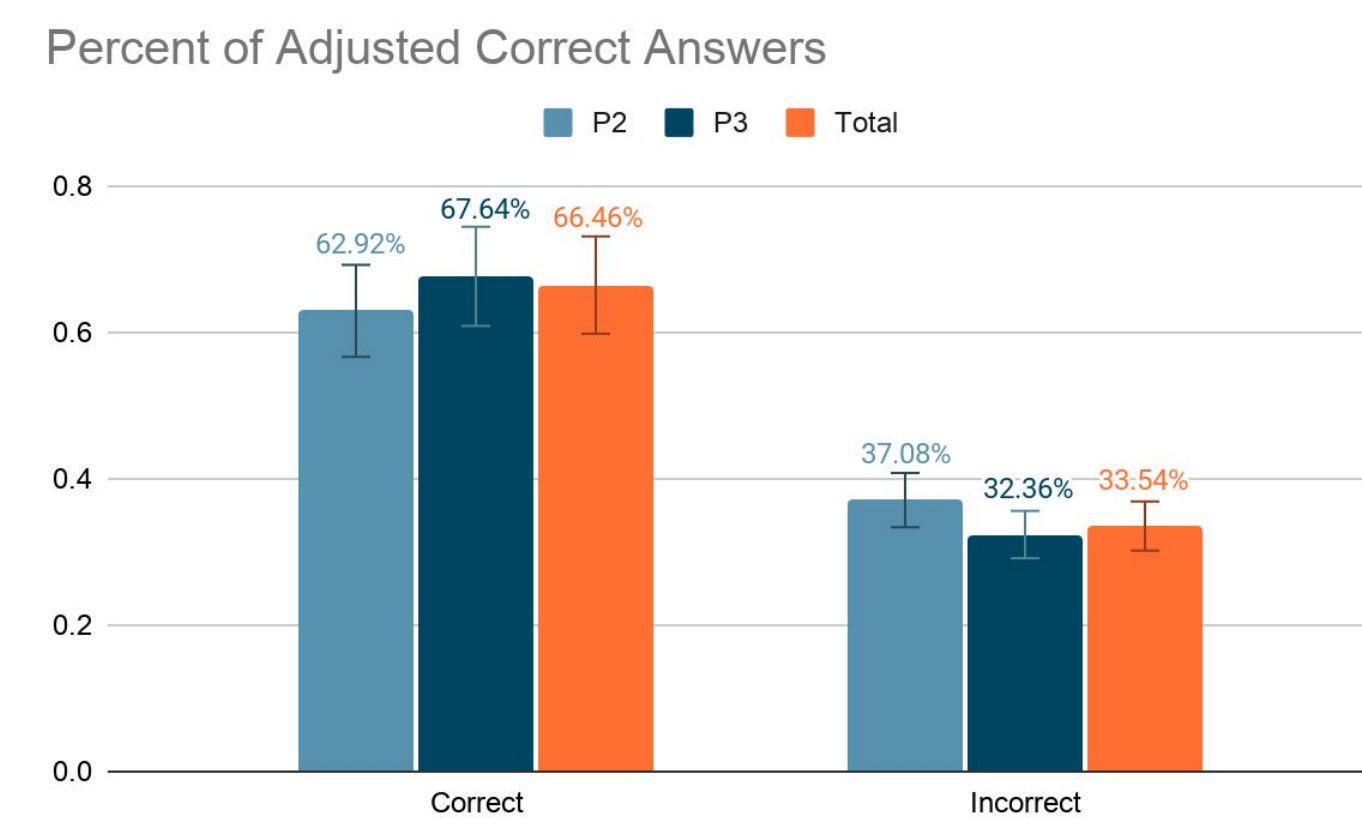


Figure 2. Percent of adjusted correct versus incorrect answers in each group.

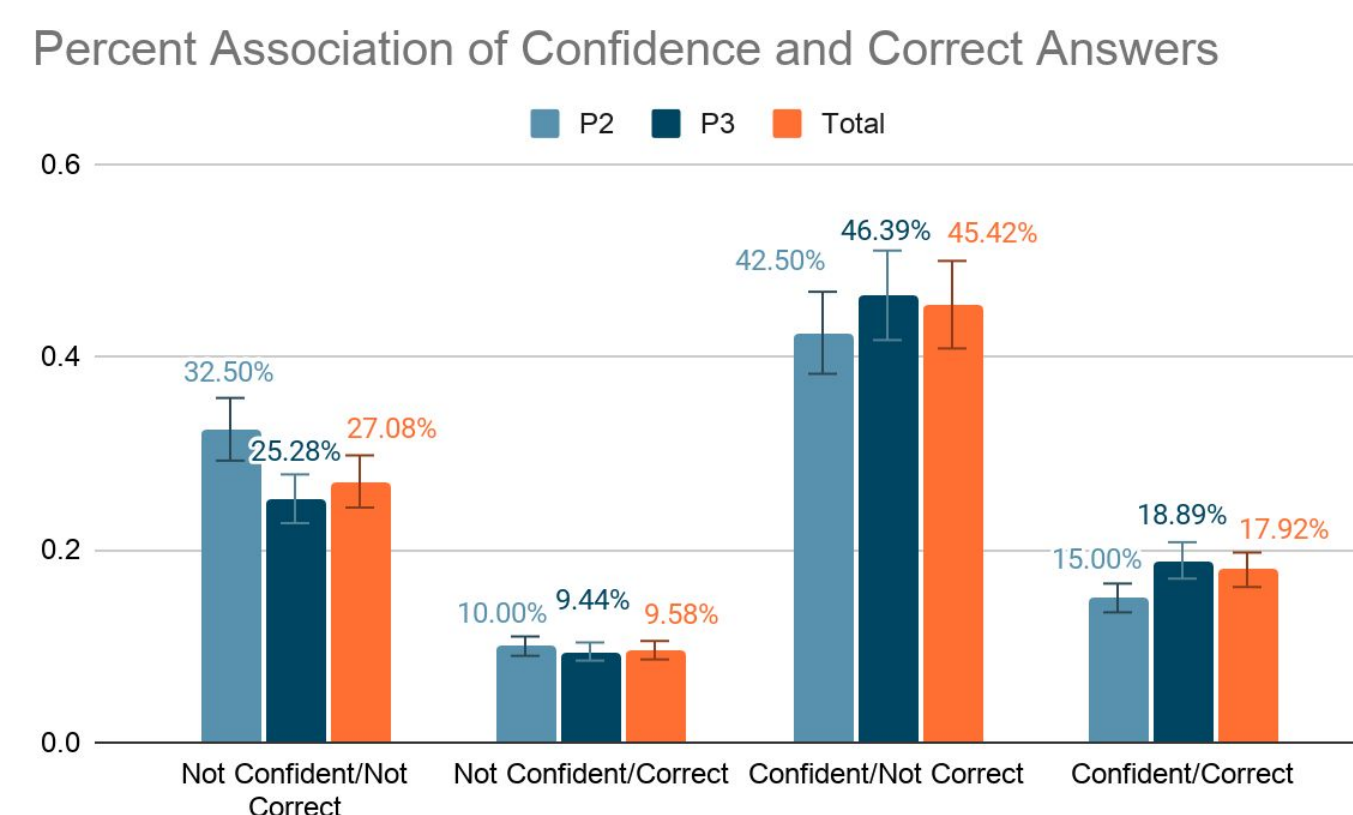


Figure 3. Percent association between students confidence level in an area of diabetes management and whether their confidence correlated with a correct or incorrect answer.

## Discussion

- There was no significant difference between classes in answering questions correctly, regardless of if the questions were adjusted. The difficulty of questions was at a level proficient to a practicing ambulatory care pharmacist, which may have been too difficult for students.
- When indicating confidence, most participants who indicated that they were confident on the subject were inaccurate when tested on the topic, which was most likely due to the difficulty of the material.
- In both cohorts, students who answered questions correctly were not more likely to report being confident than students who answered incorrectly.

## Conclusions

- Students retained the same level of confidence and relative amount of knowledge on the topic of diabetes over time compared to students who more recently learned the material.
- Confidence is a complex emotion, and is not a strong significant indicator of baseline knowledge.

## Limitations

- Small population size
- Difficulty of knowledge-based questions
- Limited generalizability

## References

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## Contacts

For any questions, please contact [wrona@pharmacy.arizona.edu](mailto:wrona@pharmacy.arizona.edu) or [luc@pharmacy.arizona.edu](mailto:luc@pharmacy.arizona.edu)