Second-Year Indian Medical Students' Perspectives and Experiences of Teaching and Learning in Physiology

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INTRODUCTION

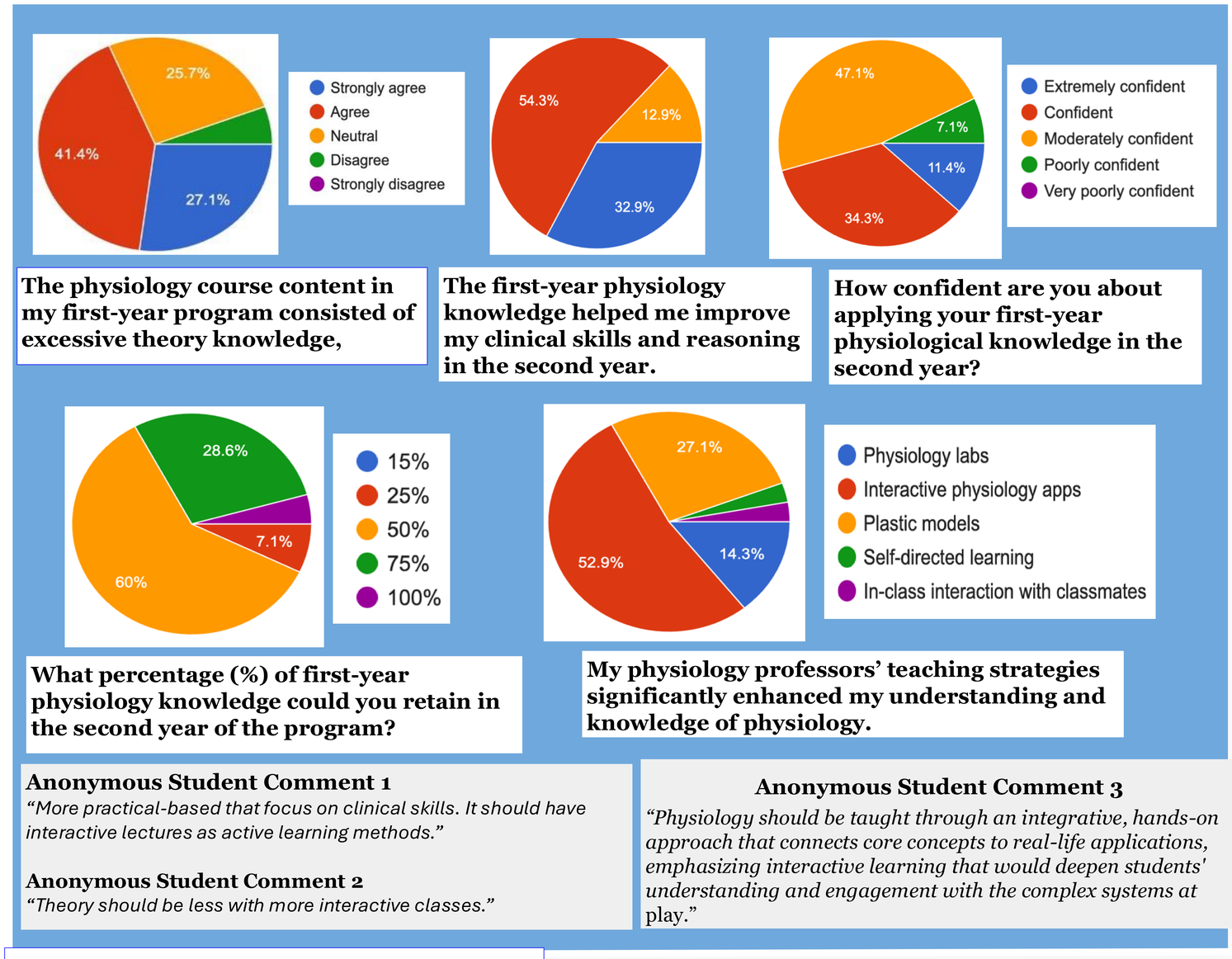
- Human physiology is one of the cornerstone subjects of the health sciences discipline, and it is the second content-heavy course after anatomy (Aswathy et al., 2024).
- For the most part, it is mainly taught in a didactic, passive way of teaching and learning (Narnaware, Y. 2021). Very few active pedagogies and various teaching modalities are incorporated in the teaching and learning of this course compared to anatomy (Narnaware et al., 2023).
- However, a systematic review of Indian medical students' perspectives and experiences in terms of active teaching strategies, teaching modalities and their ability to retain and apply physiological knowledge in the subsequent years of the medicine program has yet to be investigated.

METHODS

- The present study was conducted in the semester of Fall 2024 at N.K.P. Salve Institute of Medical Sciences and Research Center, Nagpur, India.
- A Google survey consisting of 11 multiple-choice questions on a five-point Likert scale, where 1 indicated "strongly agree" and 5 indicated "strongly disagree", was delivered to second-year medical students about their first-year's opinion and experiences on physiology teaching and learning.
- Also, a short answer question on their responses to teaching and learning was included in the survey.
- A Google link to the survey was shared with the second-year medical students.

RESULTS

- Ninety-seven (97.0%) students recognized the importance of first-year physiology in their second year, and 68.5% agreed that the first-year program consisted of excessive theory knowledge.



Anonymous Student Comment 1
"More practical-based that focus on clinical skills. It should have interactive lectures as active learning methods."

Anonymous Student Comment 2
"Theory should be less with more interactive classes."

Anonymous Student Comment 3
"Physiology should be taught through an integrative, hands-on approach that connects core concepts to real-life applications, emphasizing interactive learning that would deepen students' understanding and engagement with the complex systems at play."

RESULTS (Continue...)

- Most students (90.0%) agreed that physiology was relevant to clinical practice, and 87.2% agreed that first-year physiological knowledge helped them improve their clinical skills and reasoning in the second year (87.2%).
- Only 34.3% of students were confident applying the first-year physiological knowledge in their second year.
- Similarly, 60% of students could remember 50%, and only 26% could remember 75% of the first-year physiology knowledge in their second year of the program.
- Students agree that physiology labs (64.3%) and self-directed learning (22.9%) helped them retain physiology knowledge in their second year.
- Only 57.2% of students would consider pursuing a career in physiology in the future.

Survey Questions	Responses				
1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	1.	2.	3.	4.	5.
1. Physiology course contents in my first-year program consisted of excessive theory knowledge.	27.1.0%	41.4%	25.7%	5.7%	0.0%
2. I understand the importance of first-year physiology knowledge in my second year of the program.	47.1%	50.0%	2.9%	0.0%	0.0%
3. My first-year physiology knowledge helped me improve my clinical skills and reasoning in the second year of my program.	32.9%	54.3%	12.9%	0.0%	0.0%
4. Knowledge of physiology and its application to clinical practice was relevant.	30.0%	60.0%	8.6%	1.4%	0.0%
5. I struggled to retain and apply first-year physiological knowledge into my second year.	7.1%	35.7%	28.6%	27.1%	1.4%
6. How confident are you about applying your first-year physiological knowledge in the second year?	Extremely conf.: 11.4%	Conf.: 34.3%	Mod. Conf.: 47.1%	Poorly conf.: 7.1%	Very poorly conf.: 2.7%
7. What percentage of first-year physiological knowledge could you remember/retain in the second year of your program?	15.0%= 0.0%	25.0%= 7.1%	50.0%= 60.0%	75.0%= 26%	100%= 4.3%
8. My physiology professor's teaching styles and various teaching strategies significantly enhanced my understanding and knowledge of physiology.	14.3%	52.9%	27.1%	2.9%	2.9%
9. The following teaching and learning activities introduced in the first year helped me remember physiology knowledge in the second year of my program.	Physiol. labs= 64.3%	Physio. apps= 4.3%	Plastic models= 2.9%	Self-directed learn.= 22.9%	In-class interaction with classmates= 5.7%

DISCUSSION AND CONCLUSIONS

- The second-year medical students positively commented on the relevance of the first-year physiological knowledge to their second-year clinical reasoning, similar to the physiology students in another Indian institute (Ashwathy et al., 2024).
- Even though the majority of students lack confidence in applying physiology knowledge to their second-year clinical, 86% of students could remember approx. 50-75% of that knowledge in their second year, similar to Canadian nursing students (Narnaware et al., 2023).
- Physiology labs and self-directed study benefitted the students in retaining physiological knowledge.
- Hence, future medical physiology students should be taught using integrated, hands-on approaches with active and interactive learning.
- This study provides the basis for evaluating base-level knowledge acquisition in the first year and retention in the senior years of medicine at NKPSIMS.

REFERENCES

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