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Website: www.jehp.net
DOI: 10.4103/jehp.jehp_1077_23

Perception of undergraduate medical students on learning physiology: A descriptive cross-sectional study in a medical school of South India

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Abstract:

BACKGROUND: Understanding the various principles in physiology is very important for medical students to apply their knowledge in clinical practice. Most of the students learn physiology just to clear exams. There is a need to understand the student's perception on the significance of learning physiology in medical colleges, its role in clinical practice, research, and the subject of career choice.

MATERIALS AND METHODS: A descriptive cross-sectional questionnaire-based study was conducted in a medical college in Karnataka, India. A total of 100 medical students studying in year 2 MBBS were enrolled into the study. Responses were collected, validated, and analyzed to understand the perception.

RESULTS: All the participants (100%) felt physiology is an important subject in the medical curriculum and 93% of participants felt physiology knowledge was essential to become a better doctor. It was observed that 48% of the participants were interested in pursuing research in physiology and only 24% of the participants agreed on considering physiology as a carrier option.

CONCLUSIONS: Medical students perceived physiology as an important and interesting subject in the medical curriculum. However, only few of the students were inclined to do research in physiology and agreed on pursuing physiology as a carrier option. The scope of study in physiology is vast due to the large variety of interdisciplinary topics included in different systems. Subsequent decrease in job opportunity, lack of awareness of research opportunities, and lower pay scale in the medical colleges in India lead to less interest in students for considering physiology as a carrier option.

Keywords:

Career, perception, physiology, research, South India

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Received: 20-07-2023

Accepted: 26-09-2023

Published: 29-04-2024

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the significance of these subjects in the clinical practice.^[2] There are multiple studies showing lack of interest among medical students in considering basic sciences as a career option. This may be due to lack of understanding about the subject, decreased job opportunities, promotional avenues, academic growth, research opportunities, and financial returns.^[3-5] This has led to a decrease in the student-to-teacher ratio, thus leading to large-group teaching methods and lesser implementation of small-group teaching

How to cite this article: Ashwathy VT, Avanthi E, Narayanam H, Lokesh BN. Perception of undergraduate medical students on learning physiology: A descriptive cross-sectional study in a medical school of South India. *J Edu Health Promot* 2024;13:139.

and clinical examination. This can lead to decrease in the quality of medical education.^[4] Hence, we are conducting this study to understand the student's perception on significance of learning physiology in medical colleges, role of physiology in clinical practice, and research and physiology as a subject of career choice.

Materials and Methods

Study design and setting

A descriptive cross-sectional questionnaire-based study was conducted in a medical college in Karnataka, India, in 2018–2019. Students with more than one attempt to clear year 1 MBBS were excluded from the study. Informed consent was taken from all participants.

Study participants and sampling

Twenty percent of the relevant population is adequate for the descriptive study design. The proportion decreases as the population increases. Out of 150 students of MBBS year 2, 66.67% of the population were included in this study. However, in a cross-sectional study, the minimum required sample size is at least 60 participants. Therefore, being a descriptive cross-sectional study, a total of 100 medical students were selected for this study by following convenience sampling.

Data collection tool and technique

The use questionnaire for the study was adapted from Ali *et al.*^[4] after extensive modifications following institutional guidelines [Table 1]. The adapted questionnaires were duly pre-validated and pretested. The questionnaire was randomly distributed to all the participants and duly filled individual questionnaires were collected after 35 min. The identity of the participants was not disclosed. The participant's response was collected individually, in a way that prevented them from seeing each other's response.

Ethical consideration

Institutional ethical committee approval was obtained.

Statistical analysis

The adapted questionnaires were validated through the estimation of coefficient of Cronbach's alpha. The reliability of the adapted questionnaire was measured as acceptable above the range of 0.70 of the coefficient of Cronbach's alpha. Being a descriptive cross-sectional study, we presented the data in percentage (%). The data collected were analyzed using a central tendency statistical tool and conclusion was drawn based on the statistical results.

Results

A total of 100 students participated in the study. The coefficient of Cronbach's alpha for the adapted

questionnaire was recorded as 0.87. Therefore, the reliability of questionnaire was found good. All the participants (100%) felt physiology is an important subject in the medical curriculum. Seventy-eight percent (78%) of the participant believed physiology is an interesting subject. Although majority of the participants experienced physiology is an easy subject to understand (77%), but 53% of the students thought physiology is difficult to retain and reproduce. Majority of the students (84%) believed studying physiology for 1 year is sufficient for medical knowledge, while 16% of students thought physiology should be learnt for more than 1 year. It was observed that only 48% of the participants were interested in pursuing research in physiology. Participants preferred to have more tutorial sessions (78%) than didactic lectures. Students felt that practical on clinical examination should be more (75%), while hematological experiments in physiology had to be reduced (62%).

Majority of the participants (81%) experienced physiological knowledge is essential for a better understanding of other medical subjects. Most of the participants (93%) believed physiology knowledge is essential to become a better doctor. Only 51% of the participants felt physiology should be integrated with clinical subjects. It was observed that as low as 24% of the participants agreed on considering physiology as a carrier option. Among the 48% of medical students who disagreed with choosing physiology as a career path, 65% said that there were fewer employment prospects and less financial returns with physiology as a career option.

Discussion

Knowledge of physiology is of utmost important to develop profound clinical knowledge. All the students in our study (100%) agreed that physiology is an important subject in the medical curriculum. Medical education has evolved with time and many changes are implemented in the methods of learning and teaching.^[6-8] Learning a subject also depends on personal, environmental, and behavioral factors and an individual's perception on the subject.^[9]

In our study, 78% of the participants felt physiology is easy to understand. However, 53% of students felt difficulty to retain and reproduce the concepts in physiology. There were several studies that reported the inability of the students to recall the information and knowledge gathered from basic science subjects.^[1,10] The probable underlying cause could be the huge divergent syllabus of basic science subjects in the medical curriculum. However, lack of knowledge about the clinical applications of the basic science subjects along

Table 1: The responses of the students to questionnaire

Question	Agree (%)	Disagree (%)	Neutral (%)
I feel physiology is an important subject in the medical curriculum	100	0	0
I find physiology subject interesting	78	8	14
I feel physiology is easy to understand and study	77	18	5
I feel physiology is difficult to retain and reproduce	53	43	4
I feel that 1 year is sufficient to learn physiology	84	16	0
I would consider doing research in physiology	48	42	10
I would like to have more small group sessions in physiology than didactic lectures	78	16	6
I feel hematology experiments have lost its relevance in the present clinical practice	62	31	7
I feel more practical session should be added in clinical examination	75	20	5
I feel physiological knowledge is essential for better understanding of other medical subjects	81	5	14
I feel physiology knowledge would make me a better doctor	93	2	5
I feel that it would be more useful to learn physiology along with clinical subjects as an integrated teaching	71	28	1
I would consider physiology as a choice for future career	24	48	28
If it is no to question 13, is decreased job opportunities or financial returns cause for not choosing physiology as a future career?	65	35	0

with inadequate vertical integration made it more difficult to reproduce and recall among students.^[1]

Small-group teaching methodologies like problem-based learning, tutorials, and seminars should be implemented to improve the retainability of the subject. In our study, 78% of the participants preferred small-group teaching to didactic classroom lectures. Several other studies from different parts of the globe also reported increasing student preference toward small-group teaching.^[6,7] It was observed that many students were not interested in pursuing research in physiology. Previous study showed that medical student's nonparticipation in research was due to lack of knowledge regarding scope of research in physiology, motivation, funding, vast curriculum, lack of interest in physiology research, and lack of research infrastructure in medical colleges.^[11-13]

Most of the participants felt that good knowledge in physiology was important in understanding other medical subjects and to become a better doctor. A study conducted by Özdengül *et al.*^[2] reported that the knowledge of physiology was extremely important for family physicians in diagnosis and treatment of patients. Although many of the participants felt physiology is an interesting subject, only 24% of them agreed on pursuing physiology as a carrier. Decreased job opportunity and lower pay scale in the medical colleges of South India were the two major reasons behind not considering physiology as their professional carrier option. Previous studies also reported declined preference of basic science subjects as a choice of carrier among medical students.^[1,3-5]

Limitation and recommendation

Although the medical students in our study were not very fascinated to take physiology as their potential

carrier option, due to the following limitation of our study, we may not be able to conclude it firmly. Small sample size, no participants from other years including years 4 and 5, and collecting the data from a single medical college were our limitations. We are planning to further expand this study by including students from different medical colleges and different academic years.

Conclusion

The students perceived physiology as an important subject in the medical curriculum. The students were aware of the importance of physiology in good medical practice. More of small-group teaching methodologies should be included in the curriculum to improvise the retention of knowledge. Increasing job, research opportunities, and better financial returns would encourage more medical students to consider physiology as a carrier option.

Acknowledgments

We would like to thank all the students of year 2 MBBS who participated in the study willingly, our colleagues and laboratory technicians for their assistance in data collection, and friends who rendered their valuable help from time to time.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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