

## Assessing the existing learning methodology in physiology: a feedback study from students of two medical colleges in Northern India

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### Abstract

To improve the overall health scenario of the nation, the need of the hour is to produce quality doctors and not just the quantity. To achieve this, medical education needs to be updated keeping in mind the current trends. Physiology, one of the basic subjects of medical education forms the foundation of many medical branches and students should have its proper understanding. The aim of the study was to assess the current practices and attitudes of the medical students in two medical colleges of North India in the Jammu Province of J&K towards learning of physiology. 500 medical students participated in this study, 300 from the ASCOMS & Hospital, Sidhra, Jammu and 200 from the Government Medical College(GMC), Jammu. A questionnaire consisting of 13 questions was provided to each of them to elicit their feedback regarding learning of physiology. The results revealed that 89% were in favour of lectures, 51.2% of tutorials and 83.45% were of the opinion that practical's were useful. Enthusiasm of the students' in learning physiology was so much that 36.2% considered lecture notes insufficient, so 87.4% were using advised reference books, 51.2% previous examinations and 57.6% previous exam papers to guide them. When faced with difficulty in learning physiology majority preferred to consult advised reference book, class fellows and seniors in that order, while consulting teachers was found to be the last option. The potential to self-study was so much that 64.8% used internet and 21% scientific journals to get the latest information in the learning of the subject. We can conclude that medical students are motivated in learning physiology by using hybrid techniques which include using advised reference books, consulting among themselves to solve problems and using online sources Fewer consultation with teachers and lesser interest in tutorials can be improved by initiative from teachers, by becoming more friendly with students, encouraging them, creating an open and positive atmosphere, being more responsive and empathetic to them.

**Keywords:** Medical students, Medical Education, Learning Physiology

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### Introduction

The Government of India recognizes Health for all as a national goal and expects medical training to produce competent 'Physicians of First Contact', towards meeting this goal. However, the medical education and health care in India are facing serious challenges in content and competencies<sup>20</sup>. All over the world, medical education is evolving rapidly and in order to keep pace with changing time, we need to adopt to the current trends. This has been appreciated by the Medical Council of India and accordingly it has put forward certain guidelines for effective and need based curriculum for MBBS<sup>13</sup>. To take care of the huge Indian population, we need quality doctors. Heightened focus on the quality of teaching in medical colleges has led to increased use of student surveys to evaluate teaching practice<sup>6</sup>. The

emergence of new techniques and availability of extensive information in the field of medicine calls for a fresh look at the curriculum, especially that of the basic sciences<sup>3,14</sup>.

Human physiology provides the knowledge about the human health and physical performance. A basic understanding of physiological mechanisms can instil a deeper appreciation for the complexity of the human body and motivate the students to learn still more<sup>5</sup>. Physiology like any other branch of medicine is progressing by leaps and bounds. Lectures form an important aspect of the teaching/learning process in medical education. They are an effective and feasible way for large group teaching where a vast curriculum has to be covered<sup>18</sup>. Lectures are generally described from the instructor's point of view<sup>10</sup>. Students are frequently seen as passive recipients of information and as a result are not engaged in the learning process to a greater extent<sup>16</sup>. In addition to the traditional role of transmitting knowledge, academicians should also be interested in producing valid and reliable assessments about the educational content<sup>7</sup>.

Medical education, the science behind the teaching and learning in medicine, has been firmly established as a separate discipline. Parallel to the advancement in

medical science, medical education as a discipline has progressed from the role of problem identifier to that of solution provider<sup>2</sup>. It is generally agreed that reviewing the teaching and evaluation methods at regular intervals and modification of methodologies, is a must for improvement in the undergraduate medical teaching<sup>11,12</sup>. Currently students' feedback represents the primary means used by most programmes to assess their methodologies<sup>4</sup>. It is an inexpensive and invaluable tool to improve the quality of teaching. Though a lot of verbal and non-verbal feedback is conveyed to the teachers, but much of the work is not published especially in this part of the country. It motivated the authors to undertake the current study so as to make teaching and learning process more effective.

In this study, the authors aim to assess the current practices and attitudes of medical students in Northern India from the two medical colleges in Jammu province of J&K towards learning of Physiology. The information so gathered will act as an important feedback, to know how things are at present from the student's perspective. Further the information gained can be incorporated by the authors and other medical educators to make relevant changes in different aspects of teaching, so that teaching and learning Physiology becomes interesting and productive.

### Material and Methods

Before the conduct of the study, permission was duly sought from institutional ethical committees

of both the medical colleges. A total of 500 medical students participated in this study, 300 from the ASCOMS and Hospital, Sidhra, Jammu and 200 from the Govt. Medical College, Jammu. First year students who were studying Physiology and senior students who had already studied Physiology were included. A questionnaire of thirteen questions was prepared by a team of experts in physiology. This team comprised of senior faculty members from both the medical colleges. The information was usually sought about the different methods by which students learn Physiology. This questionnaire was pilot tested on 25 students of pre-final MBBS students who were not part of the study sample. After pilot testing, expert team met once again to incorporate the necessary changes before the questionnaire was put to use. All the questions were in one sheet of paper and could be answered within few minutes. Eleven of the questions required simple choice of either 'yes' or 'no'<sup>1</sup>.

Of the remaining two questions, they were multiple choice, in one there were two options and in the other four. To ensure confidentiality, name and gender of the participants were not recorded. The students were approached in practical/tutorial classes and the purpose of the study was explained. They were asked to fill the questionnaire in their free time towards the end of the session. The response rate was 100% as none of the students refused participation. The study was conducted during February -April 2016. The data thus collected was tabulated and analysed.

**Table 1: What is the opinion of the students regarding the lectures & tutorials?**

Questions	GMC(n=200)		ASCOMS(n=300)		All students(n=500)	
	Yes(%)	No(%)	Yes(%)	No(%)	Yes(%)	No(%)
1. In your opinion, do you need lectures to learn physiology?	162(81)	38(19)	281(94.33)	17(5.66)	445(89)	55(11)
2. Would you attend physiology lectures if no attendance is taken?	124(62)	76(38)	211(70.33)	89(29.67)	335(67)	165(33)
3. In your opinion do you need tutorials to learn physiology?	146(73)	54(27)	189(63)	111(37)	335(67)	165(33)
4. Would you attend physiology tutorials if no attendance is taken?	116(58)	84(42)	164(54.67)	136(45.33)	280(56)	220(44)
5. Do you come prepared with the topic for tutorials?	102(51)	98(49)	179(59.67)	121(40.33)	281(56.2)	219(43.8)
6. In your opinion are the physiology practical's useful?	167(83.5)	33(16.5)	250(83.33)	50(16.67)	417(83.4)	88(16.6)

**Table 2: Sources of the students from which they obtain information of physiology**

Questions	GMC(n=200)		ASCOMS(n=300)		All students (n=500)	
	Yes(%)	No(%)	Yes(%)	No(%)	Yes(%)	No(%)
1. In your opinion, are the lecture notes sufficient to learn physiology?	63(31.5)	137(68.5)	118(39.33)	182(60.67)	181(36.2)	319(63.8)
2. What reference books of physiology do you use?						
a. The advised reference book	175(87.5)	25(12.5)	262(87.33)	38(12.67)	437(87.4)	63(12.6)
b. Others.	93(45.5)	109(54.5)	152(50.67)	148(69.33)	243(48.6)	257(51.2)
3. Do you use previous exams to help you study physiology?	93(46.5)	107(53.5)	163(54.33)	137(65.67)	256(51.2)	144(48.2)
4. Do you use previous exam papers to help you study physiology?	111(55.5)	89(44.5)	177(59)	123(41)	288(57.6)	212(42.4)

**Table 3: When there is a difficult topic in physiology, whom do students consult?**

Questions	GMC(n=200)		ASCOMS(n=300)		All students(n=500)	
	Yes(%)	No(%)	Yes(%)	No(%)	Yes(%)	No(%)
1. Who do you consult when faced with difficulty?						
a. Teachers?	106(53)	94(47)	108(36)	192(64)	214(42.8)	286(57.8)
b. Senior Students?	73(36.5)	127(63.5)	147(49)	153(51)	220(44)	180(56)
c. Class Fellows?	113(56.5)	87(43.5)	194(64.67)	106(35.33)	307(61.4)	193(38.6)
d. Reference Books?	114(57)	86 (43)	236(78.67)	64(21.33)	350(70)	150(30)
2. Do you use internet to obtain physiology information?	133(66.5)	67(33.5)	191(63.67)	109(36.33)	324(64.8)	176(35.6)
3. Do you use scientific journals to get physiology information?	39(19.5)	161(80.5)	66(22)	234(78)	105(21)	295(79)

## Results

The results of the current study have revealed that medical students (89%) from both the colleges overwhelmingly favoured lectures as the preferred mode of learning. 94.33% of ASCOMS students opined in favour of lectures in comparison to 81% of GMC students. Need for tutorials was felt more by GMC students (73% vs. 63%). Higher proportion of ASCOMS students (70.33%) preferred attending lectures even if no attendance was marked, while GMC students (58%) were more keen to attend tutorials. In all, a total of 51.2% were in favour of attending tutorials. Regarding preparation for tutorials, more number of ASCOMS students (59.67%) came prepared to attend in comparison to GMC students (51%). 83.4% of students from both the medical colleges rated physiology practical's very useful in the subject learning process. (Table 1)

The results further revealed that only one third of the total students (36.2%) labelled lecture notes alone as sufficient in the context of subject learning. 87.4% of the students were using reference books as advised by the faculty. Also, it was found that more than half of the

students were using previous examinations (51.2%) and previous exam papers (57.6%) to guide them to study physiology. (Table 2)

When faced with difficulty in learning the subject, majority preferred to consult reference books, class fellows and seniors in that order while consultation with teaching faculty was usually the last option. Two-third (64.8%) of the respondents were using internet to obtain the subject information while only one fifth (21%) of them were using scientific journals to get the requisite knowledge of physiology. (Table 3).

## Discussion

Human physiology provides the scientific foundation for the field of medicine and all other professionals related to human health and physical performance. The scope of topics included in a human physiology course is therefore wide-ranging, yet each topic must be covered in sufficient details to provide a firm basis for further expansion and application. Teaching is a complex endeavour. A teaching method comprises the principles and methods used for

instruction. The best way to assess and improve the teaching methodology is through students' feedback<sup>6</sup>. The students' undoubtedly are in the best position to comment on the effectiveness of any teaching system. Most of the institutions collect feedback from their students in different forms. Feedback from students have always played an important role in the maintenance of quality and standards in higher education.

The authors could not retrieve much during the review of literature except very few studies like that of Abdalla ME<sup>1</sup>, Elkhair EB and Alharbi WDM<sup>14</sup> and a slightly different study of Skandhan KP, Dileep D, Sasi ASP<sup>15</sup>.

The authors are not trying to be judgemental, but the effort is to put forth the facts. The results have shown that the students of both the medical colleges were keen on learning physiology which is one of the basic sciences on which future foundation of a good doctor is laid. Lectures (89%) in comparison to tutorials(67%) were found to be the preferred mode of subject learning and it was in agreement with the results of Abdalla ME<sup>1</sup> and that of Elkhair EB and Alharbi WDM<sup>4</sup>. 89.73% of students in study conducted by Skandhan KP, Dileep D, Sasi ASP<sup>15</sup> also projected lectures as the choicest teaching method. Generally, lectures consist of instructors introducing constructs and their definitions, examples of how phenomenon work and other supporting information. This approach is beneficial because it is a convenient and efficient way to introduce a vast amount of information, especially in large classes where activities may be impractical<sup>8,9,17,21</sup>. Attendance was not an issue with the respondents as majority would attend lectures/tutorials even if no attendance was marked. More than half of the respondents(56.2%) came prepared to attend tutorials which was in contrast to the results reported by Abdalla ME<sup>1</sup>. Discussions during tutorials help students to cement their existing knowledge and analyse implications of this knowledge in new contexts. However, problems with tutorials can arise if the student/teacher ratio is more, then it may become difficult for the tutor to solve the problems of each student. Also, even in tutorial group equal opportunities may not be provided to all the students, some students might dominate others or the tutor may be biased, then most of the students might lose interest. In the current study, 83% rated physiology practical's as useful learning tool which concurs with those reported by Elkhair EB and Alharbi WDM<sup>4</sup> while lower rates were reported by Abdalla ME.

In our study, lecture notes were found to be insufficient study material by the respondents(39%) which was in sync with Abdalla ME(23%)<sup>1</sup> but not with that of Elkhair EB and Alharbi WDM(87.6%)<sup>4</sup>. In the current study, 87% of the respondents were using reference book as per the advice of the faculty. In contrast, lower proportion of respondents were using reference book as advised in the studies by Abdalla ME<sup>1</sup>, and that of Elkhair EB and Alharbi WDM<sup>4</sup>. More than

half (57.6%) of the respondents in the current study were using old examinations to guide their study while Khartoum study reported it to be 67%. Considering that teachers have no input in this activity, it would be imperative on the part of faculty to get involved to ensure quality of this activity.

One disturbing finding in the current study was little contact between the students and the teachers at the time of need. Most of them turned to reference books and fellow colleagues. The obvious reasons could be students feeling shy to approach teachers, their non-availability or tight teaching schedule. The matter needs to be sorted out among the stakeholders. Teachers should encourage open communication and free thinking among their students, so that they willingly approach them. Two-third of the respondents using internet to get subject information was a welcome finding as online search is mostly required by postgraduate students and usually not by undergraduate students. However in contrast to our findings, only 13% respondents were using internet for subject information in Khartoum study<sup>1</sup> and 4.1% in Umm AL-Qura study<sup>4</sup>.

### Conclusion

The study has shown that medical students are motivated to learn one of the basic subjects, Physiology and are using hybrid techniques to learn the subject. The respondents are using advised reference books, consulting among themselves in solving problems and using online resources. However fewer contacts with teachers in problem solving and less interest in tutorials need to be looked into. Teachers need to become more friendly with their students, encourage them to share their ideas, create an atmosphere that is open and positive, be available to them in between classes, listen to them giving hints, being responsive and sharing empathy for students.

### Limitations

Although much remains to be done our work generates important findings in the field of medical education. The other variables which influence the opinions and perceptions like the personality of the students, peer pressure and timing of the feedback and different teaching methods like power point presentation, overhead projector and chalk board were not assessed. More studies need to be done where students from more number of medical colleges across India should be involved; feedback about teaching methods and opinion of students how to improve teaching should be sought.

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