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Medical Students' Perception about Various Methods of Learning Physiology in a Medical College in Central India

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Abstract

Teaching methods have huge impact over appropriate acquisition of knowledge by the intended recipient.Physiology course in our college is taught through lectures, laboratory sessions, tutorials, all of which are teacher centered; and student-led seminars. Aim of this study was to investigate students' perceptions of the value of varying academic methods on their learning of physiology. A faculty-based descriptive study was conducted. 150 Pro-formas were distributed & 127 were completed. Results showed that 108 students (85%) believed that their absence from different academic activities could affect performance. Students perceived lectures as the most valuable academic activity (90.7%), whereas seminars by students were perceived as least important (18.5%). There was significant correlation between lectures attendance and performance in examinations (P-0.008). 90% students thought that teacher involvement in tutorials was essential. These results showed that in our course, students perceived teacher involvement as a key component of the learning process.

Introduction

At our institute, MBBS curriculum and the physiology course are traditional and mostly teacher centered. MBBS degree is awarded to students after the successful completion of 9 semesters& one year of internship. Physiology is taught in first two semesters. The academic activities for physiology include lectures, laboratory practical sessions, tutorial sessions, and seminars presented by students after they finish each system under respective teacher's supervision. Most of these activities are guided and managed by teachers. Also, because of a relative deficiency of laboratory equipments, some practicals are descriptive rather than interactive, as the experiments are just explained to students.

A style of teaching that is dependent on didactic lectures and other academic activities managed by teachers does not develop self-directed learning skills that are required of healthcare professionals (1, 2, 3, 4, 5). Realizing this, some have recommended the implementation of the SPICES instructional model (where S is student centered, P is problem based, I is integrated, C is community based, E is electives, and S is systematic) (6). Physiology has undergone

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many innovative changes regarding the teaching and learning environment (7, 8, 9, 10). Novel teaching methods that mainly depend on interactions rather than simple recall have proven to be more effective in learning physiology than traditional methods (11).

Despite university recommendations and the success of novel teaching methods, our medical colleges mostly still teach in the traditional way, where didactic lectures are the cornerstone of the teaching process. In the traditional curriculum, faculty members feel that the role of the teacher is powerful since the “impact of our teaching will extend long beyond our life time because a small part of every teacher is in the students we taught” (12). Students also seem to value the educational role of faculty members in our institution, although this has not been well documented.

The overall aim of this study was to investigate student perceptions of the value of varying academic methods on their learning of physiology. The information garnered may guide the planning necessary for introducing a more learner-centered model of instruction.

Materials and Methods

An institution-based descriptive study was conducted at the NKP Salve Institute of Medical Sciences, Nagpur, India. The college follows traditional MBBS curriculum and physiology is taught in semesters I & II.

A standardized (questions were of the same sequence, same wording, and same order) self-administered pro-forma was developed and pretested by five second year MBBS students. Their responses were not included in the study. The pro-forma was then revised, corrected, and finalized. Pro-forma were distributed to 150 students from three consecutive MBBS batches in second semester. In all, 127 students filled up the Pro-forma. The response rate was ~ 85%. The Pro-forma consisted of close-ended questions focused on students’ perceptions of the teaching methods used in physiology, the importance of lectures to the students, students’ ability to study on their own, their results in the last physiology exam they had before the survey & and their opinions of whether physiology is relevant to their future career.

All the teaching activities continued routinely as per schedules prepared by the department during the study. For the student-led seminars, groups of five students are allotted a faculty member each as preceptor. Each group is then allotted topic and is asked to prepare the seminar in consultation with the preceptor and present it on a given date & time (1/2 hour total) in front of other students &all the faculty members of the department. Finally, each group of students is informally assessed by the faculty members at the end of presentation & relevant feedback provided.

Data were analyzed using STATA 9.0 (College Station, Texas, USA) and Chi-square test was applied for the analysis.

Ethical approval was obtained from the Institutional Ethics Committee. The Pro-forma was anonymous, and verbal consent was obtained from each student after a thorough explanation of the study’s purpose and assurances of voluntary participation and confidentiality of the data.

Results

One hundred twenty-seven students responded, most of them (71) being females (56%). Respondents were between 17 and 23 years of age (mean: 18.9 years).

One hundred & eight students (85%) believed that their absence from different academic activities could affect their performance, whereas 15% of them denied this. We asked the students who answered “yes” (108 students) which activity affected their learning most; and most of the students perceived lectures as the most valuable academic activity (90.7%), whereas the seminars that were presented by students were perceived as the least important activity (18.5%) (Table I).

TABLE I: Student perceptions of the effect of absence from academic activity on the performance.

	Absence affects exam performance		*Absence does not affect exam performance*		*Total*	
Activity	*Number of students*	*Percent*	*Number of students*	*Percent*	*Number of students*	*Percent*
Lectures	98	90.7	10	9.3	108	100
Practicals	84	77.8	24	22.2	108	100
Tutorials	73	67.6	35	32.4	108	100
Seminars	20	18.5	88	81.5	108	100

This perception was validated when we asked the students about their results in the end-*semester I examination* and the status of their attendance, which is compulsory according to the regulations of the college. There was significant correlation between lectures attendance and student performance in the end-semester examination (Table II).

TABLE II: Correlation between students' attendance in lectures and performance in end-of-semester examination.

Student's examination performance in the last physiology	*Lecture attendance pattern change since entry to the college*			
	Improved	*Declined*	*Same*	*Total*
Poor	27	14	25	66
Average	13	2	17	32
Good	4	4	1	9
Very Good	12	0	2	14
Excellent	2	2	2	6
Total	58	22	47	127

($P<0.05$)

As shown in Table III, 90% of the students reported that teacher involvement in the tutorial is essential and that lectures are useful to understand certain topics. More than half of the students stated that it is difficult to study the subject on their own.

About 94% of the students strongly agreed or agreed that studying physiology is relevant for studying other subjects and that it is relevant to their future professional career.

Discussion

Teaching physiology in our traditional curriculum is mainly teacher centered, as it depends on lectures & practical sessions as the main source of information for students. Tutorials and seminars are complementary course activities that do not greatly influence students' performance. Such results are expected as the students had more contact hours for lectures & practical and fewer for tutorials and seminars. Physiology principles every where are the same, but the approach to teaching varies among different institutions. Often, how wet each is more important than what we teach (1, 12, 13). The data from this survey indicate that our students value the teacher-based system adopted for teaching of the subject. They perceived lectures as the most important way to understand physiology. This finding runs in contrast to a decrease in global interest in didactic lectures (4), even in low-resource settings (1, 2). Most studies have revealed that students showed more interest in peer-review tutorials (1, 2, 7). In our case, 90% of our students reported teacher participation in tutorials is essential, and actually what happens in this case is that the tutorials are

TABLE III: Students' opinion about teaching methods and different learning styles.

Statement	*Strongly agree Number (%)*	*Agree Number (%)*	*Neutral Number (%)*	*Disagree Number (%)*	*Strongly disagree Number (%)*
Lectures were useful to understand certain topics	54 (42.5)	61 (48)	5 (3.9)	7 (5.5)	0(0)
Active participation in tutorials increases marks in exams	40 (38.6)	39 (30.7)	28 (22)	4 (3.1)	7 (5.5)
Active participation in practicals increases marks in exams	30 (23.8)	46 (36.5)	32 (25.4)	15 (11.9)	3 (2.4)
Teacher involvement in the tutorial was essential	75 (59.1)	40 (31.5)	4 (3.1)	4 (3.1)	4 (3.1)
It was difficult to study the subject by my own	26 (20.5)	48 (37.8)	8 (6.3)	27 (21.3)	18 (14.2)

transformed into mini-lectures. Half of the students stated that it is difficult to study the subject on their own, giving more evidence that our students are passive learners. One of the objectives of undergraduate teaching is to graduate students who have the necessary skills for self-directed learning (13). However, it is worth mentioning that most of our students came from a pre-university general education system that is unsupportive for self-directed learning, and, consequently, they enter the university as passive rather than active learners. It is our responsibility as teachers to motivate students to be self-directed and active learners. Despite the satisfaction of the students with the current teaching methods, it is necessary to incorporate innovative teaching methods to enhance the overall performance of our educational system. There has been sustained increase in physiology knowledge in the last century, but our university still teaches in a very traditional way (14). Instructors can't cover all the content (12), and any attempt to do this will limit our student's ability to learn on their own (15). Students at our college can also contribute to the resistance to change through their stated preference for familiar teaching settings. Our study indicates the importance of preparing students as well as instructors for their role in the learning process.

In conclusion, it is difficult for us to change the way we teach (13, 14), but necessary that we do so for the benefit of our students. Interactive teaching methods can and should be introduced to compliment the didactic lectures. Problem-based learning (16, 17, 18, 19), self-directed study (20), and peer-review discussion (7, 19) are examples of student-centered activities that can help students to be motivated to become lifelong learners after graduation. The curricula and courses should be designed to encourage students to take responsibility for their own education.

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