

# A SURVEY BASED ANALYSIS OF STUDENT'S PERSPECTIVE OF THE CURRENT MEDICAL EDUCATION SYSTEM, TEACHING LEARNING METHODS AND THEIR ATTITUDE TOWARDS RESEARCH IN A MEDICAL COLLEGE IN NORTH KARNATAKA WITH SPECIAL REFERENCE TO PATHOLOGY AS A SUBJECT

Ashraf Ahmed Zubair<sup>1</sup>

<sup>1</sup>Assistant Professor, Department of Pathology, Navodaya Medical College, Raichur, Karnataka.

## ABSTRACT

### BACKGROUND

Undergraduate medical education in the pre-clinical sciences remains challenged to find teaching strategies that actively engage students in the learning process. The aim of this study was to analyse the student's perception regarding the ideal class strength and duration, various teaching-learning methodologies in practice, their attitude towards assessment, research; and to take feedback on how improvement could be made in this domain with specific reference to pathology as a subject.

### METHODS

A pre-validated, structured questionnaire based cross sectional study was conducted on students of Phase II MBBS at the end of their 3<sup>rd</sup> term in Navodaya Medical College, Raichur. A total of 114 of 181 students participated in the study.

### RESULTS

Student preferred a smaller class strength for both theory and practical classes with teaching duration of less than one hour. Teaching methods like group discussions were preferred and use of video demonstration as audio visual aid was regarded as most appropriate by majority of the students. PowerPoint presentations were not opted by a greater proportion of the students. This shows a changing trend in the teaching process towards integrated teaching. The essential skills of a teacher from a student's perspective were highlighted. Changes in pattern of assessment comprising a blend of conventional essay questions along with case-based questions and MCQs was suggested by the participants. Most of the students wanted to pursue research preferably from the 2<sup>nd</sup> phase MBBS and a good proportion felt it should be made mandatory. Many of these results correlated with studies conducted in other medical colleges in India and abroad.

### CONCLUSIONS

A need for change in the current system of medical education with more focus on optimal class size and duration, better teaching learning methods as per the scenario, promotion of problem-based learning, more efficient assessment techniques and embarking on research at an early stage was felt by the students. Thus, this study highlights the essential need to restructure the present medical education system to cater to the student's needs.

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### BACKGROUND

Undergraduate medical education in the pre-clinical sciences remains challenged to find teaching strategies that actively engage students in the learning process.<sup>1</sup> Second phase MBBS is a crucial point in the life of a medical student when there is a transition from the classroom-based teaching to bedside clinics. Medical education is rapidly undergoing change with the introduction of newer and more efficient teaching and learning methods and focus on fostering research. Conventional lecture-based teaching practiced in

many Indian medical colleges lacks a student-oriented approach.<sup>2</sup> The current medical education system is facing a crisis due to lack of evidence based teaching<sup>3</sup> and problem-based learning (PBL). PBL in contrast to traditional teaching focuses on the process of learning rather than the content of teaching.<sup>4</sup> In PBL, educators need to change their educational roles and helps to increase student's self-motivation by focusing on their learning needs, rather than merely acquiring facts.<sup>5</sup> Large classes, compromised faculty time for teaching and an ever-expanding knowledge base have influenced many educators to favour the lecture as the standard teaching format.<sup>1</sup> Pre-clinical students often feel overwhelmed or burned out by the amount of information they must acquire through individual study.<sup>6</sup>

An understanding of pathology is an essential prerequisite to an understanding of medicine. Over the years, pathology has developed from an autopsy and microscopy-based discipline to a technically finessed histological and molecular field. This change has also been mirrored in the teaching of this field in medical school.<sup>7</sup> The

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*Corresponding Author:*

*Dr. Ashraf Ahmed Zubair,*

*Assistant Professor,*

*Department of Pathology,*

*Navodaya Medical College,*

*Mantralayam Road, Navodaya Nagar,*

*Raichur- 584103, Karnataka.*

*E-mail: ashahmzub@gmail.com*

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main goals of undergraduate pathology teaching have always been to provide a framework for the description of disease and to provide students with knowledge of the functional and structural changes in disease so that clinical signs and symptoms can be understood and interpreted.<sup>8</sup>

The aim of this study was to analyse the student's perception regarding the ideal class strength and duration, various teaching-learning methodologies in practice, their attitude towards assessment and research; and to take feedback on how improvement could be made in this domain.

## METHODS

A pre-validated, structured questionnaire based cross sectional study was conducted on students of Phase II MBBS at the end of their 3<sup>rd</sup> term in Navodaya Medical College, Raichur. Institutional ethical clearance was obtained. The questionnaire contained 27 questions relating to class strength, teaching duration, interest in subject, preference of teaching and learning methods and research in the medical field. A total of 180 students were sent questionnaires of which 114 complete responses were obtained and analysed.

## RESULTS

Of the 114 responses obtained, 65 students were females and 49 were males (1.34:1). 93% of the students were in the age group of 18-21 years. Majority of the students (58.8%) believed that the ideal number of students in a theory class would be between 51-100 (Figure 1) and that for a practical class would be between 21-40 (61.4%) (Figure 2). Optimal duration for a theory class was considered to be 45 minutes by a sizeable majority of the students (75.4%) (Figure 3) and that for a practical class was 60 minutes (43.9%) followed by 45 minutes (33.3%) (Figure 4). None of the students preferred that the theory class duration should exceed 60 minutes and practical duration should exceed 90 minutes. Only 20.2% of the students felt that attendance should not be mandatory for classes even though they agreed with the bulk of the students that classes are an essential part of the learning process (93.9%).

Students considered Forensic Medicine (40.4%) as their favourite subject in Phase II MBBS, followed by Pathology (26.3%), Pharmacology (17.5%) and Microbiology (15.8%). 71.9% of the students opted for their favourite subject based on it being "very interesting", followed by it being essential and easy to understand.

Pharmacology was considered as the least favourite subject by 39.5% of the students followed by Pathology (24.6%), Forensic Medicine (19.3%) and Microbiology (16.7%). Difficulty in comprehension of the subject (59.6%) was the major reason for categorization of the subject as least favourite by the students followed by the subject being boring (35.1%) and improper staff to teach the subject (5.3%).

36% of the students preferred group discussions, 24.6% preferred didactic lectures and 22.8% preferred

demonstrations as the teaching method of choice for Phase II MBBS subjects (Figure 5). According to the students, group discussions helped to arouse interest in the subject thereby contributing to active, interactive and effective learning, better preparedness for the activity, uniform participation, better clarification of doubts and understanding different opinions and views of their peers which would foster team work. Only a small proportion of the students opted for seminars (7%) and tutorials (6.1%) as ideal teaching methods.

With regards to audio-visual aids 41.2% preferred video demonstrations, 34.2% preferred chalk and black-board and 18.4% opted for PowerPoint presentations (Figure 6). The choice of video demonstrations was attributed to several factors like being easier to understand, longer attention span and prolonged retention time with better recall. The students who opted for chalk and board preferred it due to better concentration, easier understanding and better ability to document notes. Seven students opted for a blend of all the audio-visual aids depending on the scenario and topic being taught.

Ability to effectively communicate the details of topic being taught ranked highest among the qualities of an ideal teacher (71.9%). Being knowledgeable and updated regarding the subject; and being approachable and friendly with the students (35.1% each) were also considered as essential attributes of a teacher by the participants. Having a lot of teaching experience was not considered as an essential trait by the students (2.6%). A majority of the students (57.9%) agreed that the qualities of an ideal teacher chosen by them were present in the Pathology department staff of our institute while 32.5% agreed to some of the qualities being present but not all.

Most of the students clarified their doubts regarding pathology by discussion among themselves (37.7%), followed by browsing on the internet (27.2%), extensive reading (14.9%) and approaching the pathology staff (10.5%) (Figure 7). Majority of the students (67.5%) believed that the pathology staff was approachable and devoted ample time for resolution of their doubts.

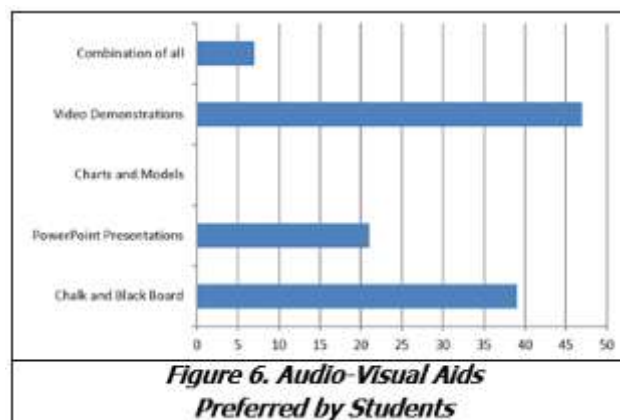
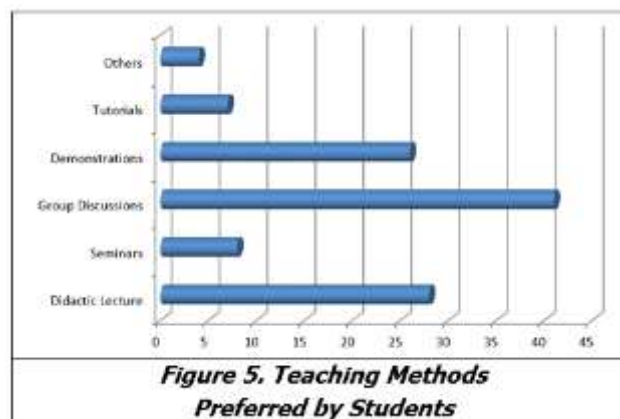
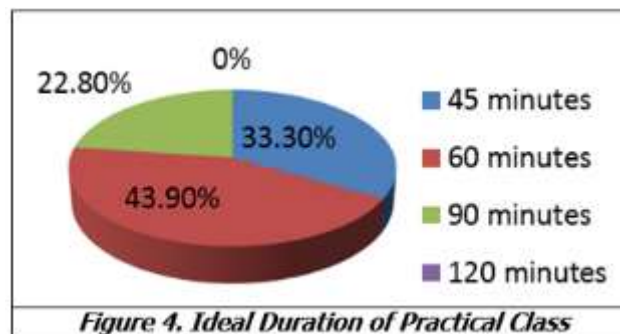
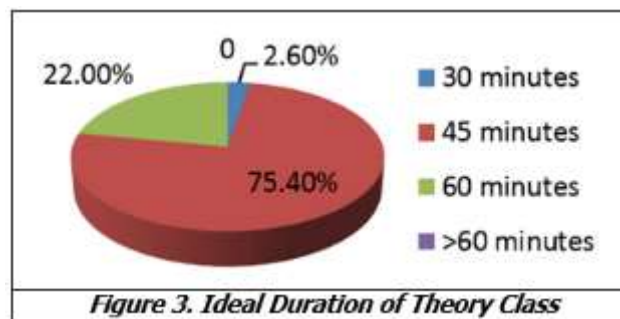
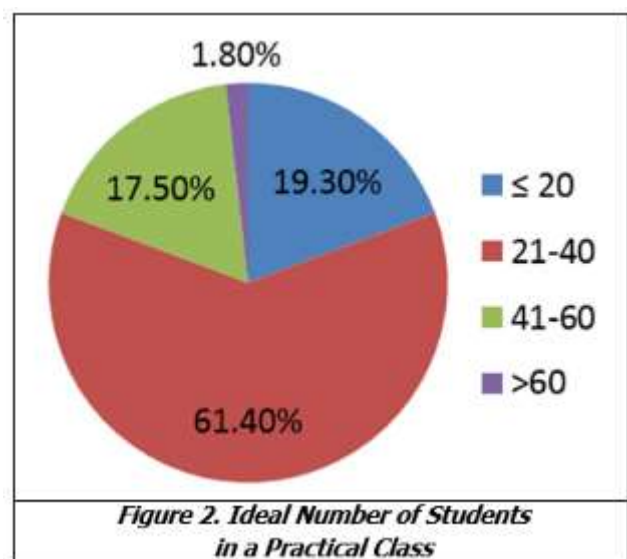
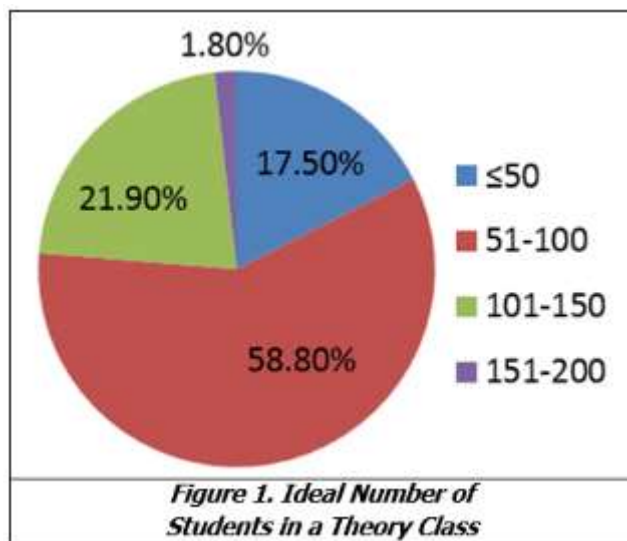
With regards to study of pathology 21.9% of students preferred to do selective reading with reference to a question bank rather than going through standard textbooks, preparing notes or taking notes during classes (74.6%).

Assessment, according to most students (41.2%) should be based on overall performance rather than just University exams. This included punctuality to class, individual and team participation in academic activities, periodic tests in addition to the internal assessments and University exams. Inclusion of MCQs and case-based reasoning questions in addition to the conventional theory exam pattern was preferred by the bulk of students (60.5%) while 28.9% of the students felt the conventional theory exam pattern comprising long essays, short essays and short answers was better (Figure 8). In case of practical assessment, 39.5% preferred the conventional practical exam pattern comprising performance of experiments or

exercises followed by viva voce to Objective Structured Practical Examination (35.1%).

Taking part in seminars and exhibitions (41.2%) was opted as the majority of the participants as the most effective method of training themselves for public speaking at this stage in their course. This was followed by group discussions (36.8%), anchoring in extra-curricular college events (11.4%) and oral poster and paper presentations in conferences (9.6%).

36% of the students believed that research was extremely important in their course and an additional 31.6% believed that it should be made mandatory in their curriculum (Figure 9). 29.8% preferred research to be optional based on the interest of the individual whereas 2.6% felt that it is not required altogether. Majority of the students felt they should be embarking on a research study by Phase 2 MBBS (45.6%) only 7% opted for undertaking a research study in the final phase of their course (Figure 10).



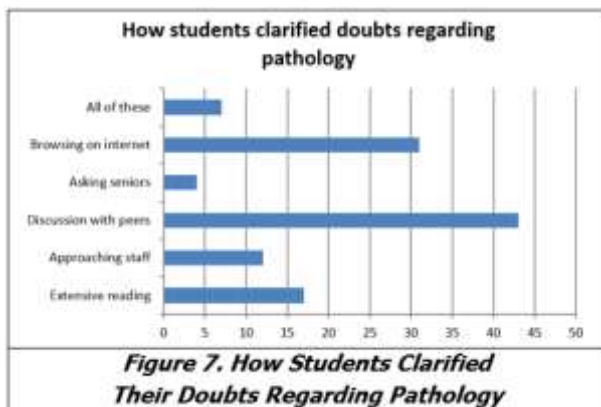


Figure 7. How Students Clarified Their Doubts Regarding Pathology

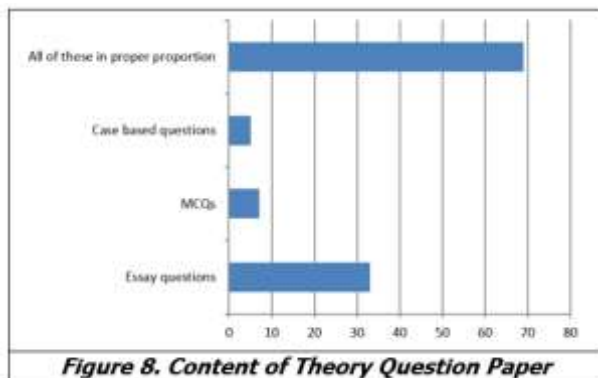


Figure 8. Content of Theory Question Paper

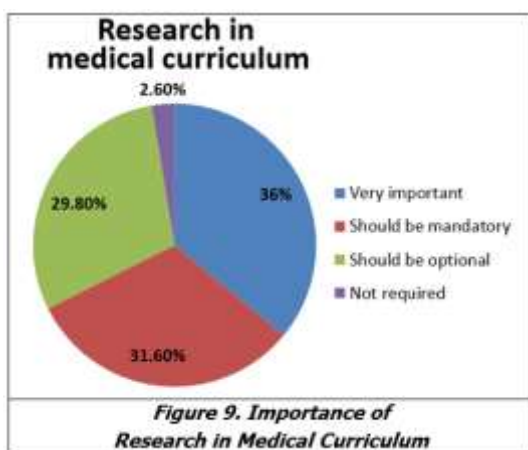


Figure 9. Importance of Research in Medical Curriculum

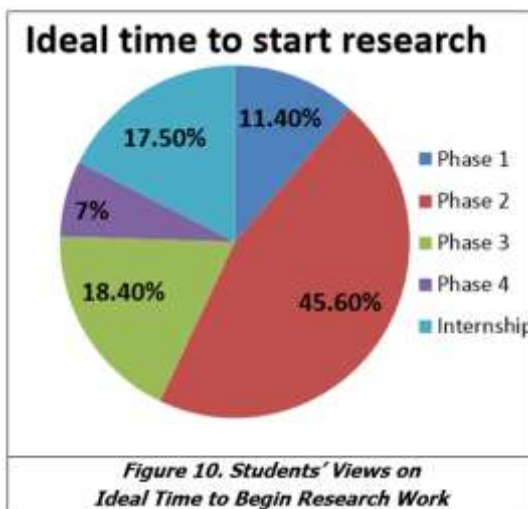


Figure 10. Students' Views on Ideal Time to Begin Research Work

**DISCUSSION**

Student’s opinion regarding their needs for learning forms an important base for designing relevant teaching activities. What a student expects from his teachers is of utmost importance to create a healthy learning environment, to clarify doubts and to foster research. Better assessment would also help the students not only have adequate knowledge but also on how to apply it in real scenarios and how to exercise a reasonable judgement and apt decisions. Pathology as a subject, forms the basis for understanding the mechanisms of various diseases, choosing relevant laboratory investigation for evaluating a patient and interpretation of laboratory data in the clinical context, which would be of paramount importance in the latter part of the MBBS course. At the crucial transition stage of 2<sup>nd</sup> Phase MBBS where the students step into the clinical side, understanding the mind-set of the students and providing a more flexible learning environment would go a long way in making them better clinicians. This study was designed to make a preliminary assessment of the student’s needs and attitudes towards learning and research with particular regard to pathology as a subject.

Most of the students in this study preferred a class size of 51-100 students for theory and 21-40 students for practical class. This smaller class strength would improve the student to teacher ratio so that better interaction could be facilitated, and individual attention could be given. This correlates with the study conducted by Nekkanti et al. where the participants also opted for a theory class comprising 50-100 students.<sup>3</sup> A smaller sized batch for both theory and practical may not be feasible due to the manpower and infrastructural constraints in many medical colleges in India.

Students believed that the optimal duration for a theory class should not exceed 45 minutes and that for a practical class should not exceed 60 minutes. In a study by Mustafa et al., majority of the students (92%) reported not being able to concentrate during a lecture beyond 30 minutes.<sup>9</sup> This fact correlates with the present study and other previous studies.<sup>8</sup>

The largest proportion of students favoured group discussion as the best mode of teaching followed closely by didactic lecture and demonstrations. Seminars and tutorials were not preferred by the students. This correlates with study conducted by Khane et al,<sup>10</sup> in which the students preferred small group discussions as the preferred method of teaching. Demonstrations were also favoured by the student in study conducted by Nelkkanti et al.<sup>3</sup> However, in this study group discussions were not included as a teaching method. The reason why students still preferred a didactic lecture could be the use of audio-visual aids which enhance learning experience and also that a larger number of students could be taught in the time constraints of their syllabus.

Power Point presentations which were the preferred audio-visual aids in earlier studies have now become unpopular among the students who prefer video demonstrations and conventional chalk and board as in our study. The vastness of syllabus has led to piling up of

volumes of matter in PowerPoint presentations and faster pace of teaching. Lack of updating of information in PowerPoint presentations and sharing of material between staff has resulted in a monotony during classes. Students probably prefer eye to eye contact, slower pace of teaching and greater time to document notes during classes. This decline in preference for PowerPoint presentations correlates with other studies.<sup>6,10,11</sup> However, some studies have also shown conflicting views in which the students favoured PowerPoint presentations as preferred mode of teaching.<sup>8</sup> However, even in this study group discussions and case-based discussions were preferred over PowerPoint presentations. Chalk and board may be the choice of a few students as the class would proceed at a slower pace and allow the students ample time to take notes.

Similar to previous studies<sup>10,12</sup> the students felt that experience in teaching field and personality was not an essential trait of the teacher. On the other hand, majority believed that ability to effectively communicate the details of topic being taught ranked highest among the qualities of an ideal teacher (71.9%) in addition to being knowledgeable and updated regarding the subject. Being approachable and friendly with the students was also considered as important attribute.

Though the majority of the students felt that the pathology staff were approachable for clarification of doubts (67.5%), only 10.5% clarified their doubts by approaching staff, preferring discussion with peer groups and browsing on the internet to it. This probably highlights the hesitancy among students to approach staff due to fear of being ridiculed (10.4%). This is in accordance with the study conducted by Khane et al.<sup>10</sup> Staff approachability is mainly based on the environment created by the teacher in the class, their rapport with the students and probably also influenced by the Heads of the Department with regards to how they condition their staff for effectively teaching their students. Gaining the students confidence, empathizing with them, giving ample time for their doubts and criticizing them in a healthy way would foster a healthier learning environment. Though empathy plays a role to improve performance, the extent a teacher should empathize is situation based<sup>13</sup> and relates to the skill of the teacher.

A smaller proportion of students preferred exam-oriented reading right from the start of their academic year (21.9%). This approach though beneficial for scoring a higher percentage in exams may not always be ideal for an integrated and practical learning experience.

An overall assessment according to most students (41.2%) included punctuality to classes, individual and team participation in academic activities, periodic tests in addition to the internal assessments and University exams. Though this would require more man-power and academic support, it would also pave way for better overall participation of the students and honing of their skills in multiple spheres including teaching and public speaking. The bulk of students (60.5%) preferred inclusion of MCQs and case-based reasoning questions while a smaller proportion (28.9%) of the students preferred the conventional theory exam pattern

comprising long essays, short essays and short answers. MCQs enable the students to understand the concepts better as compared to essay questions which are primarily based on recollection and memory. Case based questions help to improve their analytical and reasoning skills and formulate a judgement. A combination of MCQs, case-based questions and essay type questions in the proper proportion would be required to develop other faculties of the budding doctors rather than just jogging their memory. These results correlate with other previous studies<sup>3</sup> and therefore emphasize the urgent need for reforms in the assessment system.

However to the contrary, with regards to practical assessment, 39.5% preferred the conventional practical exam pattern comprising performance of experiments or exercises followed by viva voce to Objective Structured Practical Exam, OSPE (35.1%).<sup>14</sup> The reason could be unfamiliarity with the concept of OSPE as it has not yet been implemented even in the pilot stage in our institute. Heavy infrastructural and man-power demands have been curtailing the use of OSPE on a regular basis.

Research is a concept alien to the current system of medical education at the under-graduate level. It has been greatly neglected at the MBBS level with more significance given to it, at the post graduate level. 62.6% of the students believed that research should be a very important part of the undergraduate course out of which 31.6% believed that it should be made mandatory in their curriculum. This correlates with other studies conducted by Nekkanti et al.<sup>3</sup> 29.8% preferred research to be optional based on the interest of the individual. Majority of the students felt they should be embarking on a research study by Phase 2 MBBS (45.6%). This could be as the students are more comfortable with the medical school environment after completion of the 1<sup>st</sup> phase and also as they have the acquired the basic knowledge which would be of help to them to continue with the research in the coming years. The reasons for not aggressively pursuing research were not evaluated in this study but other studies have cited lack of proper research guide, lack of knowledge regarding conduction of study and inadequate infrastructure as a few.<sup>3,15,16</sup>

The limitations of the study were that the study was conducted on a single batch of 3<sup>rd</sup> term MBBS students at a single institute which comprised a mixture of regular batch students and those with earlier backlogs. Only 63% of the 181 students volunteered to take part in the study. The opinions expressed by the students at one point of time (end of 3<sup>rd</sup> term) might not be the same as those expressed by them towards the end of Phase 2 of MBBS due to better overall understanding of the subjects and clinical exposure.

## CONCLUSIONS

In spite of the above-mentioned drawbacks, this study highlighted the views of the budding doctors at a crucial point in their course where they make a transition into the clinical domain. A need for change in the current system of medical education with more focus on optimal class size and

duration, better teaching learning methods, problem-based learning, more efficient assessment techniques and promoting research at an early stage was felt by the students. These needs would have to be addressed for better and complete training of an MBBS student to become a competent doctor.

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