The Perception Of MBBS Interns Towards Biochemistry Curriculum In A South Indian Medical College.

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Abstract: Introduction: The concepts taught in pre-clinical sciences serve as a backbone to understand the clinical sciences. The system of teaching basic science subjects through didactic lectures followed in most of the medical colleges is more of a teacher centered. The medical educators are concerned about the learning outcomes of the traditional programs of teaching. Usually feedback on curriculum is obtained by subject experts from other universities. There is an unmet need to obtain the perceptions of graduates as they represent one of the important stakeholders of curriculum. Objective: To collect the interns perception about the content, need and application of biochemistry knowledge during their internship using a pre-designed and pre validated questionnaire**.** Materials and Methods: It was a cross sectional study done on interns who were asked to give feedback on biochemistry curriculum using the questionnaire. All the opinions were rated using 5- point Likert scale, ranging from strongly disagree to strongly agree. Results: 72.9% of interns were in favor of integrating basic science subjects with clinical sciences . Around 74.5 % (2/3rd) expressed that adopting interactive teaching strategies and problem based learning helped them in better understanding of the subject. Conclusion: The final goal of teaching in a medical sector includes attainment of knowledge, skills, attitudes and morals required to perform professional tasks safely and competently. In order to achieve this interactive, practical/case oriented and integrated teaching should be promoted. [Vanishree**.**B.JNJIRM 2016; 7(4): 82-86]

Key words: Curriculum, Biochemistry, Feedback, Questionnaire, Integrated teaching.

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Introduction: Understanding the concepts taught in basic science subjects serves as a backbone for studying the clinical sciences**.** [1] Medical students build their clinical knowledge on the basis of their prior basic knowledge. Biochemists consider that Biochemistry is very important for medical education. On the other hand, many medical students see that Biochemistry teaching lacks clinical relevance.

Biochemistry is thought to be a fundamental subject and it is not only required to understand many of the disciplines which strengthen medicine but that a basic knowledge which is also required in clinical practice.[2]The broad goal of teaching Biochemistry to undergraduate students is to make them understand the scientific basis of life processes at the molecular level and to orient them towards the application of this understanding in solving clinical problems [3]. In the traditional way of teaching the first year of medical teaching does not include patient based teaching. The medical educators are concerned about the learning outcomes of traditional programs of teaching**.** 4,5. In a study done at the University of Saskatchewan, Canada, it was expressed by majority of senior undergraduates that they did not remember much from their first year courses and the pre-clinical teaching content was not relevant to their clinical knowledge. The study also proved statistically that there was knowledge loss over the years**.** [6] In most of the medical colleges of India, the knowledge regarding basic science subjects is taught mainly through didactic lectures, tutorials and practical. Hence the system is more of teacher centered with less interaction or involvement from the students **.** [7] In the conventional system which is followed in most of the Medical Colleges, the basic science subjects are taught in the first year of 4.5 years course with least interdisciplinary interaction. Some studies have documented the improvement of the standards of medical education utilizing the graduates point of view **.** [8,9] The undergraduate medical curriculum should be such that it should train the undergraduates to undertake the responsibilities of a physician of first contact who is capable of looking after the preventive,promotive, curative and rehabilitative aspects of medicine.[10]

As a part of program evaluation, usually feedback on curriculum is obtained by subject experts from other universities. There is an unmet need to obtain the perceptions of the graduates as they represent one of the important stakeholders. In this context the present study was planned to collect the interns

perception about the content, need and application of Biochemistry knowledge during their internship using a pre-designed and pre-validated questionnaire.

Methods: Study Design: This was a cross sectional study conducted during October 2014 to January 2015.

Study population: The study included interns of two batches (regular and repeater).
Sample size : 90

Method of collection of data : The data was collected using an anonymous pre-designed questionnaire.

Prevalidation of the questionnaire : Pilot testing was done on 10 interns who were asked to opine regarding the content , consistency and clarity of the questionnaire. Necessary modifications were made as per the feedback given by the interns. Final corrected questionnaire was administered among the interns after taking written informed consent.Out of these , 70 interns returned the questionnaire .All the opinions were rated using 5- point Likert scale, ranging from strongly disagree to Strongly agree.
Reliability of the questionnaire : The reliability of the questionnaire was done by calculating the chronbachs alpha which showed the value of 0.901 indicating a highly reliable one.

Statistical Analysis: Percentages were used to summarize the categorical outcomes. Mean and Standard Deviation(S.D) were used to summarize the numerical outcomes.

Results: Out of the 70 participants males(52.3%) and females were equally distributed (47.7%). The age of the interns ranged from 22 to26 years with a mean of 23 years.

Learning value: Almost 3/4th (74.3%) of interns felt that the knowledge of biological structures is very much required to become a good clinician . When asked to rate the three basic science subjects in the order of their clinical usefulness as a doctor, 35.7% of the interns opted for Anatomy, while for Physiology and Biochemistry the response was 25.7% and 17% respectively (Table No. 1)

Instructor enthusiasm, Organization and Individual Rapport : 58.6% of the students agreed that the subject experts were highly enthusiastic about teaching the course. 49(70%) of the interns agreed that the teachers were friendly and easily accessible to the students, 17(24.3%) remained neutral & 4(5.7%) disagreed to this. Slightly more than half of them (55.7%) agreed that the biochemistry course materials were well prepared and carefully explained by the subject experts(Table No 2).

Group Interaction and Breadth of coverage: More than 2/3rd of interns felt that Biochemistry lectures were interactive and the breadth of knowledge in biochemistry helped to perform some of the common clinical procedures as agreed by 40(57.2%) of the students. 51(72.9%) of interns were in favor of integration of basic science subjects with clinical subjects for better understanding of the subject. 42(60%) of the students agreed with the fact that practical integration of the knowledge was well done in a manner that was helpful to inculcate useful clinical skills, 25.7%(18) remained neutral & 14.3% (10) disagreed whereas 17(24.3%) remained neutral(Table No 3).

Table No 1 : Features and response rates of Learning value

Features	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)
Knowledge of biological structures required to become a good clinician	2(2.9)	59(7.1)	11(15.7)	34(48.6)	18(25.7)
	Anatomy	Physiology	Biochemistry		
Rating of the three basic science subjects in the order of their clinical usefulness as a doctor	35.7 %	25.7%	17%		

Table No 2 : Features and response rates of Instructor enthusiasm, organization & Individual Rapport

Features	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)
Instructors enthusiasm about teaching the course	2(2.9)	4(5.2)	23(32.9)	32(45.7)	9(12.9)
Friendly nature & easy accessibility of the teachers to students	1(1.4)	3(4.3)	17(24.3)	40(57.1)	9(12.9)
Careful explanation and preparation of the course material by subject experts	1(1.4)	4(5.7)	26(37.1)	35(50)	4(5.7)

Table No 3: Features and response rates of Group interaction and breadth of coverage

Features	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)
Breadth of knowledge in biochemistry Knowledge helped to perform some of the common clinical procedures	3(4.3)	6(8.6)	21(30)	37(52.9)	3(4.3)
Integration of basic science subjects with clinical subjects helped them in better understanding of the subject	-	2(2.9)	17(24.3)	42(60)	9(12.9)
Practical integration of the knowledge was well done in a manner that was helpful to inculcate useful clinical skills.	1(1.4)	9(12.9)	18(25.7)	39(55.7)	3(4.3)
Biochemistry lectures were too interactive	2(2.9)	10(14.3)	31(44.3)	24(34.3)	3(4.3)

Table No 4 : Features and response rates of Examination,,Assignment and workload

Features	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)
Grades for continuous assessment and final examination were fair and reasonable	1(1.4)	6(8.6)	22(31.4)	32(45.7)	9(12.9)
Laboratory experiments/assignments carried out in Biochemistry subject helped us to become a good doctor.	1(1.4)	6(8.6)	16(22.9)	36(51.4)	11(15.7)
Biochemistry syllabus vastness	-	14(20)	29(41.4)	23(32.9)	4(5.7)

Examinations, Assignment and workload: More than 2/3rd of the interns felt that the grades for continuous assessment & final examinations were fair and reasonable. 47(67.1%) of interns agreed that the laboratory assignments / experiments carried out in biochemistry subject helped them to become a good doctor. Nearing 50 % of students could not comment on syllabus vastness and extensiveness(Table No 4)

The following were the suggestions given by the students for one of the open ended question –

- Inclusion of clinically important points that would help them in practice.
- Interactive integrated and black board teaching was favored more especially for biochemical pathways.
- Adoption of newer practical methods.
- Requirement of continuous revisions as the subject is volatile according to them.
- Conducting more number of interactive tutorials.
- Training some of the teachers in Medical Education.

Discussion :"No learning can be gained unless theory is practiced and theory cannot be practiced unless opportunity is availed[1]. If we want to change and improve the quality of health care education in our country, it is important to obtain regular feedback from the

students as the education climate strongly affects student's achievement satisfaction and success.[11] The medical students bring in fresh ideas , views and prospectives which can be taken up to improve the current medical education system.[12]

One of the most important sources of information in any evaluation of education process is learners' opinion.[1] Majority of interns 74.3% felt that the knowledge of biological structures is very much required to become a good clinician which was contradictory to a study done by El -Bab et al have opined in their study that clinical knowledge can be acquired without complete understanding of its basic science background. [11] In our study we also found that Anatomy was considered as the most useful subject for them in order to be a good clinician.

A good number of response was regarding subject expert enthusiasm, careful presentation of the course material and easy accessibility and friendly nature of the teachers. Similar findings were appreciated by Trevena [13] in his study and found that most of the students were in favor of a teacher having required content expertise, with good facilitation skills and an enthusiasm
for teaching.

Slightly more than 1/3rd of interns felt that Biochemistry lectures were interactive and more than half of them opined that breadth of knowledge in subject helped them to perform some of the common clinical procedures. One of the most important finding of that study was that good number of interns were in favor of integration of basic sciences with clinical subjects for better understanding of the subject. These findings are in accordance with Shankar PT et al who quote in their study that subjects are taught to prepare students for assessments and unfortunately the process of integrating with other basic science and clinical subjects is not always emphasized.[14]

More than 2/3rd of the interns felt that the grades for continuous assessment and final examinations were fair and reasonable. The laboratory experiments/assignments helped them much during their clinical years. We noted in our study that nearing 50% of them could not comment on the syllabus vastness and extensiveness. This is contrast to the study by Shalini Gupta et al, who mentions that curriculum overload especially in anatomy is an important problem faced by students. The students feel overburdened with the study of different aspects of the subject and are able to devote very little time to study other subjects.[15] Most of the physicians and medical educators believe that a substantial portion of basic science knowledge learnt in preclinical years is lost during the clinical years,[5] but contradictory to this in our study more than half of them opined that they were able to recall the subject knowledge during relevant discussions in clinical years.

Conclusion: In conclusion the interns have a positive perception about the content,need and application of biochemistry knowledge. The final goal of teaching in a medical sector includes the attainment of knowledge, skills, attitudes and morals required to perform professional tasks safely and competently. In order to achieve this interactive, practical/case
oriented and integrated teaching should be promoted.

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