MEDICAL EDUCATION

CLINICAL RELEVANCE OF PHYSIOLOGY OBJECTIVES IN DENTAL PRACTICE

Sadaf Fatima[1], Shazia Hashmat[1], Syed Tousif Ahmed[1]
[1]Department of Physiology, Ziauddin Medical College, Ziauddin University, Karachi, Pakistan

ABSTRACT

Background: The close association of physiology with clinical medicine is highlighted in the preclinical years, and also in hospital practice later. Integration of basic sciences with clinical training is remarkably challenging for the dental curriculum. Many medical and dental schools have modified their preclinical curricula to signify the relevance of basic science to practice. Since its inception, Ziauddin Dental College has introduced guide books. They are comprised of the learning objectives for each integrated module. The objective of this study is to determine the clinical relevance of Physiology objectives in Dental practice.

Methods: The learning objectives of Physiology from three modules were given to 22 House officers from the field of Dentistry. The questionnaire included the learning objectives taken from the guide book and the participants were asked to determine the clinical relevance of objectives on Likert scale from 1 to 5.

Results: Out of 38 Physiology objectives from three modules marked by House officers, 30 (79%) were determined as highly relevant and 8 (21%) as moderately relevant.

Conclusion: The Physiology learning objectives of Respiratory, Cardiovascular and Hemopoietic & Immune system, taught at ZDC were found to have a high clinical relevance.

KEYWORDS: Physiology objectives, Dental Practice, Clinical relevance

Corresponding Author
Sadaf Fatima
Associate Professor, Department of Physiology,
Ziauddin Medical College, Ziauddin University,
Clifton Campus, Karachi, Pakistan
Email: doctorsadafnaqvi@gmail.com

INTRODUCTION

Dental education is demanding and often stressful[1] as in other health professional education. Undergraduates are required to obtain a distinct and varied collection of competences[1]. Competency includes knowledge, experience, critical thinking and problem-solving skills; professionalism, ethical values, and technical and procedural skills[2]. Recently many medical schools have started to modify their preclinical curricula to signify the relevance of basic science to practice[3]. It is generally expected that dental curricula should be clinically relevant, medically informed and also realize its role in building up social responsibility[1]. In the past decade, there has been extensive debate about the future direction of the dental curriculum[4]. The need for modification in dental education is often expressed but bringing change in it is a complex issue[1].

Basic science knowledge plays an evident role as it is enveloped in clinical knowledge[5]. Physiology is one of the basic science disciplines taught at undergraduate level in traditional & integrated curriculum[5], in medical, dental and other health professional education.[5]. Its importance lies in its application in clinical practice[6]. Physiology faces immense challenges in relation to curriculum design, methods of implementation and application of knowledge in clinical practice[7]. Clinical training is perhaps the most crucial aspect of dental education[1]. The integration of basic and clinical sciences in dental curricula promotes the applica-

tion of basic science principles to clinical decision making and enhances students' critical thinking[8]. The earlier the contact with patients (in 1st & 2nd year) is, the easier it is for students to put in context the information acquired from basic sciences[1].

Since its inception, Ziauddin Medical and Dental College has introduced educational system that is dynamic and is consistent with the best latest practices[9]. It has played a proactive role in improving quality of medical education by integrating basic science disciplines into clinical disciplines[9]. An important feature of curriculum at Ziauddin Medical and Dental College is the semester system embedded with integrated organ-system modules[9]. For each semester, guide books are made available to medical and dental students[9], which comprise of the learning objectives for each integrated module to facilitate their learning management. The learning objectives were made by a panel of basic science faculty and clinicians from all specialties[10]. The idea was to formulate teaching material relevant to the requirement of a graduate[10]. The other components of guide book are academic calendar, learning strategies, learning resources, student code of conduct and examination rules. As it is important to make the basic science curriculum clinically relevant for the dental graduates, this study was designed to determine the clinical relevance of Physiology learning objectives by dental graduates.

METHODS

The study design is cross sectional. The study participants include House officers from the field of Dentistry at the completion of one year training. All the house officers had graduated from Ziauddin Dental College. Participants were explained the purpose of study. Informed consent was obtained from house officers. Participants were advised to fill in the questionnaire without disclosure of their identity. Physiology learning objectives of Respiratory, Cardiovascular and Hemopoietic & Immune system modules were given to 22 House officers from field of Dentistry. The questionnaire included the Physiology learning objectives from three modules, the information about requirement of this knowledge in clinical practice, the level of essence of the pre-requisite concept. There were 9 learning objectives from Respiratory system, 12 were from CVS and 17 from Hemopoietic & Immune system. The House officers were asked to determine the clinical relevance of objectives on Likert scale from 1 to 5. The learning objectives having 1 & 2 relevance were considered as least relevant, those marked as 3 were moderately relevant and 4 & 5 were considered as highly relevant.

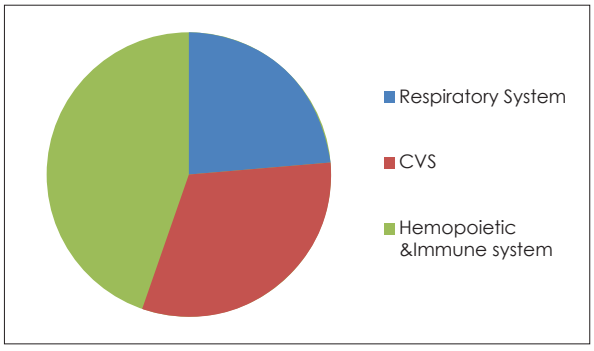

Figure 1: Learning objectives of Respiratory, Cardiovascular & Hemopoietic System

Descriptive statistics were used for analysis of data. Data is expressed in terms of frequency and percentage.

RESULTS

In order to study the clinical relevance of the Physiology learning objectives, a questionnaire was designed and given to House officers from the field of Dentistry at the end of one year training. The clinical relevance was marked on Likert scale. The Relevance of learning objectives of Respiratory system, Cardiovascular system, Hemopoitic & Immune system are shown in Figure 2,3 & 4.

Total number of objectives and the number and percentage of relevance are shown in Table 4. Out of 38 learning objectives, 9 were from Respiratory system. Out of 9 objectives, 5 were highly relevant and 4 were moderately relevant. There were 12 objectives from cardiovascular system, 9 were highly and 3 were moderately relevant. Out of 17 objectives of Hemopoietic & Immune system, 16 were found to have high relevance and only 1 has moderate relevance. Majority of the Physiology objectives of Cardiovascular, Respiratory and Hemopoietic & Immune system, marked by the House officers from the field of dentistry, were determined as highly relevant and some as moderately relevant.

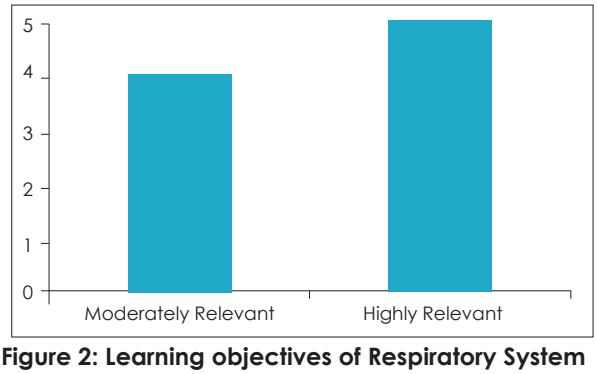

Figure 2: Learning objectives of Respiratory System

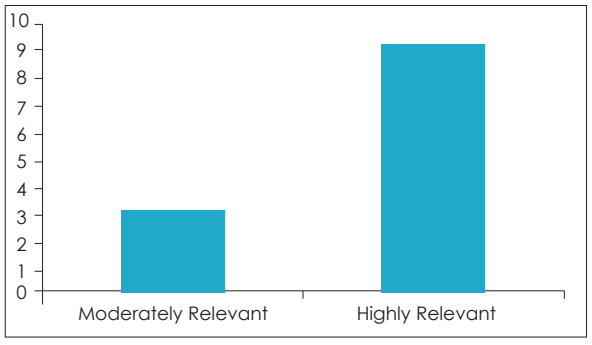

Figure 3: Learning objectives of Cardiovascular System

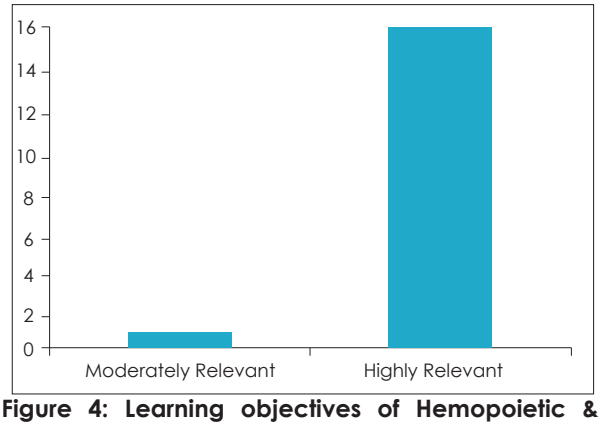

Figure 4: Learning objectives of Hemopoietic & Immune System

Table 1: Clinical Relevance of Learning Objectives of Physiology

Clinical Relevance	Frequency(N)	Percentage (%)
Highly Relevant	30	79
Moderately Relevant	8	21
Least Relevant	0	0
Total	38	100

DISCUSSION

The most common critique on today's dental curriculum is that it is very compact in terms of the number of courses and clock hours[4]. The curriculum is loaded with unnecessary material and gives students too little time to consolidate concepts or develop critical thinking skills[4]. The importance of students giving feedback for curriculum planning and change is undeniable[1]. Refining the basic sciences education to meet their clinical application is important in this respect[1]. There should be a closer integration with medicine and the overall health care system.

The total learning objectives of Physiology in this study were marked as highly relevant 79% and moderately relevant as 21%. The dental house officers reported that the knowledge of Physiology is required in making diagnosis of disease and in prescribing treatment. As mentioned earlier, it was also reported by the house officers that until the clinical practice starts, students consider the basic science curriculum as irrelevant[1]. It was also reported by the participants of this study that PBLs are conducted to highlight the application of objectives; it is still taken as a theoretical assignment by dental students. Therefore, the clinical application of each of the Physiology objective should be highlighted from 1st year. As reported earlier, the suggestion given by house officers in this study is to start students' community rounds from the very first year to make them realize the importance of it all. Early patient contact can be provided by allowing them to observe and assist in senior student clinics, or to perform simple noninvasive procedures, even in the first year of studies[1].

To the best of our knowledge, no similar study has been published on our research topic, therefore, the results could not be compared with other studies.

The articles mentioned by the reviewer could not be incorporated in the current study as spiral integration does not apply in the dental curriculum and the article on blood pressure is based on clinical parameters that do not apply to the link of physiology teaching with clinical relevance.

CONCLUSION

The Physiology curriculum of Respiratory, Cardiovascular and Hemopoietic & Immune system has high and moderate clinical relevance.

The limitations of this study are learning objectives of only Respiratory, Cardiovascular and Hemopoietic system modules were selected for this study and only dental house officers were included in the study. There should be a periodic review of learning objectives of basic sciences by the basic and clinical science faculty to make the curriculum clinically relevant.

REFERENCES

1. Divaris K, Barlow PJ, Chendea SA, Cheong WS, Dounis. A, et al. The academic environment: the students' perspective. Eur. J. Dent. Edu. 2008; 12 (1): 120-130.
2. Competencies for the new General Dentist: American Dental Education Association. 2008; Available at www.adea.org/about_adea/.../Pages/Competencies-for-the-New-General-Dentist.aspx
3. Spencer AL, Brosenitsch T, Levine AS, Kanter SL. Back to the basic sciences: an innovative approach to teaching senior medical students how best to integrate basic science and clinical medicine. Acad. Med. 2008; 83 (7): 662-9.

4. Kassebaum DK, Hendricson WD, Taft T, Haden NK. The Dental Curriculum at North American Dental Institutions in 2002-03: A Survey of Current Structure, Recent Innovations, and Planned Changes. J. Dent. Edu. 2004; 68 (9): 914-931.
5. Neilson DG, Gotzsche O, Sonne O, Eika B. The relationship between immediate relevant basic science knowledge and clinical knowledge: physiology knowledge and transthoracic echocardiography image interpretation. Adv. in Health Sci. Edu. 2012; 17 (4): 501-513
6. Ghosh S, Dawka V. Combination of didactic lecture with problem-based learning sessions in physiology teaching in a developing medical college in Nepal. Adv. Physiol. Edu.2000; 24(1):8-12.
7. Sayali R, Atish P ,Charulata K, Arun K, Tara B, et al. Teaching methods in Physiology: IOSR J. of Res. & Meth. in Edu. 2014; 4 (1): 63-67.
8. Elangovan S, Venugopalan SR, Srinivasan S, Karimbux NY, Weistroffer P,et al. Integration of Basic-Clinical Sciences, PBL, CBL, and IPE in U.S. Dental Schools' Curricula and a Proposed Integrated Curriculum Model for the Future. J. Dent. Edu. 2016; 80 (3): 281-290
9. Naqvi AS, Fatima S. Hybrid Semester System in MBBS Program, Ziauddin Medical College Experience. Pak.J. Med. Dent. 2015; 4 (1):78-80.
10. Barakzai Q. Transition from traditional to innovative teaching in and beyond pharmacology at Ziauddin Medical University. Acta. Pharmacol. Sin. 2004; 25 (9): 1220-1232