Klinik Stajlarda Dikey Entegrasyon Oturumlarının Öğrenci Değerlendirmeleri

Student Ratings For Vertical Integration Sessions In Clinical Clerkships

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ÖZET:

Giriş ve Amaç: Çağdağ tıp eğitimindeki en önemli ilkelerden biri olan entegrasyonun eğitimin tüm evrelerinde sağlanması amaçtır. Klinik öncesi evrede yatay ve dikey entegrasyon sağlanması yaygın olarak uygulanmakta olup klinik evrede özellikle dikey entegrasyon sınırlıdır. Bu çalışmada, klinik stajlarda temel bilimlerin katkısıyla uygulanan dikey entegrasyon uygulamaları konusunda öğrenci geri bildirimleri değerlendirilmiştir.

Yöntem: Alfaisal Üniversitesi Tıp Fakültesinde (Riyad, S.Arabistan) dönem 4'te Cerrahi, Kadın-Hastalıkları ve Doğum ile İç Hastalıkları stajlarında staj içerikleri ile ilgili temel bilim konularının olgu temelli tartışıldığı oturumlar düzenlenmiştir. Oturumlarda mikrobiyoloji, patoloji ve farmakoloji bölümleri katkıda bulunmuştur. Oturumlardan sonra öğrenci geri bildirimleri 5'li Likert ölçeği ile alınarak değerlendirilmiştir

Sonuçlar: Değerlendirilen oturumlar öğrenciler tarafından % 80 üzerinde olumlu bulunmuştur.

Sonuç: Temel-klinik bilim entegrasyon oturumları klinik yıllarda dikey entegrasyonu desteklemek için bir yöntemdir. Bu oturumlar stajlarla ilgili konular seçilerek yürütülmeli ve ilgili klinisyen ile temel bilimciler tarafından birlikte planlanmalıdır.

MAKALE KÜNYE BİLGİSİ

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ABSTRACT:

Background: *Integration is one of the main principles of contemporary medical education. Horizontal integration necessitates the coordination of teaching and learning activities within a year or a block, while vertical integration can be achieved by the contribution of basic and clinical sciences in all phases of medical education. Although vertical integration is achieved in many programs during the first 2-3 years (pre-clerkship years), it is usually disregarded in clinical clerkships.*

Methods: A clinical-basic science integration (CBSI) program was implemented at Alfaisal University College of Medicine during 4th year clerkships of Surgery, Obstetrics-Gynecology and Internal Medicine and the topics discussed were related to those clerkships. The basic sciences disciplines involved were: microbiology, pathology and pharmacology.

Feeddback was obtained from students at the end of the sessions by 5-point Likert scale.

A five-point Likert scale questionnaire was used to collect the results of the students.

Results: *There was a satisfaction level of over 80% for most of the questions and topics.*

Conclusion: *Basic and clinical science integration sessions are the way to complement vertical integration in clinical years. Integrated sessions should be planned and implemented in all clerkships with appropriate basic science topics. In order to ensure complete integration, these sessions should be coordinated by a team of basic scientists and clinicians.*

INTRODUCTION

There has been a rapid change in the field of medical education all over the world, where medical schools have been involved in the modification of the curriculum. [1, 2] The implementation of horizontal and/ or vertical integration is the core of focus in many of these modifications in the curriculum.[3] The integration of the curriculum can be looked at or viewed as a ladder, in which discipline-based teaching is at the bottom of the ladder while vertical integration of the curriculum is considered to be a higher level of integration. [4] Vertical integration is defined and explained as the integration in the curriculum between basic sciences and the clinical sciences. [5]

The introduction of vertical integration into the curriculum can be considered as a major factor in the preparation of better physicians in the upcoming years[6] . It is believed that it improves and increases motivation, augments deep learning and prepares for all-time learning among the students and clinicians in addition to enhancing the reflections on clinical application and research. [7] Moving towards vertical integration is being widely accepted worldwide, but the process of change in the curriculum is a difficult one where it needs to change the mindset of both the faculty and the students. [8] As clinical topics are introduced starting from the first year, students learn basic sciences in a clinical context. Strategies and learning methods, such as problem-based learning, facilitate this integration. Thus, students appreciate the necessity and application of basic sciences related to clinical problems. Vertical integration has been in use since 1970's in many medical schools all over the world. In those schools clinical topics are introduced into the curriculum, with methods such as problem-based learning (PBL), as triggers to learn and understand basic sciences. In other words, the primary aim of clinical cases or topics during the first year(s) of medical school is usually to define the normal mechanisms which are deranged. The students are directed to learn the normal structure and function (i.e., anatomy, physiology, biochemistry) starting from a

disease or a patient.

In the second phase of the curriculum, the emphasis is usually on abnormal structure and function in relation to basic sciences. This phase usually focuses on basic science disciplines of pathology, microbiology and pharmacology while anatomy, biochemistry and physiology topics continue with less weightage. Clinical context and weight increases during that phase as the topics are more disease- (or pathophysiology- and treatment-) oriented. This is not a phase of memorizing diseases but one of understanding the underlying mechanisms and relationships between disease processes, causative agents and related pharmacologic and other treatment approaches.

Both these phases are sucessfully carried out with some modifications according to the structure, priorities and design of individual medical school curricula. So, vertical integration is implemented in many places.

When it comes to clinical clerkships phase, most schools adopt a discipline-based approach as opposed to an integrated one in previous phase(s) . There are, however, numerous studies emphasising the need and importance of integration in clinical phase [9-11]. Vertical integration in clinical years is necessary to complete vertical integration throughout the whole curriculum and as a requisite of spiral curriculum planning.

Integration of basic science subjects in clinical years has been discussed frequently. However, real life application of this integration still remains a challenge [11-13].

Horizontal integration in clinical clerkships can simply be accomplished by bringing together the related clinical departments in one integrated clerkship, such as neurosciences with meurology, neurosurgery and psychiatry; cardiovascular medicine with cardiology and cardiovascular surgery. Vertical integration, on the other hand, is rarely accomplished during clinical clerkship years. Vertical integration starts by introducing clinical content from the first year, increasing in the following years; and basic sciences should gradually decrease but still exist until the end of clinical clerkship years. The latter part of vertical integration is usually disregarded in most curricula. However, a complete vertical integration should include the clinical clerkship phase as well. Vertical integration in clinical years should be done similar to the first years of medical curricula, by inserting and integrating some basic science concepts and topics in clinical clerkship programmes. There are some examples to achieve vertical integration in clinical years. Pathology, radiology, anatomy, biochemistry and pharmacology are the most common basic sciences integrated with clinical sessions [14-22].

Alfaisal University College of Medicine has a 6-year problem-based, integrated curriculum . The curriculum consists of a 3 -year pre-clerkship phase, 2-year clinical clerkship phase and 1 year of rotating internship. Team-based learning (TBL) and problem-based leaning (PBL) are two main metods used in pre-clerkship phase, with TBL being used in the first year and PBL employed in the second and third years. The pre-clership years are arranged primarily as integrated organ-system based blocks, with basic science and clinical content. Clinical clerkships are arranged in discipline based manner except Neurosciences clerkship which contains neurology, neurosurgery and psychiatry disciplines.

Clinical-basic science integration sessions were organized during year 4 clerkships of Surgery, Obstetrics-Gynecology and Internal Medicine, with participation of pharmacology, microbiology and pathology disciplines.

Our main focus of this paper is to evaluate the feedback of students for basic-clinical science integration sessions carried out during clinical clerkships.

METHODS:

Clinical-basic science integration sessions were implemented at Alfaisal University College of Medicine during year 4 clerkships of Surgery, Obstetrics-Gynecology and Internal Medicine. One session was carried out in Internal Medicine for pharmacology, one in Surgery for microbiology; two separate sessions in Obstetrics and Gynecology for microbiology and pathology.There were 18 students in each clerkship group.

The sessions were carried out as case discussions on selected topics in a two hour time frame. Students were asked to discuss the cases by addressing the basic science components with the intended learning objectives. The sessions aimed to revisit, show and implement clinical relevance of basic science knowledge in disciplines of pathology, pharmacology and microbiology. Depending on the focus of the session, it was conducted by microbiologists, pathologists and pharmacologists to ensure proper facilitation of the discussion. The topics discussed are shown in Table 2.

Table 2: Topics covered in Clinical-Basic Science Integration sessions:

Surgery:
Microbiology: Surgical infections
Obstetrics-Gynecology:
Microbiology: Congenital perinatal and neonatal infections
Pathology: Clinicopathological conference on common gynaecological malignancies
Internal Medicine:
Pharmacology: Rational pharmacotherapy for

1: poor, disagree/ 4: Agree/ 5: excellent, fully agree

	Microbiology n=35	% Fully agree + Agree	Pathology n=10	% Fully agree + Agree	Pharmacology n=15	% Fully agree + Agree
Topic(s) selected were clinically relevant	4.83	100	4.3	90	4.2	100
We were informed about the content of the session in advance	4.66	93.3	4.1	80	3.4	80
I came to the session prepared	3.68	56	4.6	100	3.7	73
Objectives were clearly stated	4.94	100	4.2	80	4.25	93
Time allocated was sufficient	4.44	100	4.5	80	4.2	93
Session was well organized	4.82	100	4.88	100	4.2	93

Venue was appropriate	**4.53**	**100**	**4.6**	**90**	**3.9**	**80**
Faculty was/were knowledgeable	**5.0**	**100**	**4.6**	**100**	**4.6**	**100**
Faculty was/were ready to answer students' queries	**5.0**	**100**	**4.5**	**80**	**4.55**	**100**
Objectives were met	**4.81**	**93.8**	**4.11**	**100**	**4.55**	**100**
Handouts given in advance were helpful (*if given*)	**4.8**	**100**	**3.33**	**50**	**N/A**	**N/A**
Additional sessions will be useful	**3.69**	**61.5**	**3.2**	**50**	**4.05**	**80**
I was given chance to contribute to the discussion	**4.61**	**93.5**	**3.9**	**80**	**4.3**	**80**
Activity should be repeated in other clerkships	**4.29**	**92.5**	**3.3**	**50**	**4.25**	**80**
This session was useful to revisit basic sciences	**4.21**	**92.5**	**3.5**	**50**	**4.3**	**80**
This session was useful to integrate basic and clinical sciences	**4.34**	**92.5**	**3.9**	**70**	**4.3**	**80**
No need for these sessions. Sufficient information was provided in other clerkships	**1.42**	**0** **1+2=92 %**	**3.55**	**70** **1+2=30%**	**2.95**	**60** **1+2=40%**

hypertension

At the end of the session, students were handed a questionnaire to rate this experience on 5-point Likert scale and were asked to write their comments.

FINDINGS:

The evaluation of the sessions by the students according to the questionnaire are shown in Table 2 with the mean Likert points and the cumulated percentages for points 4 and 5 (i.e., fully agree and agree) for each question

Table 3. Evaluation of the sessions by the students:

DISCUSSION:

Students reported that they have benefited from these sessions and it added to their overall understanding of the topic. They also highly recommended the application of similar sessions throughout their clerkship years.

The basic science topics to be covered during clinical clerkships should not and cannot be comprehensive. The aim is to revisit some basic science "concepts" and link them with relevant clinical applications. Therefore, the students are expected to appreciate the importance and relevance of basic science topics in relation to patient care and disease processes. Thus, they can utilize similar approaches later in their actual practice.

Basic science in clinical years can be organized in different clerkships or in a single clerkship, as done in previous examples. However, a systematic approach will ensure that all relevant disciplines and important areas are covered. Thus, "basic-clinical science integration" sessions can be organized as a line running in parallel to all clerkships. These sessions will belong to individual clerkships but the overall organization should be done centrally, to ensure a reasonable distribution and avoid repetitions. The selection of basic science topics and relevant clinical presentations/cases should be decided by the contribution of all related basic and clinical science discipline experts.

Care should be taken to cover all basic sciences. The distribution of the disciplines and topics in each basic science discipline across clerkships should be tailored according to the curriculum (clerkship) structure of each medical school. Anatomy, histology and embryology can best be addressed in surgical clerkships, while physiology, biochemistry and immunology can be easily covered in medical specialty clerkships (such as internal medicine and pediatrics). Pathology, pharmacology and microbiology topics can be inserted into almost every clerkship. Anatomical sciences (anatomy, histology, embryology) should address the relevance of these areas in relation to clinical problems. Congenital defects can illustrate the importance and relevance of anatomy and embryology; topics such as cerebrovascular bleeding or neurological disorders can be a good place to review neuroanatomy. Biochemistry finds place in disciplines such as endocrinology, metabolic disorders and hematology.

The topics that were chosen did not only stimulate basic science discussions but also covered clinical topics of interest to clerkship students. Topics important to quality and patient safety, like infection control or drug-drug interaction, raised an interest in student discussion and also helped them to understand the hospital environment. Since the aim of the basic science-clinical correlation sessions is to revisit the related topics and to relate them with diseases or disease processes, an active learning approach should be adopted. As a first step, the basic science topic and then the best disease

model to address this topic should be chosen.

Teaching activities such as lecturing should be kept to a minimum, if at all, during these sessions. The sessions can start from a real patient or paper-based case describing the problems of the patient. The students can then be asked to make a differential diagnosis and discuss the pathogenesis. This discussion should lead to basic science issues by questioning the details of the pathophysiology and further to more basics as anatomy, physiology or biochemistry. So, the discussion can be facilitated to draw attention to underlying basic science concepts and linking them with the clinical condition and/or management.

There were several difficulties faced while running this course. Since it is not a classical approach to offer basic science subjects to clinical years, clerkship directors felt that students had enough time in their preclinical years to be exposed to these topics. Subsequently, some clinical directors believed that clinical years are mostly meant for mastering clerkship subjects and skills and so basic science subjects should not be considered as a priority in clerkship years, as was the case in other reports [11].

Basic science faculty members could also pose as another set of challenges. Vertical integration of basic science subjects in clinical years is not an easy process. Faculty members and academicians contribute a significant amount of time and effort to organize and manage these sessions [18]. They think time can be utilized better in other academic researches or position-promoting activities [18, 24]. Thus, resistance might be felt in this situation. Similarly, this could greatly affect the shortage of faculty member to conduct these sessions. [11]. In our case, the basic science faculty members were all very enthusiastic for these sessions, which facilitated the implementation.

CONCLUSION:

Although horizontal and vertical integration is one of the most important principles of contemporary medical education and great efforts are done for this in the first 2-3 years of curriculum, little is achieved for vertical integration in clinical years. Basic science-clinical science integration (correlation) sessions is a way to complement vertical integration in clinical years. Integration sessions should be planned and implemented in clerkships with appropriate basic science topics. In order to ensure complete integration, these sessions should be planned, coordinated and monitored by a team of basic scientists and clinicians.

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