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The attitude of faculty members of Ilam University of Medical Sciences toward the basic medical sciences

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A B S T R A C T

Introduction: Basic sciences course includes the first two years of general medicine. Considering the importance of constant monitoring of education and considering the role of professors in the medical education, this study aimed to investigate the attitude of faculty members toward the basic sciences course.

Materials & Methods: This cross-sectional study was conducted in 2024 at Ilam University of Medical Sciences. The participants included two groups: basic sciences professors and clinical sciences professors (n = 30 per group). A questionnaire was used to collect the attitude of participants. Data were analyzed in SPSS 16 using Chi-Square statistic test. P value was considered less than 0.05.

Results: Compared to the basic sciences professors, clinical sciences professors agreed with reducing the period of basic sciences and physiopathology courses ($P < 0.05$). Most of the participants in both groups agreed with changing the student evaluation strategy. They also agreed with new teaching methods, as well as with the vertical integration of basic sciences and clinical sciences. Most of the participants believed that the importance of anatomy and physiology lessons is very high and the importance of specialized language, biochemistry and histology is high. However, clinical sciences professors considered biochemistry and histology courses significantly less important compared to the basic sciences professors ($p < 0.05$). In comparison, clinical sciences professors believed that the content of basic sciences should be decreased ($P < 0.05$). The professors in both groups considered the role of practical classes in understanding basic sciences to be high.

Conclusion: In conclusion, the data indicate there is a need for revision of the basic sciences course by organizations responsible for medical education planning.

Keywords: Basic Sciences, Faculty Members, Attitude, Medical Education

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Introduction

Medicine is one of the most essential sciences of our era. For medical students, learning the basic medical sciences during the early years of medical schools is necessary for obtaining medical skills in next years. The educational course in basic medical sciences serves as a prerequisite for academic advancement and a precise understanding of the subjects in subsequent general medical courses. Medical students use the information acquired in this course to solve clinical problems and make clinical decisions (1). However, unfortunately, some physicians are incapable of recalling and applying of the basic medical sciences during the clinical phase of their profession. The existing inconsistency in the timely and appropriate delivery of these courses complicates this issue (2). Traditional medical education did not emphasis on the application of basic sciences in practice while medical students must base their clinical sciences on their knowledge in basic sciences they have learned (3). Making theoretical content of the basic medical sciences applicable and engaging them in clinic play an important role in growing motivation and interest of students in these subjects (4). In addition, lack of clinical connection, lack of integration between basic and clinical courses, and the division of preclinical and clinical education have led to inconsistency and dissatisfaction among preclinical teachers and students (5).

curriculum is the core of activity of educational institutions. The curriculum is a means for transmitting information to students, and if it lacks effectiveness and proper quality, it not only wastes students' time but also wastes a lot of costs and resources, and will not achieve the desired outcome (6). Constant assessment and review of curricula prevents educational insufficiencies. Parallel to scientific progress and societal needs the medical education strategies have changed and will continue to change. However, reformations must be conducted with a rational approach to avoid unintended consequences (7). The Supreme Council of Medical Sciences Planning continuously monitors the materials being taught and their teaching methods to increase the efficiency of medical education. Constant developing in basic medical education programs, as an important criterium of quality students' knowledge, is achieved through continuous evaluation.

Considering the professors' mastery of the content of the basic medical sciences in the general medical doctoral program and their influential role in the education and training of learners in this field, it is essential to gather and study the opinions and perspectives of the professors to achieve an efficient and optimized educational program. Therefore, our study aimed to study the attitude of medical professors regarding the significance and position of basic sciences courses in the general medical doctoral program. The results obtained from this study can be utilized by those responsible for planning medical education.

Materials and methods

The present study is a cross-sectional study conducted in 2024 within the faculty of medicine at Ilam University of Medical Sciences. The implementation of this project was approved by the ethics committee of the university (IR.MEDILAM.REC.1401.076). Participants in the study were divided into two groups (30 individuals in each group). One group included basic sciences professors and the other group included clinical sciences professors (specialized in internal medicine). The inclusion criteria for the study were having a relevant specialty degree and a teaching experience of at least three years. Data collection was carried out using a questionnaire. For this purpose, an initial questionnaire was designed by researchers based on previous studies and preliminary assessment of various aspects of the basic medical sciences. To validate, four experts evaluated the questionnaire and their comments including omission or addition some questions were applied. The reliability of the questionnaire was also obtained by having 10 professors complete it twice, one week

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before the start of the study. The 29 questions were developed in four sections: general aspects (including the duration of the basic medical sciences and the physiopathology courses, teaching methods, educational programs, student assessment strategies, and educational environments), the educational importance of basic medical sciences, the volume of content of basic medical sciences, and the significance and position of practical courses in the basic sciences. The reviewed courses included Anatomy, Physiology, Histology, Microbiology, Biochemistry, Bacteriology, Parasitology, Virology, Specialized Language, and Epidemiology.

Data obtained from the questionnaire were analyzed using SPSS software, version 16. Percentages were used to describe the data. The chi-square test was used to examine the relationship between qualitative variables between the two groups. A significance level of 0.05 was considered.

Results

Descriptive Results

All participants answered all the questions in the questionnaire and there were no missing data. At first, the descriptive statistical outcome of the professors' answers to the questionnaire without dividing them in the groups is reported. Accordingly, most professors chose the choice "the duration of course is appropriate" when answered the questions related to the duration of basic science course (46.7%) and Physiopathology course (66.7%). Most professors selected the choice "I agree" when answered the questions regarding the student evaluation method (38.3%), vertical integration of basic and clinical sciences (65%), and integrating student-centered modern teaching methods into the educational program (58.3%). Additionally, most professors (56.7%) believed that the hospital has a more significant effect on learning basic medical sciences compared to other educational environments. On the other hand, most professors believed that basic medical sciences are not presented in an organized and orderly manner (43.3%) and the clinical application of these sciences is not well explained to students (46.7%). The results of the descriptive analysis of professors' answers to questions regarding the educational importance of basic sciences and their effectiveness in better learning clinical sciences showed that most professors rated the importance of Anatomy (75%) and Physiology (61.7%) as very high, the importance of Specialized Language (35%), Biochemistry (43.3%), and Histology (38.3%) as high, and the importance of Bacteriology (38.3%), Parasitology (35%), Virology (36.7%), and Epidemiology (43.3%) as moderate. Furthermore, a description of professors' viewpoint on the volume of content presented in basic medical sciences course showed that most professors considered the volume of content in Anatomy (50%), Physiology (40%), Histology (45%), Specialized Language (56.7%), and Epidemiology (55%) to be appropriate, while they considered the volume of content in Biochemistry (40%) and Virology (38.3%) to be high, and the volume of content in Bacteriology (35%) to be very high. Regarding the course in Parasitology, 36.7% of professors deemed the volume of its content to be appropriate, and the same percentage also considered it to be high. Regarding the importance of practical classes in the basic sciences course, most professors (43.3%) believed that the time allocated for these classes is insufficient. More professors (53.3%) agreed on the positive effect of practical classes on understanding theoretical concepts. Additionally, according to the point of view of most professors, Anatomy (38.3%) and Physiology (34.2%) need more practical classes compared to other courses.

Analytical Results

The results of this analysis indicated that the views of basic sciences professors and clinical sciences professors regarding the method of evaluating of students, vertical integration of basic and clinical sciences, organized and systematic presentation of basic sciences, and explaining the applications of these sciences to students, the importance of courses in Anatomy, Physiology, Specialized Language, and

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Epidemiology, the volume of content in Specialized Language and Epidemiology courses, the number of hours of practical classes, the role of practical classes in understanding theoretical concepts, and lessons that require more practical classes did not show significant differences ($p > 0.05$).

However, the attitude of the professors in the two groups had significant differences regarding other questions in the questionnaire ($p < 0.05$). Most basic sciences professors (56.7%) believed that the duration of basic medical sciences course is short, while most clinical sciences professors (53.3%) thought that the duration of this course is appropriate. Additionally, 26.7% of clinical sciences professors considered the duration of Physiopathology to be long, while only 3.3% of basic sciences professors deemed the duration of this course to be long. Overall, the perspective of clinical sciences professors compared to basic sciences professors was closer to the necessity of shortening the duration of basic sciences as well as Physiopathology courses. Also, most basic sciences professors (53.3%) chose the laboratory as a more appropriate and effective environment for learning basic sciences, while most clinical sciences professors (83.3%) believed that the hospital is the most suitable environment for learning basic sciences. In terms of the use of new educational methods, the results generally indicated that a higher percentage of basic sciences professors agreed with the use of these methods compared to clinical sciences professors.

Regarding to the importance of biochemistry, histology, bacteriology, parasitology, and virology, the results showed that the majority of basic sciences professors considered these courses to be very important, while the majority of clinical sciences professors believed that the importance of these courses is moderate or low. The comparison between the groups regarding the volume of content indicated that for anatomy, physiology, biochemistry, and histology, most basic sciences professors deemed the volume presented in these courses to be appropriate, while most clinical sciences professors considered the volume of the mentioned courses to be high or very high. About bacteriology, virology, and parasitology, most basic sciences professors believed that the volume of content is appropriate or high, and clinical sciences professors believed that the volume of content is high or very high. Overall, the attitude of clinical sciences professors about the reduction of the volume of content included in the basic medical sciences course was close to that of basic sciences professors.

Discussion

The present study aimed to examine the attitude of professors at the Ilam University of Medical Sciences toward the basic medical sciences course. In this regard, a questionnaire was used to investigate general aspects of this educational course, the educational importance of basic medical sciences, the volume of content presented in this course, and the significance and position of practical classes. The results indicated that the attitude of basic sciences professors differed from those of clinical sciences professors in some issues.

At the beginning of the 20th century, significant deficiencies in medical education resulting in unqualified students led to the Flexner report in 1910. Flexner insisted that medical education should be based on universities and the curriculum should include rigorous training in basic sciences (8). As a result of this study, university-based medical schools divided medical education into preclinical and clinical periods. However, dissatisfaction of students and professors about the quality of preclinical period was reported later in some studies. They complained about a lack of connection between clinical and preclinical courses and their integration (5). Basic medical sciences in preclinical course were taught in a passive, lecture-based format by professors who did not present the content in a clinical context (9). Thus, over time, some experts criticized the position of basic sciences in medical education and tried to downplay their role in medicine (10). However,

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others strongly defended the essential role of basic sciences. Based on research evidence, they strongly argued that basic sciences should remain a core part of medical education (11-12). It seems that the knowledge of basic medical sciences provides lifelong ability of critical analysis and clinical reasoning skills for problem-solving in practice (13). In summary, based on the articles, basic science will undoubtedly be still a foundational science in the future, but it will undergo a constant evolving to become more creative, innovative, simulating for better outcomes.

The results of the present study demonstrated the significant importance of anatomy, physiology, and specialized language courses for application in the clinical period from professors' point of view. The findings related to anatomy and physiology were in line with results reported in previous studies (14-16). Although there is little research on the specialized language to support our study's results, previous studies have mainly criticized the teaching methods and the way English language lessons are delivered from the students' point of view (17). The attitude of basic sciences professors and clinical sciences professors differed regarding the volume of contents, with clinical sciences professors believed that the content of basic sciences is excessive. So far, there has been no study examining the attitude of medical professors toward the basic sciences. Previous studies have reported the attitude of medical students in this regard (14). These results indicated that the mentioned course, which hold high educational significance, should receive considerable attention in the educational planning of the basic sciences. Furthermore, based on the results obtained from examining the views of professors, it seems that more emphasis should be placed on practical classes as an essential factor in learning the theoretical concepts of basic sciences. Additionally, the educational potential of the hospital environment, as a useful learning setting, should be considered in the educational planning of basic medical sciences.

Our study showed that the delivery of basic science courses lacks appropriate organization and order. Furthermore, the clinical application of these courses and their connection to clinical concepts is not well explained to students. In this context, it is necessary to leverage professors' capacities for better learning and to appropriately define the core role of basic sciences in medicine. Previous studies have shown that the teacher is one of the most important influential factors in learning basic sciences (18). Knowledgeable teachers with enough information about the subject have the ability to encourage and motivate the students to become active learners (19). Incompetent professors and impractical presentation of basic sciences have been also mentioned by critics as defects and weakness of preclinical period (20). Therefore, professors must present the basic sciences in a reasonable order and use active learning and student-based teaching methods. That let the student discuss the subject and connect basic sciences to clinical practice.

In this study, the attitude of professors regarding the use of new teaching methods were investigated. In the past, professors mostly focused on transferring biomedical principles and pure information, but now they are responsible for delivering specific concepts with an emphasis on clinical relevance and promoting active learning, critical thinking and communication skills (21). Recently, teachers use problem-based methods increasingly in order to reach these educational goals (22-23). Most professors participating in our study agreed with the shift from traditional teaching methods to student-centered teaching methods. Although this viewpoint was somewhat influenced by the professors' specialties. A significant percentage of clinical sciences professors did not support new teaching methods. Also, the viewpoint of professors regarding vertical integration of basic science courses with clinical science courses was studied. The results indicated that the professors agreed with this integration. In this regard, studies suggest that case-method teaching is a useful method for enhancing critical thinking skill and applying

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basic sciences concepts while managing clinical cases (24). Furthermore, evidence shows that early exposure to clinical cases can influence medical students positively leading to the ability of recalling the basic sciences in the field in the future (25-26). In addition, studies indicate that professors are interested in using new learning methods, in case new educational policies are made by institutions (27).

evaluating and modifying medical education is an ongoing process (28) and timetable of preclinical course is not an exception. recently, some medical schools have shortened the preclinical period from 24 months to 12 to 15 months (29). A paper published by Emanuel discussed that in the many medical students in United States do not attend in preclinical classes of their schools but prefer watching lectures via the internet., Thus, this shows that medical school may move toward utilizing the capacity of online learning method for the preclinical years of medical education (28). It seems that the attitude of clinical science professors in our study regarding the duration of basic sciences and pathophysiology courses being long aligns with these studies. On the other hand, most professors in the present study recognized the hospital and laboratory environments as the most appropriate educational settings, and only a small number of professors deemed the online learning as an appropriate and influential method.

Conclusion

IIn conclusion, based on our results, it seems that the current way that the basic medical sciences is presented in preclinical course requires evaluation and reformation in order to increase the practical knowledge of students to apply it in practice.

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Ethics approval

The Ethics Committee of Ilam University of medical sciences approved this study (Code of Ethics: IR.MEDILAM.REC.1401.076).

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Conflict of interest

The authors report no conflict of interest in this study.

Authors' contributions

- Conceptualization: Yousef Mohamadi

- Methodology: Yousef Mohamadi, Reza Pakzad

- Data collection: Ali Khalili-Allafi

- Formal analysis: Reza Pakzad

- Supervision: deputy of research and technology at Ilam university of medical sciences

- Project administration: Yousef Mohamadi

- Writing - original draft: Yousef Mohamadi

- Writing - review and editing: All authors.

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