Research Article

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Examining the views of student midwives and nurses on biochemistry education

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Abstract

Objectives: The aim of this study is to determine the opinions of midwives and nurses about the efficiency and effectiveness of the biochemistry courses they took during their undergraduate education, in the education process and in their fields of study.

Methods: Two hundred eighty-four students studying in the department of midwifery and nursing (1–4 classes) participated in this research voluntarily. A questionnaire consisting of 10 multiple-choice questions compiled by the authors with the support of the sociodemographic data form, including age, gender, type of lycee school graduated, and the department they studied, and the literature on biochemistry education were applied to the students.

Results: The mean age of the students was 21.25 ± 0.12. 58.2 % of midwifery department students and 69.1 % of nursing department students reported that biochemistry education is necessary. 64.1 % of midwifery department students and 59.7 % of nursing department students stated that they thought that the biochemistry application course should be absolutely necessary. There was a significant difference between nursing and midwifery students in favor of nursing students in terms of finding the biochemistry course interesting and loving the biochemistry course. A significant difference was found between the two groups in favor of midwifery students in terms of their desire to pursue postgraduate education in biochemistry and to increase biochemistry course hours ($p<0.05$).

Conclusions: It is thought that the results of this study, which include students' opinions, will contribute to the efficiency of biochemistry education and help the lecturer provide a new perspective.

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Introduction

Learning, which is an indelible product of life, is also the result of the interaction between individuals and their environment [1]. The learner's perspective gives meaning to the learning content and determines what needs to be learned. The learning approach adopted by the student contributes to the quantity and quality of learning [2]. The investigation of these learning approaches will be an indicator of how a student's intentions, behaviors, and habits change according to their perceptions of the learning task [3]. However, as it is known, education is a two-sided process in which students and educators participate voluntarily. Therefore, in providing continuous and correct education, self-assessment, re-arrangement, and feedback are important [4]. In addition to measuring the learning and development levels of students, the evaluation of their satisfaction during learning is also considered one of the main elements of education [5]. Researchers reveal this knowledge by asking students [6]. In addition, the biochemistry course, which is compulsory in midwifery and nursing departments, is generally perceived as a challenging course by the students. Because of this, they tend to memorize and grade only at a superficial level [7, 8]. Raising the number of midwives and nurses that the country needs can only be possible with the adequate application of theoretical education and skill training. For this reason, it may be possible to train qualified health workers in the realization of the goal in biochemistry education and the awareness to be created, from the taking of body fluids or materials from the patient to the laboratory by midwives and nurses. The place where skill training will be done in biochemistry is the laboratories where routine services are provided. For this reason, laboratories are not only places where services are produced but also places where trainee students can see routine laboratory operations in action and learn to perform and manage these operations. In other words, laboratories are indispensable work areas for the training of midwife and nurse candidate

students. Biochemistry is a very important field of science in basic science education. Therefore, there is always a need for studies aimed at improving biochemistry education. The perspectives and learning skills of students studying biochemistry in the field of health should be taken into account. During the educational process, it is vital to investigate the adequacy and effectiveness of the biochemistry courses that midwives and nurses take during their undergraduate education, evaluate them from the students' point of view and provide feedback in training a health professional. In this study, we aimed to obtain new ways for the effective use of knowledge, which is one of the main goals of learning, and the preparation of biochemistry education plans. In line with the answers received from the students, we aimed to obtain meaningful results that could be a guide for biochemistry educators.

Materials and methods

Study design

Undergraduate Biochemistry is a 2 ECTS (European Credit Transfer System) compulsory course given in the first year of undergraduate midwifery and nursing education. Two hundred eighty-four students studying in the Department of Midwifery and Nursing (1–4 classes) participated in this research voluntarily. A questionnaire consisting of 10 multiple-choice questions compiled by the authors with the support of the sociodemographic data form, including age, gender, type of lycee school graduated, and the department they studied, and the literature on biochemistry education were applied to the students. Three Likert type questions were used: "I agree," "I disagree," and "I am undecided." For the reliability of the answers given in the questionnaire, the students were asked not to write their names.

Ethical considerations

The ethical approvals required for this cross-sectional, descriptive study were obtained from the Ethics Committee of the Faculty of Health Sciences, Kafkas University, and the Ethics Committee Approval, dated 31.03.2022 and numbered 81829502.903/52.

Statistical analysis

SPSS statistical software (USA, New York, IBM SPSS Version 21.0) was used to evaluate the data. The conformity of the data to the normal distribution was examined with the Kolmogorov–Smirnov test. Parametric tests were used. Independent samples test was used to determine whether there was a significant difference between the means. The chi-square test was applied to find out the distribution of the answers given to the questions and the level of significance based on f the question. Frequency distributions, numbers, and percentages were given in descriptive statistics. A value of $p<0.05$ was considered significant.

Results

In total, 33.8 % of the students participating in this study are in the first grade, 30.6 % are in the second grade, 21.1 % are in the 3rd grade, and 14.4 % are in the 4th grade. 76.4 % of the students participating in the study are from the nursing department, and 23.6 % are from the midwifery department. The mean age and standard error were calculated as 21.25 ± 0.12. Of the students who participated in the study, 74.3 % were women and 25.7 % were men. Of the students who participated in the study, 94 % were graduated of general high schools, and 6 % were graduated of health vocational lycee schools (Table 1).

Some important findings of the research are as follows: 34.3 % of midwifery students and 56.2 % of nursing students stated that the biochemistry course was interesting, 58.2 % of midwifery students and 69.1 % of nursing students also stated that biochemistry is a necessary course. 55.2 % of nursing students, 43.8 % of them stated that the biochemistry course was difficult, 40.3 % of midwifery students, and 59.4 % of the nursing students stated that the biochemistry course improved their skills related to their field, 65.7 % of the midwifery students and nursing students 41.5 % of the students stated that they did not want the theoretical course hours to increase; 40.3 % of the midwifery students and 51.6 % of the nursing students stated that biochemistry was a course that they liked (Table 2).

There was a significant difference between nursing and midwifery students in favor of nursing students in terms of finding the biochemistry course interesting and loving the

Table 1: Demographic characteristics of students.

	n	%
Class		
1	96	33.8
2	87	30.6
3	60	21.1
4	41	14.4
Section		
Nursing	217	76.4
Midwifery	67	23.6
Gender		
Female	211	74.3
Male	73	25.7
Lycee		
General lycee schools	267	94
Health vocational lycee school	17	6.0

Table 2: The questionnaire form is used by students in the midwifery and nursing departments, and their responses are recorded.

Questions	Nursing, n (%)			Midwifery, n (%)		
	1. I agree	2. I disagree	3. I'm undecided	1. I agree	2. I disagree	3. I'm undecided
1. I think the biochemistry course is interesting	122 (56.2)	31 (14.3)	64 (29.5)	23 (34.3)	22 (32.8)	22 (32.8)
2. Biochemistry is necessary for nursing and midwifery education	150 (69.1)	28 (12.9)	39 (18)	39 (58.2)	14 (20.9)	14 (20.9)
3. I believe that the biochemistry course improved my skills related to my field	129 (59.4)	32 (14.7)	56 (25.8)	27 (40.3)	17 (25.4)	29 (34.3)
4. The biochemistry course is a course that I like	112 (51.6)	46 (21.2)	59 (27.2)	27 (40.3)	26 (38.8)	14 (20.9)
5. Biochemistry is difficult to learn	95 (43.8)	67 (30.9)	55 (25.3)	37 (55.2)	16 (23.9)	14 (20.9)
6. I am thinking of doing postgraduate education in biochemistry in the future	29 (13.4)	127 (58.5)	61 (28.1)	7 (10.4)	48 (71.6)	12 (17.9)
7. I think my knowledge of biochemistry is sufficient	41 (18.9)	100 (46.1)	76 (35)	13 (19.4)	33 (49.3)	21 (31.3)
8. I would like to increase the biochemistry course hours	45 (20.7)	90 (41.5)	82 (37.8)	6 (9)	44 (65.7)	17 (25.3)
9. I want biochemistry lessons to be applied	139 (64)	42 (19.4)	36 (16.6)	40 (59.7)	19 (28.4)	8 (11.9)
10. I believe that what we learn in biochemistry lessons will make our professional lives easier	144 (66.4)	21 (9.7)	52 (23.9)	34 (50.7)	15 (22.4)	18 (26.9)

biochemistry course. A significant difference was found between the two groups in favor of midwifery students in terms of their desire to pursue postgraduate education in biochemistry and to increase biochemistry course hours ($p<0.05$) (Table 3).

Discussion

The courses taught in the basic sciences departments in the field of health are generally explained theoretically and practically. With the changes to be made in teaching techniques, students will be able to understand other health issues such as metabolic process, investigating the origin and causes of diseases, and taking firm steps in linking them with biochemistry is as important as doing diagnosis and research [9]. Cicuto et al.'s study revealed that there is a strong relationship between an active learning environment, students' motivation, and their participation in the teaching-learning process. In addition, it was emphasized that these students reinforced the positive effect of the method on the results together with innovative technical infrastructures and that the biochemistry course taken in an active learning environment encouraged students' participation in the course [10]. Cicutto et al. in their research, they reveals the contribution of active learning and reinforcement of biochemistry lessons to the teaching-learning processes and how important the questions asked to the students are [10]. In another study that followed how changes in pedagogical practices improved students' interest and performance in the biochemistry course, they stated that there was a significant increase in students' interest in biochemistry and its relationship with the curriculum of this course [11]. In another study, they examined students' responses and learning in an undergraduate biochemistry course taught in a studio class. They stated that the students' reactions to the lesson, technology, and group work were positive. Students liked using technology; they felt that it helped them learn the material, and they reported that working in groups was beneficial for learning [12]. In this study, most of the midwifery and nursing students stated that the biochemistry course is an interesting and necessary course, it improves their skills related to their field, it is a course they like, and they do not want the theoretical course hours to increase. Students; The answers to the questions "I believe that what we learn in biochemistry courses will make our professional life easier" and their views on increasing the practical lessons were found important. In this research, we have reached an important picture about the future perspectives of students' understanding, application, and association issues of the changes to be made about the adaptability of teaching techniques to today's technologies (Table 2).

Table 3: The average of the answers given by the midwifery and nursing department students to the questions in the questionnaire.

Questions	Section	Average	p-Value
1. I think the biochemistry course is interesting	Nursing	1.73 ± 0.06	<0.05
	Midwifery	1.99 ± 0.10	
2. Biochemistry is necessary for nursing and midwifery education	Nursing	1.49 ± 0.05	>0.05
	Midwifery	1.63 ± 0.10	
3. I believe that the biochemistry course improved my skills related to my field	Nursing	1.66 ± 0.06	>0.05
	Midwifery	1.94 ± 0.11	
4. The biochemistry course is a course that I like	Nursing	1.76 ± 0.06	<0.05
	Midwifery	1.81 ± 0.09	
5. Learning biochemistry is difficult	Nursing	1.82 ± 0.06	>0.05
	Midwifery	1.66 ± 0.10	
6. I am thinking of doing postgraduate education in biochemistry in the future	Nursing	2.15 ± 0.04	<0.05
	Midwifery	2.07 ± 0.06	
7. I think my knowledge of biochemistry is sufficient	Nursing	2.16 ± 0.05	>0.05
	Midwifery	2.12 ± 0.09	
8. I would like more biochemistry course hours	Nursing	2.17 ±0.05	<0.05
	Midwifery	2.16 ± 0.07	
9. I want biochemistry lessons to be applied	Nursing	1.53 ± 0.05	>0.05
	Midwifery	1.52 ± 0.09	
10. I believe that what we learn in biochemistry lessons will make our professional lives easier	Nursing	1.58 ± 0.06	>0.05
	Midwifery	1.76 ± 0.10	

Data are given as mean and standard error.

When we look at the literature related to this study, it has been determined that feedback studies related to the biochemistry course are mostly made by students studying in the field of health in medical faculties [5, 13]. For this reason, this research is considered important in terms of evaluating the opinions of the students of the Faculty of Health Sciences, Midwifery, and Nursing Department about the biochemistry course. In the study, it was not expected that midwifery students gave the answer "I think the biochemistry course is interesting" at a lower rate compared to nursing students. At the same time, it was seen that midwifery students stated that they did not participate more than nursing students. There could be many reasons for this. For example, it can be interpreted that the proximity of midwifery to surgical sciences is more prominent than that of a nurse, or that they are a little far from the evidence-based biochemistry findings, such as the time spent alone with the patient and similar evidence-based biochemistry findings. In the study, midwifery and nursing students marked this statement as "undecided" at a similar rate of approximately 1/3. The comment against this undecided answer should be as follows: "There may be deficiencies in active learning and reinforcement of basic biochemistry education processes, which constitute the main theme of our study." Owolabi et al. When they evaluated the effects of current education methods on the biochemistry perspectives of medical students and general practitioners in a medical school offering English-language medical education in Nigeria, they found that general practitioners described biochemistry as an interesting discipline more than medical students [14]. Based on these findings, it is concluded that students studying in health sciences and medicine faculties and who will be health professionals in the future are interested in biochemistry education, but this interest should be supported by visual, auditory, or technical aspects. Although biochemistry is a challenging course, previous studies show that a high percentage of medical students consider it essential for medical education [14]. It is noteworthy that a high percentage of midwifery and nursing students in the study stated that biochemistry is a necessary course. It is also important that a significant portion of the students in the Faculty of Medicine and Dentistry emphasize that it is difficult to learn biochemistry [13]. Namely, it is reported that the courses taught in medicine and dentistry are in-depth and in the form of committees. Kosova et al. the fact that more midwifery students state that the biochemistry course is difficult [15] should bring to mind the following question: "Why is the biochemistry course, which should be explained in a simpler way in nursing and midwifery, is described as a difficult course to learn". In a recent study on the difficulty of biochemistry course subjects, it was reported that students had difficulty in learning the course [16]. Similarly, in this study, the fact that a significant portion of midwifery and nursing students stated that the biochemistry course was difficult supported the literature. It is very important for students to be able to express their opinions about the biochemistry course in order for the education to take place efficiently. In this study, it was stated that most of the midwifery and nursing students agreed with the statement, "I believe that the biochemistry course improved my skills related to my field." Çokluk et al. reported that 1st and 2nd semester students agreed less than 3rd semester students to the question "I believe medical biochemistry courses improve my medical skills" [5]. This has revealed the opinion that students who gain professional skills love biochemistry. The students of both departments expressed their opinions about the adequacy of the time allocated to the theoretical courses and found the time to be insufficient in general. The fact that midwifery students overwhelmingly state that they do not want to increase the theoretical course hours at a higher rate than nursing students reveals the predisposition of midwifery to a practical field of surgical sciences. Similarly, Çokluk et al. as in this study, they were reluctant to increase the course hours with medical faculty students [5]. In this study, midwifery and nursing students participated in the question "Biochemistry is a subject I like" at a moderate level, and in a similar study, Kosova et al. it was found to be

inconsistent with the study [15]. The fact that midwifery and nursing students do not see themselves as sufficient for the question "I think my biochemistry knowledge is sufficient" in this study brought to mind that the teaching-learning relationship was disabled at this point. Kosova et al. asked the same question to midwifery students, and it was seen that the rate of those who thought they were inadequate was higher than ours [15]. Kosovo and his friends' questions about the contribution of biochemistry to midwifery students were answered, "I think most of their views will contribute to our professional life" [15]. In this study, it has a special importance in contributing to the education process of the student in a rich way with new educational methods of clinical biochemistry and laboratory adventure, from taking body fluids, which is the most important dynamic of the profession of midwifery and nursing students, to interpretation of results, diagnosis, treatment and self-care of patients. Considering the answers given by the students to the questions such as that the biochemistry course is an interesting and necessary course, that it develops their skills, that it is a course they like, and that they do not want to increase the theoretical course hours, the answers given to the questions "I believe what we learned in the biochemistry courses will make our professional life easier" and to increase the applied courses were positive.

Conclusions

In this study, it is seen that the midwifery and nursing students' biochemistry course is an interesting and necessary course, it improves their skills related to the field, it is a course they like, and they do not want the theoretical course hours to increase. Since biochemistry is a course that is at the core of the humanities and addresses the application areas of health professionals in diagnosis and treatment, the education of this course should be interactive and practical. Self-evaluation, reorganization and feedback should be taken into account in providing continuous and accurate biochemistry education. Considering the answers received from the students in these shaped education plans, meaningful results that can guide educators have emerged. In the answers received, the biochemistry course was found to be interesting and significant among nursing and midwifery students in favor of nursing students. In short, it is understood from the limited data in the literature that there is a need for studies to improve biochemistry education. It has been revealed that studies should be carried out to improve and update the education of students in line with the needs of institutions providing biochemistry education in the field of health in Turkey.

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Informed consent: All students were informed about the study and written consent was obtained.

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