Research Article

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Evaluation of midwifery students' learning approaches to the compulsory biochemistry course

[Ebelik öğrencilerinin biyokimya dersi öğrenme yaklaşımlarırın incelenmesi]

Abstract

Objectives: Learning approach in a certain learning process is based on the student's intentions, behaviors, and habits according to his/her perceptions of the task of learning and determines the amount and quality of learning. The objective of this study is to evaluate the learning approaches of 1st and 4th grade midwifery students to biochemistry course and the change, if there is any, through their education.

Methods: This is an observational, cross-sectional study. The research population consisted of the voluntary students (86.47%, n:147) of the 2017–2018 season of the 1st and 4th class of Manisa Celal Bayar University, Health Science Faculty, Midwifery Department (n:170). Data were collected by using the "Introductory Information Form" and the "Learning Approach Scale", and evaluated in the SPSS package program by performing number, percentile, mean, standard deviation, independent t test.

Results: The mean age of the students was 20.82 ± 1.81. Over 95% of the students stated that biochemistry lesson was necessary, while 59.9% reported that their biochemistry knowledge was insufficient. Over 87% of the student expressed their belief that the content of the biochemistry classes will help them in their professional career. Mean score of deep approach for Learning Approach Scale was 34.13 ± 6.07 (Min:19.00–Max:50.00), and mean score of superficial approach for Learning Approach Scale was 26.94 ± 6.37 (Min:15.00–Max:50.00). There was a significant relation between deep approach scale score and the perception of high importance of biochemistry in the professional life ($p < 0.05$).

Conclusions: Midwifery students, who believe that biochemistry is necessary for their professional career have a higher motivation for learning biochemistry, thus perform a deeper approach to learning. In general, creating effective and dynamic educational environments that support deep learning is necessary for enhancing the learning of biochemistry.

Keywords: biochemistry; learning approaches; midwifery students.

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Öz

Amaç: Öğrenme yaklaşımları, öğrencinin niyetleri, davranışları ve çalışma alışkanlıklarının öğrenme görevine ilişkin algılarına göre nasıl değiştiği şeklinde tanımlanabilir. Araştırmanın amacı, ebelik öğrencilerinin biyokimya dersi öğrenme yaklaşımlarının incelenmesidir.

Gereç ve Yöntem: Araştırma kesitsel tipte yapılmıştır. Araştırma evrenini Manisa Celal Bayar Üniversitesi Sağlık Bilimleri Fakültesi 2017–2018 öğretim yılı ebelik bölümü 1. ve 4. Sınıf (n:170) öğrencileri oluşturmuştur. Örneklem seçimi yapmaksızın gönüllü öğrencilerin %86.47'sine (n:147) ulaşılmıştır. Veriler; "Tanıtıcı Bilgi Formu" ve "Öğrenme Yaklaşımları Ölçeği" kullanılarak toplanmış ve SPSS paket programında; sayı, yüzdelik, ortalama, standart sapma, bağımsız gruplarda t testi yapılarak değerlendirilmiştir.

Bulgular: Araştırmaya katılan öğrencilerin %50.3'ü 21 yaşın altındadır. Öğrencilerin %70.1'inin biyokimya dersini ilgi çekici bulduğu, %95.2'inin dersi gerekli olduğunu düşündüğü, %74.1'nin dersi sevdiği, % 59.9'unun biyokimya bilgisinin yetersiz olduğunu düşündüğü, %87.8'inin dersinde öğrenilenlerin meslek yaşantısını kolaylaştıracağını inandığı saptanmıştır. Öğrenme Yaklaşımları Ölçeği derin yaklaşım puan ortalaması 34.13 ± 6.07 (Min:19.00–Max:50.00), yüzeyel yaklaşım puan ortalaması 26.94 ± 6.37(Min:15.00–Max:50.00) dir. Ölçek derin yaklaşım cronbach alfa katsayısı 0.84, yüzeyel yaklaşım cronbach alfa katsayısı 0.80'dir. Biyokimya dersi bilgisinin yeterli olduğunu düşünme ve derin yaklaşım ölçek puanı arasında anlamlı ilişki saptanmıştır (p<0.05). Meslek yaşantısını kolaylaştıracağını düşünme ve derin yaklaşım ölçek puanı arasında anlamlı ilişki saptanmıştır (p<0.05).

Sonuç: Biyokimya dersinin mesleki hayatlarında gerekli olduğunu düşünen öğrencilerin ders motivasyonlarının daha yüksek olduğu görülmüştür. Biyokimya dersi öğrenme çıktılarının iyileştirilmesi için derin öğrenmeyi destekleyen etkili ve dinamik öğrenme ortamları yaratılmasının fayda sağlayacağı düşünülmektedir.

Anahtar Kelimeler: biyokimya dersi; ebelik öğrencileri; öğrenme yaklaşımları.

Introduction

Learning is a result of the interaction between individuals and their environment and is an indelible product of life [1]. The perspective of the learner gives meaning and sense to the learning content and determines what has to be learned. This forms the basis of the learning approach adopted by the learner that determines the amount and quality of learning [2]. The study of learning approaches investigate how a student's intentions, behaviors, and habits change according to his/her perceptions of the task of learning [3].

It was reported that the students' learning approaches are influenced by many factors such as motivations, teaching strategies, content and evaluation methods. Learning approaches have been classified to two types: superficial (orientation toward reproduction) and deep (orientation toward understanding the meaning) approaches [2, 4]. Students who adopt the deep approach are motivated by the recognition of the relevance of the material for their professional performance. The aim of such students is to understand what the topics mean and relate it to previous knowledge and personal experiences [4–6]. In contrast, students who adopt the superficial approach are motivated by the fear of failure [5–7]. Therefore, the aim of such students is to fulfill the requirements of the course by memorizing facts without really trying to integrate to previous knowledge or appreciating the conceptual aspects of the subject [2, 4].

It is important to determine students' learning approaches and learning styles in order to evaluate teaching and assessment strategies. This will assist educators to improve teaching and assessment effectiveness and implement favorable changes to improve education programs. By this evaluation, it is also possible to identify students at risk and give support to them [2]. Educational researchers reveal these information by asking students about their learning experiences (how students approach to certain academic tasks) [8].

Students in health sciences often perceive biochemistry as a challenging course and tend to use a "surface approach," especially when biochemistry is taken as a compulsory subject in a general health science degree [9, 10]. Students who attend this course perceive biochemistry as a comprehensive theoretical knowledge, even if only basic terms and concepts are taught to students [11]. Midwifery students are not an exception to this approach and how much and how to teach biochemistry to these students have long been a topic of discussion [11, 12].

Based on this knowledge, the present research was done to investigate the learning approaches and styles of midwifery students to the compulsory biochemistry course. The study aims to evaluate the relationship between the learning approaches and styles and to observe whether any changes occur in these during the course of midwifery education.

Materials and methods

Study design

This research was carried out as an observational-cross-sectional study to determine the learning approaches of 1st and 4th grade midwifery students to the biochemistry courses at the Department of Midwifery of Health Sciences, Faculty at Manisa, Celal Bayar University. Biochemistry is a compulsory subject with three ECTS given in the 1st and 4th grade of the undergraduate midwifery education. The aim

of the course in the 1st grade is to introduce the basic molecules (structure, function, and metabolism) in the body along with their role in health and diseases. In the 4th grade some clinical biochemistry subjects are introduced as well. The course is lecture-based with some cases and problems within. The assessment technique is standard testing with multiple choice questions.

Participants

Since we did not propose any causal explanation in the design of the study but aimed to understand the meanings students attribute to learning, we used an observational methodology with a non-random sample of volunteer students (1st and 4th grade students in the 2017–2018 academic year). Out of 170 students in both grades, 86.47% (n: 147) volunteered to take part in the study.

Ethical considerations

Ethics approval for the study was obtained from the Medical Faculty Local Ethics Committee of Manisa Celal Bayar University (decision no: 20.478.486, date: 01/08/2018). All students were informed about the study and written consent was obtained.

Methods

This research used two forms to obtain the data of the participants: The information and perception of biochemistry form and Learning Approaches Scale (LAS).

Information and perception of biochemistry form: This tool aims to gather epidemiologic and perception data collection and consists of 11 items developed by researchers on the relevant field.

Learning Approaches Scale (LAS): The Turkish validation studies of the LAS developed by Biggs et al. (2001) was conducted by Batı et al. (2010). The twenty-item scale consists of two sub-scales, each of which consists of five sub-items, each with two determiners: the deep approach (deep motivation, deep strategy) and surface approach (the surface motivation, surface strategy) [13, 14].

All items question the learning ways and attitudes of students. A student's deep approach learning level can be calculated by summing the scores of questions 1, 2, 5, 6, 9, 10, 13, 14, 17, and 18. Also, questions 1, 5, 9, 13 are the determinants for deep motivation and item 18 quests the deep strategy. The superficial approach is calculated by adding the scores of questions 3, 4, 7, 8, 11, 12, 15, 16, 19 and 20. Items 3, 7, 11, 15 and 19 are determinants for the superficial motivation, and items 4, 8, 12, 16 and 20 are determinants for superficial strategy. The total scale score for each approach varies between 10 and 50 [14]. In this study, the Cronbach alpha coefficient of deep approach was 0.84 through LAS and the Cronbach alpha coefficient of superficial approach was 0.80 (both indicate reliable values).

Statistical analysis

Data were evaluated using SPSS 15 package software. Statistical significance was set at p value less than 0.05.

Results

The study consisted of 147 university Midwifery students. Of these, 74 students (50.3%) were in the 1st grade (basic stage) and 73 (49.7%) in their 4th grade (professional stage).The mean age of the students was 20.82 ± 1.81 (min: 18.00, max: 26.00). In regard to their perception of the biochemistry course, 70.1% (n: 103) of the students perceived the biochemistry course as interesting, 95.2% (n: 140) as necessary. Out of the students, 74.1% (n: 109) liked the course, 59.9% (n: 88) believed that their knowledge of biochemistry was insufficient, and 87.8% (n: 129) believed that the knowledge learned in biochemistry would facilitate their professional life (Table 1).

Discussion

Biochemistry is one of the most challenging disciplines for health sciences education. This study aimed to determine the learning approaches and styles of midwifery students to the biochemistry course, to investigate if there is any relation in between these and to evaluate if any changes occur through the process of education.

Learning approach defines the method preferred by the learner as he/she is addressing a learning task. It depends on the harmony between the purpose, motivation, and learning style of the students. Learning style, on the other hand indicates the ways in which the student deals with the reception and processing of the information. Learning styles and learning approaches are flexible and dynamic, thus they can change depending on the learning environment, teaching strategies, assessment methods, use of previous knowledge, personal characteristics, etc. It is well known that significant learning takes place only if the learning style and learning approach of students are used in a relevant manner by both students and educators.

Although biochemistry is a challenging course, previous studies indicate that a high percentage of (90%) medical students consider it necessary for medical education [15]. In our study, 95.2% of the midwifery students also perceived that biochemistry is a necessary course. In an another study conducted with the students of the Faculty of Medicine and Dentistry, 40% of the students of the Faculty of Medicine and 40.7% of Dentistry thought that biochemistry is difficult to learn [12], which was a similar rate (55.1%) of the midwifery students in our study.

In this study, the average point of deep approach in the LAS was 34.13 and the mean of the superficial approach

Table 1: Comparison of some determinants of students' learning approaches(LA).

Properties		n=147	n (%)	Learning approach scale (Mean±SD)	Statistical significance
Age	<21 years of age	74	50.3	Deep: 33.79 ± 6.14	t=−0.66
				Superficial: 28.09 ± 6.89	p=0.50
	21 years and above	73	49.7	Deep: 33.46 ± 6.00	t=2.23
				Superficial: 27.03 ± 6.35	p=0.27
I find the biochemistry course interesting	Yes	103	70.1	Deep: 34.74 ± 6.21	t=1.90
				Superficial: 26.37 ± 5.49	p=0.58
	No	44	29.9	Deep: 32.68 ± 6.52	t=−1.66
				Superficial: 28.27 27 ± 5.85	p=0.09
I believe the course is necessary	Yes	140	95.2	Deep: 34.22 ± 6.16	t=0.82
				Superficial: 26.87 ± 6.40	p=0.41
	No	7	4.8	Deep: 32.28 ± 3.25	t=−0.63
				Superficial: 28.42 ± 5.85	p=0.53
I like the biochemistry course	Yes	109	74.1	Deep:34.69 ± 6.47	t=1.94
				Superficial: 26.92 ± 6.96	p=0.54
	No	38	25.9	Deep: 32.50 ± 4.36	t=−0.61
				Superficial: 27.00 ± 4.31	p=0.95
I consider biochemistry as a difficult course to learn	Yes	81	55.1	Deep: 33.39 ± 5.21	t=−1.63
				Superficial: 26.70 ± 5.87	p=0.10
	No	66	44.9	Deep:35.03 ± 6.90	t=−0.50
				Superficial:27.24 ± 6.96	p=0.61
I believe that my knowledge of biochemistry is sufficient	Yes	59	40.1	Deep: 35.89 ± 6.72	t=2.97
				Superficial: 27.05 ± 6.02	p=0.03[a]
	No	88	59.9	Deep: 32.94 ± 5.29	t=0.16
				Superficial: 26.87 ± 6.62	p=0.87
I believe that the biochemistry knowledge/I learn will help me in my professional life	Yes	129	87.8	Deep:34.39 ± 6.14	t=−2.53
				Superficial:26.45 ± 6.29	p=0.01[a]
	No	18	12.2	Deep: 32.22 ± 5.20	t=1.42
				Superficial: 30.44 ± 5.95	p=0.15

[a]Independent Samples Test. There was no relationship between the learning approaches score and the students' age or the course perceptions of the students except the two of sub-items. Students who thought that their biochemistry knowledge is sufficient had higher deep learning approaches score (p<0.05). A similar relationship was found between deep approach scale score (p<0.05) and the students who thought that their biochemistry knowledge will help them in their professional life (Table 1).

was 26.94. This indicates a higher deep learning approach point in undergraduate midwifery students.

Mansouri et al. (2006) reported that 60% of nursing students and 63% of midwifery students adopted a deep

Table 2: Arithmetic mean and standard deviations of students' learning approach score.

Properties/ Scale	Min.	Max.	X	SD
Deep approach	19.00	50.00	34.13	6.07
Deep motivation	9.00	25.00	16.87	3.14
Deep strategy	7.00	25.00	17.27	3.29
Superficial approach	15.00	50.00	26.94	6.37
Superficial motivation	5.00	25.00	12.00	3.87
Superficial strategy	8.00	25.00	14.59	3.15

The average point of deep approach in the learning approaches scale was 34.13 ± 6.07 (Min: 19.00,Max: 50.00) and the mean of the superficial approach was 26.94 ± 6.37 (Min: 15.00,Max: 50.00) (Table 2).

approach, and the use of superficial approach was negative for midwifery students [7]. In a qualitative study in which the basic biochemical course perceptions of the students of Faculty of Health Sciences were examined, Minasian–Batmanianand Lingard (2005) reported that the students were more likely to adopt deep learning approach [9].

It is assumed that emotions have a strong influence on academic motivation and on learning approaches and strategies. Generally, students engage themselves more in the learning process if they find meaning in what is being taught. Similarly, in the present study, students who expressed a significantly higher rate of deep learning approach (Deep: 35.89 ± 6.72 Superficial: 27.05 ± 6.02; t=2.97, p=0.03*) thought that they have sufficient knowledge of biochemistry. Also, the students who believed that biochemistry is necessary for their professional life had higher deep approach (Deep: 34.39 ± 6.14, Superficial: 26.45 ± 6.29; t=−2.53, p=0.01*).

In this study, no relationship was found between age, class variables, and learning approaches. Similarly, Özgür and Tosun (2012) reported that age and class variables of the students did not cause any difference on the learning approach [1].

Conclusions

The aim of higher education is to give students the knowledge and analytical skills to deal with new information and to make deliberate choices [16]. The deep learning approach promotes such outcomes by contributing to higher quality learning. Thus, it is important to facilitate the learning process in undergraduate education so that deep learning approaches are more frequently used by students.

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