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### Investigating the attitude of medical students to the effect of applying correct skills of teacher-student communication on learning physiology

**Background:** Physiology is one of the most basic lessons among medical education courses. The teacher can facilitate the teaching process for compensating deficiencies in textbooks.

**Method:** This study was a descriptive cross-sectional study and the available sampling method was used. The study population in this study was students of Abadan University of Medical Sciences who had physiology lessons in their curriculum in the first semester of the 2019-2020 academic years.

**Results:** The results showed that respect for the student's personality, teacher's scientific mastery of the subject of teaching and a few minutes break between teaching with 95.7%, the flexibility of the teacher and the interest in teaching with 92.7%, the up-to-datedness of the teacher with 92.7%, and the way of speaking and pleasantness of the teacher with 91.3% have the greatest impact on increasing learning of students. On the other hand, teacher's strictness with 46.5% and teacher's stubbornness with 8.7% had the least effect on increasing student's learning

**Conclusions:** The results obtained regarding the correct communication skills between teacher and students as the most effective in better learning physiology lessons and the highest scores, respectively, were:: teacher's scientific mastery, teacher's expression, respect for the student's personality by the teacher, teacher's up to dateness, teacher's flexibility, teacher's sobriety, teacher's appropriate class management, teacher's high self-confidence, teacher's patience, teacher's kindness, and teacher's interest in teaching.

**Keywords:** Physiology, Teacher, Students, Effective Communication

التحقيق في موقف طلاب الطب من تأثير تطبيق المهارات الصحيحة للتواصل بين المعلم والطالب على تعلم علم وظائف الأعضاء

**الخلفية:** علم وظائف الأعضاء هو أحد الدروس الأساسية في دورات التعليم الطبي. يمكن للمدرس تسهيل عملية التدريس لتعويض النقص في الكتب المدرسية.

**المنهج:** كانت هذه الدراسة عبارة عن دراسة مقطعية وصفية واستخدمت طريقة أخذ العينات المتاحة. كان مجتمع الدراسة في هذه الدراسة من طلاب جامعة عبادان للعلوم الطبية الذين تلقوا دروسًا في علم وظائف الأعضاء في مناهجهم الدراسية في الفصل الدراسي الأول من العام الدراسي ٢٠١٩-٢٠٢٠.

**النتائج:** أظهرت النتائج أن احترام شخصية الطالب، وإتقان المعلم العلمي لمادة التدريس، واستراحة لبضع دقائق بين التدريس بنسبة ٩٥,٧٪، ومرونة المعلم والاهتمام بالتدريس بنسبة ٩٢,٧٪، وحدثة المعلم بنسبة ٩٢,٧٪، وطريقة التحدث ولطافة المعلم بنسبة ٩١,٣٪، لها الأثر الأكبر في زيادة تعلم الطلاب. من ناحية أخرى، فإن تشدد المعلم بنسبة ٤٦,٥٪ وعناد المعلم بنسبة ٨,٧٪ كان لهما أقل تأثير على زيادة تعلم الطالب

**الاستنتاجات:** النتائج التي تم الحصول عليها فيما يتعلق بمهارات الاتصال الصحيحة بين المعلم والطالب باعتبارها الأكثر فاعلية في دروس علم وظائف الأعضاء لتعلم أفضل وأعلى الدرجات، على التوالي، كانت: إتقان المعلم العلمي، تعبير المعلم، احترام المعلم لشخصية الطالب، حداثة المعلم، مرونة المعلم، رصانة المعلم، إدارة الفصل المناسبة للمعلم، ثقة المعلم العالية بالنفس، صبر المعلم، صبر المعلم، واهتمام المعلم.

**الكلمات المفتاحية:** علم وظائف الأعضاء، مدرس، طلاب، اتصال فعال

### بررسی نگرش دانشجویان علوم پزشکی به تأثیر مهارت های صحیح ارتباط استاد و دانشجو بر یادگیری درس فیزیولوژی

**زمینه و هدف:** فیزیولوژی یکی از اساسی ترین دروس در دوره آموزش پزشکی است. مدرس می تواند روند تدریس را تسهیل کند و حتی کمبودهای کتاب های درسی را جبران کند.

**روش:** این مطالعه یک مطالعه توصیفی مقطعی بود و از روش نمونه گیری در دسترس استفاده شد. جامعه مورد مطالعه در این پژوهش دانشجویان دانشگاه علوم پزشکی آبادان بودند که در ترم اول سال تحصیلی ۹۹-۹۸ درس فیزیولوژی را در برنامه درسی خود داشتند.

**یافته ها:** نتایج پژوهش نشان داد که احترام به شخصیت دانشجو، تسلط علمی استاد بر موضوع تدریس و استراحت چند دقیقه ای بین تدریس با ۹۵/۷ درصد، انعطاف پذیری استاد و علاقه به تدریس با ۹۲/۷ درصد، به روز بودن استاد با ۹۲/۷ درصد و نحوه بیان استاد و خوشرویی استاد با ۹۱/۳ درصد بیشترین تأثیر را در افزایش یادگیری درس فیزیولوژی توسط دانشجویان دارند. از سوی دیگر سختگیری استاد با ۴۶/۵ درصد و لجباز بودن استاد با ۸/۷ درصد کمترین تأثیر را در یادگیری دانشجویان دارد.

**نتیجه گیری:** نتایج به دست آمده نشان داد که مهارت های ارتباطی صحیح استاد و دانشجو که در یادگیری بهتر دروس فیزیولوژی تأثیر داشتند، شامل این موارد می باشد: تسلط علمی استاد، نحوه ی بیان استاد، احترام به شخصیت دانشجو توسط استاد، به روز بودن استاد، انعطاف پذیری استاد، متانت رفتار استاد، مدیریت مناسب کلاس توسط استاد، اعتماد به نفس بالای استاد، صبور بودن استاد، خوشرویی استاد، علاقمند بودن استاد به تدریس و شوخ طبعی استاد.

**واژه های کلیدی:** فیزیولوژی، استاد، دانشجویان، ارتباط مؤثر

### فزیولوجی سیکهنے پر استاد اور طالب علم کے مواصلات کی صحیح مہارتوں کو لاگو کرنے کے اثر کے بارے میں میٹریکل طلباء کے رویے کی چھان بین

**پس منظر:** طبی تعلیم کے کورسز میں فزیولوجی سب سے بنیادی اسباق میں سے ایک ہے۔ درسی کتب کی کمی کو پورا کرنے کے لیے استاد تدریسی عمل کو آسان بنا سکتا ہے۔

**طریقہ:** یہ مطالعہ ایک وضاحتی کراس سیکشنل مطالعہ تھا اور دستیاب نمونے لینے کا طریقہ استعمال کیا گیا تھا۔ اس مطالعے میں مطالعہ کرنے والی آبادی آبادان یونیورسٹی آف میڈیکل سائنسز کے طلباء تھی جنہوں نے ۲۰۱۹-۲۰۲۰ تعلیمی سالوں کے پہلے سمسٹر میں اپنے نصاب میں فزیولوجی کے اسباق رکھے تھے۔

**نتائج:** نتائج سے معلوم ہوا کہ طالب علم کی شخصیت کا احترام، تدریس کے مضمون میں استاد کی سائنسی مہارت اور ۹۵.۷٪ کے ساتھ پڑھانے کے درمیان چند منٹوں کا وقفہ، استاد کی لچک اور ۹۲.۷ فیصد کے ساتھ پڑھانے میں دلچسپی، ۹۲.۷ فیصد کے ساتھ استاد کی تازہ کاری، اور استاد کے بولنے کے انداز اور سیکھنے کے انداز میں ۹۳٪ کے ساتھ زبردست اثر پڑتا ہے۔ طلباء دوسری طرف، ۴۶.۵٪ کے ساتھ استاد کی سختی اور ۸.۷٪ کے ساتھ استاد کی ضد کا طالب علم کے سیکھنے میں اضافہ پر سب سے کم اثر پڑا۔

**نتیجہ:** استاد اور طالب علم کے درمیان رابطے کی درست صلاحیتوں کے حوالے سے جو نتائج حاصل کیے گئے ہیں وہ فزیولوجی کے اسباق کو سیکھنے میں سب سے زیادہ مؤثر ہیں اور بالترتیب سب سے زیادہ اسکور ہیں: استاد کی سائنسی مہارت، استاد کا اظہار، استاد کی طرف سے طالب علم کی شخصیت کا احترام، استاد کی تازہ کاری، استاد کی لچک، استاد کی اعلیٰ اخلاق، استاد کی خودداری، استاد کی اعلیٰ اخلاقیات، استاد کی مہربانی، اور استاد کی تدریس میں دلچسپی۔

**مطلوبہ الفاظ:** فزیولوجی، ٹیچر، طلباء، مؤثر کمیونیکیشن

## INTRODUCTION

Physiology is one of the most basic lessons among medical education courses that its purpose is to teach the principles and ruling concepts on the functioning of body systems in health conditions. The most students believe that physiology is a difficult course, while the nature of this course is very attractive and closely related to the medical profession (1).

Communication in the educational process is for the exchange of ideas and information between teacher and students (2). In the process of educational communication, many elements and variables such as instructor, message, and environmental factors are involved (3). Effective teaching depends on the correct use of communication skills. Teachers use their knowledge to apply texts and teaching skills and create a suitable environment for students to learn (4).

Teaching is a teacher-comprehensive interaction in which the teacher tries to create the desired conditions for change by planning (5). Thus, teaching is the interaction or mutual behavior of the teacher and the learner based on the regular and purposeful design planned by a teacher to change the inclusive behavior (6).

The teacher can facilitate the teaching process and even compensate for the lack of textbooks and lack of educational facilities or, conversely, turn the best situation and subject of teaching into an inactive and unattractive environment due to the inability to establish favorable communication (4).

Because students are in direct contact with professors, the best way to evaluate them is to use their opinions (7). Knowing the characteristics of a good teacher is very important because it facilitates education and compensates for the lack of textbooks and lack of educational facilities, on the other hand, the teacher's personality can affect his scientific ability (8).

The characteristics of a positive relationship can be accessible as an educational experience and encourage students to learn. From the point of view of teacher and students, the existence of good communication characteristics, respect in the classroom, interest in teaching, and student learning, will create a positive relationship in the classroom. Therefore, communication is an essential factor in the teaching-learning process (9).

Research on the application of effective teaching criteria in universities is effective for finding and compensating deficiencies because it provides a comprehensive picture of the educational quality of the university and leads to strengthening strengths and eliminating shortcomings in the quality of teaching (10).

Evaluating teachers' teaching without having effective teaching indicators not only does not improve the quality of education but also reduces the quality of teaching (11).

The aim of this study was to determine how applying the correct skills by professors and students affect learning physiology at Abadan University of Medical Sciences.

## METHODS

This study was a descriptive cross-sectional study and the available sampling method was used. The study population

in this study was 200 students (Students of medicine, nursing, operating room, anesthesia, librarianship and health information technology) of Abadan University of Medical Sciences who had physiology in their curriculum in the first semester of the 2019-2020 academic year. 69 students of Abadan University of Medical Sciences participated in this study.

The inclusion criteria in this study were the students of Abadan University of Medical Sciences, who had the field of physiology in their curriculum in the first semester of the 2018-2019 academic year.

The exclusion criteria were students who dropped the physiology course, left the physiology course incomplete, or those students who were transferred to another university.

The data collection tool was a researcher-made questionnaire consisting of three parts: The first part was about the purpose of the project and how to complete the questionnaire. The second part included students' demographic information and the third part included 23 questions about the effective factors in establishing a student-teacher relationship which were presented on a five-point Likert scale as strongly agree, agree, have no opinion, disagree, and strongly disagree.

To determine the validity of the questionnaire, the content validity method was used, which was validated by 20 faculty members. To measure the reliability of the questionnaire in two stages, students completed it in 2 separate weeks and the Cronbach's alpha was 0.79.

The questionnaires were completed online. Answering the questionnaire was also optional for the students. After collecting information and organizing them, the data was entered into SPSS software version 21 for statistical analysis. Data analysis was performed using descriptive statistics.

## RESULTS

Students were in the age range of 18 to 44 years with an average and standard deviation of 21.82+3.74 years. Most participants (60.9%, 42 people) were female.

The effect of applying teacher-student communication skills on the effective learning of physiology are shown in Table 1. The results of the questionnaire showed that the intimate and appropriate communication between teacher and student has 60 agreeing opinions (86.9%) Respect for the student's personality has 68 agreeing opinions (95.7%) Scientific mastery of the subject of teaching by the teacher has 66 agreeing opinions (95.7%), the flexibility of the teacher to increase the learning of physiology has 64 agreeing opinions (92.7%) Teacher's patience has 66 agreeing opinions (89.9%), Teacher's high self-confidence has 66 agreeing opinions (89.9%), Teacher's way of speaking and teacher's type of voice has 63 agreeing opinions (91.3%), Teacher's good appearance in the classroom has 46 agreeing opinions (66.6%), teacher's humor has 54 agreeing opinions (78.2%) Dignity of teacher behavior has 60 agreeing opinions (86.9%) Appropriate counseling of students in difficult life situations by the teacher has 46 agreeing opinions (66.6%), stubbornness of teacher has 6 agreeing opinions (8.7%), seriousness of the teacher in the class has 33 agreeing opinions (46.3%) few minutes brake between teaching has 66 agreeing opinions (95.7%) Teacher's strictness has 28

agreeing opinions (46.5%) Answering course questions at other times than class time has 57 agreeing opinions (82.6%) Student participation during teaching has 54 agreeing opinions (78.2%), Teacher's attention to individual differences between students has 51 agreeing opinions (73.9%), Teacher's kindness in class has 63 agreeing opinions (91.3%) being an up to date teacher has 65 agreeing opinions (92.7%) Teacher's determination has 49 agreeing opinions (71%) The teacher's interest in teaching physiology

has 64 agreeing opinions (92.7%) and the proper management of the class by the teacher has 65 agreeing opinions (94.2%). These factors had positive effects on increasing the learning of physiology.

**DISCUSSION**

The present study showed that the teacher's scientific mastery of teaching has a great impact on increasing physiology learning. The correct communication skills used

**Table1. The effects of correct teacher-student communication skills on effective learning of physiology lesson**

Statement	A	B	C	D	E
Intimate and appropriate communication between teacher and student is effective in increasing the learning of physiology	35 (50.7)	25 (36.2)	8 (11.6)	0 (0)	0 (0)
Respect for the student's personality is effective in increasing the learning of physiology	48 (69.6)	18 (26.1)	2 (2.9)	0 (0)	0 (0)
Scientific mastery of the subject of teaching by the teacher is effective in increasing the learning of physiology by the student	54 (78.3)	12 (17.4)	2 (2.9)	1 (1.4)	0 (0)
Teacher flexibility is effective in increasing the learning of physiology	43 (62.3)	21 (30.4)	5 (7.2)	0 (0)	0 (0)
Teacher patience is effective in increasing the learning of physiology	40 (58)	22 (31.9)	6 (8.7)	1 (1.4)	0 (0)
Teacher's high confidence is effective in increasing the learning of physiology	40 (58)	22 (31.9)	7 (10.1)	0 (0)	0 (0)
The way the teacher speaks and the type of the teacher's voice are effective in increasing the learning of physiology	50 (72.5)	13 (18.8)	5 (7.2)	1 (1.4)	0 (0)
The appearance of the teacher in the classroom is effective in increasing the learning of physiology	29 (42)	17 (24.6)	21 (30.4)	1 (1.4)	1 (1.4)
The teacher's humor and kindness are effective in the increasing the learning of physiology.	35 (50.7)	19 (27.5)	11 (15.9)	1 (1.4)	3 (4.3)
The sobriety of the teacher's behavior is effective in increasing the learning of physiology	41 (59.4)	19 (27.5)	9 (13)	0 (0)	0 (0)
Proper counseling of students in difficult life situations by the teacher is effective in increasing the learning of physiology	25 (36.2)	21 (30.4)	16 (23.2)	7 (10.1)	0 (0)
The teacher's stubbornness is effective in increasing the learning of physiology	2 (2.9)	4 (5.8)	13 (18.8)	23 (33.3)	26 (37.7)
The seriousness of the teacher in the classroom is effective in increasing the learning of physiology	11 (15.9)	21 (30.4)	21 (30.4)	9 (13)	6 (8.7)
Giving a few minutes brake between teaching is effective in increasing the learning of physiology	42 (60.9)	24 (34.8)	3 (4.3)	0 (0)	0 (0)
Teacher strictness is effective in increasing physiological learning	6 (14.6)	22 (31.9)	19 (27.5)	13 (18.8)	7 (10.1)
Other times besides class, when the teacher answers the student's questions, are effective in increasing the learning of physiology	29 (42)	28 (40.6)	8 (11.6)	2 (2.9)	2 (2.9)
Involving students while teaching is effective in increasing physiology learning	23 (33.3)	44.9 (31)	9 (13)	3 (4.3)	3 (4.3)
The teacher's attention to the individual differences of students is effective in increasing the learning of physiology	23 (33.3)	28 (40.6)	9 (13)	4 (5.8)	5 (7.2)
The openness and kindness of the teacher in the classroom is effective in increasing the learning of physiology.	38 (55.1)	25 (36.2)	3 (4.3)	1 (1.4)	0 (0)
Teacher's being an up to date is effective in increasing physiology learning	43 (62.3)	21 (30.4)	4 (5.8)	0 (0)	1 (1.4)
Teacher determination is effective in increasing physiology learning	26 (37.7)	23 (33.3)	14 (20.3)	5 (7.2)	1 (1.4)
The teacher's interest in teaching physiology is effective in increasing physiology learning by students	39 (56.5)	25 (36.2)	0 (0)	0 (0)	0 (0)
Proper management of the class by the teacher is effective in increasing the learning of physiology	40 (58)	25 (36.2)	3 (4.3)	0 (0)	0 (0)

A = Strongly agree; B = Agree; C = Neutral; D = Disagree; E = Strongly disagree

by physiology professors and students can play an important role in better learning of physiology course. Among these skills, the eloquent expression, flexibility, patience, respect for the student's character by the teacher, modesty of behavior, proper class management, high self-confidence, kindness, and interest in teaching are the most important ones.

The results of Peyman et al research showed that the most important characteristic of a capable teacher from the perspective of postgraduate and doctoral students is the ability of the teacher to answer the questions and specialized information of the teacher (12), also Darling Hammond et al identified the teacher's content competence as the most important component in teaching (13). The results of Roohi et al study indicated that the most effective factor on students' academic motivation is the scientific and moral competence of University teachers (14). According to Keller, faculty members are able to overshadow the conditions and position of other factors by emphasizing merit and technical-professional ability (15).

The present study showed that the teacher's humor in the classroom increases the learning of physiology. According to Cheragh Cheshm's study, a teacher with humor increases students' self-confidence and motivates their curiosity, as a result, humor reduces emotional fatigue and improves their performance (16). Majidi's research also showed that teacher humor reduces students' pessimism. Teacher humor and the use of laughter-jokes-verbal jokes-humor in social relationships and stressful situations can be an effective tool to increase happiness and reduce anxiety and stress (17).

This study showed that the way teacher speaks and the type of teacher's voice has a positive effect on increasing learning. The teacher's expressive power is mentioned as the most important factor in successful teaching, as well as professional- practical and personal-moral characteristics are of great importance (18).

Also this study showed that proper classroom management by the teacher is an important priority in increasing the learning of physiology. According to the study done by Askari et al, in addition to the characteristics of transparent content transfer and motivation in students, proper classroom management was also recognized as an important priority (19).

The present study showed that the way the teacher speaks, respect for the student's personality, and high self-confidence of the teacher are important factors in increasing students' learning. According to the results of Zohoor et al, simple expression, having a respectful tone, and self-confidence were the highest priority for students, which is consistent with this study (20). According to Fenn, it is necessary for the communication process to be mutually understood by the teacher and the student in order for the learning-teaching process to be effective (9).

This study also represented that the appearance of the teacher in the classroom affects learning. Dearakhshan et al study at Mashhad University of Medical Sciences showed that students' standards for a good teacher include communication skills, seeking for knowledge, teaching skills, evaluation skills, and personal and physical characteristics

(21). In the study done by Ahmad Ghadami et al, from the students' point of view, the educational and moral characteristics of the teacher, such as having justice in dealing with students, maintaining respect for students, mastering scientific concepts and curriculum, experience, appropriate openness, humbleness and modesty, confidentiality and trustworthiness, patience and up-to-date knowledge of the teacher were the most important factors in communication while age and gender, appearance and type of teaching were not very effective in this regard (22).

The present study showed that the appropriate relationship between teacher and student and the teacher's interest in teaching has a positive effect on learning process. West's study also showed that teacher assistance to students, teacher knowledge, and teacher interest in class activities has a positive effect on increasing learning. The study also showed that unexplained strictness, unwanted aggressive behavior, unrealistic expectations, and inappropriate affection have a negative impact on students' learning which is consistent with this study (23).

The current study also demonstrated that the teacher's kindness in the classroom and attention to individual differences have a positive effect on the learning process. In Sattari study, it has been mentioned that paying attention to the component of communication power creates a friendly and interactive environment which causes no discrimination in the classroom (24).

This study showed that the teacher's attention to students' individual differences is effective in increasing physiology learning. In the study of Mohammadi et al, teachers were asked to provide different teaching styles according to the student's wishes and according to the individual differences of the students to provide any support in relation to their particular style (25).

The present researchers concluded that being an up to date teacher is effective in increasing physiology learning. In the study of Soltani et al also it is stated that students pay a lot of attention to the teacher's teaching method and they look for ways to be creative and innovative (26).

This study also showed that the intimate and appropriate relationship between teacher and student, as well as the openness and kindness of the teacher in the classroom, increases the effective learning of physiology, which is consistent with the study of Krah et al (27).

Also, according to the results of this study, being an up to date teacher, the art of speaking, and respect for the student's personality in the classroom increase the effective learning of physiology, which is consistent with the study of Mir Saeed et al, unlike this study, physical characteristics such as gender and age have little to do with learning (28).

The present study showed that the flexibility of the teacher is effective in increasing the learning of physiology, which is consistent with the study of Karimi et al (29).

It would be worthy to mention that the power of expression of the teacher and mastery of the subject of teaching are important factors affecting the learning of physiology, which is consistent with the study of Vakili et al (30).

As another result of this study, students' participation during teaching has a great impact on increasing student learning,



which is also discussed in the article by Jenkins, that student participation, whether in the form of Face-to-face questions in the classroom or in the form of a conference presentation, has a significant impact on increasing student learning (31). The present study also showed that the humor and tenderness of the teacher and the cheerfulness and openness of the teacher are effective factors in increasing the learning of physiology, which has been mentioned in the study of Brandon et al (32).

Among the limitations of this study was the small sample size of the participants, which is recommended to be conducted in all universities of medical sciences in the country with a larger sample size.

The results obtained regarding the highest scores and the correct communication skills between teacher and student which were most effective in better learning physiology lessons, respectively, were: teacher's scientific mastery, teacher's expression, respect for the student's personality by the teacher, teacher's up to dateness, teacher's flexibility, teacher's sobriety, teacher's appropriate class management, teacher's high self-confidence, teacher's patience, teacher's

kindness, teacher's interest in teaching, teacher's sense of humor and the lowest score was given to these options, respectively (from low to high): the stubbornness of the teacher, the strictness of the teacher, and the seriousness of the teacher.

**Ethical Considerations:** Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors. This study was approved by the Research Ethics Committees of Abadan University of Medical Sciences (IR.ABADANUMS.REC.1399.001).

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