



Comparing the Effects of Early Clinical Exposure on the Attitude and Motivation of First-year Medical Students from Ilam University of Medical Sciences Based on Video-based Education and Learning-in-Hospital Settings Methods

Ali Sharifi ¹, Masoumeh Shohani ^{2,*}, Leili Abedi Gheshlaghi ³ and Elhm Shafiei ⁴

¹Department of Internal Medicine, School of Medicine, Ilam University of Medical Sciences, Ilam, Iran

²Department of Nursing, Faculty of Nursing and Midwifery, Ilam University of Medical Sciences, Ilam, Iran

³Non-Communicable Diseases Research Center, Bam University of Medical Sciences, Bam, Iran

⁴Non-Communicable Diseases Research Center, Ilam University of Medical Sciences, Ilam, Iran

*Corresponding author: Department of Nursing, Faculty of Nursing and Midwifery, Ilam University of Medical Sciences, Ilam, Iran. Email: msh282000@gmail.com

Received 2022 May 06; Revised 2022 August 19; Accepted 2022 October 04.

Abstract

Background: Exposure to an unfamiliar clinical environment is highly important for medical students since it affects their attitudes.

Objectives: This study aimed to determine the effect of implementing a short course of familiarity with the clinical environment through video-based education and learning-in-hospital settings on the attitudes of first-year medical students.

Methods: In the present quasi-experimental study with a pretest-posttest design, 59 first-year medical students were divided into two groups of "learning-in-hospital settings" and "video-based education". Students' attitudes and motivations were measured using questionnaires, and the obtained data were analyzed using SPSS 22.

Results: The attitude of most students from learning-in-hospital settings group was positive before and after the exposure. The attitude of most students from the video-based education group, on the other hand, was positive after watching the video while it was negative before the intervention; this difference, however, was not statistically significant ($P = 0.1$). In pre-exposure and post-exposure stages, the motivation of students in video-based education group was higher than that of students in learning-in-hospital settings group, but this difference was not statistically significant ($P = 0.6$). Female students in video-based education group had a higher positive attitude ($P = 0.02$) than male students ($P = 0.01$) before and after the exposure, and were highly motivated.

Conclusions: Early clinical exposure to learning-in-hospital settings and, particularly, to video-based education may have been an effective factor contributing to motivating and encouraging the medical students.

Keywords: Early Clinical Exposure, Attitude, Motivation, Medical Students

1. Background

About a century ago and when the medical education was split up into pre-clinical and clinical stages, an urgent need arose regarding the development of a separate pre-clinical course for clinical education based on basic sciences (1). Over time, the lack of ethical issues, attitudes, and medical skills in curriculum of medical education seemed incompatible with the principles of professionalism in the 21st century, principles that emphasize the importance of training physicians with communication skills and meeting the needs of society (2). About two decades ago, therefore, the General Medical Council of the United Kingdom asked the world's medical schools to include the basic clin-

ical skills in medical curriculum, with particular emphasis on training qualified physicians (3). Hence the courses of early clinical intervention were designed, in which the term "exposure" was defined as a genuine and authentic human difference in the clinical environment or society designed for learning the concept of health, illness, disease, and professional role (2).

Fortunately, early clinical intervention has been recently designed and implemented in a number of universities of medical sciences in Iran. Furthermore, this program has occupied a special place in the revised general medicine curriculum in the basic sciences. The attitude of the learners following this curriculum plays an important

role in planning the curriculum, providing more facilities, creating a motivating educational environment, and providing an efficient planning environment for training the qualified physicians (4).

Several studies have reported the positive effects of this program, including the increased motivation (5, 6), positive attitude towards the medical profession (4), medical education (3), satisfaction with basic science courses, understanding the social components affecting health, and understanding clinical thinking (7). Some studies, on the other hand, have produced contradictory results and found no positive change in students' attitudes toward basic sciences (6), communication skills (7), and the medical profession (3).

Considering the facts that the negative attitudes towards medicine are formed in the first and second years of education (8) and that the positive effects of a course of familiarity and early intervention to the clinical environment are now recognized (9), it can be said that the existence of such courses in the first year of medicine can positively affect the motivation and attitude of students as well as their later academic performance. This can even provide students with a more accurate picture of the medical profession and offer them a good opportunity to learn about the profession, which is not possible in many other fields (10).

In addition, the small educational environment of many hospitals and the lack of capacity to accept a large number of basic science students and other higher education students simultaneously, which may create many problems such as student overpopulation as well as disruption of patient treatment and students' education, can negatively affect students' perspectives when presented with practical lessons.

2. Objectives

Two ways to address the problem are implementing virtual education and showing documentary films aiming at portraying the clinical environment for first-year medical students. This study, therefore, was conducted to evaluate the effect of implementing a short course of familiarity with and observation of the clinical environment on students' attitudes toward medical profession and education in the first year of education.

3. Methods

3.1. Study Design, Setting, and Participant

The present study was a quasi-experimental one with a pretest-posttest design. In this study, 59 first-year medi-

cal students of Ilam University of Medical Sciences participated voluntarily. They were randomly assigned into two groups of "learning-in-hospital settings" and "video-based education" using a table of random numbers. This course was held in the first semester 2019 for 4 days from 8:00 AM to 1:00 PM in Shahid Mostafa Khomeini Hospital, Ilam University of Medical Sciences.

3.2. Inclusion and Exclusion Criteria

All first-year medical students willing to participate in the study were included. However, students failing to attend the groups' training classes and complete the questionnaire were excluded from the study.

3.3. Data Collection Tool and Technique

Two researcher-made questionnaires on students' attitudes and strength of motivation were used in this study. The questionnaires had been developed based on literature review. The students' attitudes questionnaire had 7 items graded based on a five-point Likert scale from strongly disagree = 1 to strongly agree = 5, and the strength of motivation tool had 16 items graded based on a five-point Likert scale from very low = 1 to very high = 5.

The face validity of questionnaires was determined with help from 20 medical students and 10 faculty members of medicine faculty. To this end, they were asked to express their opinions regarding the importance of each question in the questionnaires. For each question, three options of "important", "somewhat important", and "not important" were considered. In order to assess the content validity qualitatively, points assigned to items such as compliance with grammar and using appropriate words were examined by five faculty members. After the collection of panel group's opinions, the necessary changes were made to the questionnaires. In addition, the content validity ratio (CVR) and content validity index (CVI) of the questionnaires were assessed regarding the necessity of an item inclusion based on the responses and three characteristics of clarity, ambiguity, appropriateness or relevance of items, respectively. Then, the questionnaires were sent to 10 faculty members of the nursing faculty. The reliability of the questionnaires was calculated adopting a split-half method and using Spearman correlation coefficient.

As for the intervention group (learning-in-hospital settings), a 4-day course with similar turns was designed in the form of four groups after making necessary arrangements with the hospital manager. Each group including 6 or 7 students was monitored and guided by a clinical supervisor. The program in each group consisted of two days attendance at hospital units with professor rounds, one day at teaching clinics, and one day at the emergency department.

The day before the project started, a briefing session was held and students became familiar with the title and objectives of the project to the extent that their pre-test response was not affected. They were also familiarized with their tasks during the course as well as with the different programs and activities in each group. In this session, students' questions about the length of the course, their tasks in each group, and different parts of the project were answered.

In this training course, no professional activities or special skills were presented to the students and only the execution of different educational levels and the work methods in the hospital were introduced and a situation was simulated so that the students experienced the real conditions of the clinical environment.

In the stage of familiarity with hospital ward, students were presented with the methods of bedside learning as well as with the approach professors adopt to deal with the students, patients, and different components of a teaching hospital. They were also allowed to observe the implementation of therapeutic and diagnostic procedures for the patients, learn about the role and duties of the professors, assistants, interns, and students in various stages, and deal with invasive diagnostic and treatment procedures.

In addition, students were allowed to observe and experience the difference between the clinical students and the patients and during their observations, therefore, they learned about the methods the interns adopted in order for inquiring about the patient's medical history and performing physical examinations.

By attending the hospital clinic, the students learned about the methods of patient treatment, the responsibilities each student, intern, assistant, and professor had in the teaching clinic, as well as the medical profession and doctor-patient difference in a more tangible way.

While in the emergency department, they were allowed to visit various emergency units and observe the condition of referred patients as well as the initial medical and diagnostic procedures.

At the end of the final day, the students were asked to answer the post-test questions in a session and discuss the methods for conducting the course as well as their impressions and opinions with the researchers.

As for the video-based education group, a short video was made after making necessary arrangements with the security unit and hospital manager as well as ensuring patients' privacy, which included the explanations of the clinical supervisor about the field of medicine, different courses for medical students, health care system in Iran, and all units of the hospital. After making arrangements with the Medical Education Development Center of the University, the film was played for students from the video-

based education group in the central hall and, then, they were asked to answer the post-test questions. In this session, the clinical supervisor and the students discussed the methods of conducting the course and expressed their perceptions and opinions.

Ethical consideration: This research was carried out after obtaining the permission from the research council of Ilam University of Medical Sciences and the approval from the ethics committee (ethics code: ir.medilam.rec.1398.025), and after making arrangements with the hospital security and management unit.

3.4. Data Analysis

After completion of the questionnaires, the collected data were entered into SPSS 22 software. The significance level was set at $P < 0.05$. Descriptive statistics for qualitative variables were reported on a frequency (percentage) basis. The attitude score was divided into two groups based on "visual binning" in SPSS 22 (i.e., below 11 as negative attitude, and above 11 as positive attitude). The motivation score was categorized into three subgroups as low (below 22), moderate (between 22 and 27), and high (above 27). The McNemar test was performed in pre- and post-intervention stages to compare the attitude of students from "learning-in-hospital settings" and "video-based education" groups. Furthermore, the marginal homogeneity test was used to compare the motivation of students before and after the intervention in the given groups. A chi-square test was carried out in the pre-exposure stage to compare the attitude and motivation of students in the two groups. A chi-square test was also conducted in the post-exposure stage to compare the attitudes and motivations of students in the groups. A chi-square test was performed before and after the exposure to examine the relationship between gender and the attitude/motivation of first-year medical students in the two groups.

4. Results

In the present study, a total of 59 first-year medical students were examined. Of these 59 students, 26 ones (42.3% male and 57.7% female) were included in learning-in-hospital settings group and 33 ones (60.6% male and 39.4% female) were assigned to video-based education group.

After assessing the face validity of the attitude/motivation questionnaire based on the opinions of experts and medical students, the order and sequence of some items were changed. In the attitude questionnaire, one item was removed due to having a theme similar to that of another item (similarity). The questions

with more than 81% agreement were not removed from the questionnaire. The CVR for attitude questions was over 0.80 and the CVI of them was between 0.6 and 0.8. In addition, the CVR and CVI of the motivation questionnaire were over 0.7 and 0.75, respectively. Cronbach's alpha and Guttman split-half coefficients of the attitude questionnaire were 0.6 and 0.7, respectively. Cronbach's alpha and Guttman split-half coefficients in motivation questionnaire were found to be 0.9 and 0.91, respectively.

The means (standard deviation) of motivation scores for learning-in-hospital settings group in pre- and post-exposure stages were 8.8 (3.6) and 1.5 (0.6), respectively. The means (standard deviation) of motivation for video-based education group in pre- and post-exposure stages were 10.1 (3.5) and 1.6 (0.6), respectively.

The means (standard deviation) of attitude scores for learning-in-hospital settings group in pre- and post-exposure stages were 12.7 (3.4) and 12.2 (3.6), respectively. The means (standard deviation) of attitude scores for the video-based education group in pre- and post-exposure stages were 10.4 (3.7) and 11.5 (3.7), respectively.

As shown in [Table 1](#), 58% of the students in learning-in-hospital settings group had a positive attitude in pre-exposure stage, while only 36% of the students in video-based education group displayed a positive attitude; however, this difference was not statistically significant ($P = 0.08$). As for the post-exposure stage, 54% of students in the two groups had a positive attitude, but the difference was not statistically significant ($P = 0.58$). There was no significant difference between the two groups in terms of pre-exposure and post-exposure attitudes ($P = 0.1$).

In the pre-exposure stage, about 23% of students from learning-in-hospital settings group and 30% of students from video-based education group were highly motivated; the difference, however, was not statistically significant ($P = 0.18$). In the post-exposure stage, the motivation of students in video-based education group was higher than that of students in learning-in-hospital settings group; however, this difference was not statistically significant ($P = 0.09$) ([Table 1](#)).

As shown in [Table 2](#), there was no significant difference between male and female students in learning-in-hospital settings group regarding pre-exposure attitude ($P = 0.24$) and post-exposure attitude ($P = 0.18$). In video-based education group, however, female students displayed higher positive attitude than male students in both pre-exposure ($P = 0.02$) and post-exposure ($P = 0.03$) stages.

Furthermore, the motivation of female students was higher than that of male students in both pre-exposure stage ($P = 0.04$) and post-exposure stage ($P = 0.01$). No significant difference was observed between male and female students of learning-in-hospital settings group in

pre-exposure stage ($P = 0.07$) and post-exposure stage ($P = 0.2$) regarding the motivation ([Table 3](#)).

5. Discussion

This study aimed to determine the effect of implementing a short course of familiarity with the clinical environment through video-based education and learning-in-hospital settings on the attitudes of first-year medical students. According to our study results, the attitude of most students in the direct exposure group was positive both before and after the intervention; the attitude of most students in the video-based education group, on the other hand, was positive after watching the video but it was negative before the intervention, though this difference was not statistically significant. In the pre-exposure stage, moreover, about 23% of the students from learning-in-hospital settings group and 30% of the students from video-based education group were highly motivated. In the post-exposure stage, the motivation of students in video-based education group was higher than that of students in learning-in-hospital settings group, but this difference was not statistically significant. Previous studies have demonstrated that a negative attitude towards medicine is formed among students in the first and second years of education (8), while several reports have documented the positive effects of a course of familiarity with and an early exposure to the clinical environment (9). It can be argued that the inclusion of such courses in the first-year educational curriculum of medical sciences can positively affect the motivation and attitude of students as well as their later academic performance. According to Shirzad et al. (5), the positive attitude of Iranian students about the importance of history and examination versus para-clinical examinations, duties of different levels of medical staff, duties of physicians towards patients, patients' rights in hospital, and diagnostic-therapeutic procedures was increased after implementing a course of early exposure. The positive effect of adopting this method on the attitude of first-year students was confirmed by another study (11). Therefore, it can be argued that early clinical exposure as a new trend and approach in medical education, especially in general medicine and family medicine education, may increase the students' motivation to deal with the clinical environment (12). The inconsistencies found among the results of different studies can be attributed to the differences in the number of samples, the methods adopted for training students, and the learning environment.

Our study results revealed that in the video-based education group, female students had higher positive attitude and motivation compared to male students in both

Table 1. Comparing the Results of Investigating Attitude and Motivation of First-year Medical Students of Learning-in-Hospital Settings and Video-based Education Groups in Pre-intervention and Post-intervention Stages^{a, b}

Variables	Learning-in-Hospital Settings Group	Video-based Education Group	P-Value***
Attitude frequency			
Pre-intervention			0.08
Positive	15 (57.7)	12 (36.4)	
Negative	11 (42.3)	21 (63.6)	
Post-intervention			0.58
Positive	14 (53.8)	18 (54.5)	
Negative	12 (46.2)	15 (45.5)	
P-value*	0.11	0.9	
Motivation frequency			
Pre-intervention			0.18
Low	11 (42.3)	9 (27.3)	
Moderate	9 (34.6)	14 (42.4)	
High	6 (23.1)	10 (30.3)	
Post-intervention			0.09
Low	12 (46.2)	12 (36.4)	
Moderate	9 (34.6)	7 (21.2)	
High	5 (19.2)	14 (42.4)	
P-value**	0.35	0.1	

^a Values are expressed as No. (%).

^b * P-value based on Mac Nemar test; ** P-value based on marginal homogeneity test; *** P-value based on chi-square test.

Table 2. Determining the Difference Between Gender and Attitude of First-year Medical Students of Two Groups in Pre-intervention and Post-intervention Stages^{a, b}

Groups	Pre-intervention Attitude			Post-intervention Attitude		
	Positive	Negative	P-Value*	Positive	Negative	P-Value*
Learning-in-hospital settings			0.24			0.36
Male	5 (45.5)	6 (54.5)		6 (54.5)	5 (45.5)	
Female	10 (66.7)	5 (33.3)		6 (40)	9 (60)	
Video-based education			0.02**			0.03**
Male	4 (20)	16 (80)		6 (30)	14 (70)	
Female	8 (61.5)	5 (30.5)		9 (69.2)	4 (3.80)	

^a Values are expressed as No. (%).

^b * P-value based on chi-square test. ** P-value < 0.05 is significant.

pre- and post-exposure stages. In a study by Kojuri et al. (11), it was discovered that basic science students were satisfied with attending the clinical settings and becoming familiar with the different departments. In the given study, increases were found in students' motivation to learn, purposeful educational activities, understanding different theoretical aspects of basic sciences, and recognition of health and sickness. A prolonged medical education and its resulting problems may reduce the motivation of stu-

dents and lead to academic failure of them.

The program, in addition to exerting positive effect on motivation increase, has been also found to have positive effects on the perception of profession (13), psychomotor, and affective domains (14).

A positive attitude towards the career and field of study among students is one of the important factors contributing to the success of students. Several studies investigating this topic in different fields have generated conflicting re-

Table 3. Determining the Difference Between Gender and Motivation of First-year Medical Students of Two Groups in Pre-intervention and Post-intervention Stages^{a, b}

Groups	Pre-intervention Motivation				Post-intervention Motivation			
	Low	Moderate	High	P-Value*	Low	Moderate	High	P-Value*
Learning-in-hospital settings				0.07				0.2
Male	7 (63.6)	2 (18.2)	2 (18.2)		5 (45.5)	4 (36.4)	2 (18.2)	
Female	4 (26.7)	7 (46.7)	4 (26.7)		7 (46.7)	5 (33.3)	3 (20)	
Video-based education				0.04**				0.01**
Male	8 (40)	7 (35)	5 (25)		10 (50)	4 (20)	6 (30)	
Female	1 (7.7)	7 (53.8)	5 (35.8)		2 (15.4)	3 (23.1)	8 (65.1)	

^a Values are expressed as No. (%).

^b * P-value based on chi-square test. ** P-value < 0.05 is significant.

sults in two spectrums, that is, positive results for students of dentistry (15, 16), physiotherapy (17), hygienic (18), operating room (19) but negative results for students of nursing (20). These contradictory results may be attributable to the influence of several factors and variables. In the study by Momenyan et al. (16), for example, the most positive attitude was recorded for students of medicine and dentistry while the most negative attitude was reported for students of hygienic fields, and the relationship between the attitude and some factors of academic failure was found to be significant.

Obviously, the medical education is a stressful process which may have unpleasant consequences for the physical and mental health of the medical students and negatively affect their academic performance (21). This stress together with the acquisition of medical knowledge has a major negative impact on the mental health of medical students and causes them academic stress. In this regard, Alimohammadzadeh et al. reported an academic stress percentage of 19.5% (22). Creating motivation and positive attitude in students depends on various factors including teaching methods adopted by faculty members and learning environment (23). In this regard, Kunanithaworn et al. (24) explored the effects of various internal and external factors (e.g., demographic characteristics, psychological characteristics and mental problems, positive personality characteristics, and perceived social support) on students' motivation to study medicine. They suggested that the depression was a significant factor affecting the motivation, which should be reduced in order for preventing the academic failure of medical students and the decline in quality of their life. In their qualitative study, Mohammadi et al. (25) also investigated the motivational content and process as well as the role of professors as educational facilitators in motivating their students. Furthermore, other factors such as the traditional routines, ineffective evaluations, methods of meeting students' needs, lack of ed-

ucational facilities, and effects of increasing the number of students have been identified as inhibiting factors and challenges that may affect the quality of education.

Early clinical exposure is one of the proposed methods to address the challenge of training medical students studying basic sciences. The lack of proper communication and experience at the time of transition to the clinical environment can arouse a wide range of positive and negative emotions, cause disruption in the formation of basic and applied concepts of basic sciences, and have a negative effect on the motivation and development of students' abilities; accordingly, 80% of the students participating in the study by Kojury et al. (11) stated that the presentation of the early clinical intervention program had been effective in creating a new attitude towards the medical profession.

Overall, early clinical exposure develops empathy between patients and students as well as helps students learn about the social and psychological aspects and real life of people, increase their attitude and self-awareness towards studying the required courses, and feel confident when dealing with patients. Students' satisfaction with the early clinical exposure program improves the quality of basic science courses and reduces students' stress when performing medical tasks.

5.1. Limitations

In the present quasi-experimental study, a limited sample size and the lack of a control group prevented obtaining more accurate judgments and generalizing the results of our study. Therefore, it was recommended that further studies with a larger sample size and a control group should be conducted in order for comparing the performance of students more accurately.

5.2. Application and Suggestions

According to our study results, it was concluded that the implementation of a short-term course of early clinical

cal exposure may have increased students' motivation, facilitated their learning and, therefore, improved their academic performance. It was suggested that the early clinical exposure program should be considered as a part of medical students' training programs, since this exposure was found to help students become familiar with hospital environment, establish an effective interpersonal communication with patients, improve their awareness and understanding of medical techniques, get rid of the monotonous process of studying in university environments, enhance their motivation for and interest in learning course materials, understand patients accurately and diagnose their diseases correctly, develop a proper perspective and attitude towards medical profession, boost their self-confidence, as well as increase the sense of responsibility.

Acknowledgments

The authors are grateful to clinical professors, hospital managers, and students for their cooperation on and participation in the study. They would also like to thank the Vice Chancellor for Medical Research and Technology of Ilam University of Medical Sciences, and Clinical Research Center of Shahid Mostafa Khomeini Hospital.

Footnotes

Authors' Contribution: Design: MSh, ASH, ESh, LA; Acquisition of data: Ash; Analysis and interpretation of data: LA, MSh; Drafting of the article: MSh, LA.

Conflict of Interests: There is no conflict of interests between authors regarding the publication of this article (in cases of funding or research support, employment, personal financial, interests stocks or shares in companies, consultation fees, patents, personal or professional relations with organizations and individuals (parents and children, wife and husband, family relationships, etc., and unpaid membership in a government or non-governmental organization). In addition, I am not one of the editorial board members or a reviewer of this journal.

Data Reproducibility: The dataset presented in the study is available on request from the corresponding author during submission or after its publication. The data are not publicly available due to confidentiality.

Ethical Approval: This study was approved under the ethical approval code of [IR.MEDILAM.REC.1398.025](#).

Funding/Support: This study did not receive any financial support for the research, authorship, and publication.

References

- Dornan T, Littlewood S, Margolis SA, Scherpbier A, Spencer J, Ypinazar V. How can experience in clinical and community settings contribute to early medical education? A BEME systematic review. *Med Teach*. 2006;**28**(1):3-18. [PubMed ID: [16627313](#)]. <https://doi.org/10.1080/01421590500410971>.
- Dornan T, Bundy C. What can experience add to early medical education? Consensus survey. *BMJ*. 2004;**329**(7470):834. [PubMed ID: [15472265](#)]. [PubMed Central ID: [PMC521574](#)]. <https://doi.org/10.1136/bmj.329.7470.834>.
- Swamy M, Bloomfield TC, Thomas RH, Singh H, Searle RF. Role of SimMan in teaching clinical skills to preclinical medical students. *BMC Med Educ*. 2013;**13**:20. [PubMed ID: [23394435](#)]. [PubMed Central ID: [PMC3572432](#)]. <https://doi.org/10.1186/1472-6920-13-20>.
- Afra B, Alizadeh M, Taghavi S, Jabbari Bayrami H, Yari J. The Impact of Early Clinical Exposure on the Knowledge and Attitude of Basic Sciences Medical Students at Tabriz University of Medical Sciences. *Res Dev Med Educ*. 2015;**4**(1):55-60. <https://doi.org/10.15171/rdme.2015.009>.
- Shirzad H, Moezzi M, Khadivi R, Sadeghi B, Madhkhan A. Effect of early clinical exposure on attitude and performance of first year medical students. *J Shahrekord Univ Med Sci*. 2011;**13**(1):69-78.
- Littlewood S, Ypinazar V, Margolis SA, Scherpbier A, Spencer J, Dornan T. Early practical experience and the social responsiveness of clinical education: systematic review. *BMJ*. 2005;**331**(7513):387-91. [PubMed ID: [16096306](#)]. [PubMed Central ID: [PMC1184253](#)]. <https://doi.org/10.1136/bmj.331.7513.387>.
- Seifrabai MA, Esna Ashari M, Maghsoodi F, Esna Ashari F. [The Effect of Early Clinical Exposure Program on Attitude Change of Undergraduate Medical Students toward their preparation for Attending Clinical Setting in Internal Medicine, Surgery and Pediatrics Wards during 2013-2014]. *Avicenna J Clin Med*. 2016;**22**(4):323-30. Persian.
- Rooks L, Watson RT, Harris JO. A primary care preceptorship for first-year medical students coordinated by an Area Health Education Center program: a six-year review. *Acad Med*. 2001;**76**(5):489-92. [PubMed ID: [11346530](#)]. <https://doi.org/10.1097/00001888-200105000-00024>.
- Lam TP, Irwin M, Chow LW, Chan P. Early introduction of clinical skills teaching in a medical curriculum-factors affecting students' learning. *Med Educ*. 2002;**36**(3):233-40. [PubMed ID: [11879513](#)]. <https://doi.org/10.1046/j.1365-2923.2002.01142.x>.
- Kibble JD. A peer-led supplemental tutorial project for medical physiology: implementation in a large class. *Adv Physiol Educ*. 2009;**33**(2):111-4. [PubMed ID: [19509396](#)]. <https://doi.org/10.1152/advan.90212.2008>.
- Kojury J, Amini M, Rivaz S, Dehghani M, Rivaz M, Doostkam A. The Effect of Early Clinical Exposure Program on First Year Medical Students' attitudes and Function in Shiraz University of Medical Sciences. *Yazd Cen Stud Dev Med Sci Educ*. 2016;**11**(1):2-10.
- Basak O, Yaphe J, Spiegel W, Wilm S, Carelli F, Metsemakers JF. Early clinical exposure in medical curricula across Europe: an overview. *Eur J Gen Pract*. 2009;**15**(1):4-10. [PubMed ID: [19229784](#)]. <https://doi.org/10.1080/13814780902745930>.
- Ebrahimi Rigi Z, Sabzevari S, Khajehali N, Brohanzahi K, Ebrahimi H, Dadpisheh S, et al. [Effect of early clinical exposure in peer assisted learning on the clinical practice of nursing students]. *J Educ Strateg Med Sci*. 2018;**12**(1):1-6. Persian. <https://doi.org/10.29252/edcbmj.12.01.09>.
- Govindarajan S, Vasanth G, Kumar PA, Priyadarshini C, Radhakrishnan SS, Kanagaraj V, et al. Impact of a Comprehensive Early Clinical Exposure Program for Preclinical Year Medical Students. *Health Prof Educ*. 2018;**4**(2):133-8. <https://doi.org/10.1016/j.hpe.2017.06.002>.
- Jafari A, Gharagozloo P, Baghalian A. [Evaluation of Tehran university of medical sciences dental students' attitude toward their field of study and future]. *J Dent Med*. 2020;**33**(2):116-25. Persian.

16. Momenyan S, Abedinipoor A, Seddighian T, Taheri L. Evaluation of Attitude of Students toward Their Discipline and Its Relationship with Some Factors of Academic Failure in Students of Qom University of Medical Sciences in 2015. *J Med Educ Dev*. 2019;**11**(32):68-78. <https://doi.org/10.29252/jedc.11.32.68>.
17. Ghourbanpour A, Talebi GA, Taghipour M. [Attitude of first-year students of physiotherapy towards their field of study and future career in Babol University of Medical Sciences]. *Med Educ J*. 2018;**6**(1):28-34. Persian.
18. Khammarnia M, Shokohian F, Eskandari S, Kassani A, Setoodezadeh FATEMEH. [Students' attitudes toward their education and job prospects in Zahedan health school in 2015]. *J Rafsanjan Univ Med Sci*. 2017;**15**(11):1003-14. Persian.
19. Talebi M, Raziei F, Seif M, Ahmadinia H. Attitude of Operating Room Students of Hamadan University of Medical Sciences toward Their Discipline and Future Career during the Corona Virus Epidemic. *Journal of Health and Care*. 2021;**23**(2):156-64. <https://doi.org/10.52547/jhc.23.2.156>.
20. Marzban A, Marzban H. Attitudes of nurse students toward their discipline and future career in Hormozgan University of medical sciences. *Dev Strateg Med Educ*. 2018;**5**(2):22-32.
21. Waterman LZ, Weinman JA. Medical student syndrome: fact or fiction? A cross-sectional study. *JRSM Open*. 2014;**5**(2):1-9. [PubMed ID: 25057368]. [PubMed Central ID: PMC4012647]. <https://doi.org/10.1177/2042533313512480>.
22. Alimohammadzadeh K, Akhlaghdoust M, Bahrainian SA, Mirzaei A. Survey on Mental Health of Iranian Medical Students: A Cross-sectional Study in Islamic Azad University. *Shiraz E-Med J*. 2017;**18**(7). <https://doi.org/10.5812/semj.14929>.
23. Orsini C, Evans P, Jerez O. How to encourage intrinsic motivation in the clinical teaching environment?: a systematic review from the self-determination theory. *J Educ Eval Health Prof*. 2015;**12**:8. [PubMed ID: 25855386]. [PubMed Central ID: PMC4397857]. <https://doi.org/10.3352/jeehp.2015.12.8>.
24. Kunanithaworn N, Wongpakaran T, Wongpakaran N, Paiboonsithiwong S, Songtrijuck N, Kuntawong P, et al. Factors associated with motivation in medical education: a path analysis. *BMC Med Educ*. 2018;**18**(1):140. [PubMed ID: 29914462]. [PubMed Central ID: PMC6006981]. <https://doi.org/10.1186/s12909-018-1256-5>.
25. Mohammadi M, Bagheri M, Jafari P, Bazrafkan L. Challenges and Motivational Facilitators of Social Accountability in Medical Students of Shiraz University of Medical Sciences: A Qualitative Study. *Shiraz E-Med J*. 2020;**22**(3). <https://doi.org/10.5812/semj.97422>.