

Healthcare Staff's Attitude toward the E-learning On-the-job Courses and its Association with Self-Assessment Effectiveness of these Programs

Asiyeh Shabankareh¹, MSc;^{ORCID} Mitra Amini^{1,2}, MD;^{ORCID} Nahid Zarifsanaiey³, PhD;^{ORCID} Mohammad Mahdi Parvizi⁴, MD, PhD, MPH^{ORCID}

¹Department of Medical Education, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

²Clinical Education Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

³Department of E-learning, Virtual School and Center of Excellence for e-Learning in Medical Sciences, Shiraz University of Medical Sciences, Shiraz, Iran

⁴Molecular Dermatology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

ABSTRACT

Background: Healthcare workers are frequently too preoccupied with their jobs to attend regular educational sessions. E-learning is one of the most effective ways to empower healthcare workers and better utilize their skills. In the present study, we aimed to measure the correlation between the attitude toward E-learning and teaching effectiveness through self-assessment after the E-learning courses for healthcare staff.

Methods: In this cross-sectional study, all the healthcare staff working in Bushehr urban healthcare center, Bushehr, Iran, were enrolled via the census sampling method from April to June 2019 (n=219). The topics covered in the E-learning courses were poisoning, introduction to the pre-hospital management system, occupational risks, infection control, and psychological wellbeing. We used the Attitude toward E-learning questionnaire, consisting of 20 questions, in addition to Self-assessment of Teaching Effectiveness questionnaire, comprising 35 questions. SPSS software version 21 was utilized for data analysis.

Results: Overall, 102 (46.6%) men and 117 (53.4%) women were enrolled in the study. The total mean score of the attitude toward E-learning on-the-job courses was 62.86 ± 6.14 and the total mean score of self-assessment of teaching effectiveness was 115.4 ± 26.75 . According to the obtained results, there was a weak, positive, significant correlation between these two scores ($r=0.20$, $P=0.003$). The mean score of the attitude toward E-learning on-the-job courses was significantly lower in the high-educated staff in comparison with that in the other staff ($P<0.001$).

Conclusion: We observed a higher score for attitude toward E-learning on-the-job courses among the health care staff compared with the score of self-assessment of teaching effectiveness. In order to create a positive attitude in employees about virtual courses, policymaking can contribute to increasing the effectiveness of those courses and improving employee performance.

Keywords: E-learning, Self-assessment, Virtual course, Attitude, Medical staff

*Corresponding author:
Mitra Amini, MD; Clinical Education Research Center, Sina and Sadra Hall, Neshat Street, Shiraz, Iran
Email: mitraamini51@yahoo.com

Please cite this paper as:
Shabankareh A, Amini M, Zarifsanaiey N, Parvizi MM. Healthcare Staff's Attitude toward the E-learning On-the-job Courses and its Association with Self-Assessment Effectiveness of these Programs. Interdiscip J Virtual Learn Med Sci. 2022;13(2):93-100.doi:10.30476/IJVLMS.2022.93867.1128.

Received: 20-3-2022

Revised: 6-4-2022

Accepted: 19-4-2022

Introduction

E-learning has become a necessary component of medical education in recent years. Although different people have varied interpretations of the term “E-learning,” it simply refers to the use of technology for educational purposes (1). A series of training activities employing an electronic technology, such as audio, video, computer, or network, is referred to as e-learning. Smart and active learning may lead to changes in teaching, as well as social progress and the stabilization of information and communication technologies (2).

Healthcare workers are busy at their workplaces and cannot usually participate in conventional educational programs (3). E-learning is one of the alternatives for educationally empowering this demographic and better utilizing their potential. Because training things are compiled once and utilized frequently in numerous places, this development would be extremely beneficial to saving time and money (4). A number of studies have shown that E-learning is as effective as conventional training and even more efficient, and learners are satisfied with their education (5). These approaches have the advantages of being available at any time and in any location, lowering training expenses, increasing flexibility, and coordinating with job tasks while providing practical and fulfilling training (6-8). Many organizations have recently been drawn to these benefits (9, 10).

Tensions and stress are common when new technologies are implemented, and E-learning is no different (1). When their tutors do not provide feedback, students may feel anxious and perplexed; they may also confront ambiguous instructions. However, not being concerned about technology’s drawbacks can lead to a more positive attitude among students and a better level of satisfaction with this method of instruction. (11).

Assessing training effectiveness means determining how training improve the staff’s skill to do their duty in an organization (12). Moreover, self-assessment is essential in

the majority of evaluation systems and is a practical step that can measure participants’ reactions to training effectiveness (13). In this regard, Ward et al. suggested that self-assessment is the capability of precisely assessing one’s strengths and weaknesses (14).

There are certain papers in which the researchers investigated E-learning as an intervention and assessed the participants’ knowledge and satisfaction considering the E-learning program. Abendroth et al. showed that designing a self-studying E-learning module for last-year medical students based on real cases increased the score of their self-assessment in decision making (15). In the study of Kang et al., an E-learning program about asthma guidelines improved the awareness of the participants about asthma management (16). Furthermore, a randomized controlled trial conducted by Kulier et al. revealed that E-learning was relatively as effective as the lecture-based course, and the change in attitude was not different between the two groups (17). The use of technological advancements in medical education, especially E-learning, has increased over the recent years (18, 19); thus, assessing the level of effectiveness and users’ attitude about this educational methodology is of great importance. To the best of our knowledge, there is scarce evidence concerning the association between the attitude of healthcare staff toward E-learning on-the-job courses and their self-assessment effectiveness of these programs in Iran. Therefore, this study aimed to measure the relationship between the attitude toward E-learning and teaching effectiveness through self-assessment among healthcare staff.

Methods

Study Design, Setting, Participants, and Sample Size

Eligible subjects in this cross-sectional study comprised healthcare staff working in Bushehr urban healthcare center, Bushehr, Iran. The study samples included all the healthcare staff taking continuous professional development courses from April to June 2019

(n=219). They were enrolled to the study using the census method. The inclusion criteria were participating in E-learning on-the-job courses at least once, willing to participate in the research, and living in Bushehr, Iran. Unwillingness to continue collaborating in the study was the exclusion criteria. All the staff accepted to fulfil the questionnaires, and no missing data were observed in the returned questionnaires

Variables and Measurements

Two paper-based questionnaires were used in this study, which took a total of about 15 minutes to be completed. The first one was the Attitude toward E-learning questionnaire, designed by Vatan-parast et al.; it consists of 20 questions about attitude in three domains, namely 1) the importance of E-learning, 2) enjoying this type of education, and 3) anxiety during the education. The participants were asked to rate each item based on the lowest 1 (strongly disagree) to the highest 5 (strongly agree). This questionnaire's validity and reliability were determined in the study of VatanParast. with a content validity index of 0.93 and a Cronbach's alpha of 0.85. The attitude is considered positive if the mean score of all the questions is over 60. For each item, the mean score of above 3 is deemed to be positive (20).

Secondly, Self-assessment of Teaching Effectiveness questionnaire was completed by the healthcare staff. This questionnaire contains 35 questions about learning new concepts in a healthcare system and their effectiveness. Its validity and reliability were confirmed in the study of Fathi Vajargah with an Cronbach's alpha of 0.86 for the students and 0.92 for the faculty members. The participants were asked to rate each item based on the lowest 1 (low effectiveness) to the highest 5 (excellent effectiveness). The scores between 35-70 were considered low, 71-105 moderate, and over 105 were considered to be of excellent effectiveness (21).

Statistical Methods

Descriptive statistics, including Mean±SD

and percentage, were calculated. Additionally, the Pearson correlation coefficient, independent sample T-test, one-way ANOVA, and LSD test were employed for statistical analysis. A P-value<0.05 was considered to be significant. We analyzed the data via SPSS version 21.

Results

The findings showed that 102 (46.6%) were men and 117 (53.4%) were women. The mean work experience was 18±8 years and the mean age of the participants was 31.6±3.18 years. Table 1 represents the demographic characteristics of the study subjects.

Table 1: Demographic characteristics of the participants in the study

Variables*	Frequency (%) N=219
Sex	
Men	99 (46.5)
Women	114 (53.5)
Marital status	
Single	47 (21.9)
Married	168 (78.1)
Educational level	
Diploma or below diploma	7 (3.3)
Associate degree	14 (6.6)
Bachelor's degree	83 (39.3)
Masters of science (MSc)	93 (44.1)
Doctorate or higher degree	14 (6.6)

*There were a few data missing in some characteristics

Generally, 144 (65.8%) subject reported that the effectiveness of on-the-job virtual courses was high while 64 (29.2%) and 11(5%) expressed that the effectiveness of these courses was moderate and low, respectively. The mean score of the Attitude questionnaire was 62.86±6.14 from 100, and that for Self-assessment of Teaching Effectiveness questionnaire was 115.4±26.75 from 175. The mean scores of both questionnaires were at a reasonable and positive level. Furthermore, a positive correlation existed between the attitude toward E-learning and self-assessment of teaching effectiveness (Pearson r=0.20, P=0.003).

Table 2: Association between the attitude toward E-learning on-the-job courses and self-assessment of teaching effectiveness with the participants' demographic characteristics

Variable	Attitude toward E-learning on-the-job courses (mean±SD)	P value	Self-assessment of teaching effectiveness (mean±SD)	P value
Sex				
Men	63.37±6.26	0.324	117.9±25.3	0.250
Women	62.53±6.09		113.7±28.2	
Marital status				
Single	61.27±5.80	0.044	113±31.4	0.467
Married	63.32±6.21		116.2±25.4	
Educational level				
Diploma or below diploma	67.28±7.49	<0.001	136±7.82	0.213
Associate degree	68.57±3.58		122.3±6.02	
Bachelor's degree	62.49±6.56		114.1±2.71	
Master's of science (MSc)	62.53±5.65		115.4±3.08	
Doctorate or higher degree	60.14±4.40		109.5±6.92	

As shown in Table 2, there was no statistically significant relationship between sex and attitude toward E-learning ($P=0.324$). The relationship between the attitude to E-learning and the educational level of the healthcare staff indicated a significant difference in terms of the points of view of personnel with different educational degrees ($P<0.001$). We performed LSD test to find the degree of the differences. The test results illustrated that those holding a diploma and post-diploma degree had more positive views than those with higher degrees. Marital status and attitude toward E-learning had a significant correlation ($P=0.044$) and the married participants had more positive attitudes compared to the unmarried ones.

Discussions

The findings demonstrated a substantial positive association between the participants' views about E-learning and their self-evaluation of its efficacy. Furthermore, our study showed that the mean score of attitude toward virtual on-the-job courses was lower among the staff with higher-level education in comparison with that in the other staff.

Students' attitudes, motivation, and acceptance of this teaching style have all been shown to be influenced by E-learning, according to research (22, 23). Karanjam et

al. observed increases in dentistry students' knowledge and attitudes following E-learning training (24). Furthermore, the study done by Al-Omari and Salameh indicated that undergraduate students' perceived value outperformed traditional learning. Male students viewed E-learning as more positive in the study described (25). These results were in line with those of our study. On the other hand, Borhani et al. revealed that although both virtual and conventional education could increase the knowledge among nursing students, the mean attitude score of the nurses in the conventional education group was higher in comparison with that of the virtual education-receiving nurses (26).

E-Learning courses combine a variety of educational methods, materials, and tools to help users learn certain skills and abilities (27); Students, for example, can readily communicate with their teachers and coworkers via social media and online communication platforms. Students can grasp and learn more in-depth and effectively through the usage of instructional multimedia than they could through traditional education. These elements would assist students in immersing themselves in the educational process and improving their learning (28).

These elements may play a key influence in improving students' attitudes toward

E-learning. Educational programs would be more productive and successful if learners had a positive attitude (29). The results of this study revealed a substantial positive association between health care employees' attitudes about E-Learning and their evaluation of its usefulness. According to Cidral et al., people's attitudes toward E-learning can influence their level of success (30). According to Chong et al. E-learning has a favorable and significant impact on learners' attitudes toward this educational modality. Using an interactive and adaptable strategy can help excite students and give them a great impression of educational programs (31). Another study found that students' attitudes toward E-learning have a substantial impact on their achievement in this environment (32).

We also considered the demographic elements that could influence the study's outcomes, such as age, gender, and educational level. The educational level of the health workers showed a substantial association with their perceptions of E-learning, according to the findings. Furthermore, people with lower levels of education had more positive attitudes than those with greater levels of education. Despite the academic level, the rapid rise of E-learning and mobile technologies has raised interest in employing these methods. People with lesser levels of education are more inclined to use E-learning courses, according to studies. This disparity could be due to different expectations from E-learning in different contexts, particularly among health care personnel. It could be due to their drive to learn more about their medical specialty (33). Moreover, this difference can be due to the difference in staff expectations of on-the-job courses among the staff in medical universities; for instance, the staff with a higher level of education, including MSc and PhD, prefer to receive more practical and specialized trainings than on-the-job courses, which require activity and experience in a real educational environment, such as clinics and laboratories. On the other hand, staff with lower-level university degrees typically receive general on-the-job courses;

accordingly, virtual education could be more suitable.

One of the work's strengths is its focus on E-learning, which is one of Iran's and the Eastern Mediterranean Region's research goals (34). Furthermore, in Iran, integrating health and medical education might create an outstanding atmosphere for utilizing the university's power to educate healthcare professionals (35).

Limitations and Suggestions

There were a number of limitations in this study. Primarily, we used self-evaluation to assess teaching efficacy, which may not be as reliable as an objective assessment. Secondly, this was a single-center study; therefore, the authors could recommend designing multi-center studies in order to achieve more generalizable results. Additionally, the effects of the field on the activity of the staff and the level of their academic degrees were not considered in this study due to the small sample size. Hence, the authors could recommend conducting further research with a larger sample size and controlling probable confounding factors, such as the staff's occupational fields and their academic degrees. Finally, further interventional studies and systematic reviews could be suggested in this field.

Conclusion

Overall, this research proved that paying attention to teaching, improving human resources, and productivity enhancement contribute to further efficiency and effectiveness. Since E-learning is a new approach, in which there is a great deal of ambiguity, further research could be suggested so that the achievement of medical education goals in virtual education would be facilitated. Qualitative research could also identify the unknown aspects of the method.

Acknowledgement

The present article was extracted from the thesis by Asiyeh Shabankareh, as the partial fulfilment of the requirements for obtaining

the Master's degree in Medical Education in Shiraz University of Medical Sciences. We would like to express our sincere appreciation to the Vice Chancellor of Research of Shiraz University of Medical Sciences for financially supporting this study (Grant No. 14723).

Authors' Contributions

MA, AS, NZ, and MMP designed the study. AZ collected the data. MA, NZ, and MMP analyzed the data. AS, NZ, and MA drafted the manuscript. MA, NZ, and MMP finalized the manuscript. All the authors reviewed the manuscript and approved the final version. They take full responsibility for the content and writing of this article.

Conflict of Interest: None declared.

Ethical Consideration

Written informed consent was obtained from all the participants. All of them were engaged in the study voluntarily, and their names were not mentioned in the scripts. Moreover, the Ethics Committee of Shiraz University of Medical Sciences approved the protocol of this study (Ethics code: IR.SUMS.REC.1397.614).

Funding/Support

This study was financially supported by the Vice Chancellor of Research of Shiraz University of Medical Sciences (Grant No. 14723).

References

- 1 Ellaway R, Masters K. AMEE Guide 32: e-Learning in medical education Part 1: Learning, teaching and assessment. *Medical teacher*. 2008;30(5):455-73. doi: 10.1080/01421590802108331. PubMed PMID: 18576185.
- 2 Mayer R. *The Cambridge Handbook of Multimedia Learning*. Cambridge: Cambridge University Press; 2005. doi: 10.1017/CBO9780511816819.
- 3 Ariza-Montes A, Muniz NM, Montero-Simó MJ, Araque-Padilla RA. Workplace bullying among healthcare workers. *International journal of environmental research and public health*. 2013;10(8):3121-39. doi: 10.3390/ijerph10083121. PubMed PMID:2388762. PubMed Central PMCID:PMC3774428.
- 4 McDonald EW, Boulton JL, Davis JL. E-learning and nursing assessment skills and knowledge—An integrative review. *Nurse education today*. 2018;66:166-74. doi: 10.1016/j.nedt.2018.03.011. PubMed PMID: 29705504.
- 5 Voutilainen A, Saaranen T, Sormunen M. Conventional vs. e-learning in nursing education: A systematic review and meta-analysis. *Nurse education today*. 2017;50:97-103. doi: 10.1016/j.nedt.2016.12.020. PubMed PMID:28038371.
- 6 Gautam S, Tiwari MK. Components and benefits of E-learning system. *International Research Journal of Computer Science (IRJCS)*. 2016;3(1):14-7.
- 7 Alzahrani NM. Augmented reality: A systematic review of its benefits and challenges in e-learning contexts. *Applied Sciences*. 2020;10(16):5660. doi: 10.3390/app10165660.
- 8 Elzainy A, El Sadik A, Al Abdulmonem W. Experience of e-learning and online assessment during the COVID-19 pandemic at the College of Medicine, Qassim University. *Journal of Taibah University Medical Sciences*. 2020;15(6):456-62. doi: 10.1016/j.jtumed.2020.09.005. PubMed PMID: 33106752. PubMed Central PMCID: PMC7578775.
- 9 Feng JY, Chang YT, Chang HY, Erdley WS, Lin CH, Chang YJ. Systematic review of effectiveness of situated e-learning on medical and nursing education. *Worldviews on evidence-based nursing*. 2013;10(3):174-83. doi: 10.1111/wvn.12005. PubMed PMID: 23510119.
- 10 Ruiz JG, Mintzer MJ, Leipzig RM. The impact of E-learning in medical education. *Academic medicine : journal of the Association of American Medical Colleges*. 2006;81(3):207-12. doi:

- 10.1097/00001888-200603000-00002.
PubMed PMID: 16501260.
- 11 Omar ND, Hassan H, Atan H. Student Engagement in Online Learning: Learners Attitude Toward E-Mentoring. *Procedia - Social and Behavioral Sciences*. 2012;67:464-75. doi: 10.1016/j.sbspro.2012.11.351.
 - 12 Steinert Y, Mann K, Centeno A, Dolmans D, Spencer J, Gelula M, et al. A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME Guide No. 8. *Medical teacher*. 2006;28(6):497-526. doi: 10.1080/01421590600902976. PubMed PMID: 17074699.
 - 13 Colthart I, Bagnall G, Evans A, Allbutt H, Haig A, Illing J, et al. The effectiveness of self-assessment on the identification of learner needs, learner activity, and impact on clinical practice: BEME Guide no. 10. *Medical teacher*. 2008;30(2):124-45. doi: 10.1080/01421590701881699. PubMed PMID: 18464136.
 - 14 Ward M, MacRae H, Schlachta C, Mamazza J, Poulin E, Reznick R, et al. Resident self-assessment of operative performance. *American journal of surgery*. 2003;185(6):521-4. doi: 10.1016/s0002-9610(03)00069-2. PubMed PMID: 12781878.
 - 15 Abendroth M, Harendza S, Riemer M. Clinical decision making: a pilot e-learning study. *The clinical teacher*. 2013;10(1):51-5. doi: 10.1111/j.1743-498X.2012.00629.x. PubMed PMID: 23294745.
 - 16 Kang SY, Kim SH, Kwon YE, Kim TB, Park HK, Park HW, et al. The virtual asthma guideline e-learning program: learning effectiveness and user satisfaction. *The Korean journal of internal medicine*. 2018;33(3):604-11. doi: 10.3904/kjim.2017.017. PubMed PMID: 28724281. PubMed Central PMCID: PMC5943662.
 - 17 Kulier R, Coppus SF, Zamora J, Hadley J, Malick S, Das K, et al. The effectiveness of a clinically integrated e-learning course in evidence-based medicine: a cluster randomised controlled trial. *BMC medical education*. 2009;9:21. doi: 10.1186/1472-6920-9-21. PubMed PMID: 19435520. PubMed Central PMCID: PMC2688004.
 - 18 Frehywot S, Vovides Y, Talib Z, Mikhail N, Ross H, Wohltjen H, et al. E-learning in medical education in resource constrained low-and middle-income countries. *Human resources for health*. 2013;11(1):1-15. doi: 10.1186/1478-4491-11-4. PubMed PMID: 23379467. PubMed Central PMCID: PMC3584907.
 - 19 Barteit S, Guzek D, Jahn A, Bärnighausen T, Jorge MM, Neuhann F. Evaluation of e-learning for medical education in low-and middle-income countries: A systematic review. *Computers & education*. 2020;145:103726. doi: 10.1016/j.compedu.2019.103726. PubMed PMID: 32565611. PubMed Central PMCID: PMC7291921.
 - 20 VatanParast M, Royani Z, Ghasemi H. The survey of kerman Nursing Student's Attitudes toward Virtual Learning in 2009. *J-Nurs-Edu*. 2016;5(1):53-61.
 - 21 Fathi Vajargah K, Pardakhtchi MH, Rabiei M. Effectiveness evaluation of virtual learning courses in high education system of Iran (Case of Ferdowsi University). *Information and Communication Technology in Educational Sciences*. 2011;1(4):5-21.
 - 22 Adewole-Odeshi E. Attitude of Students Towards E-learning in South-West Nigerian Universities: An Application of Technology Acceptance Model. *Library Philosophy and Practice*. 2014.
 - 23 Yakubu MN, Kah MMO, Dasuki SI, editors. *Student's Acceptance of Learning Management Systems: A Case Study of the National Open University of Nigeria. Sustainable ICT, Education and Learning*; 2019; Cham: Springer International Publishing. doi: 10.1007/978-3-030-28764-1_27.
 - 24 Karanjam SS, Karanjam S, Zarifsanaiey N. *Designing a Comprehensive Organizational E-Learning Model*

- Using the Meta-Synthesis Method. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*. 2017;8(3). doi: 10.5812/ijvlms.11496.
- 25 Al-Omari AA, Salameh KM. E-learning versus Traditional Learning as Perceived by Undergraduate Students in Jordanian Universities. *E-Learning and Digital Media*. 2012;9(2):223-31. doi: 10.2304/elea.2012.9.2.223.
- 26 Borhani F, Vatanparast M, Zadeh AA, Ranjbar H, Pour RS. Virtual education effect on cognitive learning and attitude of nursing students towards it. *Iran J Nurs Midwifery Res*. 2011;16(4):321-4. PubMed PMID: 23450257.
- 27 Tichavsky L, Hunt A, Driscoll A, Jicha K. It's Just Nice Having a Real Teacher": Student Perceptions of Online versus Face-to-Face Instruction. *International Journal for the Scholarship of Teaching and Learning*. 2015;9(2):2. doi: 10.20429/ijstl.2015.090202.
- 28 Caporarello L, Manzoni B, Bigi M, editors. *E-learning Effectiveness from a Students' Perspective: An Empirical Study*. *Digital Technology and Organizational Change*; 2018; Cham: Springer International Publishing. doi: 10.1007/978-3-319-62051-0_14.
- 29 Rukavina P, Langdon J, Greenleaf C, Jenkins J. Diversity Attitude Associations in Pre-service Physical Education Teachers. *JTRM in Kinesiology*. 2019.
- 30 Cidral WA, Oliveira T, Di Felice M, Aparicio M. E-learning success determinants: Brazilian empirical study. *Computers & Education*. 2018;122:273-90. doi: 10.1016/j.compedu.2017.12.001.
- 31 Chong MC, Francis K, Cooper S, Abdullah KL, Hmwe NT, Sohod S. Access to, interest in and attitude toward e-learning for continuous education among Malaysian nurses. *Nurse Educ Today*. 2016;36:370-4. doi: 10.1016/j.nedt.2015.09.011. PubMed PMID: 26455411.
- 32 Quadri NN, Muhammad A, Sanober S, Rafik M, Shah A. A Mixed Method Study for Investigating Critical Success Factors (CSFs) of E-Learning in Saudi Arabian Universities. *International Journal of Advanced Computer Science and Applications*. 2017;8. doi: 10.14569/IJACSA.2017.080522.
- 33 Podsiadło P, Kosiński S, Darocha T, Sałapa K, Sanak T, Brugger H. The Use of E-Learning in Medical Education for Mountain Rescuers Concerning Hypothermia. *High altitude medicine & biology*. 2018;19(3):272-7. doi: 10.1089/ham.2018.0050. PubMed PMID: 30010429. PubMed Central PMCID: PMC6157343.
- 34 Amini M, Kojuri J, Lotfi F, Karimian Z, Abadi AS. Research priorities in medical education in the Eastern Mediterranean Region. 2012;18(7):687-92. doi: 10.26719/2012.18.7.687. PubMed PMID: 22891514.
- 35 Salehi A, Harris N, Lotfi F, Hashemi N, Kojouri J, Amini M. Reform in medical and health sciences educational system: a Delphi study of faculty members' views at Shiraz University of Medical Sciences. 2014;20(3):151-61. doi: 10.26719/2014.20.3.151. PubMed PMID: 24950072.