Effect of education on knowledge of fertility counseling and attitudes toward fertility control

Talat Khadivzadeh¹,², Raziyeh Rahmati³, Habibollah Esmaily⁴,⁵

Abstract:

BACKGROUND: The development of any society depends on proper planning in various fields such as population and birth control. Fertility control is designed to create a level of population growth appropriate to the resources available and to ensure a good life. Receiving information and education is one of the basic strategies to change the attitude toward fertility and awareness in most people in society. Therefore, this study was conducted to determine the effect of education on knowledge of fertility counseling and attitudes toward fertility control in health workers.

MATERIALS AND METHODS: The present study was a randomized clinical trial with a control group that was conducted in the presence of 107 health workers of health centers and community health centers working in Mashhad in 2017. The research units were randomly divided into three groups (webinar training, group discussion training, and control). Research tools were researcher-made questionnaires on attitudes toward fertility and measuring healthy reproductive awareness that all study participants completed at the beginning of the study and 2 weeks after the intervention. Data analysis was performed by the Chi-square, one-way analysis of variance, and independent t-test using the SPSS software version 16.

RESULTS: The results of this study showed that at the beginning of the study, all three groups were homogeneous in terms of quantitative and qualitative demographic variables including age, education, work experience, type of employment, and number of family members. The results of Kruskal–Wallis test showed that before the intervention, the three groups did not have a statistically significant difference in terms of mean scores of awareness about fertility counseling (P = 0.77) and attitude toward fertility control (P = 0.523), but this relationship was significant after the interventions. Furthermore, the results of Mann–Whitney intragroup test showed that the scores before and after the intervention were significant in both educational groups (P = 0.001).

CONCLUSION: Considering the importance of healthy fertility counseling and the important place of education in promoting awareness and attitude toward healthy fertility, it is recommended to use active educational methods to promote the awareness and attitude of health workers to provide healthy fertility services to couples.

Keywords: Attitude to fertility control, awareness, education, fertility counseling, health workers

Introduction

Fertility decline is a global issue in some countries, including Japan, France, Germany, Korea, etc., as well as Iran is very acute and complicated.¹² If developing countries such as Iran do not control their declining fertility and population growth, they will face the problem of population aging and dangerous population decline in the coming years, which will cost the country’s economy dearly.¹³ The development of any society depends on proper planning in various fields, including population and birth control. Fertility
control is designed to create a level of population growth that is appropriate to the resources available and ensures a good life.^[4] Human development is one of the important pillars of sustainable development of societies, it has a special place in the discussion of reproductive health.^[3] Receiving information and education, which is one of the main strategies to change attitudes toward fertility in most people in society, has had a clear effect on couples’ fertility behavior in recent years. In the past, the role of health-care personnel in the reproductive discourse has included providing training and counseling to clients in terms of acceptance, selection, and use of contraceptive methods. At present, the role of many employees in disseminating attitudes and providing counseling and family planning services has not changed significantly, and some of them do not have the necessary attitude to align with the new population policies of the country. As a result, it has led to conflicting messages about fertility in society. These findings indicate the need for training and changing the attitude of employees in the field of counseling to promote fertility in society.^[6] In recent years, along with changes in population policies in the country, measures have been taken to increase fertility. However, staff have not received the necessary training to provide family planning counseling with the approach of increasing fertility. Reproductive health and childbearing health are mentioned in the draft policies of the office of Population-Family and School Health to improve the overall fertility rate. This draft emphasizes on educating personnel about providing reproductive health rights, improving the quality of counseling services, reviewing the indicators of the reproductive health program, and improving the existing educational content.[^7] Many fertility problems can be solved through careful counseling, and the quality of counseling can be significantly improved by incorporating the principles of information, education, and communication into counseling. In fact, counseling is a process and the implementation of a good counseling depends on how to establish the right relationship between health personnel and clients and provide the correct information to improve the knowledge of clients and their encouragement.^[8] Due to the importance of counseling in regulating fertility, the counselor has a serious responsibility and must receive the necessary training and skills before doing so. The counselor should be someone who is interested in communicating with people and working with them and is fully aware of and believes in the importance of fertility regulation and its benefits.[^9]

Due to the new policy of the country in the field of fertility promotion, health workers are now expected to provide a very different performance in terms of fertility counseling than the usual performance over the past two decades. However, without gaining knowledge, improving attitudes and improving the skills of employees, it is not possible to provide appropriate and effective advice by them.^[10] Improving attitudes and improving the scientific level and skills of health workers are the basic pillars for improving the quality and quantity of health services. Attitude improvement leads to improved performance and by increasing the level of knowledge and skills of employees, they will monitor their own activities.[^11] Considering that health workers have a major role in promoting the health of the family and the community, they are at the forefront of the population and implement fertility regulation programs. Changing their knowledge, attitude, and practice through the use of active and effective methods of education is of particular importance.[^4]

Applying active and modern training methods will help employees to play their role more effectively. One of the components of community health is the educational ability of the staff of health centers in that community, as a result, changing and improving the structures, systems, processes and classical methods of education can be helpful in this regard.^[12] Meanwhile, midwives play a very important role in providing health services. According to the regulations of the Ministry of Health, midwives can provide reproductive health services (from birth to old age) to women, family, and society and promote the health of mother, baby, and ultimately society.[^12,13] Among educational methods, group discussion is an effective and common way to change the attitude of health workers. In this method, all participants, while discussing, defend their thoughts and attitudes by stating reasons based on facts, concepts, and scientific principles. On the other hand, with the advancement of science and technology, new technologies have quickly replaced the old technologies and provided powerful tools for users.^[13] The use of these technologies in the field of health with the aim of achieving three outcomes including learning the right information, changing health-related attitudes, and creating new behaviors consistent with health is considered.[^14] Web-based education is one of the new educational methods that is able to increase the critical thinking and decision-making ability of learners and improve their psycho-motor skills and performance.[^15] Web-based learning allows learners to focus on their learning goals and content and to learn at their own pace.[^16] According to Friedman et al. (1970), quoted by Karimi (2006), it is a durable military attitude that includes a cognitive element, an emotional element, and a desire for action. Part of the importance of attitude stems from the fact that attitudes determine behaviors, and this implicitly implies that by changing people’s attitudes, their behavior, and performance can be changed. Reasons for the importance of attitude can be mentioned as follows: it affects social thoughts, affects the way of thinking and processing information, acts
as a mental plan, organizes, and maintains cognitive frameworks of information about concepts and situations and ultimately affects the process of behavior.[17]

The staff of health centers are able to facilitate the achievement of reproductive health goals in the community by providing proper advice and attracting the participation of clients. Considering their role model and guidance in the field of fertility, it is necessary for health workers to be justified in this regard and their attitude and practice to be corrected. Given the vacuum of a program that empowers employees to play their expected role in the current state of society and promote the country’s population policies and considering the need to use effective and efficient training methods that enable the widespread training of skills needed by employees as soon as possible, the aim of this study was to determine the effect of education on knowledge of fertility counseling and attitudes toward fertility control in health workers.

Materials and Methods

Study design and setting

The present study is a randomized controlled trial with a three-group design and pretest-posttest, which has been approved by the Ethics Code No. (Ir. Mums. Rec. 1393.1438) in the Vice Chancellor for Research, Mashhad University of Medical Sciences in 2018. The aim of this study was to investigate the effect of education on knowledge of fertility counseling and attitudes toward fertility control in health workers.

Study participants and sampling

This study was performed on 108 midwives and health-care workers working in health centers and community health centers and health centers. Sampling was performed in health centers subset of health centers 2–3 and 5 (random selection method) in Mashhad in 2015. Sample size using the following formula:

\[ n = \frac{\left( s_1^2 + s_2^2 \right) \left( z_{1-\alpha/2} + z_{1-\beta} \right)^2}{(\bar{x}_1 - \bar{x}_2)^2} \]

Moreover, with 95% confidence interval (1.96) and 80% power factor (0.84), 108 people were calculated considering the probability of 10% drop in the number of samples. The research units were randomly assigned to three groups: webinar, group discussion, and control (36 people in each group).

The inclusion criteria were as follows: having a degree in midwifery (associate, bachelor, or master) or a degree in family health or public health (bachelor or master), employed in maternity, child and family planning units, counseling or health care plan (polyvalan) of selected health centers, have at least 6 months of experience in health-care centers, written consent to participate in the research, lack of experience attending fertility counseling classes and workshops for at least the last 6 months, no history of major stressful event (serious illness of the participant or spouse and child, death of a first-degree relative, accident, severe family dispute, divorce, financial bankruptcy) 6 months before the intervention, ability to use computers and the Internet, access to internet, and computer or smartphone. The exclusion criteria were as follows: Occurrence of major stressful events during the study. It should be noted that the criteria for the decline of the study were: unwillingness to continue participating in research, not participating in one of the training sessions.

Data collection tool and technique

The instruments used in this study included a fertility attitude questionnaire and a knowledge questionnaire about fertility counseling training. A 47-item fertility attitude questionnaire was prepared based on a qualitative study by Khadivzadeh et al. (2013). Its items were scored on a five-point Likert scale (strongly disagree = 1, disagree = 2, have no opinion = 3, agree = 4, and strongly agree = 5). Validity was confirmed by content validity method. Its reliability was confirmed by internal consistency method by Cronbach’s alpha method with \( \alpha = 0.65 \). The Fertility Counseling Awareness Questionnaire had eight two-choice questions. This questionnaire was prepared based on the Listening Skills Assessment Questionnaire taken from the book Family Planning Counseling, authored by the Ministry of Health and Medical Education and the United Nations Population Fund. The correct answer was given a score of 2 and the incorrect answer was given a score of 1. Awareness was then divided into three levels: weak (8 and <8), moderate (8.1–12), and good (12.1–16). Validity was confirmed by content validity method. Its reliability was confirmed by internal consistency method by Cronbach’s alpha method with \( \alpha = 0.64 \). The whole questionnaire was completed once before the start of the research and once 2 weeks after the end of the research by the participants of all three groups (webinar, group discussion, and control). In order to conduct the research, after obtaining the necessary permits, the researcher referred to the research environments and after presenting the goals and working methods to the study target group, invited them to participate in the research. Then, if the inclusion criteria were met, individuals completed the written consent to participate in the study and were randomly divided into three groups. The two groups of webinars and group discussions that were intervention groups separately participated in four training sessions.
The results of Kruskal–Wallis test showed that after performing the interventions, the three groups had a statistically significant difference in terms of the mean rank of knowledge scores compared to fertility counseling ($P = 0.001$) [Table 3].

The mean scores of attitude toward fertility control in the three groups with the one-way analysis of variance showed that the three groups did not differ significantly in mean scores of attitude toward fertility control at the beginning of the study. However, at the end of the study and after the interventions, there was a statistically significant difference between the three groups ($P = 0.03$) [Table 4]. Tukey test showed that this difference between group discussion and control groups ($P = 0.02$) was significant.

**Discussion**

Healthy fertility counseling means stating the facts about the fertility of the community that can be done by the health personnel of health centers individually, in groups or through mass media with important goals such as ensuring family health by achieving the goals of empowering families.[20–26] Proper provision of healthy fertility counseling in health centers depends on the knowledge, attitude, and scientific skills of health personnel who need to receive practical and correct training. Therefore, the present study investigated the effect of education on knowledge of fertility counseling and attitudes toward fertility control in health workers. The results of the present study regarding the knowledge scores regarding fertility counseling in the intervention and control groups before the interventions showed no statistically significant difference in the mean knowledge score between the three groups. However after the interventions, the three groups had a statistically significant difference in the mean rank of knowledge scores compared to reproductive counseling. In this regard, various studies show the effect of education on promoting fertility awareness. In this regard, Parsa et al. by examining the effect of group counseling on improving the reproductive awareness of adolescent girls showed that group educational intervention is significantly effective in promoting awareness of different dimensions of fertility.[23] Also, regarding the levels of awareness in the groups, the results of the present study showed that

| Variables                                      | Group discussion | Webinar | Control | $P$  |
|------------------------------------------------|------------------|---------|---------|------|
| Awareness scores before the intervention       | 12.7±1.8         | 13.0±1.1| 12.8±0.9| 0.77 |
| Awareness scores after the intervention        | 15.2±1.0         | 15.0±2.1| 13.2±0.75| 0.001|
| Mann-Whitney test results                      | 0.001            | 0.001   | 0.452   |      |

SD=Standard deviation
there is no statistically significant difference between the three groups in terms of the level of awareness before the interventions. But after the interventions, there was a statistically significant difference between the three groups in terms of the mean rank of awareness scores compared to reproductive counseling. There are studies in line with the findings of the present study, including the study of RahimiKian et al., Modabber, Shokri, and Morgan.[24-26]

The study was conducted by Rahimikian et al. entitled “The effect of training emergency contraceptive methods on the knowledge and attitude of health workers working in health centers. The results showed that the highest percentage of research units had poor knowledge about emergency contraceptive methods before the intervention, which reached a good level after the intervention.[24] Modabber et al. Conducted a study entitled “The effect of group discussion training on raising awareness of women using intermittent contraception” concluded that after training, the proportion of women aware of contraceptive methods increased.[27] Shokri, By examining the effect of web-based education on students “awareness in the field of reproductive health, observed that web-based education as an effective method leads to raising students’ awareness in the field of reproductive health.”[28] He et al. Emphasized that in order to improve the level of knowledge and awareness of couples about reproductive health and the correct use of contraceptive methods at the right scientific time, it is necessary to improve the knowledge and awareness of health personnel and assess their knowledge about proper fertility counseling. They also stated that we should teach proper fertility counseling using educational methods.[29] In his research, Morgan examined the knowledge gap associated with contraceptive methods in students. By providing educational interventions, Morgan showed that students do not have sufficient level of knowledge and awareness in the use of contraceptive methods, and this level is improved by performing educational interventions. In their study, Morgan et al. Recommended that various educational methods be tried to improve public awareness of contraceptive methods.[30]

Regarding the attitude toward fertility, the results showed that the mean attitudes about fertility control in the three groups at the beginning of the study was not significantly different but at the end of the study and after the interventions there was a statistically significant difference between the three groups. The result of the present study is consistent with the results of research by Ramazani et al., Modabber et al., Alami et al., Shokri et al., He et al.[19,27-29,31,32] In the study of Ramazani et al. Entitled “The effect of premarital education and counseling program on the knowledge and attitude of couples towards reproductive health” a significant increase was observed in the mean score of couples’ attitudes about reproductive health after the intervention. Attitudes about reproductive health increased from 10.25 ± 1.75 to 11.12 ± 1.71.[31] In the study of Alami et al., The results showed the effect of education on promoting couples’ attitudes regarding childbearing.[32] The results of the study of Modabber et al. Regarding the effect of group training on promoting the attitude of women using intermittent contraception showed that group training improves the attitude of women.[27] The study of Shokri. Entitled the effect of web-based education on students “awareness in the field of reproductive health, showed that web-based education promotes students’ attitudes in the field of reproductive health.[28] The study by He et al. Entitled the effect of using new educational methods in comparison with traditional methods and mere lectures, showed that the fertility attitude and

Table 2: Distribution of level of frequency sometimes compared to fertility counseling of research units in three groups receiving training by group discussion, webinar, and control methods at the beginning of the study

| Variables          | n (%) | n (%) | n (%) | P     |
|--------------------|-------|-------|-------|-------|
| Poor (8 and <8)    | 1 (2.9)| -     | -     | 0.59  |
| Medium (between 8.1 and 12) | 11 (31.4) | 10 (27.8) | 14 (38.9) |   |
| Good (from 12.1 to 16) | 22 (62.9) | 26 (74.2) | 22 (61.9) |   |
| Total (16)         | 34 (97.1)| 36 (100) | 36 (100) |   |

Table 3: Frequency distribution of knowledge about fertility counseling of research units in three groups receiving training through group discussion, webinar, and control at the end of the study

| Variables          | n (%) | n (%) | n (%) | P     |
|--------------------|-------|-------|-------|-------|
| Poor (8 and <8)    | -     | -     | -     | 0.001 |
| Medium (between 8.1 and 12) | 7 (20) | 4 (11.1) | 16 (44.4) |   |
| Good (from 12.1 to 16) | 28 (80) | 32 (88.9) | 20 (55.6) |   |
| Total (16)         | 35 (97.1)| 36 (100) | 36 (100) |   |

Table 4: Mean and standard deviation of attitude scores regarding fertility control of research units in three groups receiving training by group discussion, webinar, and control methods

| Variables          | Group discussion | Webinar | Control | P     |
|--------------------|------------------|---------|---------|-------|
| Attitude scores before the intervention | 10.64±1.3 | 9.31±2.3 | 10.32±1.2 | 0.523 |
| Attitude scores after the intervention | 14.8±2.1 | 15.4±1.4 | 15.9±1.4 | 0.001 |
| Mann-Whitney test results | 0.001 | 0.001 | 0.001 |   |

SD=Standard deviation
the use of contraceptive methods in new educational methods are improved.[29] The reason for the increase in attitude in these studies can be considered in the use of different educational methods and establishing more and appropriate communication and interaction with people and expressing new concepts in the framework of educational intervention. Using a logical message transmission system in the curriculum can be effective in changing behavior and attitude.[29] Also, the results of Rahmati et al.’s study showed that counseling can increase the attitude and practice of health workers in providing counseling with a fertility promotion approach and raising the level of awareness and attitude toward fertility and fertility counseling skills of health workers.[33,34]

There are some studies that are inconsistent with the findings of the present study, including the study of Moshki et al.[35,36] In the study of Moshki et al. entitled “Comparison of the effectiveness of nutrition education through two methods of group discussion and multimedia package on the learning areas of pregnant women,” attitude scores after the intervention did not show a significant difference.[35] Perhaps the reason for this difference with the present study is due to the nature of the issue because the attitude to nutrition is an individual attitude and is related to the individual’s economy. But in this study, the attitude towards fertility is a social attitude, and the practice of the attitude toward fertility may occur every few years. Lanken et al. Conducted a study in the United States entitled “The effect of web-based education and small group discussion on attitudes toward patients with substance abuse disorders and trainees’ communication skills with them” in the United States. The results showed that the residents of the control group had a more positive attitude about the effectiveness of treatment and self-efficacy than the residents of the intervention group.[36] Probably the reason for the difference with the present study is the knowledge of the intervention group about the ineffectiveness of treatment and the high rate of treatment failure in patients with substance abuse disorders.

**Limitation and recommendation**

It should be noted that the widespread use of mass media by participants in the study could distort the results of the study. For this purpose, this case was one of the limitations of the present study. It is recommended that future studies be conducted with respect to this limitation and that future studies be reviewed using other teaching aids.

**Conclusion**

The results of the present study showed that the level of knowledge about healthy fertility counseling and attitude towards healthy fertility control in health personnel after receiving training through webinars and group training increased significantly. Therefore, considering the importance of healthy reproductive counseling and the important position of education, it is recommended to use active educational methods to raise the awareness and attitude of health workers in order to provide healthy reproductive services to couples.

**Acknowledgment**

This study is part of the results of the master’s thesis in midwifery counseling approved by the Vice Chancellor for Research of Mashhad University of Medical Sciences with the code Ir. Mums. Rec. 1393.1438. We would like to thank all the managers and staff of the health centers who helped us in this study.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

**References**

1. Rahbani M, Hajnaghizadeh F, Damari B. A qualitative study of the status of children’s play from the viewpoints of experts and suggestions for promotion interventions. Iran J Pediatr 2015;25:e2178.
2. Golmakani N, Rahmati R, Shaghaﬁ H, Safinejad H, Kamali Z, Mohebbi-Dehnavi Z. Investigating the relationship between social support and self-compassion by improving the adequacy of prenatal care. J Educ Health Promot 2020;9:340.
3. Sadeghi-Bazargani H, Ayubi E, Azami-Aghdash S, Abedi L, Zemestani A, Amanati L, et al. Epidemiological patterns of road traffic crashes during the last two decades in Iran: A review of the literature from 1996 to 2014. Arch Trauma Res 2016;5:e32985.
4. Eager PW. Global Population Policy: From Population Control to Reproductive Rights. Routledge: Taylor & Francis; 2017.
5. Gaddy H. Has fertility increased at very high levels of development? SocArXiv cupfa, Center for Open Science 2020.
6. Barutli E, Farhadi Z. Assessment of knowledge of health services providers about contraceptives. Med Islam Repub Iran 2003;14:3-8.
7. Khadivzadeh T, Arghavani E, Shakeri MT. Attitude toward governmental incentives on childbearing and its relationship with fertility preferences in couples attending premarital counseling clinic in health centers in Mashhad. J Mazandaran Univ Med Sci 2015;24:1-13.
8. Afkhami A, Madrakian T, Shirzadmehr A, Tabatabaee M, Bagheri H. New Schiff base-carbon nanotube–nanosilica–ionic liquid as a high performance sensing material of a potentiometric sensor for nanomolar determination of cerium (III) ions. Sens Actuators B Chem 2012;174:237-44.
9. Koser K. Fertility counseling with couples: A theoretical approach. Fam J 2020;28:25-32.
10. Allameh Z. Foundamental and process of family planning counseling. Tehran: MOH & ME; 1997.
11. Choi W, Park J, Lee S, Yim J, Jeong H, Lim Y, et al. The effects of convergent reproductive health promotion program for Korean University students on sexual knowledge, sexual attitude, and reproductive health promoting behavior. J Korea Converg Soc 2018;9:145-52.
12. Zangiabadi Zade M. The study effect of teaching contraceptive and preventive methods of sexual diseases on female students’ knowledge and attitudes toward reproductive and sexual health. J Jiroft Univ Med Sci 2015;20:152-61.
13. Mirheydari M, Qazvinian L, Rezaei AM, Karimi RZ, Qazvinian M, Saghaipour A. The Effects of Pre-Marriage Education on Their Reproductive Health among Couples Participating in Marriage Classes of Qom-2016. 2016.
14. Mah dizadeh H, Kazemi S, Azizi M. The Challenges in Application of Information Technologies (ICT) in Medical Science Universities; 2011.
15. Sadeghi A, Balali F, Razazadeh S. Attitude and performance of health staff regarding health information resources Kerman University of Medical Sciences. J Educ Community Health 2014;4:27-35.
16. Tan WM, Klein MC, Saxell L, Shirkoohy SE, Asrat G. How do physicians and midwives manage the third stage of labor? Birth 2008;35:220-9.
17. Kyrpides NC, Hugenholtz P, Eisen JA, Woyke T, Göker M, Parker CT, et al. Genomic encyclopedia of bacteria and archaea: Sequencing a myriad of type strains. PLoS Biol 2014;12:e1001920.
18. Kendall C, Afable-Munsuz A, Speizer I, Avery A, Schmidt N, Santelli J. Understanding pregnancy in a population of inner-city women in New Orleans – Results of qualitative research. Soc Sci Med 2005;60:297-311.
19. Yeh CT, Lin YK. Component allocation cost minimization for a multistate computer network subject to a reliability threshold using tabu search. J Indus Manage Optimiz 2016;12:141.
20. Golmakani N, Gholami M, Shaghaﬁ F, Safinejad H, Kamali Z, Mohhebi-Dehnavi Z. Relationship between fear of childbirth and the sense of cohesion with the attachment of pregnant mothers to the fetus. J Educ Health Promot 2020;9:280.
21. Gholami M, Moallem SA, Afshar M, Etemad L, Karimi G. Maternal exposure to silymarin leads to pathologcal changes in mouse foetuses. Pharmacologyonline 2015;2:38-43.
22. Gholami M, Moallem SA, Afshar M, Etemad L, Karimi G. Gestational exposure to silymarin increases susceptibility of BALB/c mice fetuses to apoptosis. Avicenna J Med Biotechnol 2017;9:66-70.
23. Parsa P, Shobeiri F, Mohammadi Y. The effect of group counseling on improving the awareness of reproductive health in adolescent girls living in welfare boarding centers. J Urmia Nurs Midwifery Fac 2017;15:534-43.
24. Wani RT, Rashid I, Nabi SS, Dar H. Knowledge, attitude, and practice of family planning services among healthcare workers in Kashmir - A cross-sectional study. J Family Med Prim Care. 2019;8(4):1319-1325.
25. OstadRahimi A, Safaeean A, Modaresi J, Pour Abdollahi P. The effect of nutrition education on knowledge, attitude and practice of women working in the nutritional University of Medical Sciences. J Tabriz Univ Med Sci 2010;31:12-7.
26. Saatsaz S, Rezaei R, Nazari R, Haji Hosaini F, Saeidi Andi S. The impact of education on the knowledge and practice of teachers in methods of breast cancer screening. Breast Dis Iran J 2009;2:28-35.
27. Modabber M, Poursesmaeil M, Soltani M. Effects of group discussion on knowledge, attitude and practice of women using natural family planning methods in Alborz City, Qazvin. J Health 2017;8:211-21.
28. Shokri A. The Effect of Web-Based Education on Students’ Knowledge and Attitudes about Youth Reproductive Masters thesis, Qazvin University of Medical Sciences: Qazvin University of Medical Sciences and Health Services; 2017.
29. He Y, Zhang N, Wang J, He N, Du Y, Ding JX, et al. Evaluation of two intervention models on contraceptive attitudes and behaviors among nulliparous women in Shanghai, China: A clustered randomized controlled trial. Reprod Health 2017;14:73.
30. Morgan E. Knowledge Gaps Regarding Birth Control and Emergency Contraceptives among College Educated Woman: An Educational Intervention; Honors Thesis 2020.
31. Ramazani A, Faraji A, Fatemi M, Sooloki M. The effects of pre-marriage education and consultation on knowledge and attitude of couples regarding to reproductive health. Tolooebehadasht 2013;11:56-65.
32. Alami A, Esmailzadeh M, Esmaeili R, Matlibi M, Ekrami Noghabi A, Saberi M. Effectiveness of an educational intervention based on the theory of planned behavior on fertility intention of single-child women: A field trial study. Q Horizon Med Sci 2020;26:212-27.
33. Rahmati R, Khadivzadeh T, Esmaili H. Comparison of the effect of two training methods (webinar and group discussion) on improving the attitude and performance of health workers in providing counseling with fertility promotion approach. J Educ Health Promot 2020;9:280.
34. Rahmati R, Khadivzadeh T, Esmaili H. Improving the level of awareness and attitude toward fertility and fertility counseling skills of health staff with both face-to-face and virtual training methods. J Educ Health Promot 2020;9:335.
35. Mosshi M, Shafaghi K, Seyyedasani SK. Comparative Effectiveness of Group Discussion and Multimedia Nutrition Education among Pregnant Women in Learning Domains; Journal Of Sabzevar University Of Medical Sciences, 2014;21(3):441-452.
36. Lanken PN, Novack DH, Daetwyler C, Gallop R, Landis JR, Lapin J, et al. Efficacy of an internet-based learning module and small-group debriefing on trainees’ attitudes and communication skills toward patients with substance use disorders: results of a cluster randomized controlled trial. Acad Med 2015;90:345-54.