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Education for Menstrual Hygiene Promotion in Iranian Girls: A Systematic Review and Meta-Analysis

Tanin Tamiztousi[1], Masoumeh Rafiee[2], Forough Rakhshanizadeh[2], Mansoureh Azizi[3], Mohadese Khakpour[2], Fahimeh Khorasani[4], Nasibeh Roozbeh[5], *Masumeh Ghazanfarpour[4]

[1]General Physician, Mashhad University of Medical Sciences, Mashhad, Iran.
[2]Department of Pediatrics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
[3]Department of Anesthesiology, Mashhad University of Medical Sciences, Mashhad, Iran.
[4]Nursing Research Center, Kerman University of Medical Sciences, Kerman, Iran.
[5]Mother and Child Welfare Research Center, Hormozgan University of Medical Science, Bandar Abbas, Iran.

Abstract

Background

The menstrual hygiene education is a process for strengthening skills and empowering women, especially young girls. The aim of this systematic review was to investigate the efficacy of menstrual health education on young girls' knowledge, attitude and practice in Iran.

Materials and Methods

The searching procedure was systematically fulfilled on databases of Medline (via PubMed), Scopus and Cochrane library with no time restriction from inception to November 2018. Also, equivalent Persian keywords were searched in Iranian databases such as Irandoc, Magiran, Medlib, SID, and Barakatkns. The quality of enrolled trials was assessed using the Jadad scale. Random effect instead of fixed effect model was used if heterogeneity existed across different studies.

Results

Four studies were included in the meta-analysis. Level of practice improved significantly in intervention group than control group (standardized mean difference [SMD]: 0.458; p=0.006 (95% confidence interval [CI]: 0.132 to 0.783). Pooled data of two studies showed that attitude score increased significantly in intervention group when compared to control group (SMD: 0.599 (95%CI: 0.032 to 1.167; random effect model; two trials). The mean score of knowledge was significantly higher in educational intervention group compared to control group (SMD: 0.831; p=0.023 [95%CI: 0.117 to 1.546 random effect model; three trials)

Conclusion

The current meta-analysis confirmed that educational approach such as peer education and role playing can be more effective than classic method (booklet and lecture) on girl's level of knowledge, attitude and practice.

Key Words: Education, Hygiene, Menstrual, Systematic Review.

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Corresponding Author:

Dr. Masumeh Ghazanfarpour, Nursing Research Center, Kerman University of Medical Sciences, Kerman, Iran.

Email: masumeh.ghazanfarpour@yahoo.com

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1- INTRODUCTION

Various physiological changes occur during puberty, one of which is the start of a menstrual period. The onset of menstruation is a developmental stage in the life of any female, which is accompanied by fear and emotional distress in young girls. The phenomenon of menstruation is often surrounded by imagination, disappointment, and negative attitudes, and covers the concept of physical and mental turmoil for many girls and women. In the distant past, women were forced to separate from other people during their menstruation, and had the right to return to the tribe after the end of this period. Among other superstitions, if a woman is in the menstrual period and crosses the farm, the crops will not grow, and the flowers will wither, and if she wants to bake, the dough will not ferment (1). Literature reviews conducted in Iran on the knowledge of girls about menstrual hygiene indicated a very poor awareness (2). If girls have greater knowledge about the reproductive system and how it functions, they will pay more attention to themselves and will make more of an effort with their hygiene (3).

Another literature review demonstrated that the girls who have enough training about menstrual periods have a more positive attitude toward this time. The existence of false beliefs about menstrual issues among young girls in different cultures of the country can cause many physical, psychological and behavioral problems (4). Health education is a process for strengthening skills and empowering people to promote health (5). Health education can change these wrong behaviors and negative attitudes, so the need for correct education of girls seems to be necessary. There are few studies in Iran that have assessed the effectiveness of menstrual hygiene education on girls' practice, knowledge and attitude. The question of how effective they are exists. Combining the results of different studies using meta-analysis can provide a more precise estimate of the effectiveness of intervention program for promotion of menstrual hygiene. Consequently, it could help in policy-making on an evidence-based medical program. The aim of this systematic review was to investigate whether menstrual health programs are effective on girls' knowledge, attitude and practice in Iran.

2- MATERIALS AND METHODS

2-1. Search strategy

The searching procedure was systematically fulfilled on databases of Medline (via PubMed), Scopus, Cochrane library and also Google Scholar with no time restriction from inception to November 2018, using the keywords (Menstrual hygiene OR menstrual health OR menstrual OR menstruation) AND (Training OR teaching OR education) AND (Iran OR Iranian). The discussion was resolved by independent third party. Also, equivalent Persian keywords were searched in Iranian databases such as Irandoc, Magiran, Medlib, SID, and Barakatkns.

2-2. Inclusion criteria

The present systematic review embraced all randomized clinical trials to investigate the efficacy of menstrual education on young girls in Iran.

2-3. Data extraction

Two separate authors extracted the required data in accordance to the comments of the research team using a pre-designed checklist (**Table.1**). Author, city, design of study, age of participants, study population, type of interventions, sampling method, number of participant intervention/ control, validity and reliability.

2-4. Quality assessment

The quality of enrolled trials was assessed using the Jadad scale comprising three dimensions (6), including randomization appropriateness, blinding appropriateness, and patient. The total Jadad scale ranges from three to five scores. These items were evaluated by two separate reviewers and any disagreement was dealt with by consensus or third-party consultation. Two other key items, namely intention to treat and baseline comparability, were appended to the Jadad scale (**Table.2**).

2-5. Statistical analyses

The main effect size in our meta-analysis was considered to be the data standardized mean difference (SMD). Pooling across studies was analyzed by the random-effect, and fixed-effect models. Heterogeneity was divided into three groups: < 25% considered as low, between 25-75% considered moderate, and > 75% considered as high (7). Random effect was used if heterogeneity existed among different studies. Cochran's Q and the I^2 index provided heterogeneity. Comprehensive Meta-analysis Version 2 (Biostat, Englewood, NJ, USA) was employed to analyze all attained data.

Table-1: Baseline characteristics of 4 studies included in systematic review.

Author, Reference City, Year	Design	Age	Study population	Type of intervention	Sampling method	Number of participants intervention/ control	Type of interventions	Validity and reliability
, Dabiri et al. (3), Hormozgan (in the South of Iran), 2009	Quasi experimental study	14.9±0.7	High school girls	-	Cluster sampling method	200/200	Peer education lecture	Yes
Fakhri et al., (11), Mazandaran province (in the North of Iran), 2012	Quasi-experimental study	15.7±1.08	High school girls	10 two-hour educational sessions	Random sampling method	Study group n=349 Control group n=349	Peer education lecture	Yes
Parsa et al., (17), Hamadan (Iran), 2018	Quasi-experimental study	Peer group=13.31 Lecture group=13.35	High school girls	Four weekly sessions (each session 45 min)	Cluster sampling	In study group n=100/ control group n=100	Peer education lecture	Yes
Ostovar et al., (8), Yasouj (Iran), 2013	Quasi-experimental study	Role play group= 13.7 lecture group= 12.5	Secondary school girls	Four weekly sessions (each session 45 min)	Random sample	Role play, question n=60 and answer and lecture n=60	Role-play, question and answer, and lecture	Yes

Table-2: Assessment of the quality of studies included in the systematic review and meta-analysis based on Jaded scale (6).

Author, Reference	Randomization			Blinding			Report of dropping	Intention dropping	Baseline comparability
	Mention randomization	Appropriate method	Inappropriate method	Mention randomization	Appropriate method	Inappropriate method			
Dabiri et al., (3)	🙂	☹	☹	☹	☹	☹	😐	☹	🙂
Fakhri et al., (11)	🙂	☹	☹	☹	☹	☹	😐	🙂	🙂
Pars et al., (17)	🙂	☹	☹	☹	☹	☹	😐	🙂	🙂
Ostovar et al., (8)	🙂	☹	☹	☹	☹	☹	😐	🙂	🙂

🙂: Yes: ☹ No; 😐 : 0%.

3-RESULTS

After removing duplicates, 83 studies were identified and were screened, and 79 studies were excluded. Four full-text articles were assessed for eligibility and finally four studies were included in qualitative synthesis (**Figure.1**).

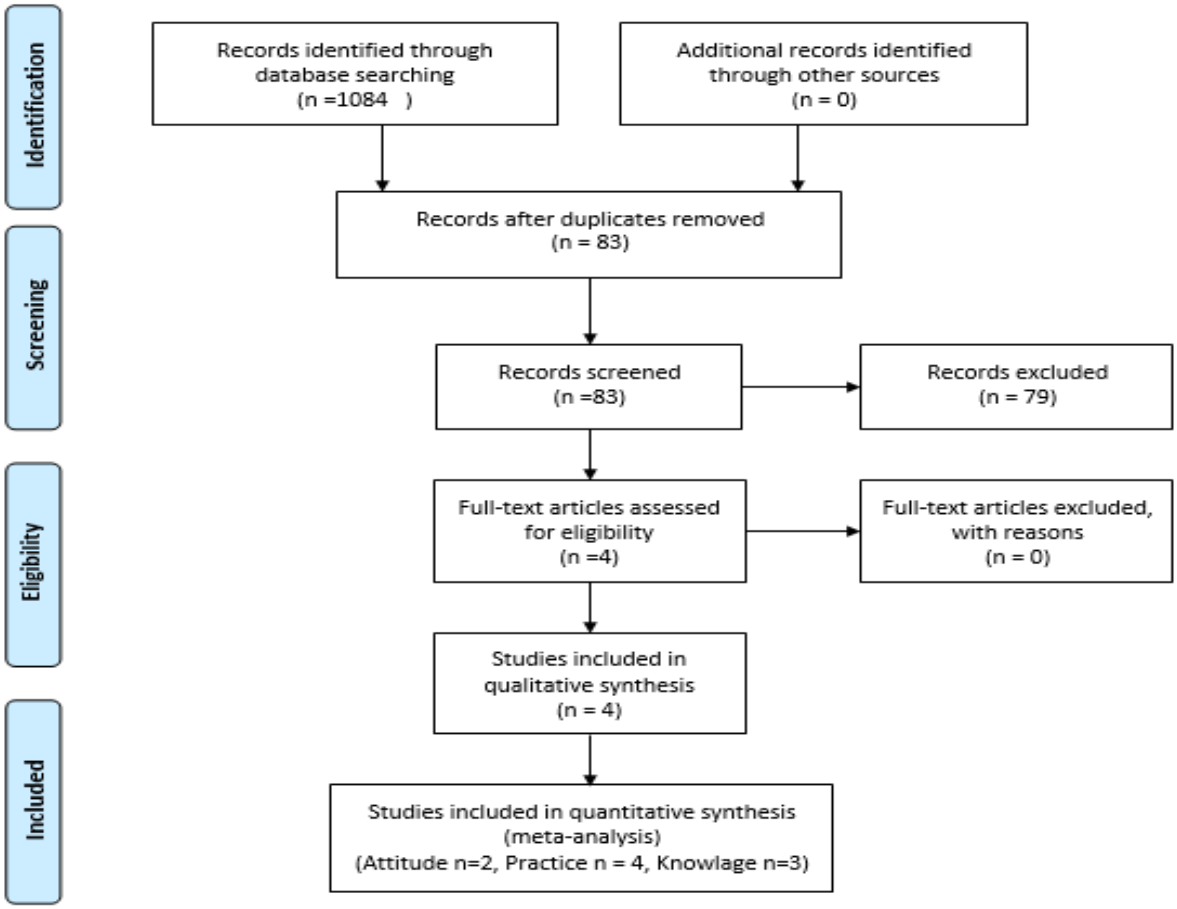

Fig.1: Flowchart of included studies.

Level of practice (behavior) improved significantly in intervention group compared to control group (SMD=0.458; P=0.006 (95%CI: 0.132 to 0.783; random effect model; four trials; **Figure.2**). Heterogeneity was very high (I^2=87.35 %; P<0.001).

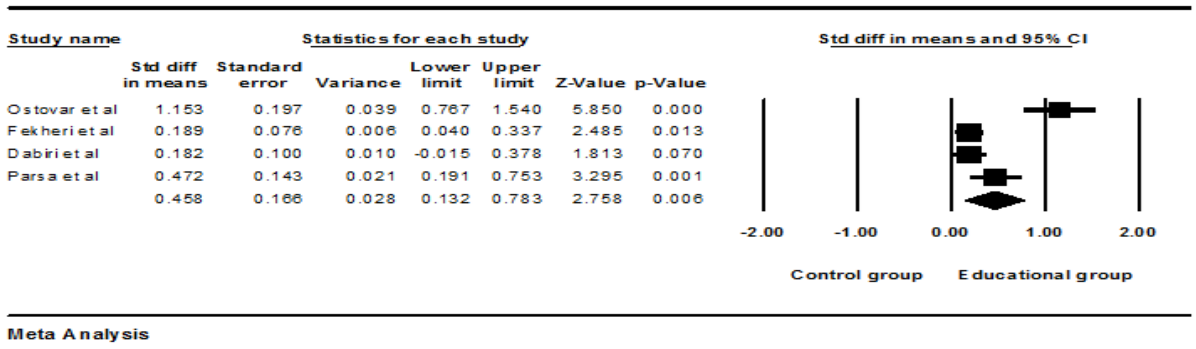

Fig.2: Effects of menstrual hygiene on practice (behavior); the horizontal lines denote the 95% confidence interval; ■Point estimate (size of the square corresponds to its weight; ♦Combined overall effect of treatment).

To find potential resource of heterogeneity, sensitivity analysis was conducted and it was shown that Ostovar et al.'s study (8) was an outlier (**Figure.3**). After excluding this study, heterogeneity decreased from 87% (P<0.001) to 40% (P=0.184). SMD was 0.229; P=0.001 (95%CI: 0.120 to 0.333, **Figure.3**).

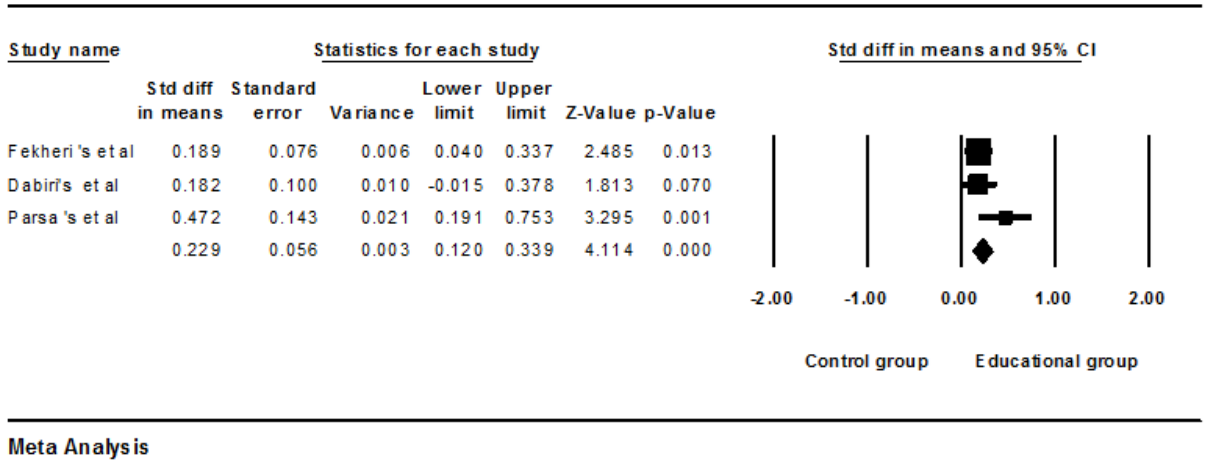

Fig.3: Effects of menstrual hygiene on behavior after excluding Ostovar et al.'s study (8). The horizontal lines denote the 95% confidence interval; ■Point estimate (size of the square corresponds to its weight); ♦Combined overall effect of treatment.

Pooled data of two studies (3, 8) showed that attitude score was significantly higher in intervention group when compared to control group (SMD=0.599 (95%CI: 0.032 to 1.167; random effect model; two trials), P=0.04; heterogeneity P=0.007; I^2=86.09%, random effect model, **Figure.4**).

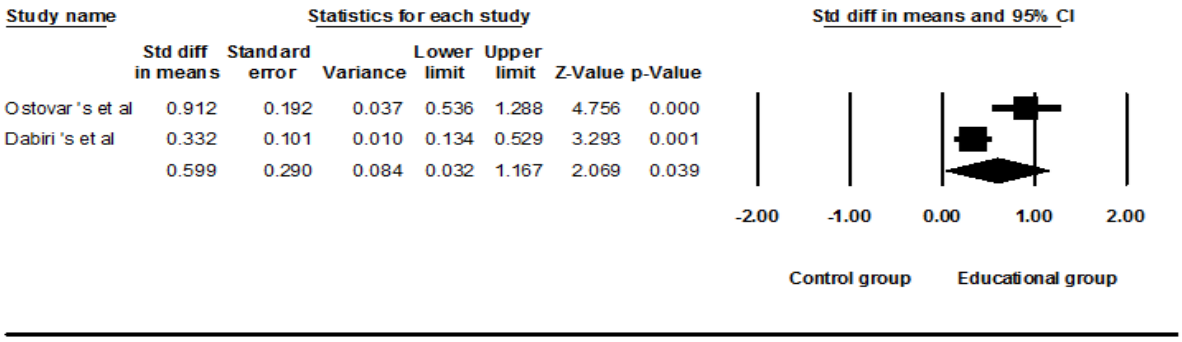

Fig.4: Effects of menstrual hygiene on attitude. The horizontal lines denote the 95% CI; ■Point estimate (size of the square corresponds to its weight; ♦Combined Overall effect of treatment).

The mean score of knowledge was significantly higher in intervention group compared to control group (SMD=0.831; P=0.023 (95%CI: 0.117 to 1.546; random effect model; three trials; **Figure.5**).

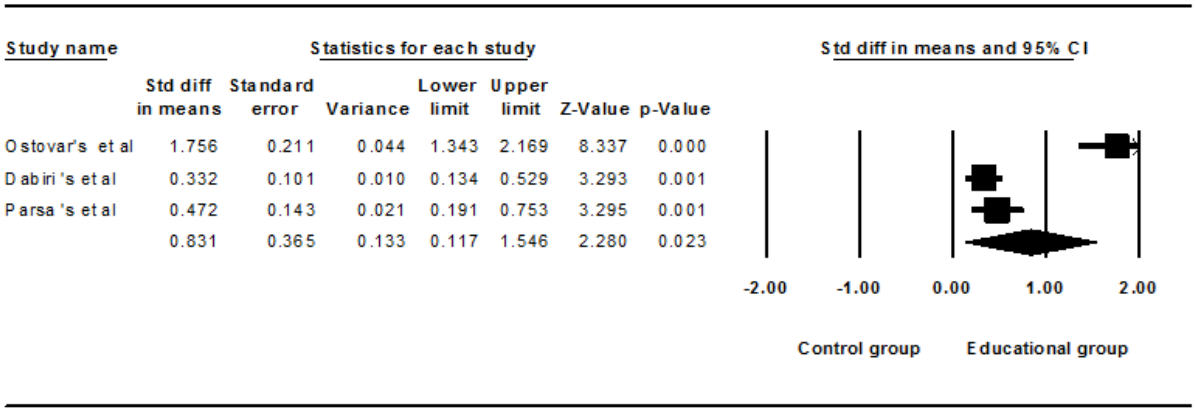

Fig.5: Effects of menstrual hygiene on knowledge. The horizontal lines denote the 95% confidence interval; ■Point estimate (size of the square corresponds to its weight; ♦Combined overall effect of treatment).

Heterogeneity was very high (P<0.001; I^2=94.7%). To detect potential resource of heterogeneity, studies were deleted one by one from pooled estimate, indicating Ostovar et al.'s study (8) influenced pooled estimate. After excluding Ostovar et al.'s study, SMD decreased from 0.831 to 0.378 (95%CI: 0.217 to 0.540; random effect model; two trials, P<0.001); heterogeneity; P=0.272; I^2=0%, **Figure.6**).

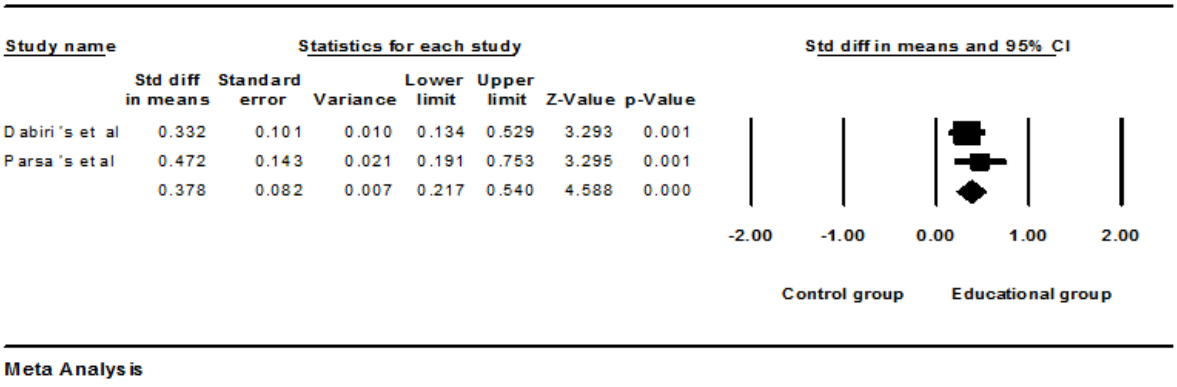

Fig.6: Effects of menstrual hygiene education on knowledge after excluding Ostovar et al.'s study (8). The horizontal lines denote the 95% confidence interval; ■Point estimate (size of the square corresponds to its weight); ♦Combined Overall effect of treatment.

4- DISCUSSION

The current meta-analysis, as far as is known, is the first meta–analysis to assess the effect of menstrual hygiene education on girls' knowledge, attitude and practice. The knowledge of today's girls, who are the future mothers and will be the accepted source of information for their young girls, will be of great help in creating health beliefs and respect for individual health in menstruation in women of the future generation. Therefore, it is important to promote girl's information. This meta-analysis confirmed that training by using attractive educational approaches such as peer education can promote level of knowledge, attitude and practice. A systematic review in 2016 showed that

training program had a positive beneficial effect on knowledge and practices in menstrual hygiene. Hennegan and Montgomery also reported menstrual knowledge is theorized to increase girls' menstrual health management and decrease harmful psychosocial outcomes. After education, positive attitudes to menstruation were found in teenage girls. Although authors mentioned that instruments and intervention type, and self-report biases affected on the results (9). These findings are consisted with our meta-analysis. A study assessed the effectiveness of role-play, question and answer and lecture (intervention group) with single lecture (8). The results of this study showed that role play was more effective on the performance of girls during menstruation in intervention group than lecture along.

In fact, one of the important reasons for effective role play is that it provides an opportunity for further participation of the students because the learners are in a passive position in the classical way and have no chance to contribute actively. Kashefi et al. indicated that the level of awareness and the observance of hygiene standards regarding menstruation were very low in Bojnurd (Iran), and that the necessity of rapid interventions to overcome this social problem can be considered as one of the high health priorities of the country (10).

Current meta-analysis demonstrated that the interventions can affect the level of knowledge and performance of female students. Therefore, one strategy is to train young girls. Studies recommended that health teaching by teachers, parent's paternities and the mass media are significant in illustrating the mistaken beliefs about menstrual health. Changes in the health education organization to promote the reproductive health have become important for the health departments (11, 12). It needs to promote the knowledge of menstrual health management for adolescents, therefore it was raised international visualization for menstrual health management in schools until 2024 (13). A systematic review reported educating girls about menstrual products and the role of menstrual health is necessary. More education about physiological issues that adolescents experience as in puberty period is also vital to helping girls (14). It is very important that the education interventions are conducted based on education need. Families, counseling and support groups could have a great influence on the well-being of teenagers (15).

In a systematic review study evaluating the social impact of menstrual health management it is shown that educational interventions can increase menstrual health practices and decrease social limitations, but they also reported that some studies do not have methodology quality, and among the studied research a high risk of bias was observed (14). Having inadequate information on menstrual health matters and obtaining information from unknowing and inaccurate sources can lead to physical, psychological and personality problems in many adolescent girls in family life (16). Mothers have been shown to be the most important source of information for girl students about menstruation due to a deep and an active relationship between girls and mothers as well as the key role of mothers in transmitting this information (10). Therefore, mothers should be equipped with enough knowledge.

Peer Education, which is also part of the World Health Organization (WHO) program can transfer the correct information to young girls by their friends and classmate (3). Schools can also play an important role in teaching the issues of maturity, including the important issue of menstrual health. Therefore, managers, teachers and especially school health

educators are required to become familiar with efficient and effective educational and practical methods, and to apply effective methods for improving the health of students. In this way, they promote the health of students (8). Studies included in this systematic review assessed only the effectiveness of peer education and girl's education. Future research should be enough large to compare the effectiveness of training with peer, mothers, teachers and girls on knowledge levels of girls.

4-1. Limitations and suggestions for futures

This meta-analysis had some limitations. The first, high heterogeneity across studies. This may be related to difference in content from training programs, sample size and setting and type of intervening education. Second, the meta-analysis cannot be generalized to other countries as all studies in the meta-analysis were performed in Iran. Third, despite the fact that we believe that a comprehensive search was done, some relevant trials may have been missed. Finally, the main methodological flaw present in some studies was the use of incomplete or inappropriate statistical analyses. Four studies included in the meta-analysis used randomization technique. However, none of the studies descripted randomization technique. Future studies should be well designed and descripted according to consort guideline.

5- CONCLUSION

The current meta-analysis confirmed that educational approach, peer education and role playing can be more effective than classic method (booklet and lecture) on girl's level of knowledge, attitude and practice. These findings must be interpreted with caution due to the number of studies and high heterogeneity across studies.

6- CONFLICT OF INTEREST: None.

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