The effects of peer education on health behaviors in girls with dysmenorrhea

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Abstract: This study was conducted to compare the effect of peer-led VS health-provider-led self-care education on dysmenorrheic girls' knowledge, attitude, and menstrual symptoms of primary dysmenorrhea at dormitories of Ferdowsi University in Mashhad, Iran. In this randomized clinical trial, 165 girls between ages 19-25 who had experienced menstrual cramps three or more times during the last six months were randomly assigned to three groups (peer-led self-care education, health-provider-led self-care education, and control). A Menstrual Knowledge Questionnaire (MKQ), Menstrual Attitude Questionnaire (MAQ), and Menstrual Information Form were the main instruments in this study. Data were collected in the baseline menstrual period and one and two menstrual periods after intervention. One-way ANOVA and Kruskal-Wallis were used to analyze data by SPSS software. Menstrual Knowledge in the peer-led self-care education group increased 2.1 times and 2.5 times in the health-provider-led self-care education groups. Negative concepts of menstrual attitude decreased in the peer-led self-care education group (56.6 vs. 40.2, p=0.009) more than the health-provider-led self-care education group (56.9 vs. 48.3, p=0.035). There was no significant difference in the measure of decrease in pain score between interventional groups at both the first (p=0.988) and second (p=0.965) menstrual periods after intervention. These findings provide preliminary evidence that peer education can be effective health promotion in primary dysmenorrheic girls.
[Zahra Abedian, Maryam Kabirian, Seyed Reza Mazlom, Behroz Mahram, Mehrdad Jalalian. **The effects of peer education on health behaviors in girls with dysmenorrheal.** Journal of American Science 2011;7(1):431-438]. (ISSN: 1545-1003). http://www.americanscience.org.

Keywords: peer education; health behaviors; primary dysmenorrhea

1. Introduction

The prevalence of primary dysmenorrhea, which is the most common gynecological problem among menstruating young women and adolescents, has been reported in many studies to vary between 50 and 90 percent (Latthe, 2006). Moreover, it was reported more than 70 percent in Iran (Panahande, 2008; Afshari, 2006; Jalili, 2004; Kamjo, 2001). Typically, when women visit health providers for dysmenorrhea, they prescribe non-steroidal anti-inflammatory analgesic drugs or oral contraception, but neglect to emphasize the importance of dysmenorrheic self-care. From the viewpoint of health promotion, women's self-care should be enhanced and medicalization should be reduced (Kumar, 2004). Self-care behaviors related to dysmenorrhea refer to those actions taken to enhance comfort and to prevent or respond to the condition (Ching-Hsing, 2004). Self-care behaviors are divided into two categories: externally oriented behavior including searching for knowledge, expression of emotions, seeking assistance, control over external factors, and internally oriented behavior including resource utilization and self-control (Orem, 1995). Self-care education is in the early stages in developing countries and hasn't made considerable progress (Rafie far, 2005). Few educational programs have been directed at improving self-care behaviors among dysmenorrheic girls. Because of the high prevalence of primary dysmenorrhea and low self-care knowledge, there is a strong need for investigation for effective strategies. Self-care agency and self-care requirement are two main concepts of the self-care theory. Self-care agency is the human capability to give self-care, and self-care requirement is an essential or desired input for an individual or the individual's environment to maintain or optimize human functioning. There is a bilateral relationship between three concepts of this theory that means reinforcement of one is due to reinforcement of others (Orem, 1995). Based on Bandura's Social-Cognitive theory, environment is the most important and indisputable factor in improvement of self-care agency. Environment provides behavioral models

that can reinforce the learning process (Bandura, 1986). Peer educators act as positive role models. Peer education has grown in popularity and practice in recent years in the field of health promotion (Turner, 1999). Research suggests that people are more likely to hear and personalize messages and thus to change their attitudes and behaviors if they see the messenger is like them and faces the same concerns and pressures (Topping, 2001). Peer groups give group members a safe place to test new behaviors and skills, promote self-awareness, self-understanding, and change as confidence is enhanced and roles are strengthened through sharing (Rejeh, 2009; Edwards, 2001). Peer education can be used with many populations and age groups for various goals (UNFPA, 2006). Education of sexual behaviors (Wyandt, 2003), reproductive health (Ozcebe, 2003), methods of AIDS prevention (Mahat, 2008), and dietary behaviors (Perez-Escamilla, 2008) are the topics addressed by peer education and combined with controversial results.

In Lorig et al.'s (2009) study, a peer-led diabetes self-care program versus the usual care group offered significant improvements in depression, symptoms of hypoglycemia, communication with physicians, healthy eating, and self-efficacy. So people with diabetes can benefit from a community-based, peer-led diabetes program (Lorig, 2009). On the other hand, Crotty et al. (2009) evaluated self-management and peer support among people with arthritis. The results of this study revealed that a peer-led arthritis self-management program didn't have significant effect on pain, function, or quality of life in the short term and further research was needed to assess peers' impact in maintaining health behaviours in this patient group (Crotty, 2009). To our knowledge, there exists no evidence for the use of peer-led self-care education in dysmenorrheic girls. Considering the importance of dysmenorrheic self-care, benefits of peer education, and the resulting relevant controversies about the effect of peer-led education in other health topics, this study was conducted to determine the effects of peer education on health behaviors in girls with dysmenorrhea.

2. Material and Methods

This study was a randomized controlled trial on 165 dysmenorrheic girls who lived in dormitories of Ferdowsi University of Mashhad, Iran, between April and October 2009.

2.1. Subject recruitment

Single girls younger than 25 years who had experienced primary dysmenorrhea based on the Verbal Multidimensional Scoring System for at least three months in the past half year and didn't have any prior history of gynecological disease and symptoms of secondary dysmenorrhea were eligible. The menstrual history for diagnosis of primary dysmenorrhea included the regularity of menstrual cycles (menstrual cycle length from 28 to 35 days and bleeding cycle length from three to seven days) and the beginning of pain, a few hours before the onset of a menstrual period, not lasting more than 72 hours. Exclusion criteria included current or recent use of hormonal contraception, refusing to participate in educational section or fill out the follow-up questionnaire.

Two-hundred-and-nine dysmenorrheic girls from three different dormitories of Ferdowsi University fulfilled the inclusion criteria and were randomly divided into three groups of peer-led self-care education (n=79), health-provider-led self-care education (n=65), and control (n=65) group. Data were collected in three stages. In the first stage, the girls were asked to provide demographic information and fill out Menstrual Information Form (MIF) during their first future menstrual cycle. After that, girls in the peer-led self-care education group participated in a meeting session. During this visit, the investigator explained the peer-education procedure and its objectives. In addition, the girls were made aware of the needed characteristics and the roles of peer-educators in the group. Then participants were asked to form small groups (six-seven persons) as peer groups and select their peer-educators themselves. Fourteen dysmenorrheic girls adopted the peer educator's role participated in "Training of Peer Educators Workshop." The objectives of this workshop were: 1- To know about the concept of peer education, 2- To introduce some basic principles and qualities required for becoming a peer educator, 3- To know about Orem's self-care theory, 4- To know about dysmenorrheic self-care behaviors including: searching for knowledge, expression of emotion, seeking assistance, control over external factors, self-control, and resource utilization. At the end of workshop, 10 participants who earned the highest score of "Peer Educator's Skills Rating Form" were selected as peer educators. In the next stage, subjects completed pre-test forms, including the Menstrual Knowledge Questionnaire (MKQ) and the Menstrual Attitude Questionnaire (MAQ). Then dysmenorrheic self-care education sessions were carried out by a midwife in the health-provider-led self-care education group and by peer educators in the peer-led self-care education group with the method of small-group discussion. In the last stage, MIF was completed for two follow-up periods and post-test forms the same as the pre-test forms were completed at the end of the second follow-up period.

2.2. Questionnaires
2.2.1 Menstrual Information Form

This form included the four components: a) Visual Analog Scale (VAS) to measure the severity of pain during the first three days of the menstrual cycle, ranging from no pain at all (0) to intolerable pain (10). The measurement of menstrual pain by VAS is common practice in research on dysmenorrhea and has been found to be reliable for estimating pain severity. b) Higham chart for assessment of menstrual blood loss is known as a valid and reliable tool for this purpose c) Daily recording schedule to determine the pattern of painkillers use during the menstrual period. d) Recording schedule of symptoms of premenstrual syndrome included 11 diagnostic criteria as described in DSM-IV-TR. In this study, girls who have had at least five of the following symptoms for most of the time during the premenstrual week are identified as suffering from PMS. Eleven diagnostic criteria were:

- Depressed mood, hopelessness
- Anxiety
- Affective ability
- Anger, irritability
- Decreased interest in usual activities
- Difficulty concentrating
- Decreased energy
- Appetite changes or cravings
- Changes in sleep
- Feeling overwhelmed or out of control (Berek, 2006)

2.2.2. Menstrual Knowledge Questionnaire (MKQ)

It is a collection of 10 questions to assess dysmenorrheic girls' knowledge about menstrual period. It is designed based on obstetrics and gynecology textbooks by investigators. A correct answer was scored 1 and an incorrect answer or an answer of "I don't know" was scored 0. An overall Content Validity Index (CVI) for MKQ was calculated 0.91 and revealed high content validity. Reliability was assessed using Cronbach's alpha and the coefficient alpha was 0.82.

2.2.3. Menstrual Attitude Questionnaire (MAQ)

The original questionnaire was developed by Brooks and Ruble (1980) with 35 items (Brooks, 1980). In this study, based upon the item analysis, one item of the last subscale was deleted. (Others should not be critical of a woman who is easily upset before or during her menstrual period). Therefore, the Iranian version of this questionnaire contained 34 statements that were rated on a seven-point scale

(strongly disagree = 1, strongly agree = 7). Cronbach's alpha coefficient was calculated to determine the internal consistency of each subscale in terms of menstruation as a debilitating event (r=0.72), menstruation as a bothersome event (r=0.79), menstruation as a natural event (r=0.80), anticipation and prediction of the onset of menstruation (r=0.61), denial of any effect of menstruation (r=0.66), and the coefficient alpha for the 34 items as a whole was 0.71. CVI for the Menstrual Attitude Questionnaire was calculated 0.88.

2.3. Data analysis

Sample size was determined based on the findings from a pilot study. In addition, we estimated that a 20 percent decrease would occur in each groups. This calculation showed that a sample of 65 girls with dysmenorrhea per group would be needed to detect a difference between the groups with regard to menstrual pain, with a power of 80 percent and type I error (alpha) of 5 percent. One-way ANOVA and Kruskal-Wallis were used to compare the continuous numerical variables. For categorical variables, the chi-square and Fisher exact tests were used.

2.4. Ethical and confidentiality considerations

The study received ethical approval from the committee for research on human subjects of Mashhad University of Medical Sciences. All subjects gave written consent for participation. They received a thorough explanation of the purpose and procedures of the study and informed that they could withdraw from the study any time without any consequences.

3. Results

The recruited sample comprised a total of 209 dysmenorrheic girls. Among them, 14 clients were selected as peer educators and 30 clients were excluded from the study, constituting a drop-out rate of 15.3 percent. The demographic and menstrual characteristics of the subjects (n=165) in the three groups are shown in Table 1. The distribution of all recorded characteristics didn't indicate a significant difference among the groups. The mean of menstrual knowledge score in the second menstrual period after intervention was significantly higher than baseline in both groups compared to the control group (Table 2).There was no significant difference between the peer-led versus the health-provider-led self-care education group in increasing the menstrual knowledge score after intervention (P=0.128) although it was higher in the health-provider-led self-care education group (Table 2).

Table 1. The demographic and menstrual characteristics of the participants.

	Peer-led education group (n=54)	Health provider-led education group (n=50)	Control group (n=61)	
	Mean (SD) or %	Mean (SD) or %	Mean (SD) or %	P
Age (years)	21.7 (1.5)	21.4 (1.4)	21.7 (1.1)	0.402
BMI (kg/m^2)	22.5 (1.9)	22.6 (1.8)	22.7 (2.0)	0.836
Menstrual cycle length (day)	30.1 (2.2)	29.1 (1.7)	29.7 (2.0)	0.057
Bleeding cycle length (day)	6.0 (1.0)	6.1 (1.1)	6.3 (0.9)	0.302
Age of menarche (years)	13.4 (1.0)	13.7 (1.1)	13.3 (1.4)	0.315
Age of onset of menstrual pain (years)	14.4 (1.5)	15.1 (1.4)	14.8 (2.2)	0.143
Severity of dysmenorrhea (Based on VerbalMultidimensional Scoring System)				
Degree 1	9.3	10.0	6.6	
Degree 2	70.4	80.0	73.8	0.586
Degree 3	20.4	10.0	19.7	
Duration of menstrual pain (hours)	35.8 (9.1)	37.6 (4.8)	37.1 (6.2)	0.632
Frequency of cycles combined with dysmenorrhea during the past six months	4.8 (1.0)	5.2 (1.0)	5.2 (0.8)	0.053

Table 2. Comparison of menstrual knowledge and attitude in peer-led education, health-provider-led education, and control groups

	Peer-led education group (n=54)	Health-provider-led education group (n=50)	Control group (n=61)	
	Mean (SD) or %	Mean (SD) or %	Mean (SD) or %	P
Menstrual knowledge				
Baseline cycle	4.1 (1.9)	3.6 (1.4)	4.1 (1.8)	0.185
The second cycle after intervention	8.8 (1.5)	9.2 (1.3)	4.9 (2.3)	0.000
p-Value	0.000	0.000	0.676	
Menstrual attitude				
Menstruation as a debilitating event				
Baseline cycle	56.6 (8.4)	56.9 (7.5)	55.6 (10.8)	0.732
The second cycle after intervention	40.2 (13.1)	48.3 (9.1)	59.3 (12.1)	0.019
p-Value	0.009	0.035	0.081	
Menstruation as a bothersome event				
Baseline cycle	26.1 (7.9)	24.4 (7.5)	24.3 (7.1)	0.350
The second cycle after intervention	19.6 (7.3)	22.1 (8.8)	23.8 (6.4)	0.047
p-Value	0.000	0.071	0.824	
Menstruation as a natural event				
Baseline cycle	27.2 (4.6)	27.6 (3.6)	26.1 (4.2)	0.152
The second cycle after intervention	29.1 (3.2)	30.1 (2.4)	26.9 (5.5)	0.076
p-Value	0.821	0.619	0.988	
Prediction of the onset of menstruation				
Baseline cycle	27.4 (4.6)	25.9 (3.8)	26.5 (5.1)	0.235
The second cycle after intervention	26.8 (5.9)	27.3 (4.2)	25.8 (6.7)	0.118
p-Value	0.456	0.320	0.189	
Denial of any effect of menstruation				
Baseline cycle	24.2 (5.3)	25.4 (5.0)	23.4 (5.4)	0.155
The second cycle after intervention	28.6 (3.8)	30.1 (5.0)	25.4 (6.1)	0.215
p-Value	0.123	0.099	0.415	

Table 3. Comparison of menstrual cycle's characteristics in peer-led education, health-provider-led education, and control groups

	Peer-led education group (n=54)	Health provider-led education group (n=50)	Control group (n=61)	
	Mean (SD) or %	Mean (SD) or %	Mean (SD) or %	p-Value
Severity of dysmenorrhea				
Baseline cycle	5.0 (1.9)	4.7 (1.8)	4.3 (2.2)	0.164
The first cycle after intervention	4.3 (2.0)	4.0 (1.8)	5.4 (2.2)	0.001
The second cycle after intervention	3.2 (1.2)	2.7 (1.3)	4.5 (2.0)	0.000
Menstrual blood loss (cc)				
Baseline cycle	95.2 (58.4)	83.8 (46.7)	84.1 (53.3)	0.457
The first cycle after intervention	96.1 (41.2)	90.6 (43.8)	88.9 (50.2)	0.312
The second cycle after intervention	90.0 (36.5)	94.1 (41.9)	86.2 (47.5)	0.503
More than five symptoms of PMS				
Baseline cycle	53.7	62.0	68.9	0.248
The first cycle after intervention	49.9	58.3	65.7	0.201
The second cycle after intervention	40.1	55.6	70.3	0.002
Use of painkiller in the first day of menstrual cycle				
Baseline cycle	65.9	68.3	54.2	0.288
The first cycle after intervention	60.2	59.9	58.0	0.313
The second cycle after intervention	57.5	52.2	50.6	0.409
Menstrual blood loss (cc)				
Baseline cycle	95.2 (58.4)	83.8 (46.7)	84.1 (53.3)	0.457

The mean of menstrual attitude score in two subscales of the Menstrual Attitude Questionnaire was significantly lower in the peer-led self-care education group compared with the health- provider-led group (Table 2). Both of the subscales "menstruation as a debilitating event" and "menstruation as a bothersome event" had negative concept and their decreasing scores confirmed the positive effect of the peer education program in this study.

Table 3 shows the comparison of the menstrual cycle's characteristics including severity of dysmenorrhea, menstrual blood loss, symptoms of PMS, and pattern of painkiller use among the three groups before and one and two menstrual period after intervention. There was no significant difference between study groups in the mean scores of severity of dysmenorrhea in the baseline menstrual period (p=0.164). But significant differences were discovered in the mean of severity of dysmenorrhea in the first menstrual period after intervention (p=0.001). The results of the Tukey test showed that there was significant difference in the mean of severity of dysmenorrhea between peer-led self-care education and control groups (4.3±2.0 VS 5.4±2.2,

p=0.015) and health-provider-led self-care education and control groups (4.0±1.8 VS 5.4±2.2, p= 0.001) but there was no significant difference in the mean of severity of dysmenorrhea between peer-led self-care education and health-provider-led self-care education groups (4.3±2.0 VS 4.0±1.8, p= 0.715). Moreover, the results in the second menstrual period after intervention were like the results in the first one. There was significant difference between study groups in the mean of severity of dysmenorrhea in the second menstrual period (p=0.000). Based on the results of the Tukey test, there was a significant difference in the mean of severity of dysmenorrhea between peer-led self- care education and control groups (3.2±1.2 VS 4.5±2.0, p=0.000) and health-provider-led self care education and control groups (2.7±1.3 VS 4.5±2.0, p= 0.000) but there was no significant difference in the mean of severity of dysmenorrhea between peer-led self-care education and health-provider-led self-care education groups (3.2±1.2 VS 2.7±1.3, p= 0.331) (Table 3).

In the second menstrual period after intervention, 40.1 percent of the peer-led self-care education group, 55.6 percent of the health-provider-led self-care education group and 70.3 percent of the

control group had experienced more than five symptoms of PMS. There was significant difference between education groups and control, but there was no significant difference in the percentage of those who had experienced more than five symptoms of PMS between peer-led self-care education and health-provider-led self-care education groups (p=0.575). There was no significant difference between study groups in the mean of menstrual blood loss (p=0.457, p=0.312, p=0.503) and use of painkillers in the first day of menstrual cycles (p=0.288, p=0.313, p=0.409) before and after intervention.

4. Discussions

The results of the present study demonstrated that peer-led self-care education is as effective as the health-provider-led education at promoting health behaviors and reducing pain in primary dysmenorrheic girls. Crotty et al. (2009) investigated the impact of peer-led self-care education on the reduction of pain in those afflicted with arthritis (Crotty, 2009). They didn't report any significant difference between the control and the intervention groups in terms of the degree of pain before and after the intervention stage. In Crotty's research, the peer group consisted of patients afflicted with osteoarthritis who experienced severe pain once entering the research phase. In the present study, the peer group included primary dysmenorrheic girls who had mostly experienced an average degree of pain once entering the research. Therefore, it can be concluded that in any research that aims to assess the impact of peer-led self-care education on the severity of pain, sufficient attention should be paid to the participants' degree of pain upon entering the program.

The other factor that could have led to the success of peer-led self-care education in this study compared to Crotty's is the setting that was chosen here, i.e. the dormitory life-style. Such an environment pulls members closer together and reinforces the sympathetic behavior among girls who suffer from dysmenorrhea. The same factor leads to a better and faster knowledge transfer among the peer-group members. Proponents of peer-led self-care education believe in the necessity of good quality peer education. The peer needs to be given a detailed protocol so that they manage to best play their role as a peer educator. In the present study, peers were instructed by taking part in workshops exclusively for this purpose. In designing the workshop program, use was made of the book "Training of Trainers Manual" published by UNFPA to prepare peers for adopting the educator's role (UNFPA, 2006). Such instruction appeared to be very effective in motivating the peers and creating a feeling of responsibility. Besides that, we provided the peer educators with the instructional content of self-care behaviors related to dysmenorrhea based on Orem's theory. Therefore, it can be concluded that emphasizing the peer educator's role and enabling them to take responsibility of such a role might be one reason for success of the peer education program.

Although the peers' previous experience has been recognized as one of the most influential factors in carrying out their roles (UNODC, 2010), in this study none of the participants were experienced in any instructional programs. Therefore, the present researcher has used other factors to select the peer participants. Some of the issues considered in selecting the peer educators in this study include: cooperation of peer group members in selecting the educator, taking into account the members' interest in adopting the peer educator's role, preparing a greater number of peer educators, followed by selection based on the highest degree of preparation.

Lorig et al. (2009) investigated the effectiveness of a community-based diabetes self-management program (Lorig, 2009). They concluded that people with diabetes could benefit from a peer-led diabetes program. The finding of their research revealed that the peer-led program reduced depression, symptoms of hypoglycemia, and communication with physicians. Moreover, it increased healthy eating, patient activation, and self-efficacy in these patients.

In the present study, part of the self-care education instructional program consisted of controlling the external factors affecting dysmenorrhea, such as the nutrition pattern and activity. Therefore, considering the results of Lorig's study based on improving healthy eating and patient activation, it seems that these factors are positively effective on peer-led self-care education in the present research.

Attention to forming small peer groups and peers' participation in selecting the group members are introduced as effective factors in the success of the peer education program (Fhi, 2010). These factors received adequate attention in the present paper. Having compared the present study with the other related research, we can summarize the effective factors in peer-led self-care education success in the three following categories: factors related to the peer group, peer educator, and designing the peer education program.

Some of the limitations of this research are presented as follows:

1- Impossibility of pelvic examination to diagnose the primary dysmenorrhea due to the virginity of the subjects.

2- Obtaining knowledge of self-care through sources other than the instructional program during the research.

3- Probability of diffusion of information among the research units in the three groups understudied.

Considering the benefits of peer education and the same effect of peer-led self-care education as compared with health-provider-led education on the reduction of pain in primary dysmenorrheic girls, health education systems can use peer education to promote self-care behaviours among primary dysmenorrheic girls. In addition, the findings of this study can be used as a basis for further research in recognizing the effect of peer-led self-care education programs on other health-related subjects.

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24/12/2010