Original Article

Comparison of the effect of motivational interview and peer group education on knowledge and performance about puberty and mental health in adolescent girls

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Abstract

Context: Adolescence is one of the most important periods of a person's life due to physical, mental andsocial maturity.

Aim: The aim of this study was to compare the motivational interview and peer groups in promoting mentalhealth and knowledge and performance about puberty health in adolescent girls.

Setting and Design: This is a semi-experimental intervention study with two intervention groups and one control group. The study was conducted at the high schools during the academic year of 2018–2019 in Shahroud, Iran.

Materials and Methods: In this study, 334 female students (13–15 years old) were allocated to three groupsby assigning the schools to two intervention and one control groups through simple randomization. In intervention Group 1, five motivational interview sessions were held and in intervention Group 2, training was conducted by peers. The tools used in this study was a researcher-made questionnaire designed to assess knowledge and performance about puberty health and Symptom Checklist-25 to measure mental health.

Statistical Analysis Used: In this study, data were analyzed using descriptive statistics and analytical statisticaltests include ANOVA, repeated measure, Pearson correlation, Chi-square.

Results: Immediately after, and 1 month after the intervention, the two intervention groups had significantlybetter scores in knowledge, performance, and mental health compared to the control group. The scores were better in the peer group compared to the motivational interview group for all threevariables.

Conclusions: Both motivational interview and peer group were effective in increasing knowledge and performance in adolescent girls.

Keywords: Adolescent, Education, Mental health, Motivational interview, Peer, Puberty, Reproductive health

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INTRODUCTION

Adolescence is one of the most important and valuable periods of a person's life, because it is the beginning of physical and mental changes. Nowadays, adolescent reproductive health is one of the most important health priorities around the world that require training more than ever before.[1,2] The world's reproductive health priority is adolescent reproductive health. Reproductive health encompasses complete physical, mental, and social well-being and all aspects of the reproductive system and its functioning, including puberty, marriage and family planning services, HIV/AIDS and sexually transmitted diseases, maternal and infant health, and sexual violence, puberty health includes principles and care that lead to maintaining and promoting the physical, mental, emotional, and social health of the individual in this period and other periods that need education more than ever.[1,3,4] According to UNICEF, there are nearly 1.2 billion adolescents (10–19 years old) worldwide; 85% of whom live in developing countries.[4,5]

According to the results of some studies, most adolescents in developing countries, especially girls, are deprived of accurate information about reproductive health and due to obtaining information from uninformed and unreliable sources, they may face physical and psychological challenges, including high-risk health behaviors[1,6] Many studies have been conducted in Iran to investigate the level of knowledge and performance of female adolescents about puberty, most of which indicate that adolescents are poorly aware of the processes of puberty and menstruation, personal health during menstruation, etc.[7-11] However, in recent years, the expansion of education on issues related to puberty health by schools,[1,9] families and the media has led to increased knowledge of adolescent girls about puberty changes; however, adolescents still do not have enough knowledge about health behaviors related to puberty.[12-14]

On the other hand, mental health refers to cognitive, behavioral, and emotional well-being. It is all about how individuals think, feel, and behave. Mental health can affect daily living, relationships, and physical health. Looking after mental wellbeing will sustain the ability of a person to enjoy life. Mental health may all be affected by conditions such as stress, depression, and anxiety and disturb the routine of a person. Adolescent mental health is important, because their condition and mental health in this period will have a great impact on behavioral adaptation patterns in adulthood.[15]

Educational methods for puberty health promotion are also important. In most puberty health education programs in Iran, lecture, and educational package and pamphlets are used as the most common methods.[9,16,17] Some studies have compared the lecture method with other educational methods such as providing educational packages,[17-20] peer-to-peer training and role-playing.[21-28] It seems that using participatory educational methods are the most effective way to develop the adolescents' knowledge, attitude, and skills to enhance their ability to make healthy decisions throughout life.[1,5,9,29] Numerous studies in different places show that the majority of girls do not perform well during puberty, and this performance certainly affects their future fertility and childbearing, and leads to their personal and social health, and the most effective tool in this people are educated.[30-32]

Peer education has been reported as a significant strategy for promoting puberty health among adolescents. Some studies have been conducted on the effect of peer group on reducing smoking and drug use in adolescents and young adults.[25,33-35] In Iran, few studies have been conducted on the promotion of knowledge, attitude, and performance about puberty health by peers but these studies have considered only the physical dimension of puberty.[1,16,28] Motivational interview is a client-centered counseling approach, which is presented as a way to help people bolster their motivation to tackle their problems and to progress through the stages of change; in addition to its flexibility and applicability in various areas of behavior, can be performed individually or in groups.[16,36-38] According to the results of some studies, motivational interviews are effective in reducing high-risk health behaviors such as smoking, alcohol consumption, and sex outside the family.[39-41]

Motivational interviewing has been rarely used to promote puberty and mental health of adolescents in Iran and around the world; hence, due to the importance of puberty health of teenage girls, in this study, for the first time in the Iran, motivational interviewing was conducted for this group. Furthermore, in order to examine its effectiveness, we compared it with the peer group method. The aim of the present study was to compare the two methods of motivational interviewing and peer-to-peer education in promoting the knowledge and performance about puberty health and mental health in adolescent girls.

MATERIALS AND METHODS

In this semi-experimental intervention study, all high schools of Shahroud-Iran during the academic year of 2018–2019 entered to the study. This project has been registered with the tracking code 96128 and the code

of the ethics committee IR.SHMU.REC.1396.144 in Shahroud University of Medical Sciences and with the code IRCT20180209038675N1 in the clinical trial registration system. Inclusion criteria included eight grade students with Iranian nationality. The exclusion criteria included consumption of psychiatric drugs, having family problems such as death or divorce of parents in the past 6 months and not attending two consecutive classes and not cooperating with the researcher during the study.

Samples were selected by multi-stage randomization, initially, according to the division of urban areas, all schools were divided into three groups: public schools in the city center, public schools in the suburban areas, and private schools. A total of 15 schools (6 public schools in the city center, 6 public schools in the suburbs, and 3 private schools) were selected based on simple randomization. Then among 15 schools, 5 schools (2 public schools in the city center, 2 public schools in the suburbs, and 1 private school) were assigned to the intervention group one, 5 schools (2 public schools in the city center, 2 public schools in the suburbs, and 1 private school) were assigned to the intervention group 2 and five other schools were selected as a control group by simple randomization.

Then, by simple randomization from each school, just one eighth-grade class was entered in the study and all the students in the class were assessed. A total of 334 students entered into the study and were divided to the three groups: the motivational interviewing group (n = 117), the peer training group (n = 94), and the control group (n = 123). The sample size was calculated 61 participants for each group based on α =95%, β =90%, $mean_1 = 2.4$, $mean_2 = 1.55$, $\sigma_1 = 6.28$ and $\sigma_2 = 7.48$.[17]

Due to the possibility of students dropping out of school, all students in a class were entered into the study.[28] Data were collected using a demographic form, including age, parent's education, a researcher-made questionnaire of knowledge and practice about puberty health, and a Persian version of standard Symptom Checklist-25 (SCL-25) questionnaire for assessing mental health.[42] The researcher-made questionnaire included 44 multiple-choice questions to assess knowledge and 37 questions to assess students' performance in relation to puberty health.[5,43] The questions were about puberty, menstruation and common issues, nutrition and diet, exercise and physical activity, smoking and drug use, and AIDS and sexually transmitted diseases. The range of the awareness scores was from 0 to 44. Thus, the correct answer was given a score of (1) and the wrong answers were given a score of (0). Awareness scores below quartile 25 were rated as poor, between quarters 25–75 average and above quartile 75 good and acceptable. The same was done for performance.

Performance responses about puberty health were given on a 4-point Likert scale ranging from 4 (always) to 1 (never); the reverse scoring was calculated for the items as required. Accordingly, the performance scores ranged from 37 to 148. The content validity of this questionnaire was evaluated using the 10 midwifery experts' opinion and revised based on their opinions. Cronbach's alpha was 0.84 in this study. Also, to confirm the reliability of the questionnaire, the test-retest method was used in such a way that the questionnaire was given to 30 students, who met the requirements of the study units, twice with an interval of 10 days and the correlation coefficient was 0.83.

The SCL-25 questionnaire was used to measure mental health. This questionnaire measures 9 dimensions of disorders. Participants' responses were given on a 5-point Likert scale ranging from never (1), a few (2), somewhat (3), great (4), and very great or severe (5). At scores between 25 and 50, symptoms of mental disorders in an individual are low. At a score between 50 and 75, the symptoms of mental disorders are moderate. At scores above 75, the symptoms of mental disorders are high. This questionnaire has a significant correlation with its original form (SCL-90) and is therefore a valid tool for measuring the symptoms of mental disorders. The reliability of the questionnaire was also calculated using the Cronbach's alpha method. Cronbach's alpha for the short-form questionnaire of mental health is 0.97.[42]

Pretest questionnaires were completed by the students before the schools were randomized into three groups (two intervention groups and one control group). Posttests were completed immediately after and 1 month after the intervention.

Prior to the start of intervention, one session was held to teach educational content of puberty health questionnaire to match students' information at the beginning of the study in intervention groups.

The intervention Group 1 was based on group counseling and for this purpose; students were divided into groups of 7–9 people. Motivational interviewing was presented to students by a master in consultation in midwifery during five sessions of 60–90 min and one session per week.

In the intervention Group 2, the peer group was selected from active volunteers who scored higher on the puberty

health questionnaire prior to the start of the study. Each peer educator was responsible for transmitting information to 5–6 other students. In one session, the educational content was explained to peer educators. Then, one formal training session was held by peer educators to other students, and the information was then passed on informally to peers in small groups (5–6 students) within 1 month. The peer-to-peer educators' relationship with the researcher continued after the intervention so that educators could ask their questions.

In order to observe ethics in research, after sampling and intervention, two training sessions on puberty health were conducted by the researcher for the control group.

The educational content was the same for both groups included various areas related to sexual maturity, menstruation, health behaviors, primary dysmenorrhea, nutrition, exercise, physical health, drug use and abuse, smoking and alcohol, AIDS, and hepatitis. All relevant topics have been used from the national guidelines for adolescent and youth self-care published by the Ministry of Health and Medical Education of Iran.[1,44]

In this study, participants and analysts were uninformed about intervention and control groups, Data were analyzed by the SPSS 16 software (Built by Norman Ney at Stanford University in 1968) using descriptive statistics (mean, standard deviation, and frequency) to describe the demographic variables and Chi-square, repeated measurement, ANOVA, and Pearson correlation to evaluate the effect of the intervention. $P \leq 0.05$ was considered as the significance level.

RESULTS

A total of 334 adolescent girls were recruited. The mean age of the students was 14.44 ± 0.51 years, and the mean years of education of parents were 4.80 ± 2.05 and 4.81 ± 2.02, respectively. Furthermore, most of the parents' jobs were freelance and homemakers, respectively. On the other hand, the first source of information and the source that is preferably used for information were family and health-care providers, respectively. Comparison of demographic characteristics showed no significant differences between groups [Table 1].

There was no significant difference between the knowledge, performance, and mental health scores of the adolescent girls in the three groups before the intervention, while immediately and 1 month after the intervention, the intervention groups (motivational interviewing and peers) scored significantly higher in knowledge and performance and lower in mental health than the control group [Table 2].

According to Mauchly's test (significance <0.05) the Greenhouse–Geisser analysis was used to evaluate the effect of time, and time-group interactive effect, both of which were significant for main variables. According repeated measurement, knowledge, performance, and mental health significantly changed intra groups and inter groups over the time [Table 3]. As shown in Table 4, differences of knowledge, performance, and mental health scores were significant between two intervention groups as well as each intervention group with control group. The scores of all three variables were better in the peer group than two other groups.

Only about one-fourth of the students had acceptable awareness and performance levels before the intervention, and the other students had poor and moderate awareness and performance regarding the puberty health, and there was a direct and significant relationship between students' knowledge and performance scores (according to Pearson correlation coefficient: $r = 0.6$ and $P = 0.0.3$), there was not a significant relationship between students' knowledge and SCL score ($P > 0.05$), there is also an inverse and significant relationship between students' performance and SCL score ($r = -0.17$ and $P = 0.001$).

DISCUSSION

This study assessed the effect of two methods motivational interview and peer group education, on students' knowledge and performance on puberty health and their mental health.

In this study, only about 25% of the students had sufficient and acceptable knowledge before the intervention. The results of the present study are similar to studies in Iran.[5,16,28,45] and other countries.[46-49] Some articles consider the obsolescence and inefficiency of health education curricula as the cause of students' insufficient awareness.[52, 53] It can also be considered that the lack of sufficient knowledge in Iranian students is due to lack of proper education by schools and families.[16,50]

In this study, the first source of information was the girls' families and the source that was preferably used for obtaining information was health-care providers which is consistent with similar studies.[16,28,51]

Regarding the awareness and performance about puberty health, scores in both intervention methods significantly

Table 1: Demographic information of the three study groups

Variable	Motivational interview, *n* (%)	Peers, *n* (%)	Control, *n* (%)	*P*
Age, mean±SD	14.53±0.54	14.37±0.48	14.41±0.49	0.07**
Father's education (years), mean±SD	10.38±1.65	10.24±1.79	10.85±1.51	0.22**
Mother's education (years), mean±SD	11.03±1.95	11.26±1.92	10.98±2.12	0.57**
Father's occupation				
Worker	20 (17.1)	10 (10.6)	8 (6.5)	0.44*
Employee	38 (32.5)	30 (30.9)	31 (25.2)	
Retired	5 (4.3)	14 (14.9)	14 (11.4)	
Self-employed	47 (40.1)	40 (42.6)	67 (54.5)	
Unemployed	7 (6)	0	3 (2.4)	
Mother's occupation				
Housewife	107 (91.5)	78 (83)	103 (83.7)	0.81*
Employed	10 (8.5)	16 (17)	20 (16.3)	
First source of information				
Family member	53 (45.3)	58 (61.7)	71 (57.8)	0.38*
Peers	23 (19.7)	7 (7.4)	19 (15.4)	
Book/magazine	10 (8.6)	8 (8.5)	4 (3.3)	
Internet	7 (6)	5 (5.3)	3 (2.4)	
Religious preacher	1 (0.9)	2 (2.1)	2 (1.6)	
Health-care providers	9 (7.7)	3 (3.2)	2 (1.6)	
School teacher	14 (12)	11 (11.7)	22 (17.9)	
Preferred source of information				
Family	34 (29.1)	25 (26.6)	38 (30.9)	0.78*
Peers	17 (14.5)	14 (14.9)	16 (13)	
Book/magazine	7 (6)	5 (5.3)	5 (4.1)	
Internet	2 (1.7)	3 (3.2)	4 (3.3)	
Health-care providers	51 (43.6)	43 (45.7)	46 (37.4)	
School teacher	6 (5.1)	4 (4.3)	12 (9.8)	

*χ^2, **ANOVA test. SD: Standard deviation

Table 2: Scores of knowledge and performance about puberty health and mental health scores in different groups at different times

Variable	Group	Scores before intervention (mean±SD)	*P*	Scores immediately after intervention (mean±SD)	*P*	Scores one month after intervention (mean±SD)	*P*
Knowledge	Motivational interview	22.61±3.84	0.59	26.45±3.49	0.001	29.44±3.49	0.001
	Peers	22.52±4.73		28.18±3.85		32.91±3.69	
	Control	21.44±4.03		20.69±4.43		20.54±3.83	
Performance	Motivational interview	106.56±16.49	0.47	119±10.10	0.001	121.86±10.40	0.001
	Peers	108.62±16.50		121.59±10.32		130.37±8.07	
	Control	105.80±17.92		106.14±14.56		105.84±13.80	
Mental health	Motivational interview	52.56±3.05	0.34	49.51±2.58	0.001	50.96±2.04	0.001
	Peers	50.74±2.80		46.61±3.73		47.41±2.13	
	Control	51.49±3.61		52.11±2.82		51.92±4.75	

SD: Standard deviation

Table 3: Results of *repeated-measures analysis* of variance for students' knowledge and performance about puberty health and mental health

Variables	Source	Df	Square of mean	*F*	*P*
Knowledge					
Intra-subject tests	Time	1	4885.679	1078.647	<0.001
	Time × group	2	1854.619	409.458	<0.001
Inter-subject tests	Interaction effect	1	616479.146	15469.329	<0.001
	Group	2	4472.633	112.232	<0.001
Performance					
Intra-subject tests	Time	1	25188.705	347.596	<0.001
	Time×group	2	6939.333	95.760	<0.001
Inter-subject tests	Interaction effect	1	12840281.530	27371.209	<0.001
	Group	2	17823.702	37.994	<0.001
Mental health					
Intra-subject tests	Time	1	1136.494	40.354	<0.001
	Time×group	2	534.362	18.974	<0.001
Inter-subject tests	Interaction effect	1	839174.485	3225.482	<0.001
	Group	2	513.541	1.974	<0.001

DF: Degree of freedom

Table 4: Comparison the changes of knowledge, performance and mental health between pairs of groups over the time

	Mean difference (I–J)	SE	*P*
Knowledge			
Motivational interview			
Peers	−4.39	1.732	0.012
Control	9.88	1.615	0.000
Peers			
Motivational interview	4.39	1.732	0.012
Control	14.26	1.713	0.000
Control			
Motivational interview	−9.88	1.615	0.000
Peers	−14.26	1.713	0.000
Performance			
Motivational interview			
Peers	−1.71	0.505	0.001
Control	5.28	0.471	0.000
Peers			
Motivational interview	1.71	0.505	0.001
Control	6.98	0.499	0.000
Control			
Motivational interview	−5.28	0.471	0.000
Peers	−6.98	0.499	0.000
Mental health			
Motivational interview			
Peers	−3.98	1.324	0.000
Control	7.24	0.944	0.000
Peers			
Motivational interview	4.1	1.114	0.001
Control	11.28	1.732	0.000
Control			
Motivational interview	−7.24	0.734	0.001
Peers	−11.28	0.950	0.000

SE: Standard error

increased in the two periods after the intervention, however, the mean scores in the peer education group were significantly higher than the motivational interview group. In addition, the mean scores of knowledge and performance in the motivational interview and peer groups were significantly higher than the control group. Hence, both the groups had significant effect on promoting puberty and mental health of the adolescents, but the peer education group seems to have been more effective and which is consistent with similar studies.[7,22] Based on our knowledge, the motivational interview method has not been assessed to promote knowledge and performance about puberty health so far. A study compared lecture and peer base education about puberty health, reported that peer base education can be more effective to promote knowledge and performance about puberty health.[4,16,22,34,50] In fact, the results showed that students learn better than other classmates about issues related to puberty and mental health through peer education.

Mental health improved in both intervention groups over the time, but not in the control group. These results are consistent with another study that assessed to investigate peer education approach on knowledge and practice about mental health of adolescent girls, it was reported that students' knowledge and performance scores increased significantly after the intervention.[15]

One of the advantages of this study is a large sample size and of the limitations of this study was poor cooperation between schools and students to hold sessions. For this, the class hours were coordinated with the high school principal, teachers, and students. In order to increase the cooperation of the students, they were given prizes and served with food and snacks.

CONCLUSIONS

The findings of the present study show that about 25% of the participants have enough information about puberty and mental health. Therefore, it is necessary to include educational courses related to the physical, mental, and social aspects of puberty health, and to establish counseling offices related to puberty health in schools. Also, since in most participants, the mother has been a source of awareness for girls, it is suggested that educational sessions be held to increase mothers' awareness in this regard.

According to the present study, the motivational interview and peer education methods can be effective in promoting puberty and mental health in adolescent girls. Both methods can have a significant impact on puberty health behaviors. However, the peer training method was more effective than the motivational interviewing method in promoting knowledge and performance puberty health in adolescent girls. Holding training sessions for students can be effective in promoting adolescent girls' puberty health.

Conflicts of interest

There are no conflicts of interest.

Authors' contribution

Sarah Mohamadi (1 author), senior researcher (20%), Sahar Paryab (2 author) discussion of the manuscript (20%), Seyed Abbas Mousavi, (3 author) assistant researcher (15%), Afsaneh Keramat (4 author), statistical analyst (15%), Zahra Motaghi (5 author), writer of methodology (15%), Omid Garkaz (6 author) discussion of the manuscript (15%)

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