

The Effect of Mothers' Group Counseling on the Health-Promoting Behaviors of Adolescent Girls

Abstract

Introduction: Promoting adolescents' healthy behaviors through different strategies is essential to prevent the risks of adulthood chronic problems. This study aimed to investigate the effect of mothers' group counseling on the health-promoting behaviors of high school adolescent girls in Qazvin city, Iran. **Methods:** This single-blind, randomized controlled trial was conducted in Qazvin, Iran. Participants were 100 guidance school female students and their mothers who were selected through multistage random sampling. The demographic data form and Health Promoting Lifestyle Profile were used for data collection before and 2 months after the intervention. The intervention was conducted in four sessions lasting for 90–60 min. **Results:** There was no improvement in the mean score of health-promoting behaviors before the intervention in the control group (27 ± 20.313) and the intervention group (23.54 ± 138.86), but after the intervention in the intervention group, a significant improvement was observed with a mean difference of 12.90 in the intervention group whereas 5.26 in the control group. The highest increase was in stress and nutrition control with a mean difference of 3.06 and 2.74, respectively. The ANCOVA test also confirmed the effectiveness of education ($P = 0.03$, $F = 4.43$). **Conclusion:** Mothers' group counseling can improve adolescent health-promoting behaviors. Considering the importance of the role of mothers in protecting and promoting the health of adolescent girls, it is essential that maternal education and counseling are prioritized to increase the healthy behaviors of adolescent girls.

Keywords: Adolescence, group counseling, health-promoting behaviors

Introduction

Adolescent girls are vulnerable and at-risk groups that shape the future of the community.^[1,2] The health of adolescent girls is more important than males due to numerous cultural and social reasons, characteristics of puberty and physical and psychological conditions of this era, and most importantly their fundamental role in fertility and family life.^[3,4]

Promoting healthy behaviors and measures to prevent risks for the growth and development of countries during adolescence is encouraged by the World Health Organization.^[5] Health-promoting behaviors are defined as any action that can be taken to increase and maintain the level of health and self-actualization of an individual or a group.^[6] In previous studies, the effectiveness of providing healthy behaviors through reliable educational resources has been evaluated, and its

impact on improving the health behaviors of adolescent girls has been assessed.^[4,7-9]

The results of a systematic review by van Sluijs (2007) indicated that, to promote physical activity of adolescents, multicomponent interventions including both school and family or community involvement is needed to reach desirable health promotion.^[8] In another systematic review, Van Cauwenberghe *et al.* found that, for adolescents, school-based educational program is likely to be effective to promote healthy nutrition.^[9] Hence, taking these evidence together, teachers and health-care educators, school counselors, and parents should play a significant role to improve adolescents' health behaviors.^[4]

The role and influence of families as the most important institution in reducing adolescents' high-risk behaviors is imperative^[10] because the education level of family members, social class, occupation, and religious beliefs have significant roles on households' health.^[11] Adolescents need their parents' companion for seeking

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Monireh Pourshamsian¹,
Maryam Mafi²,
Nezal Azh³

¹Student Research Committee, School of Nursing and Midwifery, Qazvin University of Medical Sciences, Departments of ²Biostatistics and ³Midwifery, School of Nursing and Midwifery, Qazvin University of Medical Sciences, Qazvin, Iran

Address for correspondence:
Dr. Nezal Azh,
Department of Counseling in Midwifery, School of Nursing and Midwifery, Qazvin University of Medical Sciences, Bahonar Blv. Qazvin, Iran.
E-mail: nezal_ajh@yahoo.com

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information,^[12] and their behavioral pattern is influenced by family relationships.^[13] Hence, the decisive role of mothers and their impact on health of the family and community is undeniable.^[14] There is a significant relationship between mothers' and adolescents' knowledge of health and puberty.^[15] The good relationship between the teenage girl and her mother can empower the younger generation.^[15,16]

Despite the important role of mothers, the level of mothers' awareness and engagement to their girls' health issues has been challenged in numerous studies.^[17-19] Therefore, efforts should be made to encourage parents, especially mothers, to communicate directly with their children.^[16] They should know that their behavior influences their child's present and future health.^[20] In this regard, mothers were selected to be the focus of the present study. Researchers aimed to investigate the impact of mothers' group counseling on their daughters' health-promoting behaviors.

Methods

Study design and setting

This was a single-blind, randomized controlled trial with a concurrent control group. Participants were female secondary school students in Qazvin city and their mothers. Female students from guidance schools were included if they lived with their mothers. Living with fathers or grandparents or anyone except mothers was considered as exclusion criteria. Other exclusion criteria included having chronic physical or psychological disease or disability in girls and unwillingness to participate.

Participants were selected from Qazvin guidance schools. A three-stage sampling method was used to select participants. Qazvin has 26 guidance schools in two different educational districts. At the first stage, clustered random sampling method was used. In this regard, a list of public guidance schools was used, and six schools were randomly selected. At the second stage, using the list of classes, two classes were randomly selected from each school. At the third stage, eight to students were randomly selected from each class. After coordinating with the school administrators and obtaining consent from the parents, eligible participants were selected through interviewing.

The sample size was calculated based on the study of Mostofi *et al.*^[21] Given the behavioral score of intervention and control groups as 11 ± 22.18 and 1 ± 8.45 , respectively, and $\alpha = 0.05$, $\beta = 0.02$, and $d = 10$, the sample size was estimated as 45 people in each group. In addition, consideration of 10% dropping of participants through study procedures, the final sample size was estimated to be 100 people (50 people in each group).

Randomization

A random allocation of the participants into two groups of intervention and control was done by the simple random blocking method with four blocks. For the purpose

of block randomization, the assignment sequence was generated using online random sequence generator before the beginning of the research. Given that the two groups will be studied, four blocks were used and each letter was assigned to one group (A: intervention group; B: control group). Twenty-five random blocks were selected to randomization.

Intervention

The mothers of students in both groups were invited to participate in the counseling sessions. The intervention program and content of counseling sessions were designed based on the subscales of the Health Promoting Lifestyle Questionnaire. However, more attention was given to subscales, with less acquired score in baseline. Mothers received education on communication skills, problem-solving methods and stress management, exercise, nutrition, and interpersonal support approved by the Ministry of Health. The intervention was conducted by the researchers during four sessions (60–90 min) on a weekly basis similar to other studies^[21,22] in groups consisting of 8–10 people. Health-Promoting Lifestyle Profile (HPLP) as an outcome variable of the study was assessed before intervention and 2 months after the last session of mothers' education.

Blinding

The study was designed to be single blinded. For this purpose, four counseling sessions were held for the control group about common gynecological diseases. Hence, as the participants were not aware of their being among intervention or control group, participation in counseling sessions for both groups helped the researchers to blind their participants.

Instruments

Demographic checklist

The demographic data questionnaire comprising questions on age of adolescents and parents, occupation and education level of parents, weight and height of adolescents, satisfaction with the household economic status, which was designed based on a literature review, was used. Content validity was confirmed by midwifery instructors.

Health-Promoting Lifestyle Profile

The HPLP was developed based on the Pender's Health Promotion Model. The HPLP-II is the modified version of HPLP developed by Walker *et al.* It measures health-promoting lifestyle with a focus on inventive work and individual perceptions that acted to maintain or increase well-being, spiritual growth, and individual satisfaction. It consists of 52 questions and 6 subscales on a 4-point Likert scale (never = 1, sometimes = 2, often = 3, and usually = 4). In general, the HPLP score and Behavioral Dimension Score are calculated using the mean response for a total

of 52 questions and for each subcategory (8–9 items). Walker *et al.* reported a Cronbach's alpha of 0.94 with a range of 0.79–0.94 for six subscales of nutrition (having a food pattern and choosing food with nine questions), exercise (pursuing a regular sports pattern with eight questions), health accountability (nine questions), stress management (identifying stress sources and stress management measures with eight question), interpersonal support (preserving relationships with a sense of proximity with nine questions), and spiritual growth (having a sense of purposefulness, seeking personal progress, and an experience of self-awareness and satisfaction with nine questions).^[23] This questionnaire has been translated to Farsi by Mohammadi Zeidi, and its validity and reliability were verified.^[24] Furthermore, Mohamadian *et al.* verified the validity and reliability of this scale in a sample of Iranian adolescents.^[25]

Statistical analysis

Data were analyzed via the SPSS software (version 24, IBM, Armonk New York, USA). To assess the level of girls' health-promoting behaviors in the groups, before and after the intervention, the independent *t*-test was used. For comparing these behaviors before and after education, the paired *t*-test was used. To investigate the effect of interference factors and effect of time, the ANCOVA tests were used. Assuming the normal distribution of data was confirmed by the large sample size ($n = 100$) and equality of variance was confirmed using the Leven's test ($P = 0.73$). The interaction between pretest scores and group ($P = 0.38$) was not present. Furthermore, there was a linear relationship between the scores of pre- and post-test of health-promoting behaviors ($r = 0.61$).

Ethical considerations

To comply with ethical principles, this research proposal was reviewed by the Institutional Review Board and Regional Ethics Committee Board of Qazvin University of Medical Sciences. As the proposal was approved by the Ethics Committee Board, it was registered under the ethics code of IR.QUMS.REC.1396.358. Furthermore, the study protocol was registered and approved in the Iranian Registry of Clinical Trials (IRCT20180131038580N1). Confidentiality and anonymity were preserved during the study. Participants' religious and cultural beliefs were respected.

Results

In this study, 100 female students and their mothers were selected and assigned to the groups. According to baseline characteristics, most mothers and fathers had a high school or diploma degree; most families described their economic status as good or medium. Overall, the two groups did not differ significantly in terms of basic characteristics including age, height, weight, and age of parents [Table 1].

Table 1: Demographic information of the participants

Variables	Sub scale	Control	Intervention	P
Mothers' education	Illiterate	2	2	0.81*
	Primary school	18	15	
	Secondary school	13	20	
	Diploma	14	12	
Fathers' education	Top diploma	3	1	0.08*
	Illiterate	1	1	
	Primary school	13	12	
	Secondary school	18	27	
Mothers' job	Diploma	16	6	0.84*
	Top diploma	3	4	
	Homemaker	44	46	
	Worker	2	2	
Fathers' job	Employee	2	1	0.59*
	Self-employed	2	1	
	Unemployed	4	3	
	Worker	16	17	
Satisfaction of the economic situation	Employee	5	3	0.58*
	Self-employed	25	27	
	Excellent	4	7	
	Good	22	25	
Mothers' age	Medium	16	12	0.74#
	Weak	3	3	
	Bad	5	3	
Fathers' age	Mean±SD	38.14±0.78	38.36±0.77	0.74#
Teen age	Mean±SD	39.78±1.65	41.66±1.25	0.74#
Teenage height	Mean±SD	14.86±0.12	14.7±0.81	0.34#
Teenage weight	Mean±SD	157.94±1.02	154.82±1.18	0.06#
	Mean±SD	52.66±1.58	47.58±1.23	0.06#

*P value for Chi-square test, #P value for *t*-test. SD: Standard deviation

The result of *t*-test for the mean score of the health-promoting behaviors in the control and intervention groups before the intervention was 133 ± 27.20 and 23.54 ± 138.86 , respectively, but after the intervention, a statistically significant increase was observed for intervention group (26.10 ± 151.76). Analysis of covariance also showed that education had a positive significant effect to improve health-promoting behaviors among intervention group compared to control group [Table 2]. As shown in Table 2, the overall mean score of posttest scores for health-promoting behaviors increased significantly, but this increase was not significant in terms of sports, health responsibility, and mental development.

Discussion

This study aimed to examine the effect of mothers' group counseling on health-promoting behaviors among guidance school adolescent girls. Results of the present study indicate that the mean scores of all subscales were higher than before and were statistically significant, except for the interpersonal support subscale. Hence, the effectiveness of mothers' group counseling on their daughters' health-promoting behaviors was confirmed.

Table 2: Effect of intervention on health-promoting behaviors among adolescent girls based on the covariance analysis

Variables	Group	Mean±SD		F	P
		Before intervention	After intervention		
Nutrition	Intervention	23.52±4.39	26.26±4.97	6.84	0.01
	Control	21.96±5.16	23.00±5.46		
Physical activity	Intervention	19.76±5.99	21.58±5.24	0.55	0.45
	Control	19.08±5.73	20.58±5.81		
Health responsibility	Intervention	23.32±6.02	24.70±5.82	2.84	0.11
	Control	21.78±5.53	22.70±6.37		
Stress management	Intervention	10.44±4.14	22.50±5.82	8.13	0.005
	Control	19.38±4.83	19.90±5.32		
Interpersonal relations	Intervention	25.94±7.40	26.98±5.54	4.48	0.03
	Control	23.90±6.31	24.06±5.70		
Spiritual growth	Intervention	27.88±5.00	29.74±5.27	1.12	0.21
	Control	27.10±5.80	28.22±6.65		
Total	Intervention	138.86±23.54	151.76±26.10	4.43	0.03
	Control	133.20±27.00	138.46±29.67		

SD: Standard deviation

Similarly, Safavi *et al.* found positive changes in nutritional behaviors of guidance school students after an educational intervention.^[26] The study of Todd *et al.*^[3] on the importance of teaching health behaviors in preventing overweight and obesity in adolescent girls showed a similar result. Salari and Rehani's study^[27] on the effect of nutritional education and weekly iron supplementation on the level of learning of female students increased the nutritional behaviors, weekly iron intake, and students' learning. Mirdrikvand *et al.*^[28] examined the effect of life skills' education on psychological capital and adaptation in adolescent girls with bad parents and showed similar results. Patel *et al.*^[29] emphasized the role of parents and families for promoting mental health of children and adolescents in low- and middle-income countries. Therefore, this study confirmed that mothers' education can lead to the same outcomes achieved through adolescent education.

It should be noted that indirect interventions on students had been evaluated by various researchers, which are in line with the WHO's recommendation on the health of adolescents affected by the environment (parents, peers, athletes, and actors).^[30] Therefore, the results of our study are supported by those of other similar studies. Brunet *et al.*^[20] and Mostofi *et al.*^[21] reported similar findings. In a longitudinal prospective study by Brunet *et al.* on the association between parental and adolescent participation in physical activities, improved parent- child relationship resulted to better child's physical activity.^[20] In a study on the impact of group education on knowledge, attitude, and performance of mothers in the sexual education of adolescent girls by Mostofi *et al.* in the intervention group 1 and 3 months later, the level of knowledge, attitude, and performance was significantly different compared to the control group.^[21] The results of the current research on the effectiveness of counseling and education were consistent with the results of other studies. Similar to our study, Yeh

et al. found that family empowerment program compared to conventional self care education, had significantly improved pulmonary function among children with asthma. Families through listening, talking, reflecting, and acting were able to help their children resolve their problems and improve their health outcomes.^[22] In the study by Hu *et al.*, the community education program improved knowledge and understanding of students and their protective behavior against sunlight.^[31] Furthermore, the study by Ahmadizadeh Fini *et al.*^[32] on the effect of education through peers on health-promoting behaviors of guidance school students yielded similar results to the present study.

This educational style (group counseling) has been used in studies with other age groups with different needs and led to similar results. For example, Sanaati *et al.*^[33] who aimed at investigating the effect of education on the health-promoting lifestyle in pregnant women and their spouses and Parsa *et al.*^[34] who analyzed the effect of group counseling on self-care behaviors in postmenopausal women with diabetes reported similar results. The group counseling approach was not effective in the study of Merakou, as assessed the educational approach of peers on the prevention of AIDS in Athens. Compared to the control group, the intervention group showed a modest increase in their responsibility and sexual behaviors. The level of knowledge in the intervention group was not improved compared to the control group. The result showed that educational approach did not affect the attitude toward the use of condom and onset of sexual relationships,^[35] which was not consistent with the results of the present study. The probable reason may be attributed to the cultural difference and the subject under study as safe sexual behaviors and the use of condoms require special interventions beyond education.

The results of the current study showed that the subscale of spiritual growth followed by interpersonal support had

the highest score in both groups before the intervention. These results were similar to those of Ahmadizadeh Fini *et al.*, as before the intervention, questions about spiritual growth, interpersonal support, and nutrition achieved the highest scores.^[32] It shows strong family and friendship support of girls in Iran and religious beliefs among teenagers in Qazvin city. In the study of Hajhashemkhani *et al.*, interpersonal support and nutrition had the highest mean scores, and the lowest score was related to physical activity and stress management.^[36] In the present study, the subscales of exercise and stress management prior to the intervention had the lowest scores that were consistent with the results of the study by Piri *et al.*^[4] Haraldsson *et al.* also pointed out stress, especially among adolescents, as a widespread phenomenon affecting girls more than boys.^[37] In the study by Bajamal *et al.*, physical activity in adolescents was inadequate.^[38] The results of the present research were not supported by the research of Raiyat *et al.* in Qazvin and Khazaie *et al.* in Birjand. The possible source of this inconsistency might be due to different participants. Participants of present study were only female guidance school students, while Raiyat *et al.* surveyed both male and female students and Khazaie focused on college students. In the Khazaie *et al.*'s study, the lowest score was related to the Health Accountability Scale.^[39]

After intervention, the total mean score in the intervention group was significantly higher than that of the control group, which was supported by studies of Ahmadizadeh Fini *et al.*,^[32] Brunet *et al.*,^[20] Mostofi *et al.*,^[21] Sanaati *et al.*,^[33] Parsa *et al.*,^[34] and Taghdisi *et al.*,^[40] indicating that mothers' counseling according to the needs of their adolescents changed their behaviors in comparison to the control group. It should be noted that, in the present study, comparison of control and intervention groups 2 months after the intervention in the three subscales of exercise, conscientiousness for health, and spiritual growth was not statistically significant. This may have been due to the current research constraints including the time limitation for exercise and the concurrence of this research with the Health Week, which were advertised through various TV channels. On the other hand, spiritual support in both groups did not significantly increase. The focus of counseling sessions was determined according to pretest scores, as this subscale achieved a high score, so counseling sessions were not focused on this subscale.

Limitation

The difficulty of access to schools and synchronization of study follow-up with schools' final examinations were the important study limitations. Another limitation was inability to assess students' health-promoting behaviors over longer periods of time. In the present study, follow-up was scheduled 2 months after intervention, while long-term follow-up (e.g., 3 and 6 months after intervention) may help to investigate the impact of such intervention over time. As

with other self-report studies, it was possible that the students in this study had not disclosed their feelings in responding to questions due to fear of exposing their secrets. The other limitation was the interference of the research with the Health Week and the invitation of many speakers to educate mothers and students by school officials and education in media, which was beyond the control of the researchers. This intervention which was more about mental health and encouragement for exercise can be considered as a cause of increased health behaviors in some subscales in the control group.

Conclusion

The mothers' counseling program promoted the health behaviors of adolescent girls. Therefore, given the importance of mothers' roles in protecting and promoting the health of girls, to eliminate the gap caused by mothers' unawareness and communication between mothers and girls, it is necessary that mothers participate in group counseling sessions. They should become aware of the needs of adolescents to increase the healthy behaviors of adolescent girls. This research showed that, despite the increase in the overall score of the health-promoting behaviors in the intervention group, the mean score still is far from the normal score level of the questionnaire. Therefore, alongside maternal group counseling, other interventions could be taken to reach the upper limit of healthy behaviors in adolescent girls.

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Conflicts of interest

There are no conflicts of interest.

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