



The Effect of Living in Orphanage and Educational Counseling on Puberty Health Among Female Adolescents Living in Welfare Centers: An Interventional Study

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Abstract

Background: Adolescents living in orphanages are at risk of health problems. The current study aimed to determine the effect of living in an orphanage and educational counseling on puberty health of female adolescents living in welfare centers.

Methods: This study contained two stages. In the first stage, a cross-sectional study was conducted among 416 students living in welfare centers (10-14 years of age). In the second stage, 60 orphans (30 in the control group and 30 in the intervention group) participated in the interventional study. The intervention group received five two-hour sessions of educational counseling once a week. Pre-test and post-test were performed using a researcher-made questionnaire. The data were analyzed in SPSS 18 using the Mann-Whitney U, chi-square, Wilcoxon, and Kolmogorov-Smirnov tests.

Results: The cross-sectional study results indicated that the knowledge of orphans was lower ($P < 0.001$), but their attitudes and practices were higher ($P < 0.001$) than others. The trial study results demonstrated that in the intervention group, there was a significant difference ($P < 0.001$) in the mean difference of the puberty health score before and after the intervention.

Conclusion: Educational counseling is recommended to improve the level of puberty among female adolescents.

Keywords: Social welfare, Health, Counseling, Puberty, Adolescent

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Introduction

Adolescence is a sensitive and critical stage with significant emotional, cognitive, social, and physical changes (1,2). It is a stage in psychological development that takes place after childhood with profound physical, sexual, psychological, and social changes and transformations (3,4). Physical and psychological changes lead to the development and formation of one's personality (3,5). It is attributed to individuals in the 10-19 age group (6,7). A total of 85% of the 1.2 billion adolescents live in developing countries. In Iran, they make up 13.94% of the population and 47% of whom are females. Puberty includes significant change, is paramount, and is considered a milestone in adolescents' lives (3,5). Puberty is a process during which physical changes occur, leading to the maturation of the body into an adult's body, such as capability of reproduction (6,8), which might sometimes induce anxiety and worry in adolescents, making decision-making difficult for them and causing problems in their interactions with family members and relatives (9).

Therefore, prior knowledge of puberty issues has a

noticeable effect on how female adolescents deal with the changes and is an essential factor in their appropriate health-related behaviors (3,10). Principles and care that lead to maintaining and improving physical, psychological, and emotional health during this period are called "puberty health." Similar to other aspects of health, education can improve knowledge, attitude, and performance during this time (11,12). Female adolescents are the future mothers and a critical resource for society's economic, social, scientific, and cultural development. Women are the pillars of the family, and their health guarantees the health of the family and society. Ignoring puberty health may have adverse effects on future health (13). Lack of awareness, poor attitude, and improper behavior in adolescents regarding the psychological and physical health of puberty can result in predicaments such as failed marriages, sterility, early and high-risk pregnancies, and psychological disorders, including anxiety and depression (14,15).

Every year, the government spends high amounts of money on taking care of homeless children and



adolescents in welfare centers (16,17).

Cognitive-behavioral and psychological-educational counseling are ways of reducing puberty crises by improving cognition as an influential factor in emotions and behaviors (18,19). This method aims to correct unreasonable and ineffective beliefs, wrong interpretations, and cognitive errors, create a feeling of control over life, and improve coping skills (17,20). Cognitive-behavioral counseling is a purposive method that tries to create behavior modification and integrate cognitive activities to create therapeutic behavioral and emotional changes (19,21). Psychological-educational counseling is a measure to provide support based on psychological sciences to a person who is already hurt or exposed to trauma (22,23).

Considering the prominence of puberty and inadequate studies on the puberty health of female adolescents living in orphanages, and the lack of interventional-counseling studies to improve their puberty health, this study aimed to compare the puberty health of female adolescents living and not living in orphanages (residents and non-residents) before intervention and analyze the efficacy of cognitive-behavioral and psychological-educational counseling on their puberty health.

Methods

This study contained two stages. In the first stage, a cross-sectional study was conducted to check and compare puberty health between the residents and non-residents students. In this stage, 320 non-resident and 96 resident female adolescents aged 10-14 attended the study. The inclusion criteria included being 10-14 years old, regularly attending schools and welfare centers in Mashhad, Iran, and being consent to participate in the study. The exclusion criteria included participating in puberty health improvement sessions in other places and missing two or more educational sessions.

Sample size

Based on previous studies and statistical estimation, the first study's sample size was calculated to be 137 people ($\alpha=0.05$, $S=25$, and $d=4.2$). However, the sample size was increased by 40%, reaching 320, to achieve more acceptable and applicable results.

In the first stage of the study, the questionnaire was distributed to all female adolescents in the studied age group at the orphanage. Since the city of Mashhad is divided into 5 geographical regions in terms of providing health services, in order to reach non-resident female adolescents and choose schools, a cluster was randomly selected by a lottery method, one school from each region was selected, and questionnaires were sent to adolescents in the intended age group.

The second phase was an interventional study with pre-test, post-test, and a control group. In this phase, the intervention was implemented among welfare adolescents, the sample size increased by 30% due to the

possibility of attrition (sample dropout), and the number of female adolescents was estimated to be 30 for the intervention and control groups.

Using the sample size formula ($\alpha=0.01$, $\beta=0.05$, $\mu_1 \pm s_1=78.6 \pm 25.9$, $\mu_2 \pm s_2=45.6 \pm 25.2$), the sample size was considered 30 people per group and 60 people overall, with a 20% loss.

Sampling

In the intervention stage, where the effect of education on the puberty health of resident female adolescents was measured, the samples were determined based on random sampling using a lottery method and the selected individuals were randomly assigned to the intervention and control groups (taking into account non-contact, two control and intervention groups from different centers).

Tools

In this study, a research-made puberty health questionnaire was used to achieve the research objectives. This questionnaire consisted of three sections, including 21 questions about awareness of puberty health, 27 questions about attitudes toward puberty health, and 13 questions about the practice of puberty health. It was based on puberty health and Goldenberg's General Health Questionnaire (GHQ), health and obstetrics resources on puberty health, and opinions and experiences of obstetricians, gynecologists, and psychologists. Answers included "Always, often, sometimes, rarely, and never" based on the Likert scale. In the first phase, the questionnaire was given to all adolescents of the target population, whether resident or non-resident, to assess their knowledge, attitude, and practice of puberty health. Higher scores in the three domains (awareness, attitude, and practice) indicate better puberty health.

The opinions of 10 experts in relevant fields were used to assess the content validity. The content validity index (CVI) and the content validity ratio (CVR) were calculated (CVI and CVR=0.99). In order to assess the reliability of the questionnaire, 20 questionnaires were distributed among the target group. After evaluation, the reliability of the three domains of awareness, attitude, and practice was 0.72, 0.94, and 0.72, respectively. After obtaining permission from the ethics committee, getting familiar with the participants, explaining the objectives, and acquiring written consent from the participants, questionnaires were distributed to the two groups. Subsequently, the collected information was analyzed. Since there was no documented information on the health status of resident female adolescents, the collected information was considered a basis for information on resident female adolescents.

Intervention

In the second phase, resident female adolescents were randomly divided into two groups of control and

intervention through a lottery method, and educational counseling sessions were held for the intervention group. The counseling was a combination of cognitive-behavioral and psychological-educational counseling performed in five two-hour sessions once a week in the form of group sessions. The content of the sessions is presented in Table 1. An educational pamphlet was presented to the control group after the intervention.

Primary outcome

Immediately after the last session, a post-test was performed for both groups using the questionnaire to assess knowledge, attitude, and practice of puberty health, and was then compared with the pre-test. This study had no secondary outcome.

Statistical method

In the end, the collected data were analyzed in SPSS 18. The Mann-Whitney U test was carried out to compare the distribution of demographic variables (age and menarche age, and knowledge and behavior of research units in two groups of residents and non-residents in the first stage before and after the intervention). The chi-square, Wilcoxon (to compare knowledge scores before and after the intervention in the intervention group, and attitudes before and after the intervention in the two groups), and Kolmogorov–Smirnov tests were used.

Results

The first phase lasted for one month, and the second lasted for two months. The participants were 12-14 years old. Their menarche age was 11-12 years old. For most resident and non-resident groups, teachers were the usual information sources of puberty health.

The findings indicated no significant difference between the two resident and non-resident groups regarding age ($P > 0.05$); however, a significant difference was observed between them in terms of age at menarche ($P = 0.009$). The most prominent sources of information on puberty for the non-resident group were teachers and first-degree family members. In the resident group, the main sources of information were teachers and welfare center instructors (Table 2).

Table 1. Contents of the educational counseling sessions implemented in the intervention group

Session	Content
Session 1	The importance of puberty: Counseling and education regarding physical changes of puberty in female adolescents
Session 2	Menstruation physiology: The effect of exercising on puberty and menstruation period and the effect of nutrition in puberty
Session 3	Abnormal menstruation: Menstruation hygiene, menstruation hygiene focused on reproductive tract infection
Session 4	Behavioral, psychological, and social changes in puberty
Session 5	Communication and ways of establishing interpersonal relationships

The awareness of non-resident female adolescents was significantly higher than their resident counterparts ($P < 0.001$). The mean attitude score in non-residents was significantly lower than that in residents ($P < 0.001$). The mean score of practice of puberty health was significantly lower in non-residents than in residents ($P = 0.002$) (Table 3).

Analyses in the second phase, which included implementing the intervention for resident female adolescents, demonstrated no significant difference between the two groups regarding age ($P = 0.68$) and age at menarche ($P = 0.78$).

The participants' awareness of puberty health significantly increased after the intervention ($P < 0.001$). However, no significant difference was observed in the awareness score before and after the intervention in the control group. Moreover, there was a significant difference in the awareness scores between the intervention and control groups after the intervention ($P < 0.001$). However, no significant difference was observed in the attitude scores between the two groups before and after the intervention.

The participants' practice of puberty health improved after the intervention ($P = 0.006$). However, no significant difference was observed in the practice scores before and after the intervention in the control group. There was a significant difference between the practice scores of the two groups after the intervention ($P < 0.001$). However, no significant difference was found between the scores before the intervention (Table 4). Table 5 shows the comparison

Table 2. The comparison of age and age at menarche in the two groups of resident and non-resident female adolescents

Variable	Group		Mann-Whitney U	P value
	Non-residents	Residents		
	Mean (SD)	Mean (SD)		
Age	13.08 (0.95)	12.94 (0.95)	-2.21	0.22
Age at menarche	11.66 (0.84)	11.38 (1.06)	-2.61	0.009

Table 3. The comparison of sources of information in the two groups of resident and non-resident female adolescents

Variable Source of information	Group			
	Non-residents		Residents	
	Frequency	Percent	Frequency	Percent
Teachers	90	28.13	25	26.04
Friends at school	50	15.63	8	8.33
Social media	30	9.38	6	6.25
Internet/Book	30	9.38	6	6.25
First-degree family	60	18.75	5	5.21
Relatives	20	6.25	3	3.13
Friends	40	12.5	10	10.42
Welfare center instructors	0	0	23	23.96
Roommates in welfare centers	0	0	10	10.42

of the means scores of awareness, attitude, and practice of puberty health in resident female adolescents before and after the intervention.

Discussion

This study aimed to compare the puberty health of resident and non-resident female adolescents in orphanages and evaluate the efficacy of educational counseling on the puberty health of the residents in Mashhad, Iran.

The first phase of the study showed that the awareness score of non-resident female adolescents was higher than that of their resident counterparts. However, the resident female adolescents obtained higher attitude and practice scores compared to their non-resident counterparts. A comparative study of menstrual health behaviors of resident female adolescents with female adolescents living with their families indicated a significant difference and proved that the score of the resident girls was lower than the other group (16). The studies conducted on the counseling and educational needs of female adolescents indicated that they were not adequately aware of concepts related to reproductive and puberty health, and their practice was quite worrying in some cases (24,25).

This finding indicates the positive effect of educational counseling on the intervention group. However, their attitude score did not change significantly, and the change was not significant. The puberty health of resident female adolescents could be improved by educational counseling. Increasing knowledge and awareness of puberty hygiene

can prevent many misunderstandings and problems for adolescents. Education can improve health behaviors and confidence during puberty (16,26).

The findings indicated that the main sources of information for residents were their teachers and instructors of welfare centers, and in the non-resident group, the main sources were teachers and then their first-degree families. A study on Chinese adolescents' attitudes and practices indicated that the main sources of information were the media and the Internet; however, families and healthcare centers were essential in providing information to individuals (27). Due to cultural reasons, most adolescents, particularly females, do not have access to accurate information about the physical and psychological changes of puberty. Consequently, they may have serious physical and mental problems in their family life due to obtaining information from uninformed and unreliable sources (28).

The results of various studies indicate that female adolescents prefer to get information about puberty and issues related to reproductive and sexual health from their mothers (29,30). Mothers, followed by health instructors and peers, are the most important sources of information for adolescents (31,32). Then, other sources of information, such as peers, older siblings, street conversations, and public media, will emerge (33). Therefore, school authorities must be familiar with different educational methods and use effective methods to raise students' awareness with the participation of parents and health team members (34).

A home environment is a place for learning and teaching in various ways, but female adolescents living in welfare centers do not enjoy such a blessing (35). According to some previous studies, this group had moderate awareness of puberty and puberty health, confirming the present study findings (16,25,35). Orphanage residents in Shiraz were shown to have relatively sound mental health based on the GHQ-28 (36). Maintaining mental health requires observing principles such as paying attention to lifestyle, social contact, awareness about mind and body

Table 4. The means scores of awareness, attitude, and practice of puberty health in resident and non-resident female adolescents in the first stage

	Living Status	Mean (SD)	Mann-Whitney U	P value
Awareness	Non-resident	10.69 (3.9)	-10.39	<0.001
	Resident	6.15 (2.12)		
Attitude	Non-resident	3.69 (0.91)	-6.61	<0.001
	Resident	4.40 (0.43)		
Practice	Non-resident	2.69 (0.54)	-3.17	0.002
	Resident	2.90 (0.47)		

Table 5. The comparison of the means scores of awareness, attitude, and practice of puberty health in resident female adolescents before and after the intervention

Variable		Before Intervention	After Intervention	P value	The difference between the scores of before and after
		Mean	Mean		Mean
Awareness	Intervention	6.43 (1.99)	19.66 (1.06)	<0.001	13.23 (1.95)
	Control	6.06 (2.22)	6.06 (2.22)	1	0 (0)
	P value	0.385	<0.001		
Attitude	Intervention	4.32 (0.38)	4.35 (0.45)	0.45	-0.27
	Control	4.31 (0.49)	4.31 (0.46)	0.46	-0.63
	P value	0.784	0.51		
Practice	Intervention	2.96 (0.47)	3.25 (0.06)	0.006	-2.76
	Control	2.83 (0.47)	2.86 (0.48)	0.48	-0.63
	P value	0.27	<0.001		

interactions, having someone in life who can be trusted, problem-solving skills, etc. If individuals do not possess these skills, they will face difficulties in their lives (37).

These adolescents have a proper attitude and a thirst for knowledge and change. However, if they do not have the sources of information, knowledge-based behavioral change does not quickly occur in them. The constant presence of the psychologists as their guardians helps the female adolescents appropriately confront their problems, correct their behaviors, and most importantly, build trust. Psychologists, due to their opportunity to be with adolescents, can become aware of their problems and consider the necessary solutions and consultations to solve them. However, in schools, psychologists and counselors do not have such an opportunity (24).

Approximately 25% of investigated adolescents had a low awareness of psychological health during puberty; however, after education, this percentage decreased to 8% (38). Chiou et al indicated significant differences between the knowledge and self-care behavior scores of girls in the experimental group before and after the counseling and systematic education of puberty hygiene, showing the positive effect of counseling and education (39). Most of the adolescents were not adequately aware of puberty, health, and behaviors. However, in line with this research, their levels of awareness and ability improved after counseling and education (28).

A significant increase in the intervention group compared to the control group shows the positive effect of counseling and education on improving puberty health. Similarly, general health scores increased in adolescents who received puberty hygiene education over time (28, 39).

Limitations

The first phase of the study was limited to a city, leading to restricting the generalizability of the data. The study only focused on females, and the intervention was implemented only in one welfare center.

Conclusion

Based on the results, it is obvious that there is a need to educate female adolescents continuously through healthcare providers or mass media. It is recommended that the present study be conducted from different aspects in different regions through longitudinal studies on female and male resident and non-resident adolescents. Furthermore, school health instructors and welfare center instructors are recommended to hold continuous educational sessions for adolescents due to the importance of health education and the high-risk period of puberty.

Authors' Contribution

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Competing Interests

None declared.

Ethical Approval

The study was approved with the ethics code of IR.KMU.REC.1396.2462 and registered with the clinical trial code of IRCT20170611034452N5.

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