

## The Effect of Cognitive-Behavioral Counseling on the Empowerment of Pregnant Women Under 18 Years Old

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ARTICLE INFO	ABSTRACT
<i>Article type:</i> Original article	<b>Background &amp; aim:</b> One of the major problems related to maternal and neonatal health in adolescent pregnant mothers is the low level of pregnancy empowerment. It seems that using cognitive-behavioral counseling approaches can help women to further strengthen their empowerment. The aim of this study was to determine the effect of cognitive-behavioral counseling on empowerment of pregnant women under 18 years old.
<i>Article History:</i> Received: 18-Jul-2021 Accepted: 05-Sep-2021	<b>Methods:</b> This randomized controlled trial was performed in 2020-2021 on 64 pregnant women aged under 18 years referred to health care centers of Khaf, Iran. Participants were randomly allocated to two groups of intervention (n=32) and control (n=32). In the intervention group, cognitive-behavioral counseling was performed in the groups with seven members during 6 sessions (two 120-minute sessions per week for three weeks). The control group received the routine care. The research tool was Kameda and Shimada Empowerment Scale for Pregnant Women (ESPW). Data were analyzed using SPSS software version 25.
<i>Key words:</i> Cognitive-Behavioral Counseling Adolescent Pregnancy Empowerment	<b>Results:</b> In the pre-intervention stage, there was no significant difference between the mean empowerment scores in the two groups of intervention ( $73.87 \pm 8.95$ ) and control ( $72.78 \pm 7.36$ ) ( $P = 0.59$ ). However, in the post-intervention stage, the mean empowerment score in the intervention group ( $84.25 \pm 6.13$ ) was significantly higher compared to the control group ( $74.44 \pm 9.24$ ) ( $P = 0.001$ ). <b>Conclusion:</b> Cognitive-behavioral counseling was effective in improving the empowerment of pregnant women under 18 years of age participating in the present study.

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### Introduction

Pregnancy in adolescents is one of the most important public health issues worldwide, which is associated with significant social and medical consequences for maternal and neonatal health (1). The World Health Organization defines adolescent pregnancy in the age range of 10-19 years (2). However, in public conversation, adolescent pregnancy includes the women who have not reached the legal age of adulthood in the society (3).

Adolescent pregnancy is considered a negative phenomenon due to its consequences

for mother and fetus and is considered as one of the major challenges of the health care system in achieving the goals of the third millennium (4). Because, pregnant adolescent mothers are more exposed to pregnancy complications such as maternal and neonatal mortality compared to adults due to exposure to important social issues such as poverty, low level of education and poor health behaviors (5-7). On the other hand, adolescence is a stage of transition from childhood to adulthood that demands its own developmental and health needs (8) and adolescent pregnant

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mothers in passing through this stage simultaneously face with several developmental challenges such as adolescence, marriage, pregnancy and motherhood responsibilities (6). So that, most adolescent mothers compared to adults experience more psychological problems such as higher levels of stress, depression, low self-esteem and suicidal thoughts (7).

One of the factors that can play a decisive role in maternal and neonatal health outcomes and care behaviors during pregnancy is the empowerment of adolescent women in pregnancy (9). So that, most of the problems related to maternal and neonatal health in adolescent pregnant mothers are related to the low level of pregnancy empowerment and their inability to support themselves (10). Therefore, the World Health Organization has greatly emphasized on the empowerment of the pregnant mother and the family to improve the health of mother and child (19).

Pregnancy empowerment includes a sense of self-sufficiency, independence, enhanced interaction with others and the environment, which can lead to successful pregnancy and childbirth by spontaneously increasing psychological energy (11). According to this definition, pregnancy empowerment is a psychological condition that can lead to increased self-management and participation in self-care behaviors in pregnant women (12).

One of the ways to strengthen the pregnancy empowerment in adolescents is formal education or through family planning clinics in the health care system (10). However, the main purpose of education in developed societies is to prevent pregnancy in adolescents (13). However, in developing or less developed societies, since adolescent pregnancy being norm, the main purpose of education is adolescent participation in prenatal care and the development of self-care behaviors (14). However, based on the results of the studies, it seems that the knowledge gained through education alone is not able to change health-related behaviors and enhance empowerment. So that, in order to increase its effectiveness, it is recommended that education-based interventions be combined with complementary components such as psychological counseling (15).

Cognitive-behavioral counseling is one of the approaches that is suggested as a routine care in the health system due to its education-oriented nature in order to overcome educational barriers to provide prenatal health care (16). Cognitive-behavioral counseling helps people to identify their distorted cognitive patterns and insufficient behaviors in life situations (17) and by correcting them through homework, to have effective coping responses in the face of negative emotions and adopt the desired behavior (18). Therefore, considering that pregnancy empowerment is a psychological concept and psychological issues related to pregnancy should be addressed in order to strengthen it (11), cognitive-behavioral counseling seems that can help accepting behavioral changes related to physical problems by changing catastrophic interpretations of it (17). Thus, the results of the studies have shown that cognitive-behavioral programs can be effective in reducing the symptoms of anxiety and depression during pregnancy (19) and before childbirth and the use of prenatal care (20). In Iran, the results of the studies also showed that cognitive-behavioral counseling can increase self-esteem in nulliparous pregnant women (21) and increase self-efficacy in women with gestational diabetes (22).

In all studies conducted in the field of cognitive-behavioral counseling inside and outside the country, other psychological issues of pregnant women over 18 years have been addressed, which cannot be generalized to adolescent pregnancy empowerment due to various developmental challenges of adolescents during pregnancy. On the other hand, in the studies on adolescent pregnancy outside the country, education in the field of contraception has often been considered (10), that since adolescent pregnancy being norm in some parts of Iran, long-term programs and policies of health care system are needed. Therefore, considering the importance of adolescent pregnancy empowerment in maternal and neonatal health outcomes, for the first time, this study was conducted with aim to determine the effect of cognitive-behavioral approach counseling on the empowerment of pregnant women under 18 years old.

## **Materials and Methods**

This two-group randomized controlled trial was performed with pretest-posttest design in

2020-2021 on 64 pregnant women under 18 years of age referred to health care centers in Khaf city.

Sample size was calculated based on the study of Jahdi et al. (2014) who studied the effect of group care during pregnancy on the empowerment of pregnant women (23) using the formula of comparing the mean of the two communities "n = ((S<sub>1</sub> ^ 2 + S<sub>2</sub> ^ 2) [(Z<sub>(1-α / 2)</sub> + Z<sub>(1-β)</sub>)] ^ 2) / [(X<sub>1</sub>-X<sub>2</sub>) ^ 2]". In the study of Jahdi et al. (2014), the mean score of empowerment after the intervention in

intervention group (one due to unwillingness to continue cooperation in the study, one due to non-participation in the post-test and one due to pregnancy complications) and 3 women from the control group (due to non-participation in the post-test) were excluded from the study and the final sample size was 64 (32 in the intervention group and 32 in the control group) (Figure 1).

Inclusion criteria were women with Iranian nationality and resident of Khaf, having at least a third secondary education, having a mobile

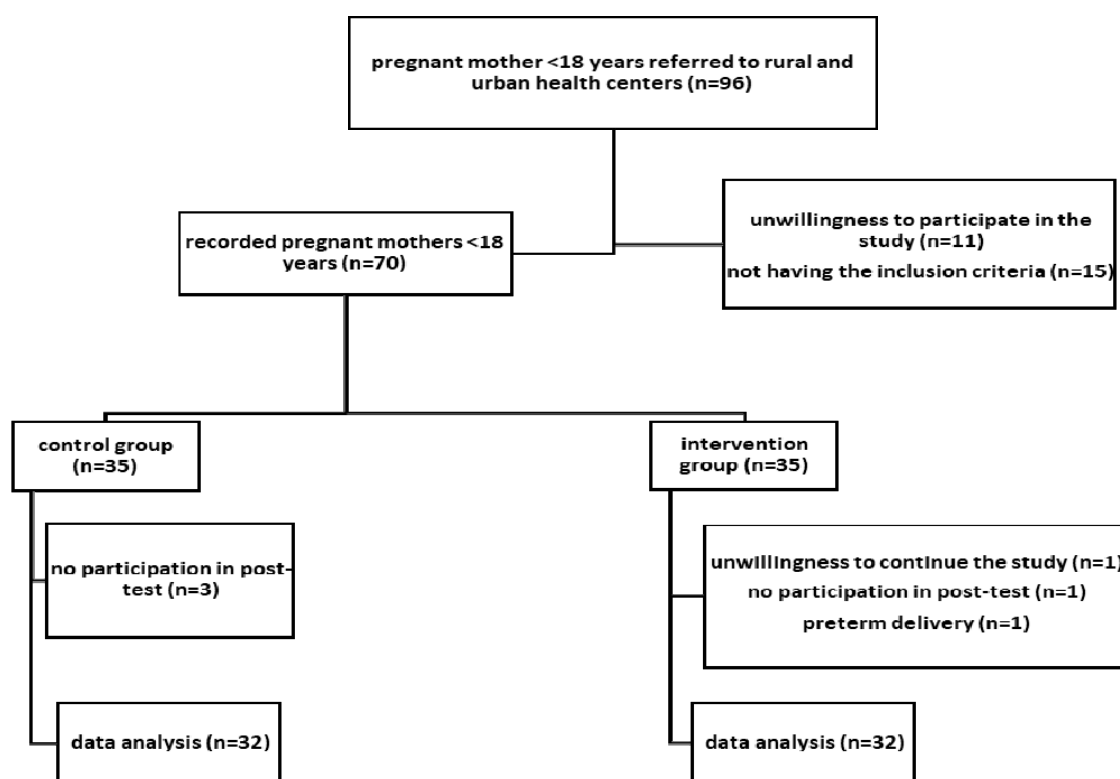


Figure 1. Diagram Consort

the intervention group was (87.23±6.87) and in the control group was (82.39±7.78), which Considering the confidence level α = 0.05 and test power β = 0.15, the minimum sample size for each group was calculated to be 24.73. Taking into account the 20% probability of sample attrition, the final sample size for each group was estimated to be 35 people (A total of 70). At the end of the study, 3 women from the

phone to connect to the Internet and install Adob Connect software, with primiparous pregnancy, gestational age of 13-32 weeks based on LMP or first trimester sonography, no physical or psychiatric illness, no experiences of obstetric complaints and complications known during pregnancy. Exclusion criteria included absence in two sessions or more and the development of any obstetric complaints and complications during the study.

Data collection tools included demographic and pregnancy profile form and pregnant women empowerment scale. The demographic information form contained 14 questions including the information about age, age of spouse, age of marriage, duration of marriage, etc.

The Empowerment Scale for Pregnant Women (ESPW) was designed by Kameda and Shimada (2008). This scale contains 27 items that include 5 dimensions of self-efficacy (6 items), future image (6 items), self-esteem (7 items), support and assurance from others (4 items) and joy of an addition to the family (4 items). The empowerment score was calculated based on a four-point Likert scale, which is answered from strongly disagree= 1 to strongly agree= 4. In this questionnaire, the minimum score is 27 and the maximum score is 108. A higher score indicates greater pregnancy empowerment (11). The validity of the translation content of this tool in Iran was examined and confirmed in the study of Hajiabadi et al. (2016) in the form of backward-forward and passing the translation verification process. Reliability of this scale was confirmed in the study of Hajiabadi et al. (2016) by internal consistency method with Cronbach's alpha coefficient 0.89 for all tool items and for other subscales of self-efficacy, future image, self-esteem, support and assurance from others and joy of an addition to the family with Cronbach's alpha of 0.87, 0.82, 0.80, 0.82 and 0.94, respectively (24).

After the approval of the ethics committee of Mashhad University of Medical Sciences with the code IR.MUMS.NURSE.REC.1399.04, sampling was done by cluster-quota method based on the highest number of pregnant women aged 18 years referring to urban and rural health centers of Khaf city. Thus, among the health centers of Khaf city, two urban centers No. 1 and 2 of Khaf city and two rural health centers of Nashtifan and Sangan, which had the most referred pregnant women under 18 years in the city, were selected by quota. Then, by establishment in the maternal and child health care unit of these centers, pregnant mothers under 18 years who were eligible to participate in the study were selected and if they wished to participate in the study and after obtaining written consent, a list of them was prepared and then, they were assigned to two

groups of intervention and control by random blocking method. For this purpose, before sampling and patients' participation in the study, based on the sample size, 7 blocks of ten cases from the groups of A and B (AAAAABBBBB, ABABABABAB, BABABABABA, ....) were determined. Then, each of the blocks was assigned a number between 1 and 7 and was determined by the table of random numbers of the sequence of entry of the blocks to the study and assigning patients to the intervention and control groups before the intervention.

Researcher performed the intervention after passing a cognitive-behavioral therapy workshop and obtaining a license to hold counseling courses by studying various books in the field of cognitive-behavioral therapy under the supervision of a master of psychology and a PhD student in psychiatric-behavioral therapy. So that, before performing the intervention, the general content of the sessions and how to present the materials was designed based on the cognitive-behavioral protocol techniques of Robert Leahy (2003) model (25).

In the intervention group, cognitive-behavioral counseling was performed in a group manner in the groups of 7 people (in 5 groups) based on the content prepared before the intervention in 6 sessions (3 in person sessions and 3 online sessions). The first three sessions (first to third session) in person and after coordination with the intervention group and according to the previously specified date in the training room located in the mother and child unit of health centers as two sessions per week (Saturdays and Wednesdays), each session was performed at 11-9 am for 120 minutes. During the sessions, corona prevention protocols such as the use of disinfectants for surfaces and hands, social distance, the use of masks, etc. were observed as much as possible. The second three sessions (fourth to sixth sessions) due to the implementation of restrictions on the prevalence of corona were performed in the form of webinars through Adobt Canect, after coordination with the participating pregnant mothers and according to the previously specified date two sessions per week on Saturdays and Wednesdays, each session at 5-7 pm for 120 minutes. For online sessions, one hour before the start of each session, all

participants were coordinated to ensure Internet access.

The control group received routine prenatal care. After completing the research, in order to observe the ethical principles, the content of cognitive-behavioral counseling was presented as an educational pamphlet for the control group.

The pregnant women empowerment scale was completed in two stages before the intervention and two weeks after the intervention by both the intervention and control groups.

In all stages of the research, all ethical points in the research approved by the research vice chancellor of the University of Medical Sciences related to the present study were observed, including assuring the research units about the confidentiality of the collected information and presenting the research results as general, obtaining written consent informed from the research units to participate in the study after explaining the purpose of the research and the method of the research, answering the questions of the research unit in the field of research during the study and explaining to the research units about the optionality of participating in the study and the possibility of leaving the study in each time they want.

Data were analyzed by SPSS software version 25. First, the normality of the data was

determined by Kolmogorov-Smirnov test. Also, Chi-square, Fisher's exact, Mann-Whitney and independent t-tests were used to evaluate the homogeneity of qualitative and quantitative variables before the intervention. Independent t-test was used for intragroup comparison between dependent variables in the case of normal variables and paired t-test was used for intergroup comparison. In all tests, the confidence level was 95% and  $P < 0.05$  was considered statistically significant.

## Results

The mean age of the study participants in the intervention group was  $(17.31 \pm 1.28)$  and in the control group was  $(16.56 \pm 1.85)$  years. The results showed that pregnant women under 18 years participating in the intervention and control groups were homogeneous in terms of demographic and pregnancy characteristics before the intervention (Table 2).

In the pre-intervention stage, the results of independent t-test showed no significant difference between the intervention and control groups in terms of mean total score of empowerment and other subscales of self-efficacy ( $p = 0.97$ ), future image ( $p = 0.95$ ), self-esteem ( $p = 0.87$ ), support and assurance from others ( $p = 0.49$ ) and joy of an addition to the family ( $p = 0.06$ ) (Table 3).

**Table 1.** Content of cognitive-behavioral counseling sessions

Sessions	Content
First	Introducing the participants, stating the research objectives and rules of the sessions, defining and explaining the dimensions of pregnant women empowerment.
Second	Recognizing the concepts of pregnancy self-efficacy and events and situations related to pregnancy and childbirth, spontaneous thoughts, emotions and logical response to self-efficacy situations and talking and providing concrete examples of exercise and providing exercises for the next session.
Third	Review the exercises of the previous session, talk about how to change and correct spontaneous thoughts and change irrational beliefs related to pregnancy and childbirth to logical, and how to record and note the change of thoughts, provide exercises for the next session.
Fourth	Review the exercises and examples of the previous session and recognize the concepts of pregnancy self-esteem and events and situations related to pregnancy and childbirth, spontaneous thoughts, emotions and logical response to self-esteem situations and talk and provide concrete examples of exercise and provide the exercise for the next meeting.
Fifth	Review the exercises of the previous session, talk about how to change and correct spontaneous thoughts and change irrational beliefs related to pregnancy and childbirth to logical, and how to record and note the change of thoughts, provide exercises for the next session about self-esteem situations.
Sixth	Review of assignments and general summary of meetings.

In the post-intervention stage, the results of independent t-test showed that the mean total

score of pregnancy empowerment ( $p = 0.001$ ) and self-efficacy subscales ( $p = 0.002$ ), support

and assurance from others ( $p = 0.005$ ) and joy of an addition to the family significantly increased in the intervention group compared to the control group ( $p < 0.001$ ). However, in the post-intervention stage, there was no significant difference between the intervention and control groups in terms of future image subscale ( $p = 0.16$ ) and self-esteem ( $p = 0.35$ ) (Table 3).

In the intra-group comparison, in the intervention group, the results of paired t-test

showed that the total score of pregnancy empowerment ( $p = 0.001$ ) and self-efficacy subscales ( $p = 0.01$ ), future image ( $p = 0.03$ ), self-esteem ( $P = 0.004$ ), support and assurance from others ( $p < 0.001$ ) and joy of an addition to the family significantly increased in the post-intervention stage compared to pre-intervention stage ( $p < 0.001$ ).

**Table 2.** Demographic and pregnancy characteristics of pregnant women under 18 years participating in the intervention and control groups

Variables	Intervention group	Control group	Test results
	N (%)	N (%)	
<b>Education level</b>			
Secondary school	16(50.0)	22(68.8)	$X^2 = 2.48$
High school diploma	10(31.3)	7(21.9)	$P^{***} = 0.29$
	6(18.8)	3(9.4)	
<b>Husband's education level</b>			
Elementary school	0(0.0)	1(3.1)	
Secondary school	6(18.8)	11(34.4)	$X^2 = 3.42$
High school	12(37.5)	8(25.0)	$P^{***} = 0.33$
Diploma and higher	14(43.8)	12(37.5)	
<b>Job</b>			
Housewife	32(100.0)	31(96.9)	$P^{****} = 0.50$
Employed	0(0.0)	1(3.1)	
<b>Husband's job</b>			
Free	26(81.3)	25(78.1)	$X^2 = 2.32$
Employee	1(3.1)	4(12.5)	$P^{***} = 0.31$
Other	5(15.6)	3(9.4)	
<b>Willing to pregnancy</b>			
Wanted	26(81.3)	22(68.8)	
Unwanted	2(6.3)	7(21.9)	$X^2 = 3.25$
Unplanned	4(12.5)	3(9.4)	$P^{***} = 0.20$
<b>Home status</b>			
Homeowner	18(56.3)	7(21.9)	
Rental housing	9(28.1)	13(40.6)	$X^2 = 10.26$
Relatives' house	5(15.6)	8(25.0)	$P^{***} = 0.12$
Other	0(0.0)	4(12.5)	
<b>Quantitative variables</b>	<b>Mean±SD</b>	<b>Mean±SD</b>	<b>Test results</b>
Age	17.31 ± 1.28	16.56 ± 1.85	t = 1.89 $p^* = 0.06$
Husband's age	24.63 ± 2.04	24.94 ± 2.41	t = 0.56 $P^* = 0.57$
Marriage age	14.94 ± 1.56	14.34 ± 1.45	z = 1.52 $P^{**} = 0.13$
Duration of marriage	2.69 ± 1.69	2.63 ± 1.43	z = 0.56 $P^{**} = 0.82$
Number of pregnancy	0.75 ± 0.84	0.69 ± 0.90	z = 0.50 $P^{**} = 0.62$

\*Independent T Test, \*\* Mann-Whitney, \*\*\*chi-square test, \*\*\*\* Fisher's exact test

However, in the control group, the results of paired t-test showed no significant difference between pre-intervention and post-intervention stage in terms of the total score of pregnancy empowerment ( $p = 0.37$ ) and self-efficacy subscales ( $p = 0.89$ ), future image ( $p = 0.64$ ) and

self-esteem ( $p=0.28$ ) and joy of an addition to the family ( $p = 0.24$ ). However, in the control group, the score of support and assurance from others significantly increased in the post-intervention stage compared to pre-intervention stage ( $p = 0.02$ ) (Table 3).

**Table 3.** Comparison of empowerment and its subscales in pregnant women under 18 years old participating in the two intervention and control groups

Group	N	Pre-intervention	Post-intervention	Difference of pre/post intervention	Paired t-test results
<b>Total empowerment</b>					
Intervention	32	73.87 ±8.94	84.25 ± 6.13	10.37 ±10.47	t = 5.60 p = 0.001
Control	32	78.72 ± 7.36	74.44 ± 9.24	1.66 ± 10.45	t= 0.90 p = 0.37
Independent t-test results		t= 0.53 p = 0.59	t= 5.00 p = 0.001	t=3.33 p = 0.001	Paired t-test results
<b>Self-efficacy</b>					
Intervention	32	15.66 ± 3.62	18.09 ± 2.89	2.44 ± 5.15	t = 2.67 p = 0.01
Control	32	15.62 ±2.83	15.72 ± 2.97	0.09 ±3.92	t= 0.13 p = 0.89
Independent t-test results		t= 0.04 p = 0.97	t= 3.24 p = 0.002	t= 2.05 p = 0.04	Paired t-test results
<b>Future image</b>					
Intervention	32	15.19 ± 2.04	16.43 ± 2.27	1.16 ± 2.96	t = 2.21 p = 0.03
Control	32	15.22 ± 2.24	15.47 ± 2.61	0.25 ± 2.96	t= 0.48 p = 0.64
Independent t-test results		t=0.06 p = 0.95	t= 1.43 p = 0.16	t= 1.22 p = 0.23	Paired t-test results
<b>Self-esteem</b>					
Intervention	32	18.16 ± 1.85	19.44 ±2.09	1.28 ± 2.32	t= 3.13 p=0.004
Control	32	18.25 ± 2.77	18.87 ± 2.68	0.62 ± 3.24	t = 1.09 p = 0.28
Independent t-test results		t= 0.16 p = 0.87	t= 0.93 p = 0.35	t= 0.93 p = 0.35	Wilcoxon test results
<b>support and assurance from others</b>					
Intervention	32	11.09 ± 2.44	15.19 ± 1.31	4.09 ± 2.57	Z = 4.77 p < 0.001
Control	32	10.91 ± 1.96	12.19 ± 2.62	1.28 ± 2.73	Z= 2.39 p = 0.02
Mann-Whitney test result		Z= 0.69 p = 0.49	z= 2.81 p = 0.005	z= 3.75 p < 0.001	Paired t-test results
<b>joy of an addition to the family</b>					
Intervention	32	13.78 ± 2.12	15.19 ± 1.31	1.41 ± 2.61	t = 3.04 p < 0.001
Control	32	12.78 ± 2.04	12.19 ± 2.62	0.59 ± 2.79	t= 1.20 p= 0.24
Independent t-test results		t= 1.92 p = 0.06	t= 5.79 p < 0.001	t= 2.96 p = 0.004	

## Discussion

The aim of this study was to determine the effect of cognitive-behavioral counseling on pregnancy empowerment of women under 18 years. The results showed that cognitive-behavioral counseling can be effective in promoting pregnancy empowerment in women under 18 years participating in the present study. This study was the first research performed on the intervention in the field of pregnancy empowerment of women under 18 years. Therefore, the results of other similar studies performed on pregnant women over 18 years were used. The study of Adeli Gargari et al. (2018) showed that counseling with an empowerment approach can be effective on pregnancy empowerment of women over 18 years (26).

Although their study was performed on adult pregnant women, but the content of the intervention was similar to the present study, the results of which are consistent with the results of the present study. Also, considering that different dimensions of pregnancy empowerment are psychological issues, the results of the study of Heidari-poor et al. (2019) that cognitive-behavioral counseling can be effective in improving the lifestyle of pregnant women over 18 years (18), The results of the study of Abdollahpour et al. (2019) that cognitive-behavioral counseling can be effective in improving the symptoms of postpartum traumatic stress disorder and unpleasant memories of childbirth (27), and the results of Green et al. (2020) that cognitive-behavioral therapy can be effective in reducing anxiety in women in the perinatal period (20), confirmed the results of the present study.

The issue of pregnancy empowerment in adolescents, although often discussed in terms of physical non-development and pregnancy complications from different cultural, social and economic perspectives, but their pregnancy empowerment is more related to psychological issues during pregnancy. Pregnancy at this age is a stressful process due to changes in the physical, mental and social health of pregnant mothers (28), which causes adolescents face with major worries and anxieties such as lack of awareness and fear of the unknown problems of pregnancy, childbirth and complications of pregnancy and reduces their empowerment pregnancy (29).

Therefore, cognitive-behavioral counseling helps pregnant mothers to understand distorted thought patterns and underlying dysfunctional behaviors related to prenatal care by talking about the worries and stresses of pregnancy, so by focusing on their abilities in the field of pregnancy and receiving appropriate information through cognitive reconstruction and strengthening the ability to solve problems can increase independence and decision-making in the field of pregnancy and ultimately improve the pregnancy empowerment (30). In order to achieve this goal, in the present study, pregnant mothers participated as an active participant and participated in a problem-solving process to test and challenge the validity of their maladaptive cognitions regarding the ability to provide prenatal care; in this way, they help to strengthen their pregnancy empowerment.

Pregnancy empowerment includes various dimensions of self-efficacy, future image, self-esteem, support and assurance from others and joy of an addition to the family (11). Accordingly, the results showed that cognitive-behavioral counseling can be effective on the self-efficacy dimension.

The results of the study of Nezamnia et al. (2020) that cognitive-behavioral counseling can affect the self-efficacy of pregnant women (31) and the results of the study of Bakhteh et al. (2018) that cognitive-behavioral counseling can increase self-efficacy of women with gestational diabetes (32) are consistent with the results of the present study. Also, the results of the study of Ghasemi et al. (2018) that cognitive-behavioral group counseling can affect the self-efficacy of nulliparous pregnant women in choosing vaginal delivery (33) are consistent with the results of the present study.

Self-efficacy is one of the key concepts of pregnancy ability and includes the self-confidence of pregnant women to feel ability to manage pregnancy and childbirth and self-assessment of physical strength (34). Most adolescent pregnant women during pregnancy experience low self-efficacy in the use of pregnancy education due to the experience of conflict between feeling dependent and not dependent on doing prenatal care and the negative emotions resulting from this conflict (35). Thus, the pregnancy event is considered to



be extremely worrying for some adolescents due to feelings of inadequacy and lack of independence and can act as a barrier to behavioral changes resulting from pregnancy education. Therefore, in cognitive-behavioral counseling by identifying negative pregnancy-related emotions such as fears and worries achieve the underlying thoughts of these emotions and by changing negative spontaneous thoughts will alleviate negative pregnancy-related emotions and change self-care behaviors related to pregnancy (31) and thus harmonizes the knowledge and behavior of pregnant women in the use of prenatal care and can increase the sense of self-efficacy in pregnant women under 18 years participating in the study.

The results of the present study showed that cognitive-behavioral counseling can be effective on understanding the support and assurance from others. The results of the study of Gargi (2018) that counseling with empowerment approach can be effective on the dimension of support and assurance from others in pregnant women over 18 years (26) are consistent with the results of the present study. The results of the study of Abdollahpour and Keramat (2016) that there is a positive correlation between receiving social support from the family and women's empowerment in the postpartum period (36), confirm the results of the present study.

In Iran, most adolescents feel lack of support from others, especially family and spouse, due to feelings of powerlessness in important life decisions such as marriage and pregnancy (37). Thus, their experiences indicate a strong need for comprehensive support such as education and counseling for emotional adjustment to pregnancy (35). Thus, the support provided to adolescent women during pregnancy, even by midwives, is useful to help them adapt to their feelings and will play an important role in improving their emotional state and adaptation to motherhood role (38). Therefore, it seems that in the present study, cognitive-behavioral counseling can increase the feeling of receiving support and approval by health care providers in pregnant mothers by accepting and validating negative emotions (31).

The results of the present study showed that cognitive-behavioral counseling can be effective on the dimension of joy of an addition to the

family. The results of the study of Gargari et al. (2018) that counseling with empowerment approach can be effective in increasing the joy of an addition to the family (26) are consistent with the results of the present study.

Some adolescent pregnancies experience is a dual feeling of one being added to the family, which in the future they may regret due to losing their freedom to care for the baby and show conflicting responses, either positive or negative, to the pregnancy. Thus, some adolescents experience a negative self-image during pregnancy. However, some adolescents see pregnancy as a positive event that causes adolescents to move into adulthood (35). Therefore, it seems that in the present study, cognitive-behavioral counseling can strengthen the feeling of joy of an addition to the family in adolescent pregnant mothers by challenging the negative thoughts underlying the stresses and worries of pregnancy.

The results of the present study showed that cognitive-behavioral counseling cannot be effective on the dimension of future image. No study consistent with these results was found.

The future image includes a realistic picture of the long-term and short-term goals of pregnancy, childbirth, and motherhood (34), which seem to pose problems for pregnant adolescents; because, pregnancy and marriage in adolescents are experienced as failures that can be manifested differently based on socio-cultural conditions (39). In Iran, adolescent pregnant mothers often face failures such as the death of dreams, which mainly include the feeling of losing childhood and the forced acceptance of the heavy responsibility of motherhood and despair about a good future and finding a suitable job (37); that their image of the future of pregnancy and childbirth may be affected. Therefore, since the focus of cognitive-behavioral counseling in the present study was on the worries and stresses of pregnancy and did not specifically address the spontaneous thoughts underlying the feelings of failures of pregnant adolescents and their goals and future image, cognitive-behavioral counseling seems to not affect this dimension of pregnancy empowerment.

The results of the present study showed that cognitive-behavioral counseling cannot affect the self-esteem dimension. The results of the study of

Vakilian et al. (2017) that group counseling with a cognitive-behavioral approach can increase the self-esteem of nulliparous pregnant women (40) and the results of a study by Mohammadnejad et al. (2018) that counseling with a cognitive-behavioral approach can be effective in improving self-esteem of women who underwent hysterectomy at childbearing age (41) is not consistent with the results of the present study. One of the reasons for this discrepancy can be the focus of cognitive-behavioral counseling in these two studies on the concept of self-esteem and methods to strengthen it.

Self-esteem is a part of the concept of pregnancy empowerment in pregnant adolescent women, which includes the feeling of acceptance and individual approval of pregnancy and motherhood (34). In the present study, cognitive-behavioral counseling had no significant effect on this dimension compared to routine prenatal care. One of the reasons could be the normality of marriage and pregnancy in adolescence in the research community, which has been accepted by the residents of these areas as a common event by adolescent pregnant mothers. On the other hand, self-esteem is influenced by coping styles that people use in order to adapt to unbalanced situations such as pregnancy (34). Therefore, although self-esteem is considered as an emotional dimension of self-assessment which has been addressed in the present study by expressing feelings about pregnancy in cognitive-behavioral counseling, but coping styles are not been considered.

## Conclusion

The results of the present study showed that cognitive-behavioral counseling can be effective on the empowerment of pregnant women under 18 years participating in the present study and the dimensions of self-efficacy, support and assurance from others and the joy of an addition to the family, but it does not affect the dimension of future image and self-esteem. One of the limitations of the present study was the simultaneous implementation of the intervention with the prevalence of covid pandemic and the problems related to the virtual implementation of training sessions such as lack of mobile phones and Internet interruption. On the other hand, the cultural and social conditions prevailing in the research environment and the time of project

implementation in covid pandemic can limit the generalizing of the results of the present study to a larger community. Therefore, it is suggested that this study be repeated in a larger community with different socio-cultural conditions and with the provision of more complete virtual facilities.

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## Conflicts of interest

Authors declared no conflicts of interest.

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