

The Effect of Group Counseling Based on Motivational Interview on the Motivation of Childbearing in the Female Students of Mashhad University of Medical Sciences

Pari Rezaee (MSc)¹, Maryam Moradi (PhD)^{2*}, Talat Khadivzadeh (PhD)³, Seyed Ali Kimiaei (PhD)⁴, Jamshid Jamali (PhD)⁵

¹ MSc in Midwifery Counseling, Student Research Committee, Mashhad University of Medical Sciences, Iran

² Assistant Professor, Nursing and Midwifery Care Research Center, Mashhad University of Medical Sciences, Iran

³ Associate Professor, Nursing and Midwifery Care Research Center, Mashhad University of Medical Sciences, Iran

⁴ Associate Professor, Department of Education & counseling psychology, Faculty of Educational Sciences and Psychology, Ferdowsi University of Mashhad, Mashhad, Iran

⁵ Assistant Professor, Department of Biostatistics, Faculty of Health, Mashhad University of Medical Sciences, Mashhad, Iran

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ABSTRACT

Background & aim: Reproductive motivations are important factors in childbearing. The present study aimed to determine the effect of group counseling based on motivational interview on the motivation of childbearing in female students.

Methods: This randomized controlled trial was conducted on 70 eligible single female students studying at Mashhad University of Medical Sciences, Mashhad, Iran, who passed the course of family and population knowledge, and randomly assigned to the intervention and control groups. The intervention group received three 60-90 minutes sessions of weekly group counselling consisting of 10-12 individuals as well as virtual counselling through webinar, based on motivational interview. Data collection tools included a questionnaire on demographic data, Miller Childbearing Questionnaire and the Reproductive Preference Questionnaire, which were completed on a self-report basis before, immediately and four weeks after the intervention. Data was analyzed using independent t-test, Mann-Whitney U test, paired t-test, Chi-square and Fisher's exact test.

Results: Before the intervention, the mean total score of positive and negative motivation of childbearing in female students was not statistically significant in the two groups. After counseling intervention, the score of positive motivation of childbearing increased ($P<0.001$), whereas, the total score of negative motivation ($P<0.001$) decreased, significantly, in the intervention group compared to the control group.

Conclusion: Group counseling based on motivational interview was effective on promoting the motivation of childbearing in female students. Therefore, it is suggested that the present counseling intervention be commonly used in order to promote the motivation of childbearing in female students.

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Introduction

Childbearing is the most important component of population growth (1). Childbearing motivations are the main stimulus of reproduction (2). Today, the total fertility rate in Iran has reached the substitution level (to 1.7 in 2019) and the birth rate has grown negatively

for the fourth consecutive year from 2017 to 2020 (3). The alarm bells of population problems have been sounded in the country by the Supreme Leader (4). In the case of no serious intervention, the country will face many problems; for example, it will face population

* Corresponding author: Maryam Moradi, Assistant Professor, Nursing and Midwifery Care Research Center, Mashhad University of Medical Sciences, Iran. Tel: 00985138591511; Email: moradim@mums.ac.ir

aging and consequent decline in development indicators (5). Factors which lead to reduced fertility include no knowledge of the problems caused by delayed childbearing, increasing the age of marriage and reducing the biological capacity of fertility, increasing family costs, women's development in matters such as education and employment, economic fluctuations, increasing maternal age, the acceptance of the norm of low childbearing by governments and increase in divorce (6-8).

Improving the fertility rate requires changing the attitude of society and improving the economic conditions of the country. Fertility (childbearing) is examined as a social reality at two levels: the macro level, which includes the social, political and cultural impact on fertility, and the micro level, which includes the impact of internal factors such as motivations, aspirations and tendencies of individuals on reproductive behavior (9). According to the studies, what is most important in childbearing is fertility motivation and the main current problem of fertility in the country is a change in childbearing motivation (10). Motivation is an internal force that stimulates a change in attitude and consequently creates a certain behavior in the individual (11). Positive or negative growth pattern depends on fertility motivation (12).

Social sciences scientists and behavioral sciences scientists have always pointed to the role of motivation. The authors consider motivation to be motive engine and believe that in every success, 80% of motivation is effective; the most challenging crisis that managers face is a little motivation (13). Fertility is a practice in which motivation is directly involved (14). Fertility motivation is a complex issue that has cultural, religious and behavioral roots and changes in the context of population transfer and social and economic development (15,16). According to Miller, there are two types of childbearing motivation: positive and negative. Positive motivations for childbearing include the reasons for desire to child and negative motivations for childbearing include the reasons for reluctance to child. In the United States, positive motivation of childbearing has been shown to be associated with a greater desire for childbearing and negative motivation of

childbearing is associated with a lower desire for childbearing (13,17). Given the declining fertility rate in Iran, further research on the role of childbearing motivations is essential. Irani and Khadivzadeh (2018) in Iran showed that childbearing motivations affect fertility preferences in women of childbearing age. According to their results, the mean scores of positive childbearing motivations in men and women were 111 and 108 and negative childbearing motivations in men and women were 47 and 46 (18).

Currently in the country in the general course of family knowledge in the university, the importance of fertility is addressed (19). Although couples are encouraged about childbearing on the eve of marriage, there is not enough focus on the childbearing motivation. At present, there is no counseling or educational program related to childbearing for single young people of marriage age in health centers. Numerous studies have emphasized on the need for providing information and counseling and education of young women in the field of childbearing (20,21). In the "Law of Family Protection and Population Youth", which was notified to all executive bodies by the President after its approval in the Islamic Consultative Assembly on 2021, the Ministry of Health, Treatment and Medical Education is obliged to educate the students of medicine and health system staff with the approach of increasing population growth and emphasizing the positive effects of pregnancy and natural childbirth, childbearing benefits, reducing the distance between marriage and birth of the first child and also reducing the distance between the birth of children (22).

Group counseling is a bilateral process in which the counselor and a peer group examine problems and values in a social experience and joint activities, and try to correct perceptions in order to solve problems (23). The main purpose of childbearing counseling is to help clients understand the barriers to planning, responsibility and ultimately the right decision for childbearing (24). Motivational interview is used to increase motivation in the field of physicians, psychologists, counselors, and health educators. In motivational interviews, clients are helped to find the causes of doubt by

focusing on the reasons for change, and their motivation is enhanced after gaining awareness of the advantages and disadvantages of change, and they make the best decision and do it with the help of a counselor (25).

Motivational interview is a style of client-centered counseling that was first proposed by Miller and Rolnik (1983) and has 5 stages: 1- Neglect, ignorance, empathy 2- Revealing inconsistency (thinking and reflection) 3- Readiness to change behavior and cope with resistance 4- Practice and support self-efficacy 5- Maintain and avoid discussion (25). Previous studies have shown the effectiveness of motivational interview in promoting attitude and motivation of some health behaviors. For example, Hosseini Haji et al. (2020) showed that motivational interview counseling leads to increased awareness and improved attitudes toward vaginal delivery after cesarean section (26). Shakiba et al. (2020) also showed that motivational interview is a useful tool to change attitudes and reduce unnecessary cesarean section (27). These motivational interview studies were done on attitudes toward cesarean section rate and improved attitudes toward vaginal delivery, which were different from the motivation of childbearing, and the effectiveness of counseling intervention or motivational interviews in these studies could not be generalized to motivation of childbearing. Therefore, limited previous studies of the interventional type have been performed in the field of childbearing. For example, Oshrieh et al. (2019) showed that a covert curriculum about childbearing motivations can improve positive childbearing motivations among schoolgirls (28). Akbarian Moghadam et al. (2020) showed that education based on planned theory was effective in increasing the intention to have children in women with single child (24).

No interventional study was found in the field of childbearing motivation in single individuals and students. Midwives have a very wide range of roles including counseling, care and research in the field of fertility (29). Therefore, considering the importance and necessity of the issue of childbearing and population growth policy, the position of counseling and the role of midwives in this field, the emphasis of the "The Law of Family Protection and Population Youth"

on educating medical students and health workers with an approach to increase population growth, no focus and attention to the important factor of childbearing motivation in routine education (chapter on family knowledge and family population), limited interventional studies in the field of childbearing motivation in the country and the lack of similar studies on single individuals or female students and since students are at marriage and fertility age and can be the source of positive changes to increase the childbearing motivation and form a family, so the present study was designed to determine the effect of group counseling based on motivational interview on the childbearing motivation of female students of Mashhad University of Medical Sciences, Mashhad, Iran.

Materials and Methods

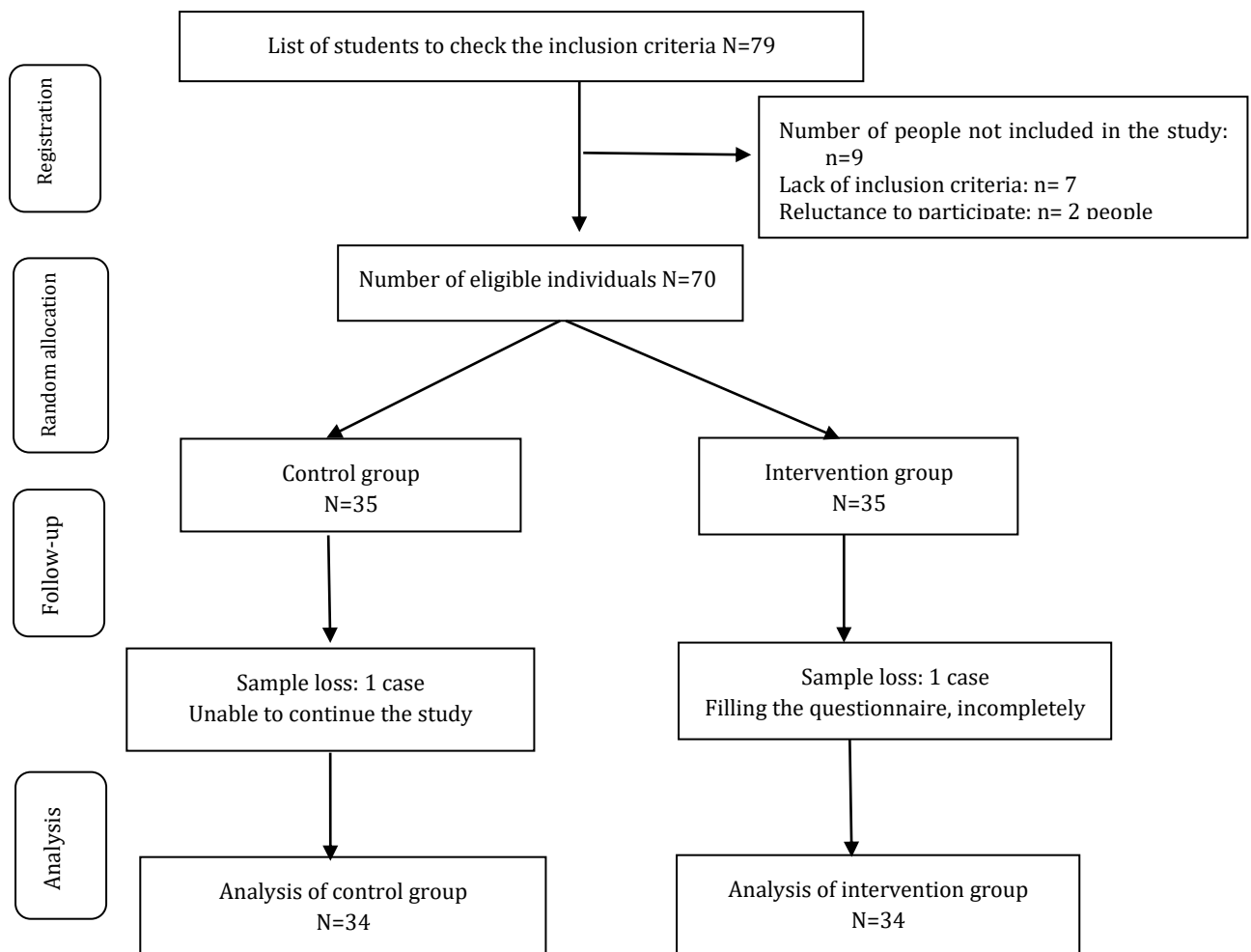
This study was a randomized controlled trial with a pre-test-post-test design that was performed on the eligible female students of Mashhad University of Medical Sciences, Mashhad, Iran, at associate, bachelor, master and PhD level during 2021. A sample size of 70 single female students was eligible to be included in the study. The sample size was calculated based on the study of Oshrieh et al. (2019) who reported that the mean score of child care challenges after the intervention in the control group was 16.47 ± 1.25 and in the intervention group was 17.8 ± 2.1 (28) using the formula of the mean of two independent populations and considering the error of 5% and test power of 80%; the minimum sample size was determined as 28 people in each group. Since the study was interventional and considering the loss of about 20%, the final sample size of 35 people in each group were determined. Random allocation was performed by double blocking method with the aim of equal number in both groups and the study was performed with two groups of 35 people in each group of intervention and control (Figure 1).

The researcher attended the dormitory, faculties and central predecessor of Mashhad University of Medical Sciences to select the eligible students by available sampling method and after completing the written consent. The data collection process lasted from June to October 2021. Inclusion criteria were: female

students of Mashhad University of Medical Sciences (students of the school of Nursing and Midwifery, Health, Paramedical, Medical and Pharmaceutical) in associate, bachelor, master and PhD level, willingness to participate in the study, Iranian, single, aged 18 to 35 years, passing the course of family and population knowledge, not having physical or mental diseases which prevent counselling, not having a known fertility problem (30) in female medical students in Mashhad University of Medical Sciences (including: absolute contraindications of pregnancy, heart valve insufficiency disease classes 3 and 4 and

irreversible to 2, any type of acute heart disease, active HIV), no major mental disease according to female students' reports (personal history of major depression, serious mental disease), no adverse events during 6 months before the study (including death of a loved one, severe family quarrel, ...), access to the necessary facilities to participate in virtual meetings through webinars, lack of desire for high childbearing (obtaining a score of 8 or higher on the scale of desire to childbearing (10-point ruler).

Figure 1. Participants' sampling flowchart



Exclusion criteria during the study were: unwillingness to continue cooperation, absence in more than one counselling session, participation in the relevant training course during the study and the occurrence of the incidents.

Data collection tools included: A questionnaire on demographic data, Miller Childbearing Questionnaire (12) and Reproductive Preference Questionnaire. The Miller Childbearing Motivation Questionnaire has 49 items. Since the questionnaire has two-part and adding the two scores is not possible, each person receives two scores from the subset of positive and negative motivations. Positive childbearing motivations consist of 28 questions and has 5 areas; 1- Pleasure of pregnancy, birth and childhood, 2- Traditional view, 3- Satisfaction with parenting, 4- Feeling of need and survival, 5- Instrumental use of child. Likert scale has been used for scoring in a completely opposite (score 1) to completely agree (score 4). The minimum and maximum scores obtained in this section are 28 and 112, respectively. Negative childbearing motivations include 21 questions and have four areas; 1- Becoming a parent, 2- Parental stress, 3- Care challenges, and 4- Discomfort of pregnancy and childbirth. A four-point Likert scale was used to score this questionnaire from strongly disagree (score 1) to strongly agree (score 4). The minimum and maximum scores obtained in this section are 21 and 84, respectively (12).

Data was collected by self-report method and closed interview. The content validity of Miller's childbearing motivation questionnaire was reviewed and confirmed by Khadivzadeh and colleagues in 2010 (12). The content validity of the questionnaire in this study was confirmed by obtaining the opinion of 7 faculty members. The reliability of this questionnaire was confirmed using the internal consistency reliability method (Cronbach's alpha) with $r=0.81$.

The Fertility Preference Questionnaire has 10 questions. One question is about the desire to have children, which is scored using a numerical grading scale from 1 (minimum desire) to 10 (maximum desire). On this scale, people determine the amount or degree of their desire to have children by choosing a number.

The score of desire for childbearing is based on the grading scale from 0 to 3 for low desire for childbearing, from 3 to 7 for average desire and above 8 for high desire for childbearing. Other questions are about the desired number of children, the desired time of childbearing and the desired gender composition of children which are openly asked (12). The validity of the Fertility Preference Questionnaire has been confirmed in Miller's study (1995) in the United States and in the study of Pezeshki and colleagues in Shiraz (17). The content validity of the questionnaire in this study was confirmed by obtaining the opinion of 7 faculty members. The reliability of this questionnaire was assessed using the reliability of stability (test-retest), so that the questionnaire was given to ten qualified medical students and was completed again by the same students after 10 days and the correlation coefficient between the scores was confirmed with $r=0.89$. The questionnaires were completed in person by the subjects during three stages of before, immediately and 4 weeks after the intervention.

Both groups received routine training of family and population knowledge course as inclusion criteria. In the intervention group, 3 sessions of 60-90-minute group counselling were held once a week as virtual through a webinar in groups of 10-12 people based on motivational interview (three steps of negligence and ignorance, thinking and contemplation (creating conflict), and readiness to change behaviour). The counselling was conducted by the researcher who passed a motivational interview course and acquired the necessary skills under the supervision of a supervisor and a psychologist counsellor and his/her competence was confirmed. Session 1: "Ignorance and empathy". After the initial introduction and communication, change to increase the childbearing motivation was discussed and students expressed their feelings about childbearing. The counselling included identifying neglect of childbearing, giving insights to the clients on the importance of childbearing, population growth, the importance of childbearing in Islam, the consequences of delaying childbearing, the ideal number of children, and combating deny.

Session 2: "Thinking and reflecting and revealing inconsistencies" The researcher expressed the benefits of change (childbearing).

Answering the questions and listening to the topics about change toward childbearing was done and led to revealing the reasons for feeling the need for change. Positive and negative motivations of childbearing were discussed. Session 3: "readiness to change behaviour and coping with resistance". The researcher encouraged the clients who were ready to change behaviour to plan a program to enter the action phase. Challenges related to child care and discomfort of pregnancy and childbirth, strategies for overcoming and adjusting barriers to childbearing such as education, employment and economic issues (using life skills strategies such as time management and economic management and financial priorities) were addressed.

After collecting information and recording it, data was analysed in two descriptive and analytical formats. At first, the normality of data distribution of quantitative variables was evaluated using Shapiro-Wilk test. Independent t-test / Mann-Whitney U test were used to compare normal / abnormal quantitative variables in two groups (intergroup) and paired t-test / Wilcoxon test were used to compare dependent variables (intragroup). Nominal variables were also compared and tested in two groups using Chi-square test and Fisher's exact test. For intra-group tests and comparison of the three stages of before, immediately after and four weeks after the intervention, analysis of variance test with repeated measures was used for normal variables and Friedman test was used for abnormal variables. Data were analysed by SPSS software (version 26). $P < 0.05$ was considered statistically significant.

Results

The demographic characteristics of the study subjects were reported in Table 1.

Comparison of the mean score of the students' positive motivation of childbearing in the two groups was reported in Table 2. Independent t-test did not show a significant difference in the mean total score of positive motivation of childbearing in female students in the pre-test stage in the intervention and

control groups ($P = 0.835$). According to Mann-Whitney U test, immediately after the intervention ($P < 0.001$) and four weeks after the intervention ($P < 0.001$), the mean total score of positive motivation of childbearing in female students was significantly higher in the intervention group than the control group. According to Mann-Whitney U test, the difference in the mean total score of positive motivation of childbearing in female students immediately after the intervention compared to before the intervention ($P < 0.001$) and four weeks after the intervention compared to before the intervention ($P < 0.001$) was significantly higher in the intervention group compared to the control group. Friedman test showed that the difference between the stages was significant in intergroup comparison ($P < 0.001$).

Wilcoxon post hoc test with Bonferroni correction showed that the difference immediately after the intervention with before the intervention was significant ($P < 0.001$), the difference four weeks after the intervention with before the intervention was significant ($P < 0.001$). Intergroup comparison in the control group, analysis of variance with repeated measures showed that the difference between the stages was significant ($P = 0.003$). Bonferroni post hoc test showed a significant difference immediately after the intervention with before the intervention ($P = 0.028$), the difference four weeks after the intervention with before the intervention was significant ($P = 0.011$) and the difference four weeks after the intervention with immediately after the intervention was not significant ($P = 1.000$) (Table 2). So that, there was a significant increase in the intervention group, and there was a significant decrease in the control group in terms of the total score of childbearing positive motivation in female students following the intervention.

Comparison of the mean score of childbearing negative motivation of female students in the two groups was reported in Table 3. Mann-Whitney U test didn't show a significant difference in the mean total score of childbearing negative motivation of female students in the pre-test stage in the intervention and control groups ($P = 0.286$).

Table 1. Mean and standard deviation of demographic characteristics of female students in the intervention and control groups

Variable	Group		Test's result
	Intervention (n=34)	Control (n=34)	
	Mean±SD Median (Third and first quarter)	Mean±SD Median (Third and first quarter)	
Age (mean±SD)	23.6±3.00 23.0(21.0,25.0)	22.8±2.6 22.0(21.0,23.0)	Z=-1.2 P=0.215 Mann-Whitney U
Number of sister	1.5±0.8 2.0(1.0,2.0)	1.4±1.6 1.0(0.0,1.0)	Z=-1.8 P=0.072 Mann-Whitney U
Number of brother	1.1±0.8 1.0(0.5,1.5)	1.2±0.9 1.0(1.5,0.5)	Z=-0.3 P=0.772 Mann-Whitney U
Rank of birth	2.4±1.3 2.0(1.0,3.0)	2.4±1.9 2.0(1.0,2.0)	Z=-0.9 P=0.389 Mann-Whitney U
Education level	N (%)	N (%)	
Associate	0(0.0)	2(5.9)	Chi2=2.8
Bachelor	15(45.5)	18(52.9)	P=0.458
Master	6(18.2)	4(11.8)	Exact Fisher
PhD	12(36.4)	10(29.4)	
Total	33(100.0)	34(100.0)	
City of residence	N (%)	N (%)	
Mashhad	6(17.6)	6(17.6)	Chi2=0.0
Other than Mashhad	28(82.4)	28(82.4)	P=1.000
Total	34(100.0)	34(100.0)	Chi-square
Monthly family income	N (%)	N (%)	
Less than enough	1(3.0)	3(9.1)	Chi2=1.2
Enough	29(87.9)	28(84.8)	P=0.760
More than enough	3(9.1)	2(6.1)	Exact Fisher
Total	33(100.0)	33(100.0)	

According to Mann-Whitney U test, immediately after the intervention ($P<0.001$) and according to independent t-test, four weeks after the intervention ($P<0.001$), the mean total score of childbearing negative motivation of female students in the intervention group decreased significantly. The total score of childbearing negative motivation of female students decreased immediately after the intervention compared to before the intervention in the intervention group and increased in the control group. Independent t-test showed this difference was significant ($P<0.001$).

The total score of childbearing negative motivation of female students decreased four weeks after the intervention compared to before

the intervention in the intervention group and increased in the control group. Mann-Whitney U test showed this difference was significant ($P<0.001$). The intergroup comparison in the intervention group, Friedman test showed that the difference between stages was significant ($P<0.001$). Wilcoxon post hoc test with Bonferroni correction showed the significant difference immediately after the intervention compared to before the intervention ($P<0.001$), four weeks after the intervention compared to before the intervention ($P<0.001$) and four weeks after the intervention compared to immediately after the intervention ($P=0.044$).

Table 2. Mean and standard deviation of the total score of childbearing positive motivation in female students during the stages in the intervention and control groups

Total score of childbearing positive motivation	Group		Test's result
	Intervention	Control	
	Mean±SD Median (Third and first quarter)	Mean±SD Median (Third and first quarter)	
Before the intervention	78.5±14.0 77.0(67.5,87.5)	79.2±15.0 77.0(69.5,85.5)	t=-0.2 P=0.835 Independent t-test
Immediately after the intervention	100.6±7.7 102.0(95.0,106.5)	78.5±14.0 77.0(67.5,87.5)	Z=-5.6 p<0.001 Mann-Whitney U
Four weeks after the intervention	78.5±14.0 77.0(67.5,87.5)	78.5±15.2 77.0(69.0,85.5)	Z=-5.5 p<0.001 Mann-Whitney U
Difference immediately after the intervention with before the intervention	22.1±9.6	-0.7±1.4	Z=-7.2 p<0.001 Mann-Whitney U
Difference four weeks after the intervention with before the intervention	21.9±9.4	-0.7±1.4	Z=-7.2 p<0.001 Mann-Whitney U
Difference four weeks after the intervention with immediately after the intervention	-0.2±2.3	-0.1±1.1	Z=-1.3 P=0.186 Mann-Whitney U
Intergroup test's result	Chi2=55.2 p<0.001 Friedman test	F=6.7 P=0.003 Analysis of variance with repeated measures	

Table 3. Mean and standard deviation of the total score of childbearing negative motivation of female students during the stages in the intervention and control groups

Total score of childbearing negative motivation	Group		Test's result
	Intervention	Control	
	Mean±SD Median (Third and first quarter)	Mean±SD Median (Third and first quarter)	
Before the intervention	59.9±11.8 58.0(50.5,65.5)	56.1±9.3 56.0(50.0,60.5)	Z=-1.1 P=0.286 Mann-Whitney U
Immediately after the intervention	39.5±8.5 38.0(32.0,44.5)	56.2±8.9 56.5(50.0,59.5)	t=-7.9 p<0.001 Independent t-test
Four weeks after the intervention	39.9±8.6 38.0(33.0,45.5)	56.3±9.1 56.5(50.0,59.5)	Z=-5.8 p<0.001 Mann-Whitney U
Difference immediately after the intervention with before the intervention	-20.4±10.5	0.0±1.4	Z=-7.2 p<0.001 Mann-Whitney U
Four weeks after the intervention with before the intervention	-20.0±10.4	0.1±1.3	Z=-7.2 p<0.001 Mann-Whitney U
Four weeks after the intervention with immediately after the intervention	0.4±0.9	0.1±0.4	Z=-1.7 P=0.084 Mann-Whitney U
Intergroup test's result	Chi2=60.9 p<0.001 Friedman test	F=0.2 P=0.682 Analysis of variance with repeated measures	

In the intergroup comparison in the control group, analysis of variance with repeated measures showed that the difference between the stages was not significant ($P=0.682$) (Table 3).

Discussion

This study was performed aimed to determine the effect of group counseling based on motivational interview on childbearing motivation in female students of Mashhad University of Medical Sciences. The results of present study showed that the positive motivation for childbearing of female students of Mashhad University of Medical Sciences increased after group counseling based on motivational interview and the negative motivation for childbearing decreased significantly.

According to the results of the present study, the mean total score of childbearing positive motivation in female students before the intervention was homogeneous in the intervention and control groups, but the mean total score of childbearing positive motivation immediately and four weeks after the intervention was significantly higher in the students of the intervention group than the

control group. In the intervention group, the total score of positive motivation for childbearing in female students immediately and four weeks after the intervention had a significant increase compared to before the intervention, but no significant difference was observed four weeks after the intervention compared to immediately after the intervention; the stability of this increase shows the positive motivation for childbearing. In the control group, the total score of childbearing positive motivation of female students immediately and four weeks after the intervention was significantly lower than before the intervention. This decrease may only be due to the difference in response in the two stages of completing the questionnaire, but on the other hand may indicate a real decrease in the positive motivation for childbearing of students over time, which is consistent with the decline in fertility in the society and may be due to the reasons such as economic conditions, the development of women in matters such as continuing education and inclination to

employment and the conditions crisis of the Covid 19 disease. Conducting descriptive and prospective studies for evaluation of fertility motivation in several stages and with a suitable sample size can examine these possible interpretations in detail.

Also, the results of the present study showed that the mean total score of childbearing negative motivation of female students before the intervention was homogeneous in the intervention and control groups, but immediately and four weeks after the intervention in the intervention group was significantly lower than the control. In the intervention group, the total score of childbearing negative motivation of female students immediately and four weeks after the intervention was significantly lower than before the intervention. In the control group, the total score of childbearing negative motivation of female students was not significantly different before the intervention, immediately and four weeks after the intervention.

Few interventional studies have been conducted in relation to childbearing. Since no interventional studies were found on the childbearing motivation of students or youth, so the studies in the field of childbearing motivation and attitudes toward childbearing were used in discussion. Osherieh et al. (2019) conducted a trial study to determine the effect of hidden curriculum on students' childbearing motivations, which showed that basic motivations for childbearing can be improved even with small interventions. The intervention had improved positive childbearing motivations among schoolgirls and reduced negative motivations (28). Similar to Osherieh et al., there was a childbearing intervention in the present study. However, in the study of Osherieh et al., education of childbearing was through hidden method and of course the target group was schoolgirls, but in the present study the target group were single female students of marriage age and the intervention was group counseling of motivational interview in childbearing.

In another study, Khodakarami et al. (2017) in a two-group quasi-experimental study showed that after midwifery counseling, the women's attitudes toward child as a pillar of life

became positive and midwifery counseling by informing women about the importance of children in life due to aging population and the need of people to young people, especially in old age, as well as the need of society to young, productive and efficient force to maintain society and improve the quality of life and also due to their attitude to fertility and childbearing has become better and more positive. Given the existing problems, conditions must be provided to increase women's motivation and attitude towards childbearing, because fertility is not just a physical matter, but it is based on the individuals' attitudes and thoughts (31).

In the study of Khodakarami et al., the target population was women who referred to health centers after one year of marriage and did not have children, but in the present study, single girls were studied, but the results showed the importance of counseling in motivation for childbearing. Akbarian Moghadam et al. (2020) in a trial study showed that education based on the planned behavior theory is effective on increasing the intention for childbearing in single-child women. Intention leads to perform a behavior and is a combination of attitudes toward performing behavior and mental norms and perceived behavioral control (24). But motivation is an internal force that stimulates the development of certain behaviors in the individual (11).

The effectiveness of motivational interview in previous studies has been shown in promoting awareness and attitude and motivation in some health behaviors. Consistent with the results of the present study, the study of Wilson et al. (2021) showed that motivational interviews significantly increase the effective use of contraception immediately after the intervention and up to four months after the intervention (32). The study of Hosseini Haji et al. (2018) showed that group counseling based on motivational interview with pregnant women who had previous cesarean section leads to increased awareness and improved attitude towards vaginal birth after cesarean section (26). Shakiba et al. (2020) showed that motivational interview can be a useful tool to change attitudes and reduce unnecessary cesarean section in pregnant women (27).

Childbearing motivations are the main stimulus for reproduction (2). Khadivzadeh et al. (2014) in a study aimed to determine the relationship between childbearing motivations and fertility preferences concluded that a direct relationship was found between childbearing positive motivations in couples desiring to childbearing and the ideal number of children (12). Providing counseling in the field of fertility and childbearing can significantly increase the awareness of couples about fertility and childbearing, positive population growth and ensuring the health of the next generation (33).

One of the limitations of the present study was the differences in personality, individuals, psychological status and cultural background of the study subjects that can affect their answering, which in this study was partially controlled by random sampling method. Another limitation was the self-report of the questionnaires, which was largely removed by encouraging the samples to complete the options and emphasizing the confidentiality of the information. Another limitation was the corona epidemic, which led to closed colleges and dormitories and delayed sampling. The counseling present study was held virtually due to corona health protocols. Virtual counseling can play an important role in promoting the health system and achieving justice in society (providing services in divested areas) by improving easier access to services and providing them cheaply and quickly, regardless of geographical borders, and provide access to counseling and necessary services (34). In this type of counseling, the person spends less money and saves time and energy resources by reducing transportation (35). Despite these advantages, there are still challenges to changing from the traditional to the virtual method (36).

Lack of face-to-face interaction and non-verbal communication in virtual counseling are considered as advantage and disadvantage, in some cases it may harm the interaction of individuals and on the other hand can lead to more comfort for some people in group interaction (36). Common disadvantages mentioned for virtual education and counseling, such as insufficient skills in information technology (37), and inadequate infrastructure

(38) was not related to the target group of the present study that were medical students with sufficient skills and access to information technology (especially due to university virtual classes because of the corona). In the present study, counseling was held virtually due to the corona epidemic. It is suggested that future research assess the effect of group counseling based on motivational interview on the childbearing motivation of male students as well as young couples.

Conclusion

According to the results of the present study, there was a significant increase in childbearing positive motivations and a significant decrease in childbearing negative motivations in female students immediately after group counseling based on motivational interview and didn't change over 4 weeks that shows the stability of promoting the motivation for childbearing due to the present intervention. Therefore, group counseling based on motivational interview was effective in promoting the motivation for childbearing of female students of Mashhad University of Medical Sciences. Therefore, it is suggested that the present intervention be widely used in order to promote the motivation for childbearing of female students.

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Conflicts of interest

Authors declared no conflicts of interest.

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