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# The effect of positive psychology intervention on quality of life among women with unintended pregnancy

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## Abstract:

**BACKGROUND:** Studies have shown that quality of life in women with unintended pregnancy is significantly less than the ones with wanted gestation. Therefore, this study was aimed to determine the effect of intervention based on the positive psychology interventions on women's QoL with unintended pregnancies in Kermanshah, Iran.

**MATERIALS AND METHODS:** In this randomized clinical trial, 40 women with unintended pregnancy met the eligibility criteria and were randomized into experimental ( $n = 20$ ) or control ( $n = 20$ ) groups. The Short-form 36-item Questionnaire (SF-36) was administered at pretest, post-test, and six weeks after the intervention. Positive psychology interventions were performed in each session once a week for 10 weeks, with a duration of 90 minutes. The Friedman test and Mann-Whitney U-test were used to analyze QoL and all eight domains for within-group and between-group comparisons, respectively. The level of confidence was set at 0.05 significant.

**RESULTS:** Distribution of matched variables was not significantly different between the two trial groups. Over the intervention period, the mean of total scores of QoL and seven dimensions showed significant improvement among the experimental group, whereas in the control group, it decreased significantly ( $P < 0.05$ ). In addition, in the posttest and follow-up stages, the mean score of six dimensions of QoL was higher than the control group ( $P < 0.05$ ).

**CONCLUSION:** According to the results of the present study, unintended pregnancy has side effects on QoL in women. Positive counseling interventions can improve the quality of life in women with unintended pregnancy.

## Keywords:

36-Item Short Form Survey, life quality, positive psychology, randomized, unintended pregnancy

## Introduction

Childbearing is an important phenomenon in demographic change and the axis of sustainable development, particularly in countries with low replacement level fertility.<sup>[1]</sup> In such countries, including the Islamic Republic of Iran (with a fertility rate of 1.9), fertility behavior is expected to occur based on prior intent and in accordance with rational decisions.<sup>[2,3]</sup> Unintended pregnancies, defined as mistimed or unwanted pregnancies, are one of the serious

facets of reproductive health.<sup>[4]</sup> Studies have shown that the average prevalence of unintended pregnancy in low-, middle-, and high-income countries is 35% ranging from 13% to 82%.<sup>[5]</sup> In Iran, about one-third of pregnancies are unintended, and it seems to be higher in some provinces, including Kermanshah.<sup>[6,7]</sup>

It is well known that such pregnancies have adverse effects on socioeconomic development and promoting public health<sup>[8,9]</sup> and can provide difficulties and complications for both mother and

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child such as unsafe abortion, premature delivery, low birth weight, infant mortality, less care and attention, and the possibility of not breastfeeding.<sup>[8,10]</sup> If unintended pregnancies continue, there is a risk of complications such as delayed prenatal care and fewer visits, decreased health-related lifestyle behaviors, and psychological distress. For example, there is a significant association between unintended pregnancy with maternal depression, anxiety, and low mental health-related quality of life (QoL).<sup>[8,10]</sup>

The World Health Organization has a broad definition of health that includes complete physical, mental, and social well-being, and not just the absence of disease. Therefore, in measuring health and evaluating health interventions, in addition to the frequency and severity indices of the disease, it is necessary to pay attention to other human values such as QoL.<sup>[11]</sup> Today, women's care in developed countries includes comprehensive goals such as supporting, encouraging psychological adaptation, and acceptance of pregnancy, which reflects the concept of QoL.<sup>[12-14]</sup> It is authenticated that QoL is more than health status or functional ability. It can be defined as "an overall general well-being that comprises objective descriptors and subjective evaluations of physical, material, social, and emotional well-being together with the extent of personal development and purposeful activity, all weighted by a personal set of values."<sup>[15]</sup>

Studies have shown that QoL is lower in unwanted pregnancies compared with wanted pregnancies.<sup>[16,17]</sup> There are several approaches to improving the QoL among pregnant women, such as hardiness training, Mindfulness training, resistance training, yoga, and positive psychology counseling.<sup>[18-22]</sup> Positive psychology is one of the recent methods to improve the QoL in various target groups.<sup>[23-25]</sup> This approach was first introduced by Martin Seligman (1998). He claimed that there are five fundamental elements of well-being: positive emotion, engagement, relationships, meaning, and accomplishment.<sup>[26]</sup>

In this approach, purposeful activities are designed to promote emotions and cognitions and perform healthy behaviors,<sup>[27, 28]</sup> and by forming positive emotions, it reduces the negative interpretation of life events and improves people's QoL.<sup>[22,25]</sup> Hence, increased attention to the use of positive psychology interventions has the potential to provide more effective health care than expected.<sup>[29]</sup> The aim of this study was to determine the effect of educational intervention based on positive psychology on the QoL of women with unwanted pregnancies.

## Materials and Methods

### Participants and procedure

The study was a randomized controlled trial. The Medical Ethics Committee of the Kermanshah University

of Medical Sciences (KUMS) (KUMS. REC.1395.717) and the Iranian Registry of Clinical Trial (IRCT) (IRCT2017030714333N70) approved the research. Women with unintended pregnancy who were enrolled at eight academic centers affiliated with KUMS conducted from April to June 2017 entered the study. Following recruitment, subjects were requested to complete the consent form. Forty women who met eligibility criteria entered the study by a convince sampling method and were randomized into two groups including experimental ( $n = 20$ ) and control ( $n = 20$ ). Based on the minimum effect size, the sample size is ( $f = 0.25$ ) found in the previous trial,<sup>[30]</sup> 20 subjects in each group with an  $\alpha$  of 0.05 and a power of 0.80 selected.

Inclusion criteria for the study included unintended pregnancy from the perspective of woman, gestational age less than twenty weeks, marriage, lack of infertility, lack of diagnosed physical and mental illness, lack of addiction or substance use of illicit drugs, having  $\geq 5$  years of education, and consent to participate in the study. Having more than 20% absence in the training sessions, and termination of pregnancy during the research also were considered as exclusion criteria.

### Instruments

The following tools were used for data collection:

1. A demographic inventory assessed age, level of the women and the spouse's education and job, age of pregnancy, the number of children, type of unintended pregnancy, interval from previous pregnancy, spouse's desire to pregnancy, and a history of contraception use. In the present study, five experts were chosen from related professions to estimate the content validity of the demographic inventory.
2. 36-Item Short Form Survey (SF-36) to evaluate the QoL, designed in 1992 by Ware and Sherbourne.<sup>[31]</sup> The purpose of this questionnaire is to assess the physical and mental condition of the participants, which is evaluated in eight structures including physical functioning, bodily pain, role limitations due to physical health problems, role limitations due to emotional problems, mental health, social functioning, vitality, and general health perceptions. The lowest and highest possible scores for each dimension are zero and 100, respectively. In Iran, the validity of the questionnaire was investigated using the method of "Comparison of known groups" and "convergence validity" and the reliability of the questionnaire was assessed using statistical analysis of "internal consistency" in the study of Montazeri and colleagues. Cronbach's alpha of this questionnaire for the Iranian community was calculated to be 0.77-0.90.<sup>[32]</sup> In our study, all eight domains of the SF-36 showed good internal reliability, with Cronbach's alphas ranging from 0.71 to 0.90.

All of the participants completed the questionnaires three times: pretest, posttest, and follow-up. The pretest was conducted before the intervention based on positive psychology, posttest at the end of the last session of the intervention, and follow-up 42 days after the end of the last session (16 week after baseline measurement). All participants were Persian speaking.

### Intervention

In this study, participants in the experimental group in addition to routine pregnancy care received 10 weekly sessions each 90 minutes based on a positive psychology approach. However, the control group received only routine care during pregnancy by staff at health care centers.

The positive psychology intervention introduced in this paper is a 10-week group-based program. This is the result of the past researches that was applied in this area.<sup>[22]</sup> Each of the 10 weeks focused on a different theme. These items are consistent with the standard approach of positive psychological intervention. A written statement of the interventions and weekly exercise was also provided by a team of researchers, who are the authors. The weekly outline and exercises are summarized in Table 1.

### Strengths of the study

There was some considerable strength in this study. At first, throughout the process of conducting the research, strict rules were followed. For example, in this study, a well-experienced psychologist monitor the interventions and used a standard operating procedure.<sup>[26]</sup> Furthermore, the follow-up period was relatively long (16 weeks after baseline measurement). Third, a written statement of the interventions and weekly exercise was provided by a team of researchers. Furthermore, two experimental and control groups were adjusted for demographic variables such as age, educational status, number of children, and contraceptive method before recent pregnancy. At last, another strength of this study was the careful validation of the use of scales.

### Statistical methods

Data were analyzed using SPSS 22 (version 22.0, SPSS Inc., Chicago, IL, USA). To test the normal distribution of continuous data, the Shapiro–Wilk test was used ( $P < 0.05$ ). Demographic variables between two experimental and control groups were analyzed by Student's *t*-test for parametric data and Mann–Whitney U-test for non-parametric data. Categorical data were analyzed by Chi-square or Fisher's exact test in instances where appropriate. The Friedman test and Mann–Whitney U-test were used to analyze the non-parametric statistics continuous variables (QoL and all eight domains) for within-group and between-group comparisons, respectively. The level of confidence was  $\geq 95$  ( $\alpha = 0.05$ ).

## Results

In this study, 40 unintended pregnant women participated in two groups of experimental and control, each consisting of 20 participants. The mean age of all participants in both intervention and control groups was  $29.92 \pm 8.26$  years and ranged from 17 to 44 years. The mean gestational age was  $13.9 \pm 3.35$  weeks; ranged from 8 to 20 weeks. Furthermore, the mean interval from the previous pregnancy was  $2.52 \pm 2.41$  years, ranged from 2 to 12 years. The findings showed that the two groups of experimental and control in terms of age, gestational age, interval from previous pregnancy, and monthly income statistics were not significantly different ( $P > 0.05$ ).

As shown in Table two, 75% of participants were housewives, 25% had academic degrees, and 77.5% had  $\geq 3$  children. Among all participants, 72.5% of women's husband was reluctant to continue the current pregnancy. Table 2 provides detailed information and a comparison of the demographic status of the two groups in terms of the similarity of the variables.

The results of Fisher's exact test showed that the two groups did not significantly differ in terms of job and the number of children ( $P > 0.05$ ). The results of the Chi-square test also showed a similarity between the variables of education, the spouse's desire for the current pregnancy and contraception method before recent pregnancy in the two groups of intervention and control ( $P > 0.05$ ).

As shown in Table 3, the results of the Friedman test showed a significant increase in mean score of QoL before and after the intervention among women in the experimental group ( $P < 0.01$ ). However, the analysis of data showed a significant decrease in the mean score of the QoL in the control group ( $P < 0.05$ ).

Also in the experimental group, the results showed a significant increase in the mean scores of the seven dimensions of QoL, including General health perceptions, Physical functioning, Role limitations due to physical health problems, Role limitations due to emotional problems, bodily pain, social functioning, and Vitality (Energy/Fatigue) with 95% confidence after intervention ( $P < 0.05$ ).

But in the control group, the mean score of two dimensions, including General health perceptions, and Role limitations due to physical health problems significantly decreased from baseline ( $P < 0.05$ ), and the differences found in other dimensions were not statistically significant ( $P > 0.05$ ).

The results of The Mann–Whitney U-test showed that there was no significant difference between the mean

**Table 1: Session-by-session of positive psychology intervention 10 weekly topics and activities**

Session	Exercise and homework	Description
1	In session: Orientation to positive psychology  Homework: Positive introduction	Explaining the group goals and rules Women complete SF-36 inventory in session, score their responses, and reflect upon their scores Women introduce themselves through a story that shows them at their best Presenting problems (in unwanted pregnancy) are discussed in the context of a lack of positive resources, such as positive emotions, engagement, positive relationships, meaning, and character strengths Write a one-page positive introduction, in which they share a concrete and real-life story showing them at their best
2	In session: Character and signature strengths  Homework: Dynamic Strengths assessment	Character strengths are defined and discussed. The role of character strengths in problem-solving is discussed. They identify their character strengths Women integrate various perspectives to compute their Signature Strengths; goal-setting is discussed The women and counselor discuss specific, and achievable goals targeting pregnancy problems Writing down their strengths and frame their own goals into a signature strengths action plan
3	In session: Good and bad excitement and memories  Homework: Positive emotions	Describing at least 2-3 positive memories The role of memories and the impact on the emotional well-being is discussed Use one or more positive cognitive reappraisal strategies to assess bad memories
4	In session: Learning engagement and self-control  Homework: Writing a memoir	Describing at least 2-3 positive experiences to the group members Ensure that they can respond to their challenges Write at least one sweet memory of the week
5	In session: Gratitude  Homework: Gratitude letter	Gratitude and thanksgiving are discussed as praising emotion The expression of gratitude for achieving happiness With an emphasis on gratitude, the roles of good and bad memories are discussed Focus on the present moment, on appreciating your life as it is today Write a gratitude letter to someone they never properly thanked
6	In session: Hope and optimism  Homework: Optimism	The effect of optimism and hope on health - both physically and emotionally are discussed Exercise: One door closes, one door opens - women think and write about times when important things were lost but other opportunities opened up Concentrate on the positive sides of what they face Positive self-talk
7	In session: Positive relationships  Homework: Active listening and responding practice	Talk about the role of positive relationships in well-being Women practice active listening and constructive responding, a strategy to develop positive communication in relationships Women self-monitor for opportunities for active constructive Summarize conversations
8	In session: Savoring  Homework: Planned savoring activity	Talk about the benefits of savoring, for example, better relationships, improved health, and finding more solutions to problems Women participate in a savoring practice that uses various techniques and strategies Women share their good feelings with others Take a mental nice photograph Congratulate themselves on a job well done
9	In session: Spirituality and altruism  Homework: Gift of time	Talk about the remedial benefits of helping others. Talk about the importance of altruism to progress spiritually Women write a paragraph about how put altruism into practice on a daily practice Women plan to give the gift of time by volunteering as a family to prepare a meal and visiting elderly relatives
10	In session: Relapse prevention	Talk about a summary of learned skills, the identification of potential difficulties, and closing the sessions Women complete SF-36 inventory and determining the next test date (42 days later)

SF-36=36-Item Short Form Survey

score of QoL in the experimental and control groups in the pretest stage ( $P = 0.385$ ); however, in the time immediately after the last session of intervention and 42 days after the intervention, a significant difference

was observed in the mean score of QoL in the two groups ( $P < 0.01$ ), [Table 3]. Also, there was no significant difference in the two groups between the mean of all eight dimensions of QoL in the pretest stage ( $P > 0.05$ ),

**Table 2: Demographic variables of participants in the experimental and control groups**

Variables	Categories	Control, n (%)	Experimental, n (%)	Total, n (%)	Statistics	P
Job	Employed	6 (30)	4 (20)	10 (25)	Fisher's exact test: 0.533	0.358
	Housewife	14 (70)	16 (80)	30 (75)		
Education	Diploma and less	15 (75)	15 (75)	30 (75)	$\chi^2$ : 0.001	0.641
	Academic	5 (25)	5 (25)	10 (25)		
Number of children	3 and above	16 (80)	15 (75)	31 (77.5)	Fisher's exact test: 0.143	0.5
	<3	4 (20)	5 (25)	9 (22.5)		
Spouse's desire to continue the pregnancy	Yes	5 (25)	6 (30)	11 (27.5)	$\chi^2$ : 0.125	0.723
	No	15 (75)	14 (70)	29 (72.5)		
Last contraceptive method	Drugs	8 (40)	8 (40)	16 (40)	$\chi^2$ : 0.001	0.993
	Others	12 (60)	12 (60)	24 (60)		

**Table 3: Comparison of the mean score of quality of life and its dimensions in two groups; before, immediately after and 42 days after the intervention**

Variable	Group	Mean±SD			Friedman test, P
		Pretest	Posttest	Follow-up	
Quality of life	Control	39.86±1.77	34.57±2.84	32.33±1.98	0.026
	Experimental	38.39±2.39	55.31±3.48	51.43±2.87	
The Mann-Whitney U-test, P		0.385	0.001	0.001	
General health perceptions	Control	54.25±2.95	35±1.8	24.7±1.33	0.001
	Experimental	53±3.52	43±2.95	34.5±2.20	
The Mann-Whitney U-test, P		0.643	0.042	0.001	
Physical functioning	Control	50±6.01	37.5±4.96	33.7±4.16	0.087
	Experimental	52.5±5.41	41.2±5.8	35±4.93	
The Mann-Whitney U-test, P		0.552	0.556	0.850	
Role limitations due to physical health problems	Control	13.33±5.07	28.3±4.37	25±4.1	0.028
	Experimental	15±4.5	65±6.61	61.6±7.36	
The Mann-Whitney U-test, P		0.629	0.001	0.001	
Role limitations due to emotional problems	Control	32.75±1.49	28.5±2.64	29.7±2.39	0.183
	Experimental	30±2.32	51.5±2.59	46.5±2.23	
The Mann-Whitney U-test, P		0.057	0.001	0.001	
Bodily pain	Control	33.8±1.95	31.8±2.20	32.4±2.3	0.831
	Experimental	28.8±2.27	62.4±2.21	62.8±1.7	
The Mann-Whitney U-test, P		0.072	0.001	0.001	
Social functioning	Control	31.25±2.48	31.25±3.5	33.7±3.63	0.814
	Experimental	30±3.06	56.8±4	53.12±3.12	
The Mann-Whitney U-test, P		0.576	0.001	0.001	
Vitality (Energy/Fatigue)	Control	62.75±3.46	52.7±4.44	47±4.1	0.056
	Experimental	61.62±4.69	63.5±5.01	62.1±5.1	
The Mann-Whitney U-test, P		0.935	0.126	0.030	
General mental health (Emotional wellbeing)	Control	39.5±3.96	31.5±4.15	32.2±3.15	0.268
	Experimental	36.25±4.08	59±4.49	55.7±3.8	
The Mann-Whitney U-test, P		0.625	0.001	0.001	

SD=Standard deviation

but after intervention it was different. The result are shown in Table 3.

## Discussion

The aim of this study was to determine the effect of positive psychology interventions on the Quality of life among women with unintended pregnancy. The results showed an improvement in the QoL scores in the experimental group compared to control, which indicates the effectiveness of interventions based on positive

psychology. In addition, this improvement remained stable for at least 42 days after the intervention.

The results of the similar studies conducted by other researchers also confirm this finding.<sup>[22-24]</sup> For example, Casellas-Grau *et al.* (2014) showed that interventions based on positive psychology can lead to improved QoL, well-being, hope, and optimism.<sup>[33]</sup> Mostafaei *et al.*, confirmed the effectiveness of this approach on the QoL of pregnant women.<sup>[22]</sup> In contrast, a study of Seyedi-Asl and colleagues showed that psychotherapy intervention

based on the positive psychology approach in infertile women, despite increasing life satisfaction, does not significantly change the QoL of women.<sup>[34]</sup> However, in the mentioned study, the instrument used to measure the QoL was the SF-12 questionnaire (a short form of SF-36 questionnaire). This tool does not examine all the dimensions of QoL and may not be appropriate for evaluating the effectiveness of interventions on aspects of the QoL, while in the present study we used the SF-36 questionnaire to measure QoL.

Between-group analysis indicated that the mean of Physical functioning sub-scale in each of the two groups in the post-test and follow-up stages did not differ significantly from the pre-test. However, within-group comparisons showed that the mean level of Physical functioning sub-scale improved significantly in the experimental group over time, but decreased in the control group.

In the evaluations immediately after the intervention and 42 days later, the QoL in the control group had a significant decreasing trend ( $P = 0.026$ ). The results of other studies also indicated the adverse effect of increased gestational age on various aspects of women's QoL.<sup>[22,34,35]</sup>

Rezaei *et al.* found that the QoL of pregnant women decreased as their sleep patterns were disrupted.<sup>[36]</sup> Munch *et al.* also reported that nausea and vomiting during pregnancy is a factor in reducing the QoL in pregnant women.<sup>[35]</sup> A study by Tendais *et al.* showed a reduction in the physical dimensions of the QoL in pregnant women; however, they noted a significant increase in the psychological dimension of QoL along with the increased gestational age, while both physical and mental dimensions of QoL in the control group of the present study decreased during the follow-up stage.<sup>[37]</sup>

The unintended nature of pregnancy may be considered a factor in reducing the QoL in the psychological dimension of the control group in the present study. In fact, the adverse effect of unintended pregnancy is a reason for the significant decrease in the mean scores of qualities of life of dimensions in the control group. Consistent with the present study, some studies have found that the QoL of pregnant women is affected by the pregnancy intention. Garipey *et al.* (2017) found that women who experienced any type of unexpected, unintended, or unplanned pregnancy had a lower QoL compared to those that had an expected, desired, and a planned pregnancy.<sup>[12]</sup> Ali (2016) showed that the QoL of women with unintended pregnancy at all scales of the SF-36 questionnaire was lower than the QoL of women with intentional and planned pregnancies. In addition, the low scores in the mental dimensions (9 times) and

especially fatigue or vitality was observed in the group of women with unintended pregnancies compared to the group with planned pregnancies.<sup>[17]</sup>

Several explanations can be presented to explain how the positive psychology approach affects the QoL. Simultaneously, with the combination of positive psychology and QoL, researches require the conceptualization of each. A fundamental question that arises at this stage is how positive psychology relates to QoL. One of the proposed methods of this approach is based on the Seligman's PERMA Model to achieve mental well-being as well as assessing and addressing people's strengths.<sup>[38]</sup> Seligman (2019) proposed a model consisting of five elements called PERMA model based on which psychological well-being was the result of five dimensions of positive emotions, engagement, relationships, meaning, and accomplishments,<sup>[26]</sup> and each of the pillars proposed by Seligman is a kind of focus for research on QoL.<sup>[26]</sup>

Since the international definition of QoL in recent years has been consistent with the new definition of subjective well-being derived from expert panel studies,<sup>[15]</sup> Seligman's model can be considered as a path of influencing the positive psychology on improving QoL. In fact, positive psychological interventions, through helping people to achieve and equip themselves with PERMA components, lead to increased self-actualization, happiness, and improved QoL.<sup>[26,39]</sup>

In addition, the structures of a positive psychology approach play their roles in improving the QoL and well-being by focusing on promoting one's strengths (as key aspects of positive psychology).<sup>[26,38,40]</sup> Efforts to form and promote one's strengths can lead to experiences of positive emotions, engagement, positive relationships, meaning, and accomplishments, and thereby promoting well-being and QoL.<sup>[38,41]</sup> People who use their strengths, experience higher level of mental well-being, and this increase in mental well-being is related to the physical and psychological dimensions of QoL.<sup>[40]</sup> Gander *et al.* found that interventions based on Seligman's theory of well-being (positive emotions, engagement, positive relationships, meaning, and accomplishment) are effective strategies for increasing well-being and improving depressive symptoms.<sup>[42]</sup> Louro *et al.* confirmed the association between positive emotions and dimensions of QoL (including general health, social functioning, and well-being) in patients with colorectal cancer.<sup>[43]</sup> A study by Damásio (2013) also found that meaning in life was a strong predictor of psychological well-being and QoL, and that both variables had a significant correlation with meaning in life, which is consistent with the results of the present study.<sup>[44]</sup> In addition, some studies that have examined

the effectiveness of strength-based interventions in improving QoL and well-being are also considered to be consistent with current research.<sup>[24,45]</sup>

## Conclusion

According to the results of the present study, unintended pregnancy has side effects on QoL in women. The positive psychological interventions can improve the QoL in these subjects. Hence, it is recommended to integrate this approach with the routine care during pregnancy. Longer follow-up studies will be necessary in the future, in order to assess the long-term effects of positive psychological interventions.

## Research suggestions

Given to the special effects of physical and psychological conditions of pregnancy on QoL, which results in limited use of existing instruments for measuring QoL, it is recommended that a valid and reliable tool be designed, evaluated and used to assess the QoL of pregnant women. Furthermore, we suggest that future researches based on a positive psychology approach be designed and conducted as counseling processes and beyond merely educating individuals.

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## Conflicts of interest

There are no conflicts of interest.

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