Original Article

The effect of educating based on continuous care model on the infertility treatment related quality of life

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ARTICLE INFO

ABSTRACT

Background & Aim: Infertility and its treatment are considered a crisis in women's life which would affect different aspects of their quality of life. Along with therapeutic measures, infertile women need educating and continuous care. This study was conducted to evaluate the effect of educating based on continuous care model on treatment-related quality of life in infertile women.

Methods & Materials: In this semi-experimental study, 80 infertile women who referred to selected infertility centers of Tehran University of Medical Sciences during 2015 were enrolled through convenient sampling. For the samples of the control and the intervention group would not encounter each other, two different centers were selected for sampling. Data were gathered through demographic-obstetrical characteristics questionnaire and the Fertility Quality of Life (Fertil QoL) tool. The control group received the routine cares of the infertility center. To conduct continuous care model for the intervention group, based on the needs of participants, 2 or 3 educational sessions (1 to 2 hours) were conducted within a period of 7 to 10 days in the form of speech and question and answer and then the booklets of the presented subjects were distributed among the participants. Quality of life of infertile women was evaluated in both groups at two stages, before and 2 months after the intervention. Data were analyzed using Chi square test, Fisher's exact test, independent t test and Paired t test through SPSS 16. The level of significance was set at less than 0.05.

Results: Both of the intervention and the control group were similar before the intervention regarding their demographic characteristics and the score of quality of life (p > 0.05). The scores of quality of life after the intervention were 25.28 ± 4.602 and 30.08 ± 2.474 for the intervention and the control group, respectively, which indicates the effect of educating based on continuous care model on the infertility-related quality of life.

Conclusions: Educating based on continuous care model would improve therapy-related quality of life in infertile women and it is recommended that this model should be used as an easy, low-cost and convenient model in educational programs of midwifery.

Introduction

Infertility is defined as not becoming pregnant after one of having unprotected intercourse . Infertility in 20-30% of cases is caused by male factors, in 40-55% of cases by female factors and in 10-40% of cases by common factors. According to World Health Organization in 2012, one of every four couples is infertile. In Iran also one fourth of couples would experience infertility during their married life (1). Different factors would

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affect quality of life and infertility is also one of the tough and disabling conditions that could cause important social and health problems (2). Quality of life individual's perception of their condition and their satisfaction with the current condition. Quality of life is an extensive concept and includes social, environmental, economic and health satisfaction aspects (3). Infertile women usually describe infertility as the most stressful event of their life and frequent and continuous periods of treatment as the periods of crisis (4). Different factors would affect the quality of life in infertile women. Mental pressures and their associated negative behavioral conditions, such as anxiety, could be a threat for the outcome of infertility treatment. Anxiety would intensify infertility by increasing the level of cortisol and prolactin. Different mechanisms have been suggested for the effect of mental pressures on fertility including disrupting the secretion of gonadotropins, topical effects of catecholamines on the uterus and function of the tubal and disorder in the immunological processes which are responsible for maintaining fertilization and implantation. Advancement of science and technology and invention of modern methods for treatment of infertility like in vitro fertilization, have created hope for infertile women but these have also caused them to bear more stress and go through lingered periods of treatment (5). Issues such as accessibility of medical services required for infertile women, the effect of infertility treatment on their spirit, concerns about the effect of treatment on their daily activities, being uncomfortable about the physical side effects of drugs and infertility treatment, quality of services, available information and communications with the staff of infertility centers are some other problems of infertile women (6).

The nature of infertility, the need for long term treatments and intensive cares would affect individual's quality of life. On the other hand, it is important to maintain the appropriate quality of life along with the infertility treatment. Evidences have shown that mental and social problems have a negative effect on individual's ability to perform and continue recommended medical cares. So it is possible that, despite all the medical follow-ups and continuity of required treatments, decrease in quality of life would cause undesirable results for the treatments and all of these would clarify the importance of quality of life among infertile women (7). Therefore, health and medical considerations and appropriate educational interventions commensurate with their condition for having a better care seem necessary (8). The aim of healthcare is to improve the quality of life. One of the methods for modification of lifestyle is to use educational theories and models (9).

Dr. Ahmadi (2001) suggested a model in Iran as "the continuous care model", which was designed evaluated to improve the quality of life among patients with coronary artery disease. In this model, the patient is introduced as the effective operator of continuous care for their own health procedure. Establishing effective communication and interaction between the patients and healthcare providers for recognizing the requirements and problems and sensitizing the patient for accepting constant health behaviors and helping to maintain, improve and enhance their own health are presented as the effective mechanisms of this model on quality of life (8).

So one of the traits of this model is constant, dynamic and effective communication, which is completely appropriate and synchronized with the traits of chronic diseases such as infertility and the dynamic nature of their problems. The main goal of this model is to design and develop a program that could lead to acceptance and increased insight and appropriate

performance for constant effective care so that it could be effective in controlling the disease, its side effects and patient's quality of life (10). In the study of Keshavarz et al (2015), educating based on continuous care model had a positive effect on the quality of life in women after delivery and it has been recommended to use this model as a supportive program for women during critical periods of their lives (11). But in the study of Kimman et al (2010) the conducted follow-up by healthcare providers had no significant effects on different aspects of quality of life in women with breast cancer (12). So it is suggested to perform more studies with different educational and care content in this field. The present study was conducted to evaluate the effect of educating based on continuous care model on therapy-related quality of life in infertile women.

Methods

This semi-experimental study was conducted on 80 infertile women who referred to selected infertility centers of Tehran University of Medical Sciences in 2015. Sampling was conducted through convenient sampling method. For the participants of the intervention and the control group not to encounter with each other two different centers were selected for sampling so random allocation was not possible. Women who referred to the infertility clinic of Vali-e-Asr hospital were assigned to the intervention group and those who referred to Arash hospital were assigned to the control group; these centers are two of the infertility centers which would make it easy and possible to access the samples. The sample size for each group was calculated to be 40 according to the sample size formula:

$$n = (\frac{2\left(Z_1 - \frac{\alpha}{2} + Z_1 - \beta\right)2pq}{(P0 - P1)^2})^2$$

$$n = \frac{2(1.96 + 1.64)0/3 \times 0/7}{(0/5 - 0/1)2}$$

The inclusion criteria were being aged from 20 to 45 years old, having a definite diagnosis for infertility by a specialist and based on the medical files, having female infertility, having infertility for at least 5 years, not participating in any educational programs effective on quality of life during the past 6 months, not having any diagnosed mental and psychological diseases and being able to at least read and write. The exclusion criteria were becoming pregnant during the study, occurrence of any unpleasant and stressful event, unwillingness to continue the study and not participating in all the educational sessions.

Data were gathered using two questionnaires: demographic characteristics questionnaire (age, husband's ages, educational level, husband's educational level, place of residence, job, husband's job, economic status, duration of infertility, history of infertility among family members and close relatives and history of failed infertility treatments) and the Fertility Quality of Life (FertilQoL) questionnaire.

This questionnaire was designed by Jacky Boivin et al in 2011 to evaluate the quality of life in infertile women (6). FertiQoL has 36 items and evaluates two main aspects of quality of life in infertile women. The first aspect (fertility-related quality of life) includes 4 subsets: emotional aspect, mental/physical aspect, interpersonal relations and social relations which each subset contains 6 questions. The second aspect which is infertility treatment related quality of life contains 10 questions. The participant should choose the answer which expresses their feelings in the best way for each question. Each expression would be scored from 0 to 4 based on 4-point Likert scale and

higher scores indicate better quality of life. Considering the importance of quality of life in relation with infertility treatment among infertile women, in the present study participants were only asked the questions of the second aspect. Questions about therapy-related quality of life were from number 25 to 36 and questions 25 and 26 were scored in reverse (6).

Validity and reliability of the mentioned questionnaire was evaluated through a study that was conducted on 1414 participants in America, Canada, New Zealand and Australia and its total Cronbach's α was 0.92 (6). Fertility Quality of Life questionnaire has also been used in Iran in different studies and is considered a valid and reliable tool that has a convergent validity with other similar tools (13, 14). Keramat et al in a study that was titled "quality of life and its related factor in infertile couples" and was conducted on 385 infertile couples, calculated a Cronbach's α of 0.89 for fertility-related quality of life, a Cronbach's α of 0.71 for therapy-related quality of life and a Cronbach's α of 0.81 for the entire questionnaire (13).
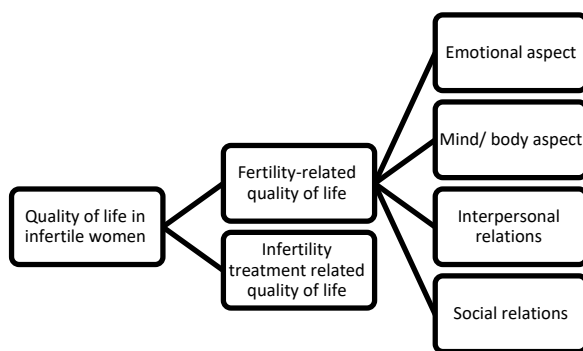
After taking written informed consent from infertile women, demographic characteristics and FertiQoL questionnaires were distributed among participants. The control group received the routine cares on the infertility center and for the intervention group continuous care model was conducted at 4 stages.

1. Introduction stage: The aim of this stage was to understand the method of interaction between infertile women and care providers (midwives) and explain the stages of the model. The proceedings of this stage included introducing the care provider (midwife) to infertile women, understanding and explaining their condition, clarifying the expectations of the treatment team during the study, determining the expectations of infertile women, determining and agreeing on the times of personal/phone meetings and explaining the goals and the method of communications and conducting the primary intervention. During one 15-30 minute session the participants and the researcher expressed their expectations and emphasized on not cutting the connections.

2. Sensitizing: The process of sensitizing was conducted to involve infertile women in implementation of continuous care approach and there is no doubt that without passing this critical stage it would not be possible to reach the aim of this theory. If people would realize the importance and sensibility of the issue, it could be hoped that they would follow patterns of healthy behaviors. The aim of this stage was to determine the nature of the disease and the limitations caused by this disease and involving them with the problems considering their requirements. The proceedings of this stage included evaluating the condition and explaining the educational and skill needs of the participants, discussing the disease and its resulting complications (existing and possible), evaluating the necessary needs about drug consumptions and justifying the necessity of regular drug consumption, explaining the problems caused by negligence, controlling the performance and explaining the communicational patterns.

Sensitizing stage was conducted at the second time when patients referred for following their treatments. At this stage educating was conducted for small groups of 4-5 as speech and questions and answers during 2-3 sessions of 1-2 hours, depending on participants' patience and cooperation. The educational content of the sessions were as follow:

Explaining and justifying the characteristics of infertility at the level of understanding of infertile women, understanding the needs of the participants and the method of resolving them, the necessity of controlling drug consumption diet, evaluating the activities, the performance and role of the participant and their improvement, the importance of paying regular visits to the physician, expressing the complications caused by the course of the disease and infertility treatment and the method of their adjustment and prevention, regarding the principles of coping with stress, addressing the intended questions and answers with emphasis on existing problems and the importance of persistence in caring behaviors for maintaining health.

At the end of the session, a booklet about the presented subjects was distributed among participants and they were asked to give the booklets to their husbands too.

3. Control: To evaluate and address new care problems and maintain mutual communication, responding to participants continued through weekly phone calls or personal meetings and it was decided to resolve the problems by the researcher or refer the participant to required specialists. This stage lasted for 2 months. The participants were asked about the appropriate time for making phone calls (morning or afternoon). The content of phone calls were developed based on the necessary educations presented in the booklet and considering each participant's personal educational needs. The

duration of phone calls by the researcher were about 15 minutes which could be changed based on participant's requirements and at the end by suggesting a solution for resolving their problem and answering their questions or referring them to necessary specialists, the call would be ended. Also, by participant's demand, they could have a personal meeting with the researcher for resolving their problems continuing the communication.

4. Evaluation: At this stage the Fertility Quality of Life questionnaire was again filled by all the participants (intervention and control) and results of both groups were compared with each other.

Since participants were aware about the method of intervention implementation, blinding was not possible. Overall, sampling and data gathering were lasted for 5 months.

Data were analyzed using Chi square test, Fisher's exact test, independent t test and paired t test through SPSS 16 and the level of significance was set at $p < 0.05$.

This study was registered at ethics committee of Tehran University of Medical Sciences by No. IR.TUMS.REC.1393.9111373030-135030 and was registered at Iranian Registry of Clinical Trials by No. IRCT2015051222241N1fh. After taking recommendation letter from the Dean of Nursing and Midwifery faculty and presenting the letter to the selected centers, sampling was started. Written informed consent was taken from all the participants and they were assured that their data would remain confidential at all the stages of the study.

Results

In this study 80 infertile women (40 in the intervention group and 40 in the control group) were participated. Participants'

demographic characteristics are shown in table 1.

Mean and standard deviation of therapy-related quality of life before the intervention in both groups are shown in table 2; results of independent t test showed that there was no significant difference between both groups before the intervention in this regard (p > 0.05). Mean and standard deviation of therapy-related quality of life before and after the intervention in both groups are shown in table 3; the mean score of the intervention group in this field was significantly increased after the implementation of follow-up care model. Mean and standard deviation of therapy-related quality of life after the intervention in both groups are shown in table 4; the mean score of the intervention group after implementation of follow-up care model has a statistically significant increase in this field.

Table 1. Demographic characteristics of infertile women

Variable		Control group	Intervention group	Results of the test (p)
Age (years)		28. 15 ± 4.004	28.75 ± 4.996	0.104
Husband's age (years)		33.52 ± 4.517	33.58 ± 6.185	0.060
Place of residence	Rural	1 (2.5)	2 (5)	0.342
	Urban	39 (97.5)	38 (95)	
Educational level	Under diploma	5 (12.5)	6 (15)	0.109
	Diploma	29 (72.5)	28 (70)	
	College degree	6 (15)	6 (15)	
Husband's educational level	Under diploma	7 (17.5)	9 (22.5)	0.586
	Diploma	29 (72.5)	26 (65)	
	College degree	4 (10)	5 (12.5)	
Job	Housewife	35 (87.5)	34 (85)	0.105
	Employed	5 (12.5)	6 (15)	
Husband's job	Unemployed	1 (2.5)	1 (2.5)	0.457
	Laborer	22 (55)	21 (52.5)	
	Employee	12 (30)	14 (35)	
	Free lancer	5 (12.5)	4 (10)	
Economic status	Undesirable	24 (60)	22 (55)	0.822
	Somehow desirable	8 (20)	11 (27.5)	
	Desirable	8 (20)	7 (17.5)	
Duration of infertility (years)		1.45 ± 1.501	3.35 ± 1.477	0.974
History of infertility	Yes	12 (30)	10 (25)	0.251
	No	28 (70)	30 (75)	
History of failed infertility treatment	Yes	12 (30)	14 (35)	0.228
	No	28 (70)	26 (65)	

Table 2. Comparing the mean and standard deviation of scores of therapy-related quality of life in the intervention and the control group before and after the intervention

Group	Before the intervention	After the intervention	Paired t test
Intervention	21.50 ± 3.955	30.08 ± 2.474	P < 0.001
Control	17.28 ± 4.243	25.28 ± 4.602	P < 0.001
Independent t test	P = 0.6	P = 0.005	P < 0.001

Discussion

In the present study educating based on continuous care model improved therapy-related quality of life in the intervention group. Results of this study consisted of two parts: results of studying participants' demographic characteristics and results in accordance with the research goals.

Different studies have shown that some of the demographic characteristics of infertile women like age, educational level, husband's educational level, economic status, duration of infertility, history of infertility in the family and history of failed infertility treatments are effective on the quality of life in infertile women (13, 14); these factors were considered in the present study and results of statistical tests showed no significant difference between both groups.

Anderheim et al in 2007 conducted an educational intervention in Sweden that was titled "extended encounters with midwives" and the model was presented by the midwife to infertile women, who were having their first cycle of IVF, at 3 stages of the first visit to the clinic, start of the ovulation induction and right after embryo transfer during 30-60 minute private sessions. Results of the study showed a significant difference between both groups after the intervention regarding the quality and level of satisfaction with the treatment (p < 0.05) (15).

In the study of Jamshidi-Manesh et al (2015) it was revealed that comprehensive training, increase in information and using cognitive and behavioral skills related to infertility treatments could be useful for successful management of infertility experiences. In this study 104 infertile women who had the inclusion criteria were allocated into two groups of intervention and control (each containing 52 participants) and training was conducted in person through speeches, questions and answers and group discussions during 60-90 minute sessions for 4 consecutive weeks; phone follow-up was conducted 2 weeks after the last educational session (16).

Also results of a study that was conducted by Sami and Tazen showed that educating infertile women and increasing their information about the causes and treatments of infertility and methods of stress reduction could have positive effects on their condition and would improve the following of medical treatments and prevent the use of traditional and unsafe methods. Sami and Tazen believed that there is an urgent need for training and health consultation in infertility treatment programs (17). In this regard, results of a study by Malik and Coulson (2008) in England revealed that increasing the information of infertile women had a positive effect on improving their relation with their husbands, reducing their sense of abandonment, better understanding of their infertility condition and treatment, having an active role in their treatment and making informed decisions and having a positive attitude toward support groups (18). Results of the mentioned studies were similar to the results of the present study. Unlike the above mentioned studies, Schmitt et al mentioned that educational intervention on 37 infertile couple had no effect on their quality of life and the condition of infertile women and

female participants of the intervention group only showed a significant decrease in the score of marriage compared to the participants of the control group after the intervention; but the difference in the aspect of quality of life was not significant ($p < 0.05$) (19). The reason for ineffectiveness of the intervention in this study might be their educational content or their small sample size. Results of a study by Khankeh et al (2007) which evaluated the effect of educating based on continuous care model on the quality of life in patients with schizophrenia, were also not similar to results of the present study; conducting the mentioned model had no significant effect on therapy-related quality of life in schizophrenic patients and only improved their inter-personal relations (20). The possible reasons for this difference could be the difference between the nature of studied diseases and the duration of follow-up.

In general, results of the present study regarding continuous care model, approved the results of some of the previously conducted studies. In the study of Keshavarz et al (2015) which was aimed to evaluate the effect of continuous care model on the quality of life of women after delivery, the trainings improved women's quality of life and it was recommended to use this model as a support program for women during the critical periods in their lives. In the study of Keshavarz et al educational intervention was conducted in one 30-60 minute session and researcher-made booklets were presented to the participants and then the participants were followed up for 3 months through phone calls or in person, if necessary (11). The study of Ghavami et al indicated the positive effect of continuous care model on general and specific aspects of quality of life in patients with type 2 diabetes. In this study 74 patients with type 2 diabetes were allocated into two groups of intervention and control and the intervention group received training based on

follow-up care model (21). Study of Sadeghi Sharmeh et al (2009) revealed that using continuous care model in patients with chronic diseases who require continuous care could improve general and specific aspects of quality of life in the target group (22). Infertility is also considered a chronic disease and infertile women require comprehensive trainings and continuous care.

One of the limitations of the present study was that questionnaire were completed by the participants themselves and it was possible that their emotional condition would affect their answers. Also gaining information from any other sources during the study could affect the outcomes of the intervention; the control group was selected to reduce the effect of these limitations.

Conducting continuous care model would improve therapy-related quality of life. Using patient-oriented models could improve health personnel's understanding of patients and their health-related needs. It is recommended to use this model as a simple, low cost and available educational model for affecting different aspects of quality of life in other patients and also infertile couples.

Acknowledgments

Conflict of interest

There is no conflict of interest.

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