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Original Article

Application of Continuous Care Model on Health-Related Behaviors And Quality of Life Among Infertile Women

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Abstract

Background: Female infertility is regarded as a life crisis that require support in enhancing health-related behaviors and maintaining a satisfactory quality of life through continuous education. **Aim:** This study aimed to examine the effect of applying a continuous care model on health-related behaviors and quality of life among infertile women. **Design:** A quasi-experimental research design was adopted. **Setting:** The study was conducted at the Obstetrics and Gynecology Outpatient Clinic and the In Vitro Fertilization (IVF) Unit of Benha University Hospital. **Sampling:** A convenient sample of 80 infertile women was recruited and randomly assigned equally into intervention and control groups. **Tools:** Data were collected using three instruments: a structured interviewing schedule, a health-related behaviors scale, and a quality of life (QOL) assessment tool. **Results:** Findings revealed a highly statistically significant improvement in the intervention group compared with the control group following the application of the continuous care model ($p \leq 0.001$). Moreover, the mean $\pm$ SD of the total quality of life score was markedly higher in the intervention group than in the control group (76.13 ± 8.36 vs. 56.68 ± 3.92 , respectively). A highly significant difference was also noted in total quality of life scores between the two groups ($p \leq 0.001$). **Conclusion:** The implementation of the continuous care model effectively enhanced health-related behaviors and improved the quality of life of infertile women. **Recommendations:** It is recommended to integrate the continuous care model into routine nursing practice to promote health-related behaviors and quality of life among infertile women.

Keywords: Continuous care model, health-related behaviors, quality of life, infertile women

1. Introduction

Infertility is defined as the inability to conceive after a year of regular sexual activity. Female-related factors account for

approximately 40–55% of infertility cases, and about half of infertile women perceive infertility as the most significant issue in their lives (WHO, 2020). One of the major

contributors to female infertility is the adoption of unhealthy lifestyles, which may worsen existing health conditions (**Ma et al., 2018**).

Although scientific and technological advances, such as in vitro fertilization, have brought new hope to infertile women, they have also been accompanied by higher stress levels and prolonged treatment processes. Moreover, unhealthy lifestyle practices can negatively influence treatment outcomes and decrease the overall quality of life for women experiencing infertility (**Latifnejad, 2019**).

Health-related behaviors are modifiable lifestyle patterns that directly affect the general health and well-being of infertile women, as well as their fertility (Acharya & Gowda, 2017). Evidence suggests that adopting health-promoting practices not only enhances quality of life but also helps infertile women maintain healthier lifestyles, thereby reducing additional fertility risks. Such behaviors support daily functioning, preserve health, and improve overall life satisfaction (**Jeihooni et al., 2020**).

The role of health-related behaviors in infertility has attracted growing attention in research. Studies have identified various unhealthy habits linked to infertility in women, including high-fat diets, delayed childbearing due to educational pursuits, lack of exercise, exposure to environmental toxins, caffeine consumption, risky sexual practices, substance

misuse, psychological stress, and frequent use of mobile phones or radiation exposure (**Alabi, 2020**).

Sedentary lifestyles—characterized by prolonged sitting and minimal physical movement—are considered a key modifiable risk factor for infertility. Biological evidence supports the relationship between physical activity and fertility outcomes. Incorporating health-promoting behaviors such as regular walking or exercise can enhance insulin sensitivity, improve ovarian function, and increase the likelihood of conception, particularly among overweight or obese women (**Silvestris, 2019**).

Quality of life encompasses psychological, social, environmental, financial, and health-related dimensions. Infertility is often described by women as one of the most stressful experiences of their lives, with continuous and repeated treatments perceived as crises that shape their perception of life circumstances. Addressing these factors can help improve satisfaction and overall quality of life (**Zare et al., 2015**).

The Continuous Care Model (CCM) is a structured approach aimed at enhancing acceptance, insight, health-promoting behaviors, and quality of life among infertile women. Its core elements include providing accurate information, ensuring continuity of care, and fostering active patient participation

in treatment. Through effective communication, nurses can better identify women's needs and guide them toward healthier lifestyle choices using individualized instructions and support (*Sadeghi, 2014*).

Nurses play a vital role in delivering continuity of care to women undergoing fertility treatments. Their responsibilities include conducting physical assessments, promoting healthy behaviors, and addressing the psychological challenges associated with infertility. Exploring social history is essential to identify risk factors and to encourage the adoption of sustainable health-related behaviors that enhance quality of life (*WHO, 2019*).

Within the CCM framework, nurses ensure ongoing communication, timely follow-up, and adherence to health-promoting practices. These may include nutritional counseling, vitamin supplementation, relaxation techniques, and minimizing exposure to harmful substances (*Thable, Duff, & Dika, 2020*).

1.1 Significance of study

Infertility has become an increasing global health issue, with approximately one in six couples experiencing difficulties conceiving. Women are the most severely impacted, often facing marital breakdown, social isolation, and loneliness as consequences of infertility (*Malgorzata et al., 2022*). In addition to these

personal challenges, social stigma further intensifies their stress levels, significantly affecting their overall quality of life (*Eniola et al., 2017; Kiani et al., 2020*).

Health-related behaviors, which are largely within women's control, are modifiable and can reduce certain infertility risk factors. By adopting healthier practices, women may improve reproductive health outcomes, increase the chances of successful infertility management, and enhance their quality of life (*Ilacqua et al., 2018*).

Nurses play a crucial role in guiding healthcare by educating women, promoting lifestyle modifications, and supporting improvements in quality of life for those facing infertility. Addressing sedentary behavior is particularly important, and the application of educational frameworks and modern models, such as the Continuous Care Model (CCM), provides a structured approach for fostering healthier behaviors. These considerations highlight the need for the present study, especially given the scarcity of research addressing this issue in Egypt.

1.2 Aim of the Study

The current study aimed to evaluate the effect of the application of a continuous care model on health-related behaviors and quality of life among infertile women.

1.3 Research Hypotheses

Hypothesis 1: Implementing the continuous care model will improve health-related behaviors among infertile women.

Hypothesis 2: Implementing the continuous care model will improve the quality of life among infertile women.

1.4. Operational Definitions

The Continuous Care Model (CCM) is a supportive framework that positions infertile women as active participants in their own healthcare journey. It is implemented through four structured phases: orientation, sensitization, control, and evaluation (*Moghaddam, Hanieh & Eghtedar, 2020*).

Health-related behaviors refer to the routine actions performed by individuals in their daily lives that directly influence their overall health and well-being (*Malgorzata et al., 2022*).

2. Subjects and methods

2.1 Research design:

A **quasi-experimental design** was employed to accomplish the purpose of this study.

2.3 Setting:

This study took place in the outpatient clinic of obstetrics and gynecology and the IVF unit at Benha University Hospital in Benha City, Egypt.

2.3 Sampling:

Sample type & size: A convenience sample of 80 infertile women was recruited and

randomly divided into two equal groups: the intervention group, which received planned care through the continuous care model in addition to routine hospital care, and the control group, which was provided with hospital care only.

According to data reported in the literature (*Ali et al., 2019*), and by considering a significant level of 5% and a study power of 80%, the required sample size was determined using the following formula:

$$n = \frac{(Z_{\alpha/2} + Z_{\beta})^2 \times 2(SD)^2}{d^2}$$

where, SD = standard deviation obtained from previous study; $Z_{\alpha/2}$, for 5% this is 1.96; Z_{β} , for 80% this is 0.84 and d, for the expected difference. Therefore,

$$n = \frac{(1.96 + 0.84)^2 \times 2(10.8)^2}{(6.8)^2} = 39.6$$

Based on the above formula, the sample size required is 40 in each group

Each group was 40 women with the following inclusion and exclusion criteria.

Inclusion criteria:

the inclusion criteria comprised infertile women aged 20–35 years, with a confirmed diagnosis of primary or secondary infertility, being sexually active, and showing normal results in fertility-related investigations such as FSH, LH, estradiol, and prolactin.

Exclusion criteria:

The exclusion criteria involved infertile women diagnosed with chronic illnesses including cardiovascular disease, diabetes mellitus, respiratory disorders, thyroid disorders (both hyper- and hypothyroidism), epilepsy, as well as infertility attributed to male causes.

2.4 Tools of data collection

Data was collected using three tools.

Tool (I): The researchers designed a structured interviewing sheet. The tool was divided into three parts:

Part (1): Socio-demographic characteristics of the studied women included age, residence, education, occupation, and monthly income, while the husbands' characteristics included age, education, and occupation.

Part (2): Infertility history included data related to the family history of infertility, failed infertility treatment, duration of infertility, duration of seeking infertility care, number of living children, and type of infertility.

Tool II: Health-related behaviors regarding infertility. It was adapted from *Fehintola (2017); Abdelaliem (2011)* to assess women's self-reported health behaviors to control and manage infertility. It comprised nine items, namely, maintaining a healthier weight, encouraging a balanced diet, avoiding excessive caffeine consumption, compliance

with relaxation programs to reduce sources of stress, avoiding all unnecessary medications and recreational drugs, avoiding excessive irradiation by reducing contact with electronic gadgets like mobile phones, avoid dealing with wrong perceptions and beliefs about infertility, avoid engaging in sedentary lifestyle behaviors, and passive smoking should be avoided.

Scoring system:

The items were rated based on a three-point Likert scale; always (score 3), sometimes (score 2), and never (score 1). The range of obtained scores was between 9 and 27, with higher scores indicating more engagement in healthy behaviors.

Tool III: The quality of Life (QoL) questionnaire was designed by *World Health Organization (2012)* the tool was translated into Arabic to assess infertile women's perception of their quality of life over the previous two weeks. It consisted of 24 items categorized into four domains: physical health (7 items), psychological well-being (6 items), social relationships (3 items), and environment (8 items). Additionally, two separate items assessed overall quality of life and general health.

Scoring system:

Responses were rated on a five-point Likert scale ranging from 1 (lowest agreement) to 5 (highest agreement). Domain scores were

calculated based on the mean of item responses within each domain, which were then multiplied by four and converted to a standardized scale of 0–100. The two items addressing satisfaction with overall quality of life and general health were excluded from the total scale score. Higher scores indicated a better quality of life.

2.5 Validity and reliability of tools:

The data collection tools were subjected to content validity assessment by a panel of experts. This included three specialists in obstetrics nursing (one professor from the Faculty of Nursing, Ain Shams University, and two professors from the Faculty of Nursing, Benha University) and two specialists in community nursing (assistant professors from the Faculty of Nursing, Kafr El-Sheikh University). The experts evaluated the tools for clarity, relevance, and appropriateness of the items. Based on their recommendations, minor modifications were introduced, such as adding the husband's profile to the sociodemographic section of Tool I. Overall, the experts confirmed that the tools were valid. The reliability of the instruments was tested using Cronbach's alpha coefficient. The internal consistency of the infertility health-promoting behaviors tool was 0.87, while for the quality-of-life tool it ranged from 0.66 to 0.84 across the four domains and from 0.86 to 0.91 for the total scale score (*WHO, 2012*).

2.6 Ethical considerations

Each participant was informed about the purpose, benefits, and procedures of the study to foster trust and confidence. Written informed consent was then obtained. All collected data were treated with strict confidentiality and used solely for research purposes. The principles of autonomy, privacy, and protection from harm were maintained. Participation was entirely voluntary, and women were assured that they could withdraw at any time without affecting the care they received. To ensure anonymity, participants were coded rather than identified by name. Additionally, the control group was provided with the designed instructional content after the completion of the continuous care model intervention.

2.7 Pilot study

The pilot study was conducted on ten percent of the total sample (8 women) to assess the tools' clarity, simplicity, relevancy, and applicability. In addition, the time required for data collection was estimated to detect any problem that occurred during data collection. No modifications were made, and infertile women in the pilot study were included in the main sample size.

2.8 Procedure

After obtaining formal approval from the Director of Benha University Hospital, the study was conducted in the previously

specified settings. Data collection took place three days per week, from 9:00 a.m. to 1:00 p.m., until the required sample size was achieved. Each participant was interviewed individually, with an average recruitment rate of 1–2 women per week. The data collection process continued over a period of eight months, from September 2021 to April 2022. For the intervention group, the Continuous Care Model (CCM) was implemented through four sequential phases: orientation, sensitization, control, and evaluation.

A. Orientation Phase

During the initial stage, the researchers introduced themselves, outlined the objectives and expectations of the study, and clarified the different phases of the Continuous Care Model (CCM). The importance of maintaining continuous contact was emphasized, and agreement was reached regarding communication methods and the schedule of follow-up phone calls. At this stage, informed consent was obtained, and the data collection tools (Tools I, II, and III) were completed while participants waited for their medical appointments. The completion of the three tools required approximately 20–25 minutes.

B. Sensitization Phase

This stage aimed to engage infertile women in the CCM, identify their needs, and highlight the importance of treatment adherence. Each participant attended four educational sessions,

held twice weekly, with each session lasting 30–45 minutes in a private room at the study setting. Educational methods included discussions, role-play, video presentations, and PowerPoint slides. At the beginning of each session, feedback from the previous session was reviewed to reinforce learning.

- **Session 1:** Overview of infertility (definition, prevalence, types, causes, risk factors, treatment adherence, and prevention).
- **Session 2:** Importance of adopting health-promoting behaviors, including reducing caffeine intake, avoiding unnecessary medications and recreational drugs, minimizing radiation exposure from electronic devices, and avoiding passive smoking.
- **Session 3:** Importance of maintaining a healthy weight, following a balanced diet rich in protein and low in salt and fat, staying well-hydrated, ensuring adequate rest and sleep quality, and practicing regular physical activity.
- **Session 4:** Commitment to scheduled follow-ups, adherence to prescribed medications, stress reduction through relaxation programs, and correcting misconceptions about infertility. The session also addressed the relationship between health-related behaviors and

quality of life. At the end, participants received an instructional booklet.

C. Control Phase

In this stage, the researchers maintained continuous communication with participants through weekly phone calls over a period of two months (8 calls per participant), scheduled according to the women's preferred times (morning or afternoon). Each call lasted around 10 minutes, varying according to individual needs. The aim was to reinforce healthy behaviors, address educational needs, and resolve any emerging health problems.

D. Evaluation Phase

After three months, the effect of the CCM was assessed using the health-related behaviors questionnaire (Tool II) and the Quality of Life (QoL) tool (Tool III). Follow-up was performed via telephone for 18 participants who could not attend the hospital, while the remaining participants were evaluated in person.

The control group received only routine hospital care, which included diagnosis, medical treatment, and brief guidance on treatment adherence. Evaluation for this group was performed first to avoid bias, using Tools II and III. After data collection was completed, they were also provided with the instructional booklet.

2.9 Data Analysis

The collected data was analyzed using the Statistical Package for Social Sciences (SPSS), version 24.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the data. Inferential statistics were employed, with the chi-square test or Fisher's exact test applied for qualitative variables, and the independent t-test used for quantitative variables. Pearson's correlation coefficient was also utilized to examine relationships between variables. A p-value of ≤ 0.05 was considered statistically significant, whereas a p-value of ≤ 0.001 denoted a highly significant difference.

3. Results

Table 1 shows that 67.5% and 72.5%, respectively, of the intervention and control groups were 30 years old with a mean $\pm$ SD 28.63 $\pm$ 1.78 and 29.41 $\pm$ 1.01 years. Besides, 57.5% and 62.5% of the intervention and control groups had secondary education, respectively, and 70.0% and 62.5%, respectively, of the intervention and control groups were employed. Regarding monthly income, 37.5% and 35.0% of the intervention and control groups had somehow enough income, respectively.

Table 2 The findings demonstrate that the mean $\pm$ SD of husbands' age was 34.63 $\pm$ 1.78 years in the intervention group and 34.41 $\pm$ 1.93 years in the control group. Regarding

educational level, 40.0% of husbands in the study group and 37.5% in the control group had higher education. In terms of occupation, 52.5% of the study group's husbands and 55.0% of the control group's husbands were employed as laborers.

Table 3 clarifies that 72.5%, 67.5%, and 57.5%, 52.5% of the intervention and control groups had no family history of infertility and had no history of failed infertility treatment, respectively. As well as Mean $\pm$ SD of the duration of infertility in intervention and control groups, were 1.723 $\pm$ 0.11 and 1.561 $\pm$ 0.41% respectively. Also, 100% of both groups had 1-3 years of seeking infertility care, while 5% and 7.5% and 95% and 92.5% respectively, of the intervention and control groups had one living child and were primary infertility.

Table 4 demonstrates that there was no statistically significant difference between the intervention and control groups concerning all health-related behaviors regarding infertility before implementing the continuous care model ($p > 0.05$). While highly statistically significant improvements were achieved in the intervention group compared with the control group after implementation of the continuous care model ($p \leq 0.001$) regarding items of maintaining a healthier weight, encouraging a balanced diet, avoiding excessive caffeine consumption, compliance with relaxation

programs to reduce sources of stress, avoid all unnecessary medications and recreational drugs and to avoid excessive irradiation by reducing contact with electronic gadgets like mobile phones.

Figure 1 illustrates that, prior to the implementation of the continuous care model, the mean total scores of health-related behaviors related to infertility were 18.7 in the intervention group and 18.2 in the control group. Following the application of the model, the intervention group demonstrated a significant improvement in mean total scores compared with the control group (37.14 vs. 20.2, respectively).

Table 5 The findings elaborate that, prior to the implementation of the continuous care model, the mean $\pm$ SD of total quality of life scores indicated impaired quality of life in both the intervention and control groups (56.35 $\pm$ 3.27 and 55.89 $\pm$ 3.65, respectively), with no statistically significant difference between them ($p > 0.05$). In contrast, following the implementation of the model, the intervention group demonstrated a significantly higher mean $\pm$ SD total quality of life score compared to the control group (76.13 $\pm$ 8.36 vs. 56.68 $\pm$ 3.92, respectively), with a highly statistically significant difference ($p \leq 0.001$). Significant improvements were also observed in the physical health domain ($p \leq 0.05$), while highly significant differences

were recorded in the psychological, social relationships, environmental health domains, as well as in overall quality of life and general health ($p \leq 0.001$).

Table 6 demonstrates a highly significant positive correlation between total health-related behavior

scores related to infertility and quality of life in the intervention group following the implementation of the continuous care model ($p \leq 0.001$).

Table 1. Distribution of the studied women according to socio-demographic characteristics (n=80).

Items	Intervention group n=40	Control group n=40	X / FET ²	P-value
	No(%)	No(%)		
Age (years)				
< 30	27(67.5)	29(72.5)	0.952	0.329ns
≥ 30	13(32.5)	11(27.5)		
Mean ± SD	28.63 ± 1.78	29.41 ± 1.01	t=1.738	0.087 ns
Place of residence				
Rural	22(55)	21(52.5)	1.72	0.142
Urban	18(45)	19(47.5)		
Educational level				
Primary education	1(2.5)	3(7.5)	1.597 €	0.450 ns
Secondary education	23(57.5)	25(62.5)		
Higher education	17(42.5)	12(30.0)		
Occupation				
Housewife	12 (30.0)	15(37.5)	0.979	0.322 ns
Employed	28(70.0)	25(62.5)		
Monthly income				
Not enough	10(25.0)	9(22.5)	2.197 €	0.822ns
Somehow enough	15(37.5)	14(35.0)		
Enough	15(37.5)	17(42.5)		

no statistically significant difference ($p > 0.05$)

t= independent t-test €Fisher Exact Test.

Table 2. Distribution of the studied women according to husband profile (n=80).

Items	Intervention group n=40	Control group n=40	X / FET ²	P-value
	No (%)	No (%)		
Husband's age (years)				
< 30	12 (30)	14 (35)	8.12	0.54
≥ 30	28 (70)	26 (65)		
Mean ± SD	34.63 ± 1.78	34.41 ± 1.93	t=1.738	0.087 ns
Husband's educational level				
Primary education	9 (22.5)	10 (25)	7.51€	0.31
Secondary education	15 (37.5)	15 (37.5)		
Higher education	16 (40)	15 (37.5)		
Husband's occupation				
Laborer	21 (52.5)	22 (55)	4.1	0.24
Employee	19 (47.5)	18 (45)		

no statistically significant difference ($p > 0.05$) , t= independent t-test €Fisher Exact Test.

Table 3. Distribution of the studied women according to infertility history (n=80).

Items	Intervention group n=40	Control group n=40	X / FET ²	P-value
	No. (%)	No. (%)		
Family history of infertility				
Yes	11 (27.5)	13 (32.5)	7.21	0.47ns
No	29 (72.5)	27 (67.5)		
History of failed infertility treatment				
Yes	17(42.5)	19 (47.5)	5.28	0.25 ns
No	23(57.5)	21 (52.5)		
Duration of infertility, year				
1-3	31 (77.5)	32 (75)	3.78	0.974 ns
3-6	5 (12.5)	5 (12.5)		
6-9	4 (10.0)	3 (7.5)		
Mean ± SD	1.723±0.11	1.561± 0.41	t=1.748	0.177 ns
Duration of seeking infertility care, year				
1-3years	40 (100.0)	40 (100.0)	2.12	1.22 ns
No living children				
1	2(5.0)	3(7.5)	1.11	0.97 ns
Type of infertility				
Primary	38(95.0)	37(92.5)	21.24	0.45 ns
Secondary	2(5.0)	3(7.5)		

no statistically significant difference ($p > 0.05$) , t = independent t-test €Fisher Exact Test.

Table (4): Distribution of the studied women in the intervention and control groups regarding health-related behaviors related to infertility before and after implementation of the continuous care model (n = 80).

Items \ groups		Intervention group n= 40			Control n= 40			X ² / FET (P-value)
		Always No. (%)	Sometimes No. (%)	Never No. (%)	Always No. (%)	Sometimes No. (%)	Never No. (%)	
Maintaining a healthier weight	Before	5(12.5)	7(17.5)	28(70.0)	9(22.5)	8(20.0)	23(57.5)	0.265 € (0.797) ns
	After	29(72.5)	5(12.5)	6(15.0)	11(27.5)	14(35.0)	15(37.5)	42.213 € (0.000) **
Encourage balanced diet	Before	12(30.0)	15(37.5)	13(32.5)	14(35.0)	17(42.5)	9(22.5)	2.222 € (0.329) ns
	After	32(77.5)	7(17.5)	1(2.5)	16(40.0)	17(42.5)	7(17.5)	40.783 € (0.000) **
Avoid excessive Caffeine consumption	Before	10(25.0)	12(30.0)	18(45.0)	12(30.0)	9(22.5)	19(47.5)	1.75 € (0.21) ns
	After	30(75.0)	5(12.5)	5(12.5)	11(27.5)	7(17.5)	22(30.0)	32.302 € (0.000) **
Compliance with relaxation programs to reduce sources of stress	Before	0(0.0)	2(5.0)	38(95.0)	0(0.0)	6(15.0)	34(85.0)	1.429 € (0.232) ns
	After	27(67.5)	7(17.5)	6(15.0)	5(12.5)	8(20.0)	27(67.5)	28.802 € (0.000) **
Avoid all unnecessary medications and recreational drugs	Before	20(50.0)	15(37.5)	5(12.5)	22(30.0)	7(17.5)	11(27.5)	1.476 € (0.478) ns
	After	40(100.0)	0(0.0)	0(0.0)	18(45.0)	10(25.0)	12(30.0)	41.828 € (0.000) **
Avoiding excessive irradiation by	Before	5(12.5)	11(27.5)	24(60.0)	7(17.5)	13(32.5)	20(50.0)	1.499 € (0.473) ns
	After	33(82.5)	7(17.5)	0(0.0)	15(37.5)	15(37.5)	10(25.0)	

reducing contact with electronic gadgets like mobile phones								37.993 € (0.000) **
Avoid dealing with wrong perceptions and beliefs about infertility	Before	2(5.0)	9(22.5)	29(72.5)	3(7.5)	10(25.0)	27(67.5)	0.239 € (0.887) ns
	After	22(30.0)	12(30.0)	6(15.0)	5(12.5)	12(30.0)	23(32.5)	28.23 € (0.016) *
Avoid sedentary lifestyle behaviors.	Before	16(40.0)	6(15.0)	18(45.0)	17(42.5)	9(22.5)	14(35.0)	0.993€ (0.609) ns
	After	40(100.0)	0(0.0)	0(0.0)	21(27.5)	10(25.0)	9(22.5)	26.739 € (0.034) *
passive smoking should be avoided	Before	13(32.5)	5(12.5)	22(30.0)	15(37.5)	6(15.0)	19(47.5)	0.984 €(0.12) ns
	After	34(85.0)	6(15.0)	0(0.0)	6(15.0)	19(47.5)	15(37.5)	25.657 € (0.042) *

ns statistically significant difference ($P > 0.05$), € FET: Fisher Exact Test

*A statistically significant difference ($P \leq 0.05$)

**A high statistically significant difference ($P \leq 0.001$).

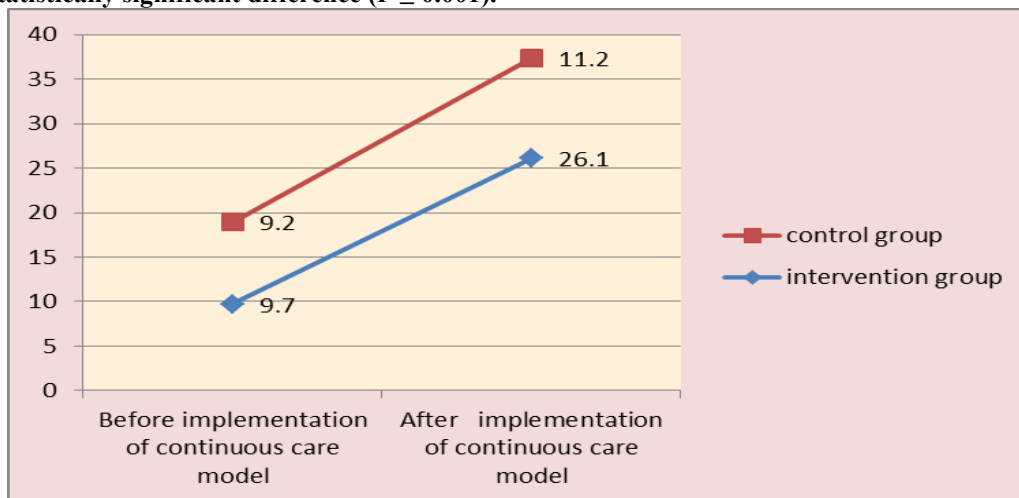


Figure 1. Mean scores of health-related behaviors related to infertility among intervention and control groups before and after implementation of the continuous care model (n = 80).

Table 5. Comparison of mean quality of life scores between intervention and control groups before and after implementation of the continuous care model (n = 80).

Domains		Intervention group n= 40	Control group n= 40	Independent t-test	P value
		Mean $\pm$ SD	Mean $\pm$ SD		
Physical health	Before	61.17 $\pm$ 3.12	62.23 $\pm$ 3.58	5.325	0.281
	After	84.61 $\pm$ 8.80	83.16 $\pm$ 3.58	8.610	0.05*
Psychological health	Before	34.86 $\pm$ 3.12	33.69 $\pm$ 3.78	1.413	0.162
	After	64.86 $\pm$ 9.76	34.06 $\pm$ 3.64	11.812	0.000**
Social relationships	Before	59.46 $\pm$ 6.39	58.69 $\pm$ 6.76	0.491	0.625
	After	77.92 $\pm$ 10.03	59.48 $\pm$ 7.12	9.387	0.000**
Environmental Health	Before	59.94 $\pm$ 5.92	58.91 $\pm$ 6.59	0.687	0.495
	After	75.43 $\pm$ 7.92	60.14 $\pm$ 7.14	8.480	0.000**
The overall quality of life	Before	55.31 $\pm$ 2.91	56.17 $\pm$ 2.86	1.525	0.132
	After	79.77 $\pm$ 3.09	57.37 $\pm$ 4.71	10.998	0.000**
General Health	Before	55.61 $\pm$ 2.43	55.11 $\pm$ 3.77	0.640	0.524
	After	79.80 $\pm$ 11.01	56.74 $\pm$ 5.72	11.000	0.000**
Total score	Before	56.35 $\pm$ 3.27	55.89 $\pm$ 3.65	0.578	0.565
	After	76.13 $\pm$ 8.36	56.68 $\pm$ 3.92	12.390	0.000**

no statistically significant difference ($P > 0.05$)

*A statistically significant difference ($P \leq 0.05$)

**A high statistically significant difference ($P \leq 0.001$)

Table 6. The correlation coefficient between total health-related behaviors regarding infertility and quality of life scores in the intervention and control groups before and after implementation of the continuous care model (n=80).

Variables		total health-related behaviors			
		Intervention group		Control group	
		r	p	r	P
Total quality of life score	Before	0.178	0.12	0.194	0.91
	After	0.864	0.000**	0.319	0.01*

*A statistically significant difference ($P \leq 0.05$) ,**A high statistically significant difference ($P \leq 0.001$)

4. Discussion

Infertility medical implications, it negatively impacts interpersonal and social relationships and often threatens the stability of marital life. Research has shown that women with infertility tend to experience lower levels of marital satisfaction compared to men (*Musa & Osman, 2020*).

A key approach to managing infertility lies in addressing modifiable risk factors, as they can support medical treatment outcomes and encourage health-promoting behaviors that safeguard women's fertility and improve their quality of life (*Latifnejad & Rasoulzadeh, 2017*). In this context, the present study was conducted to assess the effect of applying the continuous care model on health-related behaviors and quality of life among infertile women.

Regarding socio-demographic characteristics, the findings revealed that the mean age of women in the intervention group was 28.63 ± 1.78 years, compared to 29.41 ± 1.01 years in the control group. This was expected,

as it reflects the typical childbearing age when couples usually seek fertility. Furthermore, more than half of the women in both groups had secondary education, nearly two-thirds were employed, and about one-third reported having a moderately sufficient income. These results are in line with *Namdar et al. (2017)*, who found that the mean age of infertile women was 29.4 ± 5.2 years, with more than half employed and over one-third holding an academic degree. Similarly, *Sezgin et al. (2016)* in Turkey highlighted that higher education levels, urban residence, and better income were associated with improved quality of life among infertile women.

As for the husbands' profile, the current study showed that the mean age in the intervention group was 34.63 ± 1.78 years compared to 34.41 ± 1.93 years in the control group. Less than half of the husbands in the intervention group had higher education, while more than two-thirds in the control group had secondary education. In both groups, over half of the husbands were laborers. These findings were

consistent with those of *Fadaei et al. (2016)*, who reported similar mean ages (33.52 ± 4.517 in the intervention group and 33.58 ± 6.185 in the control group) and that more than half of the husbands worked as laborers. Likewise, *Rahimian and Jarareh (2015)* demonstrated that factors such as age, educational level of husbands, duration of infertility, and previous unsuccessful treatment attempts significantly influence the quality of life of infertile women.

These parallels emphasize the importance of the present study, as husbands' education and awareness play a crucial role in understanding that infertility is not solely a woman's issue. This awareness makes them more willing to provide emotional and social support to their wives, thereby fostering healthier behaviors that complement medical treatment and contribute to achieving better outcomes.

In relation to infertility history, the findings of the present study indicated that over two-thirds of participants in both groups reported no prior history of infertility, and more than half had not experienced failed infertility treatments. The majority had been seeking infertility care for one to three years, while only a small proportion had one living child. Most participants in both groups were diagnosed with primary infertility. These results are consistent with the study by *Omu, F. and Omu, A. (2020)*, titled "Emotional

reaction to the diagnosis of infertility in Kuwait and successful clients' perception of nurses' role during treatment," which also reported that more than two-thirds of participants had primary infertility.

In contrast, the present findings differ from those of *Musa and Osman (2020)*, who explored the risk profile of Qatari women treated for infertility in a tertiary hospital and reported that only a minority of women suffered from primary infertility.

Regarding health-related behaviors before and after applying the continuous care model, the current study demonstrated a highly significant improvement in the intervention group compared to the control group ($p \leq 0.001$). Specific behaviors included maintaining a healthy weight, following a balanced diet, limiting caffeine intake, practicing relaxation techniques to manage stress, avoiding unnecessary medications and recreational drugs, and reducing exposure to electronic devices to minimize radiation. These outcomes validated the study's first hypothesis.

These findings align with those of *Latifnejad and Rasoulzadeh (2017)*, who reported in their randomized controlled trial on collaborative infertility counseling that such interventions promoted healthier behaviors, including proper nutrition, reduced caffeine and alcohol consumption, and improved stress management among women undergoing in

vitro fertilization. In the present study, the continuous care model fostered greater awareness and understanding of infertility and its treatment, empowered women to make informed lifestyle changes, and encouraged adherence to healthier behaviors. Regular sensitization through scheduled sessions and ongoing follow-up care played an essential role in motivating women to sustain these changes, thereby supporting the first research hypothesis: "Implementation of the continuous care model will improve health-related behaviors among infertile women compared to those who do not receive it."

Regarding quality of life, the comparison of mean scores between the intervention and control groups revealed significant differences post-intervention. Improvements were noted in the physical health domain ($p \leq 0.05$), while highly significant enhancements were found in psychological well-being, social relationships, environmental health, and overall quality of life ($p \leq 0.001$). These findings are in agreement with **Zhu et al. (2021)**, who studied the effects of comprehensive nursing interventions on infertility-related negative emotions and reported no pre-intervention differences ($p > 0.05$), but significant improvements post-intervention ($p < 0.05$). Similarly, **Baghaei et al. (2015)** found that the quality of life significantly improved in all domains after implementing the continuous

care model over a three-month period, and Fadaei et al. (2016) also confirmed higher quality-of-life scores in the intervention group compared to the control group following continuous care.

The consistency of these results underscores the value of providing infertile women with education, support, and guidance to help them adopt healthier behaviors and enhance their quality of life. Moreover, these findings validated the second research hypothesis that "Implementation of the continuous care model will improve the quality of life among infertile women compared to those who do not receive it."

Concerning the correlation between health-related behaviors and quality of life, the study revealed a highly significant positive relationship in the intervention group after implementation of the continuous care model ($p \leq 0.001$). This observation is supported by **Keramat et al. (2014)**, who demonstrated significant associations between quality of life and factors such as self-esteem, social support, sexual satisfaction, and marital satisfaction. **Baloushah et al. (2021)** also confirmed that infertility negatively impacts the quality of life of Palestinian couples undergoing IVF, but interventions significantly enhanced QoL scores across all domains, including emotional, social, and treatment-related aspects. These improvements were attributed

to increased education, enhanced understanding of infertility, and the ability to cope with social pressures.

Overall, these findings highlight the positive influence of adopting healthier behaviors on women's ability to perform self-care, which ultimately improves their quality of life. Additionally, such improvements may help reduce reliance on expensive invasive treatments during the infertility journey.

5. Conclusion

The findings of this study demonstrated that applying the continuous care model led to significant improvements in health-related behaviors among infertile women, as evidenced by the highly statistically significant increase in behavior scores within the intervention group compared to the control group after implementation ($p \leq 0.001$). Moreover, the continuous care model also enhanced the quality of life of infertile women, with the intervention group showing a highly significant improvement in overall quality of life scores compared to the control group ($p \leq 0.001$). Therefore, the study aim was fulfilled, and the research hypotheses were confirmed.

Recommendations

Based on these findings, the following recommendations are suggested:

- Integrate the continuous care model into routine nursing interventions to enhance health-related behaviors and

improve the quality of life among infertile women.

- Develop and provide illustrated educational booklets with clear explanations and visual aids to promote health-related behaviors and improve quality of life for infertile women in obstetrics and gynecology outpatient clinics.

Future Research

- Conduct further studies with larger sample sizes to increase the generalizability of findings.
- Develop ongoing educational programs for healthcare professionals on the application of the continuous care model to support infertile women's health behaviors and quality of life.

Limitations of the Study

This study faced two main limitations:

1. The use of non-probability convenience sampling restricted the generalizability of results.
2. Challenges were encountered in scheduling and organizing phone call follow-ups.

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