Effect of Watson's Theory of Human Caring on Women's Coping Way, Quality of Life and Marital Adjustment after Infertility Treatment Fails

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Abstract:

Background: Infertility is a significant stressor for couples, impacting women's coping way, quality of life and marital adjustment. **Aim:** The research`s purpose was to explore the effect of Watson's theory of human caring on women's coping way, quality of life and marital adjustment after infertility treatment fails. **Design:** A quasi-experimental research design (one-group, time series). **Setting:** In vitro fertilization unit that is affiliated to Benha university hospitals in Qalyubia governorate. **Sample:** A purposive sample consisted of (46) infertile women with previous failed IVF attempts and attended the above-mentioned setting for another IVF attempt; according to established inclusion criteria**. Tools:** Four main tools were utilized for data gathering; a structured interviewing questionnaire, stress coping styles inventory, quality of life questionnaire for infertile women and revised dyadic marriage adjustment scale. **Results:** Statistical significant differences were detected among mean scores of women's coping way, quality of life, and marital adjustment with (p- value < 0.001) at post intervention and follow up phases compared to pre intervention. Also, there was a highly significant statistical positive correlation between total score of the studied women's coping way and total score of (infertility related quality of life and marital adjustment) and at pre-intervention, post-intervention and follow up phases (P ≤ 0.001).**Conclusion:** Nursing care based on Watson's theory of human caring had a favorable outcome on women's coping way, quality of life and marital adjustment especially after previous infertility treatment fails. **Recommendation**: Incorporation of Watson's theory of human caring as a protocol in routine nursing intervention for improving infertile women's coping way, quality of life and marital adjustment.

Keywords: Watson's Theory, Coping Way, Quality of Life, Marital Adjustment, Infertility Treatment Fails.

Introduction:

Infertility, an unsuccessful to conceive after 12 months or more with consistent and unprotected sexual intercourse, is a significant stressor for couples, impacting physical, social, psychological, and economic well-being leading to maladaptive coping mechanisms and tension in relationship **(Lee et al., 2024).** Approximately, only 15% of husbands consider infertility to be the most distressing event of lives, while half of infertile women do **(Sharkia and Taubman–Ben-Ari, 2024).**

Services and support for reproduction are crucial. The couples might go through several decades of therapies, involving hormonal treatments, in vitro fertilization, and intrauterine insemination without providing

any rationale for the outcome that fails. In addition, the annual assisted reproductive technology treatment cycles number to aid husbands in attaining a fruitful pregnancy is on the rise **(Nezhat, et al., 2024).**

According to prior research, infertility treatments induce substantial stress and confront societal expectations regarding motherhood, irrespective of the infertility reasons, whether it is female-factor, male-factor, or both **(Swift et al., 2024).** Infertility can induce a feeling of inadequacy and shortage in infertile women, as pregnancy is one of the most significant objectives of women. However, if therapy is unsuccessful after all the associated challenging procedures, or if pregnancy does not occur, the situation may worsen, and infertile women may be unable to handle negative emotions such as feeling hopeless and loss. This could have a negative inflience on women's quality of life (QoL), marital adjustment, in addition to coping strategies **(Ozcan & Kirca, 2023).**

The Coping Way is a marital stress management approach that underscores the interdependence of external stressors and marital stress experiences. Couples respond to both personal and husband stress, transforming coping into a reciprocal system focusing on evaluating, supporting, and jointly coping with stressors **(Tang et al., 2023).** Coping method is designed to enhance the couples functioning by fostering the feeling of "we-ness," intimacy, and mutual closeness, which is believed to be the foundation for sexual activity satisfaction. In fact, increased sexual gratification and more frequent orgasms have been linked to improved dyadic coping **(El Amiri et al., 2023).**

Infertile women's QoL is a significant issue that has recently been addressed by health experts. (QoL) is a concept that endeavors to comprehend the well-being of an individual at a particular moment in time, taking into account both positive and negative aspects of their existence. QoL is a multidimensional, education status, dynamic health construct personal health (physical, mental, and spiritual), relationships, freedom, autonomy in decision-making, social status, work environment, wealth, social belonging, a sense of security and safety, and physical surroundings **(Wang et al., 2024).**

The infertile women's QoL is influenced by a variety of variables, such as social relationships sexuality, mental health, educational level, medical history, marital relationship, infertility duration, communication, economic circumstances, and age. These factors combined offer an in-depth overview of health **(Bueno-Sánchez et al., 2024).**

Additionally, the marital modification of infertile women may be influenced by an argument between means of coping and concerns. Marital adjustment, which is also referred to as marital quality, is a partner mental assessment and relation that encompasses four components: satisfaction, cohesion, marital consensus, and affection expression. Marital adjustment is crucial for maintaining family foundation, growth, parental health, and future generational education, as well as promoting marital life satisfaction **(Yüksekol et al., 2023).**

The present research is driven by the need to enhance nursing care for women who have experienced unsuccessful infertility treatments. When assisted reproductive technology (ART) fails to result in pregnancy,

continued care becomes essential and requires advanced nursing knowledge, supportive practices, and emotional support. To address this need, various concepts and theoretical models have been recommended as guiding frameworks for delivering effective and compassionate nursing care in such situations **(Kiani et al., 2022).**

Watson's Theory of Human Care highlights personal experiences, experimental, aesthetic, ethical, and personal knowledge, focusing on quality care for women and maintaining communication **(Balsom et al., 2024).**The theory suggests that nursing care practices like attentive listening, eye contact, individual-centred care, and cultural understanding build trust and facilitate women adaptation to the clinic. This cooperation leads to patient improvement and adaptation, fostering cooperation and adaptation in the healthcare system **(Cirakoglu, 2024).**

The Jean Watson's human care theory objective is to alter the importance from therapy-centeredness to "caring." The theory emphasizes both nursing and human models. It posits that a human being cannot be cured in the same way that an object can be restored. The caritas process, the transpersonal caring relationship, caring moments and occasions, and caring–healing modalities are among the conceptual components of Watson's theory. Several studies have demonstrated that human caring theory can enhance the nursing care efficacy and awareness, as well as the quality of care **(Topuz et al., 2023).**

It is imperative to detect the aspects that promote women's satisfaction with nursing services; however, investigations into this field have been restricted. By comprehending the perspectives and experiences of infertile women, healthcare providers can implement the requisite modifications to enhance marital adjustment, QoL, and coping strategies. The Watson theory of human tending offers a comprehensive perspective on the nursing care that is administered during infertility treatment. Nurses are essential in the advancement of the concepts of human caregiving, the integration of theory-based nursing care, and the science of nursing. It would be appropriate to design nursing care based on this theory, as it is believed that these characteristics would support a resolution to the obstacles faced by infertile women **(Wang et al., 2024).**

Significance of the research:

Infertility has been identified as a significant global health problem with an increasing prevalence. Infertility is expected that about 48 million couples and 186 million individuals are involved globally **(Assaysh-Öber et al., 2023)**). In IVF has resulted in the birth of approximately 8 million offspring since the inception of antiretroviral therapy. IVF is not always successful on the first attempt, and some couples require multiple cycles of IVF **(Ozcan et al., 2023).**

Infertility is a silent "disease" that isn't entirely recognized, accepted, or conveyed in society, and it has a bad influence on the women personal well-being. Infertility has been associated with emotional distress, including social isolation, anxiety, remorse, depression, and diminished self-esteem, in both genders, according to research on the psychological repercussions of infertility. The majority of couples who are experiencing infertility regard it as a significant crisis **(Saif et al., 2021)**.

Women's experiences with infertility and its management have been the subject of several qualitative investigations performed worldwide. Society and the healthcare system can provide greater aid for women in their journey by gaining insight into women's perceptions and disappointments, particularly after therapy failed. Nursing staff have to offer additional information, provide appropriate guidance and recommendations, and keep infertile women from experiencing unrealistic expectations concerning therapy. Additionally, investigators believe that the implementation of nursing care through Watson's theory of human compassion can provide a broader perspective on the subject and allow for more room for interpretation **(Dube et al., 2023).** Therefore, this study aim was to explore the Watson's theory of human caring influence on women's coping way, QOL and marital adjustment after infertility treatment fail.

Aim of the research

The research aimed to explore the effect of Watson's theory of human caring on women's coping way, quality of life and marital adjustment after infertility treatment fails.

Research Hypotheses:

H1: Women will exhibit a higher coping way after implementation of the nursing care based on Watson's theory of human caring than before.

H2: Women will exhibit a better quality of life after implementation of the nursing care based on Watson's theory of human caring than before.

H3: Women will exhibit a better marital adjustment after implementation of the nursing care based on Watson's theory of human caring than before.

Subjects and method:

Research Design:

This research aim was achieved through a quasi-experimental research design (One-Group, Time series) utilization. The one-group time series design is a form of quasi-experiment that involves the measurement of the outcome of interest before and after a non-random group of participants is exposed to a specific intervention or treatment **(Cambell and Slanley, 1966).** A benefit of this design is the research directivity, that involves the dependent variable before and after intervention testing with an independent variable **(Cambridge University Press, 2019).**

Study Setting:

This research was conducted at in vitro fertilization IVF unit affiliated to Benha University Hospitals in Qalyubia governorate, Egypt.

Sampling:

Sample type, size, criteria and technique: A purposive sample of (46) infertile women with previous failed IVF attempts between those attending the above mentioned setting for another IVF attempt regarding to following **inclusion criteria:**

- Women who are infertile and have experienced unsuccessful IVF attempts within the past six months.
- Being over the age of 20.
- Confirmed and living together with spouses.
- Free from any Severe mental illness, major depression, schizophrenia, and

mania or other diseases affect quality of life
- Interested to participate in the research.
- At least read and write

The sample size was assessed according to prior annual census report in IVF unit affiliated at obstetrics and gynecology department at Benha University Hospital **Benha university Hospital statistical center, (2023),** this unit conducts 142 IVF cycles (90 succeeded and 52 failed). As the total number of infertile women with previous failed IVF attempts, who stated to the previous setting (52) in the year of 2023. applying the following formula: **n = N/ 1+N(e)^2 s**ample size was calculated

Where:

n= sample size (46)

N= total population number (52).

e= margin error (0.05)

Tools of data collection:

Four tools were utilized to gather data. All the tools were translated into Arabic.

Tool I: A structured interviewing questionnaire: After reviewing a related literature, it was designed by researchers. It included three parts:

Part (1): Personal characteristics: It composed of 5 items which were (age, occupation, educational level, residence, and economic status**)**.

Part (2): Fertility profile questionnaire: It consisted of 4 questions about (infertility family history, infertility duration, type on infertility, and number of unsuccessful infertility therapy (previous failed IVF trails).

Tool II: Stress Coping Styles Inventory (SCSI): It was established by **(Şahin and Durak ,1995)** regarding **(Lazarus and Folkman's, 1984)** coping model. It was used to assess a wide scope of considerations and acts and the individuals' coping ways with the internal and/or external challenges of specific stresses. It consisted of 5 sub-dimensions including 30 items to measure self-confidence, submissive, helpless. optimistic and pursuing social support approaches.

- Self-Confident Approach (7 items): 8-10-14-16- 20-23 and 26 numbered questions.
- Helpless Approach (8 items): 3-7-11-19-22-25-27-28 numbered questions.
- Submissive Approach (6 items): 5-13-15-17-21-24 numbered questions.
- Optimistic Approach (5 items): 2-4-6-12-18 numbered questions.
- Seeking of Social Support (4 items): 1-9-29-30 numbered questions.

Scoring algorithm:

Each sub-dimension's questions were scored based on a 4-point Likert-type scale, evaluated between 0-3 (0 = does not apply and/or not used; 3 = used a great deal). The 1st and 9 th questions were determined via reversed scoring for the sub-dimension of social support seeking. (SCSI) has an utmost score of 90 and a least score of 0 with higher scores indicating higher ways of coping. **The overall score was divided into two levels:**

- High coping approach: total scores (≥75 %) = (68 – 90 score).
- Low coping approach: total score (< 75%) = (0 – 67 score).

Tool III: Quality of life questionnaire for infertile women (QOL-QIW): It was established by **(Kiani et al., 2020)** and utilized to evaluate and justify the infertile women's QOL concept and dimensions. A 25-item tool was designed which measured 7 factors of psychological effects (4 items), adaptive approaches (4 items), factors

preventing infertility adaptation (3 items), infertility- related concerns (5 items), sexual life with infertility (3 items), physical impacts (3 items), and family and social effects (3 items).

Scoring algorithm:

The options of the QOL questionnaire for infertile women were determined employing the 5-point Likert scale. The Likert scale consists of the following points: never (5), rarely (4), sometimes (3), most of the time (2), and always (1). Questions 19, 20, 21, and 22 are evaluated in reverse order. The scores of each woman ranged from 25 to 125, with higher scores indicating an improvement in QOL-QIW..

The overall score was divided into three levels:

- High QOL: ≥75% - 100% of overall score (100 – 125 score).
- Moderate QOL: 50%-<75% of total score (75 –99 score).
- Low QOL: <50% of overall score (25 –74 score).

Tool IV: Revised Dyadic Marriage Adjustment Scale (RDAS): It was adopted from **(Spanier, 1976).** It is a self-administered test that could be completed in approximately 5 min to evaluate the separate components of marital adjustment. The scale consists of 14 items with different number of options. Marital alteration separate dimensions were reported to include the following: (a) Consensus regarding marital functionality, (b) dyadic satisfaction, and (c) dyadic coordination. The questions of the RDAS dimensions grouped by subscale as follow:

- Satisfaction scale with two subareas (Stability and Conflict)
- Consensus scale with three subareas (Decisions, Values and Affection)
- Cohesion scale with two subareas (Activities and Discussion)

Scoring algorithm:

Each item was scored between 0-4 points Likert-type scale. The score was reversed for items (7, 8, 9 and 10). The total scores were the sum of each item and was ranging from 0 to 56. The increased score was indication for better marital adjustment. **The overall score was divided into two levels:**

- Good marital adjustment: ≥75% - 100% of total score (42 – 56 score).
- Poor marital adjustment: <75% of total score (0 – 41 score).

Tools validity and reliability:

The questionnaires validity was assessed by a panel of three jury experts in the field of Obstetrics and Gynecological Nursing at Benha University to guarantee the comprehensiveness, clarity, relevance, and applicability of the tools. Items were added, omitted, or reformulated, necessitating minor modifications.

Tools reliability:

The reliability of tools was done by Cronbach's Alpha coefficient test, which illustrated that the internal consistency of each tool as following:

Tool	Cronbach's alpha value
Tool II: Stress Coping Styles Inventory (SCSI)	(α = 0. 83).
Tool III: Quality of life questionnaire for infertile women (QOL-QIW)	(α = 0. 87).
Tool IV: Revised Dyadic Marriage Adjustment Scale (RDAS)	(α = 0.80).

Ethical considerations:

Prior to commencing the investigation, the subsequent ethical considerations would be assessed: The study was accomplished with the sanction of the scientific research ethical committee of the nursing faculty at Benha University (REC-OBSN-P48). The study was conducted with the official approval from the director of the designated study setting. The researchers elucidated the purpose and significance of the study in order to establish the confidence and trust of women prior to implementing the tools. The confidentiality of the study was guaranteed, and the researchers took signed consent from women to take part. The women were not exposed to any physical, social, or psychological hazards as a result of the study. To safeguard the women privacy who participated, all data collection instruments were destroyed following statistical analysis. The women were permitted to discontinue at any time.

Pilot study:

The pilot study was performed on 10% of the total sample size (4 women) to determine the tools objectivity, clarity, applicability, and feasibility on addition to detect any potential obstacles or issues that could impede data collection or be encountered by the researchers. Additionally, the study was designed to identify any unique issues with the statements, such as the clarity of the questions and the sequence. This also facilitated the researchers' estimation of the necessary time for data collection. In order to prevent contamination of the sample, the pilot sample was excluded from the study and modifications were implemented in accordance with the prototype results.

Field work:

The research was conducted over a nine-month period, commencing in July 2023 and concluding in March 2024. The study was conducted by the researchers at the aforementioned setting on Saturdays, Sundays, and Mondays from 9:00 a.m. to 3:30 p.m. until the predetermined sample size was reached. The researchers conducted individual interviews with the women; on average, 4-5 women were interviewed per month. At the end of this research the handout (booklet) was left in IVF unit to be provided to all infertile women, so the benefit is spread.

The preparation, interviewing, and assessment phases, as well as the planning, implementation, and evaluation phases, comprised the five phases of the current research. To guarantee the participants privacy and confidentiality, these segments were conducted in a private chamber at the IVF unit.

Preparatory phase:

The research initial phase is the preparatory phase, during which the researchers conducted an inclusive review of the relevant literature about the research problem, both domestically and internationally. This facilitated the researchers' comprehension of the problem's severity and magnitude, and it also aided them in the development of the necessary data collection instruments. Three experts in the field of obstetrics and gynecological nursing at the Benha University faculty were provided with the instruments, and the jury results were conducted.

Interviewing and assessment phase:

At the outset of the interview, the researchers warmly welcomed each participant and introduced themselves individually to every woman involved in the study. The researchers explained the purpose of the research, provided detailed

information about the number and frequency of the scheduled sessions to ensure adherence to the intervention plan, and obtained written informed consent to participate. Initially, the participants were interviewed to assess their fertility profile and personal characteristics using Tool I. Following this, Tool II was employed to evaluate the coping strategies of infertile women in response to infertility. Subsequently, Tool III was used to assess infertility-related quality of life (QOL). Finally, Tool IV was administered to measure the level of marital adjustment among the participants.

Planning phase:

The researchers devised educational sessions in the format of a printed booklet that was illustrated with colored images, according to the results acquired throughout the assessment phase. The booklet is formatted in a straightforward Arabic language to accommodate the women's level of comprehension and to address their knowledge gaps. The sessions number, their instructional media, contents, and different techniques for learning are established. Objectives were established to be achieved upon the conclusion of the sessions. The broad objective was to ensure that each infertile woman would be able to acquire essential knowledge about infertility, effectively manage the stresses that result from infertility treatment failures, and have a better QoL, coping way and marital adjustment by the conclusion of educational sessions based on the structures of Watson's Theory of Human Caring.

Educational material (booklet):

It was designed and revised to give women comprehensive information and instructions. The booklet included the following two parts**;** **first part** was simple explanation about infertility including (definition, prevalence, types, causes, risk factors, treatment adherence, and prevention of infertility). **The second part** was about healthy behaviors to prevent further implications of infertility (avoiding excessive caffeine consumption, avoiding exposure to smoking "positive or negative", avoiding all unnecessary medications, avoiding excessive irradiation by reducing contact with electronics like mobile phones, importance of maintaining a normal weight and having a balanced diet with high protein, low salt, low fat, and drinking plenty of water daily. As well as, getting enough sleep hours and rest, maintaining sleep quality, and performing regular physical activity. **The third part** was about the stress coping ways toward infertility and infertility treatment fails (enhancing self-confidence and being optimistic, fighting the feeling of helplessness and being submissive, in addition to informing women about how to seek social support). **The fourth part** was about the methods of improving all dimensions of QOL of infertile women (psychologically, sexually, socially, physically and factors preventing infertility adaptation). **The fifth part** was about the methods of improving all dimensions of marital adjustment as (sharing decisions, affection and activities, maintaining mutual calm discussion, stimulating ideas exchange, overcoming conflicts together and encouraging commitment with religious matters and correct or proper behavior).

Implementation phase

The researcher designed and implemented the six separate scheduled sessions on the basis of structures of Watson's theory of human caring within three consecutive weeks. **For the first five**

sessions: the infertile women were recruited into small groups (12), each group had 3-4 women. Each meeting was conducted in private room in IVF unit at Benha University hospitals after completion of the assessment phase. Each session took about 1 hour according to their achievement and feedback. Women were given an orientation of the session's contents at the commencement of the initial session. The subsequent session commenced with a review of the previous session and the objectives of the new session. In order to accommodate the level of comprehension of women, plain Arabic language was employed. Several minutes were allotted at the conclusion of each session to allow women to pose questions in order to elucidate the session's contents and to address any misunderstandings. All women were apprised of the time of the subsequent session. **For the last sixths session:** which was private and personal session; the infertile woman was interviewed individually to express their feelings freely and confidentially.

Each session was structured regarding the enhancement procedures chosen from Watson's Theory of Human Caring. All 10 Curative Factors were implemented in the present investigation. The ten curative factors comprised:

1) Existential-Phenomenological-Spiritual forces
2) Humanistic–altruistic system of values.
3) Enabling faith-hope.
4) Transpersonal teaching-learning.
5) Cultivation of sensitivity to the self and others.
6) Expression of positive and negative feelings.
7) Creative problem-solving caring process.
8) Supportive, protective, and/or corrective mental, social, spiritual environment.
9) Human needs assistance.
10) Helping-trusting, human care relationship.

Various instructional strategies were employed, including lectures, group discussions, problem-solving activities, and the use of video downloads. To achieve the intended objectives, an educational booklet was distributed to all participating infertile women at the outset of the first session. This was supplemented with instructional media such as PowerPoint presentations and laptops. Additionally, the researchers utilized supportive tools designed as stimulus control to promote desired behavioral adjustments. These included stickers and flyers that reinforced the intervention's key concepts and messages, aligned with Watson's Theory of Human Caring structures.

- The **first session**: was about simple explanation about infertility including (definition, prevalence, types, causes, risk factors, treatment adherence, and prevention of infertility).

- The **second session**: was about healthy behaviors to prevent further implications of infertility (avoiding excessive caffeine consumption, avoiding exposure to smoking "positive or negative", avoiding all unnecessary medications, avoiding excessive irradiation by reducing contact with electronics like mobile phones, importance of maintaining a normal weight and having a balanced diet with low salt, high protein, and low fat and drinking plenty of water daily. As well as, performing regular physical activity, getting enough sleep hours and rest, and keeping sleep quality).
- The **third session**: was about the stress coping ways toward infertility and infertility

treatment fails (enhancing self-confident and optimistic, fighting the feeling helpless and submissive, in addition to informing women about how to seek social support).

- The **fourth session**: was about the methods of improving all dimensions of QOL of infertile women (psychologically, sexually, socially, physically and factors preventing infertility adaptation).
- The **fifth session**: was about the methods of improving all dimension of marital adjustment (sharing decisions, affection and activities, maintaining mutual calm discussion, stimulating ideas exchange, and overcoming conflicts together and encouraging commitment with religious matters and correct or proper behavior).
- The **sixth and last session**: intended to alleviate their tension, anxiety, depression, and the adverse consequences of their earlier unsuccessful infertility therapy attempts. Therefore, the woman was encouraged to discuss a variety of topics, including the fears associated with infertility treatment, the emotions and feelings she experienced in relation to medical practices, the expectations she had for infertility treatment, the emotions she would experience in the event of a pregnancy or non-pregnancy during the current attempt, the decisions she made regarding her health care, the positive and negative improvements in the infertility treatment process, and her plans for the near future. The positive aspects were supported and bolstered through religious beliefs and hope, and the woman's plans for the future.

Individual interviews were conducted with the woman due to the fact that the sixth and final session was especially important. Therefore, a unique chamber was assembled. The women's comfort was prioritized by the installation of a settee in the chamber. The researcher's workstation and chair were positioned in the chamber. A warning sign was affixed to the entrance of the interview room in order to prevent interruptions and maintain silence. Moreover, the interviews were conducted with the phones in the room turned off. The researcher was provided with a page of paper and a stylus on the interview station for the purpose of taking notes. Furthermore, the chamber contained a water container and tissues. The majority of the women cried as they articulated their emotions. Consequently, it was recommended that they consume the water in order to alleviate stress.

Finally, throughout period between the implementation of the sessions, the researchers followed up the women through phone calling or using social media like WhatsApp messages for assuring that the women remembered the time of next session; additionally, in order to answer women's questions and enhancing implementation the delivered educational sessions.

Evaluation phase:

The effectiveness of Watson's theory of human caring in improving the ways of coping, infertile women's QOL and marital adjustment among infertile women was evaluated twice; two-weeks then one-month post-intervention from the last session after implementation; using the same format of tools (Tool II, Tool III and Tool IV) which used during the assessment phase**.** The studied women were followed and evaluated during follow up visits. Women were assured of attending to the hospital on the pre-scheduled evaluation times.

Statistical analysis:

The data was verified prior to its entry into the computer system. The data that has been

collected will be organized, classified, computerized, and analyzed using statistical methods and tests. The Statistical Package for Social Sciences (SPSS version 25.0) was implemented. Descriptive statistics consisted of means, standard deviations, frequencies, and percentages. Inferential statistics, specifically the repeated measures ANOVA test, were employed to evaluate the research hypotheses. The correlation coefficient was implemented to investigate the correlation between the aggregate scores of the variables under investigation. A statistically significant difference was indicated by a p-value of ≤0.05, while a p-value of >0.05 indicated no statistically significant difference. A highly statistically significant difference was indicated by a p-value of P ≤ 0.001.

Results:

Table (1) shows that (65.2%) of studied women were in age group (more than 20 years and less than 30 years old) with a mean age of 29.43±5.64 years. Regrading to educational level, (50.0%) studied women had university education. Concerning the residence, (56.5%) of them lived in city. Furthermore, (73.9%) were employee. Pertaining to economic status, (54.3%) of them have average monthly income.

Table (2) mentions that, (73.9%) of studied women had family history of infertility. Increasingly, the majority of them (87.0%) suffered from primary infertility and (60.9%) suffered from infertility since <5 years with mean duration of 5.65±3.48 years. As well as (43.5%) had a previous single IVF failure.

Table (3) mentions that, among mean scores of studied women's coping way toward infertility there was a high statistically significant difference at pre-intervention, post-intervention and follow up phases with (p-value < 0.001). The total mean score of coping ways was developed from 46.26±5.52 to 63.36±4.55 and 67.39±4.20 throughout study phases; in the favor follow up phase.

Figure (1) displays that (26.1%), (58.7%) and (63.0%) of studied women had high coping approach toward infertility at pre-intervention, post-intervention and follow up phases respectively.

Table (4) shows that, there was a high statistically significant difference among mean scores of studied women regarding infertility related QOL at post-intervention, pre-intervention, and follow up phases with (p-value<0.001). The total mean score of infertility related QOL was improved from 57.84±6.57 to 76.36±6.33 and 81.30±5.78 throughout study phases; in the favor of follow up phase.

Figure (2) displays that (23.9%), (54.3%) and (60.9%) of studied women had high infertility related quality of life at pre-intervention, post-intervention and follow up phases respectively.

Table (5) reveals that, a high statistically significant difference was determined among mean scores of studied women regarding marital adjustment at pre-intervention, post-intervention and follow up phases with (p- value<0.001). The total mean score of marital adjustment was increased from 28.93±4.47 to 41.13±3.41 and 45.50±2.59 throughout study phases; in the favor of follow up phase.

Table (6) clarifies that there was a highly significant statistical positive correlation between total score of the studied women's coping ways and their total score of (infertility related QOL and marital adjustment) and at pre-intervention, post-intervention and follow up phases (P≤ 0.001).

Table (1): Distribution of the studied women according to personal characteristics (n=46).

Personal characteristics	No	%
Age (in years):		
> 20	30	65.2
≥ 30	16	34.8
Mean ± SD = 29.43±5.64		
Educational level:		
Read and write	2	4.3
Primary education	8	17.4
Secondary education	13	28.3
University education	23	50.0
Residence:		
Village	20	43.5
City	26	56.5
Occupation:		
Employee	34	73.9
Housewife	12	26.1
Economic status*:		
Good	13	28.3
Average	25	54.3
Weak	7	15.2

***According to woman' view**

Table (2): Distribution of the studied women according to fertility profile (n=46).

Fertility profile	No	%
Family history of infertility:		
Yes	12	26.1
No	34	73.9
Type of infertility:		
Primary	40	87.0
Secondary	6	13.0
Duration of infertility (in years):		
<5	28	60.9
5 – 10	12	26.1
>10	6	13.0
Mean ± SD = 5.65±3.48		
Number of failed infertility treatment (previous failed IVF):		
Once	20	43.5
Twice	18	39.1
Three times or more	8	17.4

Table (3): Mean Scores of studied women's coping way toward infertility at pre-intervention, post-intervention and follow up phases (n=46).

Sub-dimensions	Min./Max. score	Pre-intervention	Post-intervention	Follow up	ANOVA	
		Mean ± SD	Mean ± SD	Mean ± SD	F	P-value
Self-confident approach	0/21	9.61±3.20	14.24±3.75	14.87±3.53	30.93	0.000**
Optimistic approach	0/15	6.43±3.91	9.80±3.44	10.52±3.25	17.37	0.000**
Helpless approach	0/24	15.57±3.85	19.22±3.55	20.13±3.12	21.61	0.000**
Submissive approach	0/18	10.67±2.95	13.61±2.41	14.2±2.49	24.41	0.000**
Social support seeking approach	0/12	3.98±2.85	6.50±2.40	7.59±2.26	24.81	0.000**
Total score	**0/90**	**46.26±5.52**	**63.36±4.55**	**67.39±4.20**	**251.82**	**0.000****

**A Highly Statistical significant $p \leq 0.001$

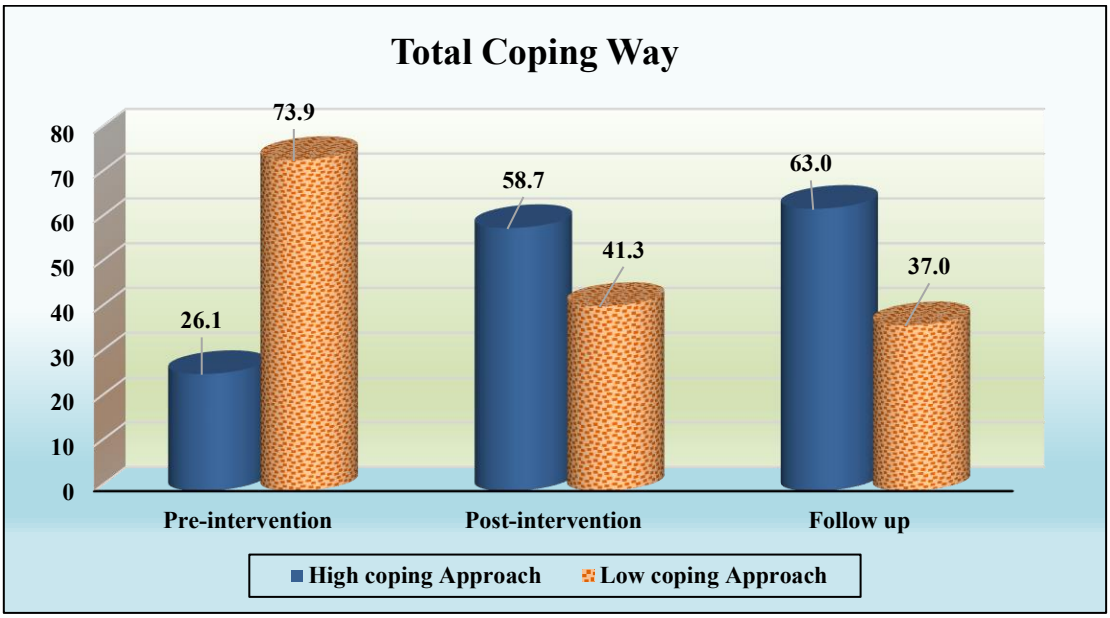

Figure (1): Distribution of studied women regarding total coping way toward infertility score at pre-intervention, post-intervention and follow up phases (n=46).

Table (4): Mean Scores of studied women's infertility related quality of life at pre-intervention, post-intervention and follow up phases (n=46).

Factors	Min./Max. score	Pre-intervention	Post-intervention	Follow up	ANOVA	
		Mean ± SD	Mean ± SD	Mean ± SD	F	P-value
Psychological effects	4/20	9.89±3.04	13.20±3.14	14.04±3.21	22.47	0.000**
Sexual life with fertility	3/15	8.15±2.09	11.28±1.88	11.80±1.84	47.46	0.000**
Family and social effects	3/15	7.28±1.77	10.00±1.44	11.09±1.65	66.42	0.000**
Infertility-related concerns	5/25	13.15±3.67	16.72±3.38	17.46±3.27	20.50	0.000**
Physical effects	3/15	9.15±2.39	11.78±1.80	12.46±2.05	31.91	0.000**
Adaptive approaches	4/20	11.91±2.64	14.37±2.48	15.54±2.23	26.12	0.000**
Factors preventing adaptation	3/15	7.46±2.09	10.80±2.29	11.37±2.20	42.51	0.000**
Total score	**25/125**	**57.84±6.57**	**76.36±6.33**	**81.30±5.78**	**180.68**	**0.000****

**A Highly Statistical significant $p \leq 0.001$

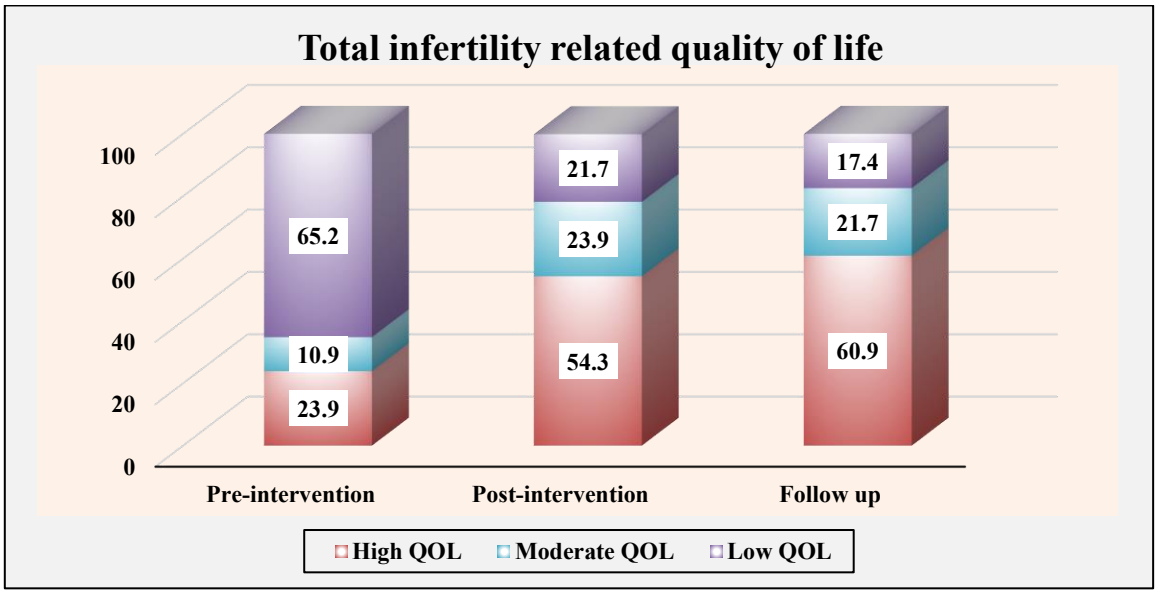

Figure (2): Distribution of studied women regarding total infertility related quality of life score at pre-intervention, post-intervention and follow up phases (n=46).

Table (5): Mean Scores of studied women's marital adjustment at pre-intervention, post-intervention and follow up phases (n=46).

Dimensions	Min./Max. score	Pre-intervention	Post-intervention	Follow up	ANOVA	
		Mean ± SD	Mean ± SD	Mean ± SD	F	p-value
Consensus scale						
Decisions	0/8	4.46±1.89	5.96±1.64	6.54±1.29	20.05	0.000**
Values	0/8	5.39±1.35	7.06±0.97	7.56±0.65	55.49	0.000**
Affection	0/8	2.24±1.03	4.72±0.93	5.39±0.95	133.00	0.000**
Satisfaction scale						
Stability	0/8	4.93±1.65	6.15±1.173	6.71±0.93	23.00	0.000**
Conflict	0/8	4.28±1.02	6.20±1.00	6.78±0.98	77.81	0.000**
Cohesion scale						
Activities	0/8	4.67±1.05	5.93±1.28	6.61±1.12	32.93	0.000**
Discussion	0/8	2.96±1.60	5.11±1.47	5.89±1.14	52.56	0.000**
Total score	**0/56**	**28.93±4.47**	**41.13±3.41**	**45.50±2.59**	**264.64**	**0.000****

**A Highly Statistical significant $p \leq 0.001$

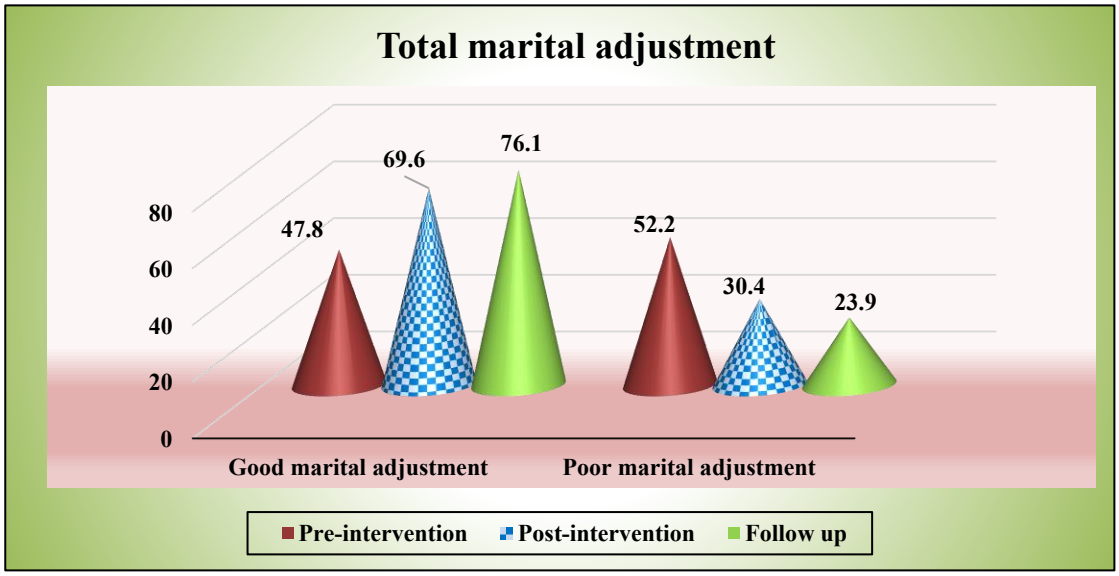

Figure (3): Distribution of studied women regarding total marital adjustment score at pre-intervention, post-intervention and follow up phases (n=46).

Table (6): Correlation between total score of coping ways and (infertility related quality of life and marital adjustment) of the studied women at pre-intervention, post-intervention and follow up phases (n=46).

Variables	Total coping ways					
	Pre-intervention		Post-intervention		Follow up	
	r	P-value	r	P-value	r	P-value
Total infertility related quality of life	0.397	0.000**	0.485	0.000**	0.476	0.000**
Total marital adjustment	0.512	0.000**	0.473	0.000**	0.505	0.000**

**A Highly Statistical significant $p \leq 0.001$

Discussion:

Infertility is a silent disorder that is occasionally characterized as an unnoticed loss and mourning of something that may not have been observed or experienced by others, but that is a fantasy and wish for a longed-for future.. Arranging the tender moments that correspond with the pivotal stages in the infertility therapy procedure is effective not only for improving coping mechanisms and overall QOL but also for cultivating marital adjustment **(Assaysh-Öberg et al., 2023).**

In order to offer the proper therapies and support for the achievement of health on all levels, it is imperative to comprehend the experiences of women who are experiencing infertility. Utilizing Watson's Human Caring Theory as a professional practice framework promotes productive, meaningful, and compassionate care in a variety of aspects of women's health. Watson's holistic theory of human compassion offers a comprehensive perspective on nursing care in the management of infertility. **(Bagheri et al., 2023)**.So, the current research aimed to explore the effect of Watson's theory of human caring on women's coping way, QOL and marital adjustment after infertility treatment fails. The research results confirmed the aforementioned hypotheses and this was clarified by discussing the following results:

The personal characteristics of the sample under investigation were outlined in the current research. The present research findings indicated that a mere two-thirds of the women under investigation were under the age of 30, with a mean age of 29.43±5.64 years. This indicated that the reproductive age was relatively advanced. Additionally, half of the sample had completed university education, which may be advantageous in light of the intricate nature of the procedure and the necessity of comprehending the cause of infertility and the IVF process.

Additionally, more than half of them lived in city and had average economic status. Furthermore, less than three-quarters of them were employee. According to the researchers, positive reappraisal and problem resolution are found to be significantly correlated with age, educational level, and economic status.

The results of the current study nearly agreed with **(Sirait et al., 2023)** who reported that the majority of infertile women were within the 31-35 age group. Also, these findings nearly agreed with **(Kiani et al.,2023)** who showed that the mean age of the sample was 31.79 ± 5.58, more than half lived in city and nearly half had average monthly income. Additionally, **(Ni et al., 2021)** clarified that more than half of the sample had university education and lived in a city. This similarity in sample characteristics between the current study and other studies is likely due to the compatibility between the community characteristics and features in the study locations, despite their differences.

As regards infertile profile, the result of the present research showed that less than three-quarters of studied women hadn't family history of infertility. The majority of them suffered from primary infertility and less than two-thirds of them suffered from infertility since < 5 years with mean duration of 5.65±3.48 years. As well as, less than two-fifths of them had a previous single IVF failure.

The researchers thought that women who had suffered infertility for a long period weren't able to cope of difficult situations and accepting the reality of the challenges. Also, failure of IVF attempts is associated with a higher prevalence of stress, ineffective coping ways, poor QOL and incompatibility of marital life. So, these complementary findings highlight how crucial for healthcare providers to provide more direction, assistance, and health education for infertile women with infertility treatment fails **(Dadhwal et al., 2022).** The current results agreed with **(Banaha et al., 2023)** who clarified that the mean duration of infertility was 4.01 ± 2.78 yr. In addition, the majority of the infertile women had primary infertility.

Pertaining to coping way, A notion of control is essential for effective dealing. Women who are infertile and possess a high level of perceived control are more adept at managing stressful situations than those who are uncertain about their capacity to confront challenging circumstances. **(Truong et al., 2024).** The results of the present research mentioned that, there was a high statistically significant difference among mean scores of studied women's coping ways toward infertility at pre-intervention, post-intervention and follow up phases. The total mean score of coping ways was improved from 46.26±5.52 to 63.36±4.55 and 67.39±4.20 throughout study phases; in the favor follow up phase. Confirmation of the results, (26.1%), (58.7%) and (63.0%) of studied women had high coping approach toward infertility at pre-intervention, post-intervention and follow up phases respectively. These results indicated the extent of the positive impact of Watson's theory of human caring on increasing the positive coping style among infertile women.

The first research hypothesis was supported by these findings. The present research result nearly agreed with **(Ozan and Okumuş, 2017)** according to whom the results analysis revealed no statistically significant difference between the pre-treatment submissive approach mean scores of the intervention and control groups, while a statistically significant difference was observed between the post-intervention and one-month follow-up scores.. Nearly, this outcome was consistent with **Kyei et al., (2022)** who concluded that the insight into the theories utilized by researchers is not pertinent only to advance coping strategies of

infertile women undergoing IVF, but also to design strategies to maximize the outcome of the process. Finally, **(Adib-Hajbaghery et al., 2020)** In conclusion, the women were able to express emotions and complete the therapeutic procedure by trusting God, employing spirituality, and obtaining support from family and friends by implementing the nursing care based on Watson's theory of human caring.

In line with the concept of quality of life, the reduced well-being experienced by infertile women undergoing IVF highlights the need to develop theories and strategies that enhance quality of life and provide a comprehensive, holistic approach to infertility treatment **(Wu et al., 2021).** The results of the present research pointed out that, there was a high statistically significant difference among mean scores of studied women regarding infertility related QoL at pre-intervention, post-intervention and follow up phases. The total mean score of infertility related QOL was improved from 57.84±6.57 to 76.36±6.33 and 81.30±5.78 throughout study phases; in the favor of follow up phase. Confirmation of the results, (23.9%), (54.3%) and (60.9%) of studied women had high infertility related QoL at pre-intervention, post-intervention and follow up phases respectively.

This result could be attributed to ongoing education and assistance that was provided through Watson's theory of human caring, as well as regular phone follow ups that gave women excellent information and encouragement to enhance QoL. So, the second research hypothesis was supported by these findings. The current research result was in accordance with **(Kiani et al., 2023)** who found that there was a statistically significant difference in the quality of life ratings of infertile women based on the kind of infertility. Also, **(Türkcü & Özkan, 2021)** concluded that Watson's theory of human caring is effective in reduction of anxiety and depression and improving the QOL in gynecological cancer women during chemotherapy. Moreover, **(Abd El Aliem et al., 2023)** revealed that there was a highly statistical difference in the total QOL scores of the intervention group more than the control group ($p \leq 0.001$).

Additionally, **(Dourou et al., 2023)** The significance of instituting interventions such as supportive care methods, counseling, and stress reduction methods to enhance the fertility-related infertile couples QOL was emphasized.. On the contrary, (**Ceran et al., 2022)** revealed that there was no significant difference related to psychological domain of QOL.

Behavioral patterns, models of compatibility with conflict, communication skills, mode of emotional expression, tension, emotional support. intimacy, and self-esteem, as well as numerous emotional, cognitive, and physiological factors, can all influence marital adjustment. Most importantly, infertility is one of the most critical factors that influence the character of conjugal relationships and marital satisfaction **(Goyal & Nakra, 2023).**

The present research findings indicates that, a high statistically significant difference was determined among mean scores of studied women concerning marital adjustment at pre-intervention, post-intervention and follow up phases. The total mean score of marital adjustment was increased from 28.93±4.47 to 41.13±3.41 and 45.50±2.59 throughout study phases; in the favor of follow up phase. Confirmation of the

results, (47.8%), (69.6%) and (76.1%) of studied women had good marital adjustment at pre-intervention, post-intervention and follow up phases respectively.

The third research hypothesis was supported by these findings. This may be due to that collaborative education and counseling can effectively reduce anxiety, and stress and improve coping skills, social support, and marital adjustment through building marital relationship skills and marital intimacy **(Wendołowska, et al., 2022).** The current research findings aligned with the research conducted by **(Banaha et al., 2023)** after the study ended, who indicated that there was a significant improvement in marital adjustment due to the considerable inter-individual adjustments within the intervention group. Additionally **(El-Feshawy et al., 2023)** revealed that the mean score of marital satisfaction elevated significantly ($p < 0.001$) post-intervention and at follow-ups.

The result of the present research clarified that there was a highly significant statistical positive correlation between total score of the studied women's coping ways and their total score of (infertility related QoL and marital adjustment) and at pre-intervention, post-intervention and follow up phases. This may be due to that maintaining good level of cooping ways of the couples can lead to good marital adjustment, and good QoL among infertile women**.** These findings were in accordance with **(Saif et al., 2021)** who revealed that positive coping strategy was significant predicting good QOL. Also, **(Wendołowska et al., 2022)** stated that there was a positive link between marital satisfaction and coping ways. Additionally this findings was aligned to **(El-Feshawy et al., 2023)** who clarified that the marital satisfaction was significantly and positively associated with the methods of coping at the 1-month and 2-month follow-ups post-intervention.

Conclusion:

The nursing care based on Watson's theory of human caring had a favorable outcome on women's coping way, QoL and marital adjustment especially after previous infertility treatment fails; therefore the total mean scores of cooping way QoL and marital adjustment had been significantly improved after intervention and follow up than before. So, the aim was achieved and the research hypotheses were supported.

Recommendations:

- Integration of Watson's theory of human caring as a protocol in routine nursing intervention for improving infertile women's cooping ways, QoL and marital adjustment
- Educational services according to Watson's theory of human caring should be provided alongside the infertility management procedure in all infertility therapy centers for boosting the quality of marital adjustment and supporting cooping way.
- Providing infertility training programs for couples with previous infertility treatment fails may prevent many marital problems and promote the family systems stability

Further researches:

- Ongoing educational program for healthcare staff about utilizing Watson's theory of human caring for promoting infertile women's cooping ways, QoL and marital adjustment.

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تأثير نظرية واتسون للرعاية الإنسانية على طريقة تكيف السيدات وجودة الحياة والتوافق الزوجي بعد فشل علاج العقم

جهاد جمال السيد- أنعام إبراهيم النجار- علا عبدالوهاب عفيفي عربي

يُعد العقم عامل ضغط كبير على الأزواج، إذ يؤثر على طريقة تعامل المرأة مع الضغوط، وجودة حياتها، والتوافق الزوجي. لذا هدفت هذه الدراسة الي استكشاف تأثير نظرية واتسون للرعاية الإنسانية على طريقة تعامل المرأة مع الضغوط، وجودة حياتها، والتوافق الزوجي بعد فشل علاج العقم. وتم استخدام تصميم بحث شبه تجريبي (مجموعة واحدة) حيث اجريت الدراسة في وحدة التلقيح الصناعي التابعة لمستشفيات جامعة بنها بمحافظة القليوبية على عينة قصدية مكونة من (٤٦) امرأة مصابة بالعقم، سبق لهن محاولات فاشلة للتلقيح الصناعي، وحضرن الوحدة المذكورة أعلاه لمحاولة أخرى للتلقيح الصناعي؛ وفقًا لمعايير الإدراج المعمول بها. و تم استُخدام أربع أدوات رئيسية لجمع البيانات: استبيان للمقابلات الشخصية، ومقياس أساليب التعامل مع الضغوط، واستبيان جودة الحياة للنساء المصابات بالعقم، ومقياس للتوافق الزواجي الثنائي. واظهرت النتائج انه تم الكشف عن فروق ذات دلالة إحصائية بين متوسط طرق تكيف السيدات، وجودة حياتهن، وتكيفهن الزوجي في مرحلتي ما بعد التدخل والمتابعة مقارنةً بما قبل التدخل. كما كان للرعاية التمريضية القائمة على نظرية واتسون للرعاية الإنسانية نتيجة إيجابية على طرق تكيف السيدات، وجودة حياتهن، وتوافقهن الزواجي، خاصةً بعد فشل علاج العقم السابق. واوصت الدراسة بدمج نظرية واتسون للرعاية الإنسانية كبروتوكول في التدخل التمريضي الروتيني لتحسين طرق تكيف السيدات المصابات بالعقم، وجودة حياتهن، وتوافقهن الزواجي.