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Exploring Self-Care Behaviours for Mental Health in Infertile Women: A Qualitative Study

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ABSTRACT

Background & aim: Infertility has various psychological consequences. Although previous studies paid attention to the psychological effects of infertility and suggested many interventions for infertile patients' mental health promotion, the design of self-care interventions and the concept and dimensions of mental health self-care have received less attention. This study was conducted to explore the concept and dimensions of self-care behaviour for mental health in infertile women.

Methods: This study was conducted from November 2021 to February 2022 using the conventional content analysis approach. Purposive sampling was performed and continued until reaching data saturation. Semi-structured and in-depth interviews were conducted with 19 participants at the Infertility and Reproductive Health Research Center of Babol, Iran. The Graneheim and Lundman method (2004) was used to analyze the data in MAXQDA version 10 software.

Results: One theme and three categories emerged from data analysis. The emerging theme of "involving in stress coping strategies" consisted of three categories of 1) emotion-focused stress coping skills, 2) treatment and healthcare-seeking behaviours and 3) self-management of mental symptoms. The findings revealed that self-care behaviours for mental health are a set of behaviors adopted by infertile women to prevent the effects of infertility on their mental health and includes strategies such as emotion-focused stress coping skills, treatment seeking, and self-management of mental symptoms.

Conclusion: Infertile women adopt different strategies to deal with mental pressures of infertility. The results can be applied to the development of interventions that aim to promote self-care behaviors for mental health.

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Introduction

According to the World Health Organization, infertility-caused disability is the fifth disability

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, worldwide (1). Prevalence of current infertility by clinical, epidemiological and demographic definitions was 9.6%, 8.1% and 5.8%, respectively (2). Infertility can affect mental health (3-4), which is one of the four dimensions of health whose absence can endanger general health (5). Studies have revealed the reduction of mental health in infertile women (3, 6-7), but infertility-related mental disorders can be prevented, and timely diagnosis can reduce their complications (8). Therefore, the promotion of mental self-care can improve infertile women's mental health (9).

Self-care refers to the ability of individuals, families, and communities to promote health and prevent or control diseases and is influenced by family, society, and culture. Self-care helps people adapt to stressful situations and promote their health (10). Self-care also can be viewed as an empowerment strategy, allowing patients to exercise control in a situation (infertility) that makes them feel "so out of control"(11).

The literature review revealed that limited attention has been given to mental health self-care in the context of infertility. However, evidence exists on self-care in other patient populations, such as those with hepatitis, diabetes, and Parkinson's disease (12-14). The results of a study aimed to develop a substantive theory of attaining self-care in infertility treatment indicated that infertile patients' movement from a passive to an active role and the self-care process consisted of four sequential phases: including perceiving that physicians lack a complete picture from infertility, actively acquiring knowledge; taking control; being satisfied with treatment (11). Additionally, a qualitative study on "the needs of self-care and community mental health education" demonstrated that identifying self-care needs could facilitate the optimal utilization of limited resources seeking to impart applied education and training (15). Another qualitative study highlighted self-care as an integral part of all areas of care and preparing patients to accept the role of self-care as one aspect of implementing self-care in the healthcare system(16). Therefore, it is crucial to elucidate the concept of mental health self-care and its dimensions in infertile women to improve mental health self-care behaviors and promote acceptance of self-care in infertile population.

Although many interventional studies have been designed and conducted to improve the mental health of infertile people, review studies are indicative of the diversity and complexity of psychological interventions, such as cognitive behavioral therapies, mind-body interventions, educational and counseling programs, Online psychoeducational support for infertile women (17-23). However the concept of mental health self-care and its dimensions in infertile patients, which is necessary to tailor appropriate self-care interventions, have not been given enough attention in Iranian context, which is a crucial knowledge gap. Given that infertility is one of the chronic diseases and mental disorders which affects all individual and social dimensions (19, 20), it is necessary to examine the role of self-care in preventing infertility complications. Nonetheless, mental self-care context in infertile women in Iran is a new concept, and the use of clinical experiences, theories, and previous studies cannot determine all its dimensions, while no appropriate framework has considered the needs of infertile women regarding self-care of mental health. Thus, the qualitative method was selected for the present study to collect more comprehensive information about mental self-care behaviors by examining different perspectives. Hence, this qualitative study was conducted using the conventional content analysis to explore the concept of self-care behaviours for mental health and its dimensions among infertile women in the sociocultural context of Iran.

Materials and Methods

This qualitative study was a conventional content analysis conducted at Infertility and Reproductive Health Research Center of Babol. The purposive sampling was performed considering maximum diversity (age, education) until data saturation was achieved. The interviews started in November 2021 and ended in February 2022 after 19 interviews (13 infertile women and 6 key informants). Two more interviews were conducted to be ensured of data saturation.

The study was performed under the declaration of Helsinki (24) and following the

Consolidated Criteria for Reporting Qualitative Research (COREQ) (25).

The participants consisted of 19 participants including 13 infertile women referred to the infertility center as well as 6 key informants (midwife, gynecologist, psychologist, spouse of infertile women) with at least two years of working with infertile couples. The inclusion criteria were having Iranian nationality and age older than 20 years, being literate, not having adopted children, having primary infertility, being under infertility treatment, having more than one year of infertility duration, no history of psychological disorders (major depression and suicidal thoughts) based on their own report and no use of drugs or psychotropic medications.

Two female researchers with working experience in the field of infertility (a PhD student and a PhD graduate in reproductive health and psychology) explored mental self-care behaviors in infertile women by conducting face-to-face and in-depth semi-structured interviews using open questions. First, interviews began with eligible infertile women, and then with key informants. Interviews were conducted in a quiet and private place. A digital audio recorder was used to record the interviews. The interview was written down if the subjects were not permitted to record their voices. To start the interview, the researcher introduced herself and explained the objective of the interview to communicate with the participants. Interview started with general and open questions. Guiding questions included the following: "How did you feel when you found out about your infertility? Why?" Or "How do you take care of yourself to maintain your mental health?" or "What do you expect from your spouse to improve your mental condition?" "What do you expect from your family to improve your mental condition?" "What do you expect from doctors and infertility center staff to improve your mental condition?".

The interview process was guided regarding the research objectives based on the participants' statements and through clarifying questions. For example, if the subjects expressed their experiences of performing mental self-care behaviors, they were asked to explain further. Finally, the participants were asked to say if there was anything left, and then the interview ended after appreciating them. The interviews lasted 30- 45 minutes.

Data analysis was performed using the Graneheim and Lundman method, adopting the following steps of data analysis:

1. Transcription of each interview immediately after conducting it; 2. Reading the full text of the interview to understand its content and considering it as a unit of analysis; 3. Identifying meaning units and initial codes; 4. Classifying similar codes in subcategories and main categories; and 5. Determining the overarching themes emerged from the categories (26).

Table 1 provides an example of the Graneheim and Lundman analysis method, including quotes from participants, meaning units, condensed meaning units, subcategories, and categories.

After each interview, the researcher typed the interview content in Word software version 2013 up to 24 hours after the interview and listened to it several times. The interview text was entered into MAXQDA version 10 software for content review and analysis. Two data coders (FY and MS) coded the data. Before coding, the content was read several times to gain a general understanding, after which the text was read line by line to identify and code the main sentences and concepts of each line or paragraph. The concepts related to similar phenomena were classified into a subcategory, for which a more abstract name was chosen. Categories were extracted from several similar subcategories, and one theme was formed based on similar categories. The concept of mental health self-care and its dimensions were explained based on the extracted themeand categories.

The criteria of Lincoln and Guba and Polit and Beck authenticity were used to check the trustworthiness of the qualitative data (27). The following measures were taken to increase the credibility of the data: Conducting in-depth interviews in sessions and different conditions (infertility center, office); Combining several data collection methods (interview and field notes); Sampling with the maximum diversity; and Peer checking, through which the data were checked by the research team to ensure that the categories were consonant with the statements of the participants.

For more dependability, the following measures were taken: A complete record of the researcher's activities concerning data collection and analysis and provision of examples of primary codes for categories and subcategories; the researcher's long-term engagement with the phenomenon and continuous review of the data; and Coding-recoding, which was performed two weeks after the initial coding. Then, the level of agreement with the previous codes was checked, and the codes were maintained, changed, or modified in case of similarities or differences.

The following steps were taken for confirmability: Putting aside the researcher's presuppositions and thoughts; Documentation of the research stages for an external auditor to review the codes and categories; and Giving the texts of some interviews together with codes and categories to some faculty members familiar with qualitative research and some infertile women who had not participated in the study to check the level of agreement between several researchers.

The following measures were taken for transferability: Sampling with maximum diversity of demographic characteristics; Detailed description of the research process to help others follow the research path; and Careful review of the codes and categories by the research team and checking the correctness of the coding process.

Authenticity: Field note was used to increase the authenticity of the research. All moods and emotions of the interviewee were recorded and coded. In the text file, all the words of the interviewees were written exactly in their own words and language.

Table 1. An example of the Graneheim and Lundman analysis method (including meaning units, condensed meaning units, codes, subcategories, and category)

Meaning unit	Condensed meaning unit	code	Subcategory	Category
The medicine had no effect, I resorted to traditional medicine and was hopeful that herbal medicine would make the fibroid shrink and help me get pregnant	Resorting to traditional medicine to treat infertility due to infertility treatment failure	Resorting to complementary therapies after failure of treatment	Seeking traditional complementary medicine	Treatment and healthcare seeking behaviors
Being afraid of treatment and ultrasound, I missed a course of infertility treatment and took traditional herbal medicine	Resorting to traditional medicine due to the fear of infertile women from infertility treatment methods	Resorting to complementary treatment due to fear of medical treatment		
I was depressed and sad. I went to a counselor, but I didn't get much of an answer. One of my friends recommended trying traditional medicine, and I did it	Resorting to traditional medicine to improve the psychological condition against the psychological problems of infertility	To reduce psychological symptoms		
I was searching for a counselor and I went to several centers	Referring to a psychologist to find a way to improve the mental state	Exploring treatment	Exploring and following strategies to improve mental health	
Today, I came here (infertility center) to see if there is something (solution and treatment) that I don't know, but the doctor can tell me and do it	Following the doctor's medication orders to improve the mental state	Follow doctor's orders		

Results

19 interviewees individually provided the research data. The mean (SD) age of 13 infertile women was 33.07 (6.34), duration of marriage was 7.96 (3.97), and duration of infertility was 6.00 (3.60) years. Most participants had higher than diploma education, were housewives, lived in the city, and had an average economic status. Most of them were suffering from primary infertility, were under ART treatment, and had no family history of infertility (Table 2). Demographic characteristics of 6 key informants are given in Table 3. The data analysis of 19 interviewees led to the emergence of 275 initial codes. After classification of the initial codes and removing similar ones, 14 subcategories, three categories and one theme were extracted to explain self-care behaviours for mental health in infertile women (Table 4).

Main theme: Involving in stress coping strategies

This theme consisted of three categories, namely 1) emotion-focused stress coping skills with six subcategories (ignoring the words of others, managing lonely time, maintaining interpersonal interactions, changing family interactions, reducing interactions with spouse, and reducing expectations and not expressing them), 2) treatment and healthcare-seeking behaviors with two subcategories (seeking traditional complementary medicine and exploring and following strategies to improve mental health), and 3) mental symptom self-management with six subcategories (releasing inner turmoil, positive thinking and distraction from negative thoughts, developing self-knowledge, acquisition of motivation, promotion of spiritual dimension, and improved sleep hygiene) (Table 4).

Category 1. Emotion-focused stress coping skills

This category consisted of six subcategories as follows:

Subcategory 1.1. Ignoring the words of others

Delayed pregnancy may arouse the curiosity of others about the life of couples. Most participants believed prolonged infertility aroused others' curiosity in family parties, consequently referring to "ignoring" as a coping strategy for this stress. A participant said: "I recently try not to pay attention to what people say; for instance, when I'm at a party, I go to the kitchen or change the subject of conversation" (A 24-year-old interviewee, 5 years of infertility, diploma).

Subcategory1.2. Managing lonely time

Loneliness was one of the negative feelings experienced by the majority of the participants. Spending time with others, doing sports, and going for a walk were among the self-care measures adopted by almost all infertile women to deal with their feelings of loneliness. A participant mentioned: "When I spend time with my friends, talk to them, or go to the gym or a walk, I feel less lonely" (A 21-year-old interviewee, 1 year of infertility, university student).

Also, sometimes, the living environment (home, family, and society) conditions are so stressful for infertile women that they prefer to leave the stressful place, go on a trip, or talk with their spouse outside the home to cope with loneliness and tensions of the environment. A participant mentioned: "I didn't like to stay home. I felt suffocated at home. I went out every day to feel better" (A 21-year-old interviewee, 1 year of infertility, university student).

Subcategory 1.3. Maintaining interpersonal interactions

Several participants believed that intimate relationships with others helped them improve their mental health, encouraging them to preserve their interpersonal interactions through conversations with their spouses, family, and friends on social networks. A participant mentioned:" We used to play together at home (Mensch and family name game); we talked with each other; the only person I'd like to talk to about our problems is my husband; I have always felt comfortable with him" (A 40-year-old interviewee, 11 years of infertility, diploma).

Subcategory 1.4. Changing family interactions

Most infertile women showed different reactions to family investigations regarding their infertility problem. Some suffering from this behavior consciously decided to reduce their family relationships to take care of their

mental health and avoid psychological pressure caused by their relatives. A key informant mentioned: The first thing that patients do is to limit their contact with others; we advise them to maintain their relationships" (A 55-year-old gynecologist with supplementary infertility course, 26 years of work experience).

Also, the COVID-19 epidemic was an opportunity to reduce family relationships: "Now because of the pandemic, we see our relatives less; we talk on the phone sometimes, and they don't ask much anymore" (A 36-year-old interviewee, 5 years of infertility, bachelor's degree).

By contrast, reduced family relations aggravated the mental condition, while their re-establishment, as a solution, improved their mental health. A participant mentioned: "Before, I used to reduce my interaction with others and was getting depressed. I restarted my relationship with my husband's family again" (A 21-year-old interviewee, 1 year of infertility, university student).

Subcategory 1.5. Reducing interactions with spouse

One of the biggest concerns of the interviewees was the husband's inattention to the wife's expectations and infertility treatment. Infertile women reacted to such problems by reducing their interaction with their husbands and not insisting on the treatment continuation. A participant mentioned: "Now it's for six months, I have nothing to do with him; I used to insist that we've to continue the treatment process, but I no longer insist now" (A 33-year-old interviewee, 14 years of infertility, diploma).

Subcategory 1.6. Reducing expectations and not expressing them

Some participants referred to the reduction of expectations from the spouse, not expressing their expectations, not insisting on the fulfillment of their expectations, and not expecting financial assistance and visits from the spouse's family. A participant mentioned: "I used to expect a lot, I'd be upset because he didn't meet my expectations; now I've lowered my expectations and no longer talk about them with him; I no longer insist on doing it" (A 36-year-old interviewee, 4 years of infertility, bachelor's degree).

"I've no expectations from my husband's family. I don't expect them to give us money or visit me after the operation; they call me and that's enough" (A 24-year-old interviewee, 5 years of infertility, diploma).

Category 2. Treatment and healthcare-seeking behaviors

This category consisted of two subcategories of seeking traditional complementary medicine and exploring and following strategies to improve mental health).

Subcategory 2.1. Seeking traditional complementary medicine

Facing the failure of infertility treatment and fearing treatment measures, and to improve their mental condition, some infertile women resort to non-medical treatments, in addition to medical interventions, to examine their chances for pregnancy and improve their mental health. A participant mentioned: "I resorted to traditional medicine and was hopeful that herbal medicine would make the fibroid shrink and help me get pregnant" (A 34-year-old interviewee, 2 years of infertility, primary education).

"Being afraid of treatment and ultrasound, I missed a course of treatment and took traditional herbal medicine" (A 40-year-old interviewee, 11 years of infertility, diploma).

"I was depressed and sad. I went to a counselor, but I didn't get much of an answer. One of my friends recommended trying traditional medicine, and I did it" (A 41-year-old interviewee, 4 years of infertility, bachelor's degree).

Subcategory 2.2. Exploring and following strategies to improve mental health

Many participants sought treatment and followed the doctor's orders to solve their infertility-caused psychological problems. A participant said: "I was searching for a counselor, and I went to several centers. Today, I came here (infertility center) to see if there is something (solution and treatment) that I don't know, but the doctor can tell me and do it" (A 36-year-old interviewee, 4 years of infertility, bachelor's degree).

Category 3. Self-management of mental symptoms

This category consisted of six subcategories as follows:

Subcategory 3.1. Releasing inner turmoil

The participants expressed different self-management behaviors, such as shouting in the woods, talking to household goods and birds, writing their negative thoughts and words on paper, listening to music, and a lack of interest in music, to vent their negative emotions. A participant and key informant mentioned: "I've to empty myself somehow; I shout in the forest, talk to the doors and walls, write down my feelings or I listen to music" (A 36-year-old interviewee, 4 years of infertility, bachelor's degree).

"To improve their mood, they can listen to relaxing music" (A 35-year-old reproductive health specialist, 9 years of work experience).

Subcategory 3.2. Positive thinking and distraction from negative thoughts

Other participants expressed concern about their inability to forget the problem of infertility and the words of others. According to several women, recalling their infertility and the blame from others annoyed them and threatened their mental health. Therefore, they learned to manage their mental state by engaging in housework, watching movies, performing artistic activities, going shopping, and focusing on their personal interests or the infertility problems of other infertile couples (peers). A participant mentioned:" I keep myself busy with housework to feel better" (A 40-year-old interviewee, 11 years of infertility, diploma).

"I think about those who, like me, don't have children; doing so, I calm down and don't think about bad things" (A 41-year-old interviewee, 4 years of infertility, bachelor's degree).

Subcategory 3.3. Developing self-knowledge

A few participants referred to self-knowledge for their mental state management. Reading psychology books and taking psychological tests, they tried to become aware of their psychological state and improve their mental health. A participant said: "Psychology books determine what kind of personality you have, or psychological tests reveal the level of our depression and whether or not we need counseling" (A 36-year-old interviewee, 4 years of infertility, bachelor's degree).

Table 2. Demographic characteristics of the infertile women (N=13)

N. p[a]	Age	Education	Occupation	Duration of marriage	Duration of infertility	Place of residence	Type of infertility	Type of treatment	Economic status	history of infertility
1	36	Bachelor's degree	Housewife	5	4	Village	Primary	IVF[b]	Medium	No
2	24	diploma	Housewife	6	5	City	Primary	Medical	Low	Yes
3	21	University	Housewife	2.5	1	City	Primary	IUI[c]	Medium	No
4	34	Guidance	Housewife	3	2	Village	Primary	Medical	Low	No
5	43	Bachelor's degree	Employed	7	5	City	Primary	Surgical	Medium	No
6	33	diploma	Housewife	16	14	Village	Primary	IVF	Medium	No
7	28	University	Housewife	9	7	Village	Primary	Medical	Medium	No
8	41	Bachelor's degree	Housewife	5	4	City	Primary	Embryo Freezing	High	No
9	31	Master's degree	Employed	7	5	City	Primary	Microinjection	Medium	No
10	32	diploma	Housewife	10	9	City	Primary	Medical	Medium	Yes
11	40	diploma	Housewife	12	11	City	Primary	Embryo Freezing	Medium	Yes
12	32	Guidance	Employed	8	7	Village	Primary	Microinjection	Medium	No
13	35	Guidance	Housewife	13	4	City	Secondary	Medical	Medium	No

N. P[a]: Number of participants, IVF[b]: In vitro fertilization, IUI[c]: Intrauterine Insemination

Subcategory 3.4. Acquisition of motivation

Another self-care behavior used by most infertile women to manage their mental state was reading/listening to motivational books and exploring and following motivational content on social networks, which helped them improve their mental health by increasing their motivation. A participant mentioned: " I follow pages with positive content that makes me think about the positive aspects of life, I repeat motivational sentences every day" (A 36-year-old interviewee, 4 years of infertility, bachelor's degree).

Subcategory 3.5. Promotion of spiritual dimension

Infertile women considered spiritual self-care as a way of gaining peace and coping with the stress of infertility and related treatments. Doing spiritual activities, such as praying, reciting the Holy Qur'an, talking with God, and worshiping Him, they tried to affect their mental health positively. A participant said: "I calm myself down by praying and reciting the Holy Qur'an" (A 34-year-old interviewee, 2 years of infertility, primary education).

Subcategory 3.6. Improved sleep hygiene

The emotional state of people affects sleep patterns. Infertile women reported a range of fluctuations in their sleep patterns (lack of sleep or oversleeping) due to psychological disturbances of infertility. Performing self-care of sleep hygiene, such as forgetting the problem of infertility and the words of others, reading a book at night before going to bed, and taking sedatives, they tried to solve their sleep disorders. A participant mentioned: "I read books at night; my eyes get tired, I fall asleep" (A 21-year-old interviewee, 1 year of infertility, university student). In infertile women (Table 4).

Table 3. Demographic characteristics of the key informants (N=6)

N. P[a]	Age (years)	Occupation	Work Experience (years)	Level of education
1	50	Clinical Psychologist	27	MD
2	55	Gynecologist of the supplementary course of infertility	26	MD
3	35	Reproductive health specialist	9	PhD
4	55	Midwife in charge of infertility center	25	Bachelor's degree
5	53	Midwife	29	Bachelor's degree
6	38	Husband	-	Bachelor's degree

N. P[a] : Number of participants

Table 4. Infertility stress coping strategies and treatment extracted from the analysis of qualitative interviews with 19 interviewees

codes	Subcategories	Categories	Theme
In family parties	Ignoring the words of others	Emotion-focused stress coping skills	Involving in stress coping strategies
As the time of infertility prolonged			
Spending time with others			
Exercise and walking	Managing lonely time		
Going outdoors			
Traveling			
Conversation with spouse outside the home environment			
Conversation with spouse	Maintaining interpersonal interactions		
Talking with family members			
Talking with friends on social networks			
Decreased family relationships	Changing family interactions		
The covid-19 epidemic as an opportunity to reduce family			

codes	Subcategories	Categories	Theme
relationships Improving psychological symptoms of women by reducing family relationships Try to reestablish family relationships Aggravation of mental symptoms caused by decreased family relationships			
Lack of conversation with spouse The spouse's lack of insistence on continuing the treatment	Reducing interactions with spouse		
Reducing the level of expectations from the spouse Not talking about expectations with spouse The spouse's lack of insistence on fulfilling the expectations Having no financial help from the spouse's family Not expecting a visit from the spouse's family	Reducing expectations and not expressing them		
Resorting to complementary therapies after failure of treatment Resorting to complementary treatment due to fear of medical treatment To reduce psychological symptoms	Traditional complementary medicine	Treatment and healthcare-seeking behaviors seeking	
Exploring treatment Follow doctor's orders	Exploring and following strategies to improve mental health		
Shouting in the woods Talking to household goods and birds Writing your feelings and negative thoughts on paper Listening to music Lack of interest to music	Releasing inner turmoil		
Getting amused by doing housework Have fun through watching movies Having fun by doing artistic activities Have fun shopping Concentrating on personal interests Focusing on the infertility problem of other infertile couples (peers)	Positive thinking and distraction from negative thoughts	Mental symptoms self-management	
Studying psychology books Doing psychological tests	Self-knowledge		
Reading motivational books Explore and follow motivational content on social networks	Acquisition of motivation		
Reading the Quran Praying Talking with God To praise God	Promotion of spiritual dimension		
Forgetting the problem of infertility and the words of others Reading a book at night before going to bed Taking anodyne and sedatives	Improved sleep hygiene		

Discussion

This study was conducted to explore the concept and dimensions of mental health self-care in infertile women. Based on the results of the study, the concept of mental health self-care and its dimensions in infertile women refers to a set of measures adopted by infertile women after being diagnosed infertile to deal with the mental concerns of infertility and prevent its adverse effects on their mental health. These measures include emotion-focused stress coping strategies, treatment seeking, and self-management of mental symptoms.

One of the self-care behaviors adopted by the majority of infertile women to improve their

mental health was emotion-focused stress coping skills. Infertility is a perceived unsolvable problem with profound effects on mental health (4). Regardless of the outcomes of the treatment, infertile women need to acquire and use strategies to cope with stress and maintain their psychological balance (28). According to studies, individuals pay more attention to incidents accompanied by high levels of psychological pressure, focusing their attention on the emotions caused by that incident and using emotion-focused strategies more (29). In a study, increased symptoms of mental disorders increased the level of emotion-focused coping strategies, and infertile people used such strategies more because of having no control over life events and high stress levels (29). Therefore, people who use emotion-focused coping strategies never deal with stress in a rational and experience low levels of adaptation to infertility due to a negative evaluation of the problem (30).

The mentioned category has six subcategories, which can be generally divided into two groups: Self-focused stress coping skills and others focused stress coping skills. In the first type, women deal with difficult situations by modifying their expectations and relationships, while in the second type, they use avoidance methods to cope with the stress caused by interacting with others (30). Based on the results, most participants used the others-focused stress coping skills, considered to be among avoidance strategies. In a study, avoidance strategy was one of the coping strategies used by infertile women to control anxiety situations (28). The use of avoidance coping skills is prevalent among infertile couples and has a positive relationship with infertility stress (31). Another study showed that in contrast to out-of-control stressors (infertility and its treatment), avoidance coping strategies were more widely used and predicted low adaptation and higher levels of stress (32). The findings of the research are in line with the topics related to coping strategies of infertile people with infertility stress, indicating that most infertile women used avoidance and emotion-focused approaches to deal with infertility, which highlights stress and a lack of adaptation to infertility. Therefore, given the high rate of infertility in Iran and the identification of prevalent coping strategies in infertile women based on the above findings, effective coping behaviors can be taught by reproductive health specialists, midwives, and other activists in this area to improve the mental health of infertile women.

Another self-care behavior of infertile women was treatment and healthcare-seeking behaviors. Some participants mentioned traditional complementary medicine as a solution to address their infertility issues and enhance their mental health. When modern medicine cannot solve infertility, and there are many problems with using it, some people resort to informal and traditional treatments depending on the level of their belief and access (33). The studies have revealed that women experience a range of treatments (traditional to modern and specialized) to get rid of infertility and always try to find easier, less expensive, and less complicated treatments. Given the widespread use of traditional medicine in Iran, most infertile women strongly believed that their infertility could be treated by traditional medicine (34). A study in Turkey showed that more than half of the infertile people were looking for traditional treatment methods, and this rate was higher in women than in men (35). The findings of the present study are consistent with other studies, indicating that infertile people deviate from the process of infertility treatment for various reasons, such as being tired of treatment, fear of treatment measures, and high cost of treatment. This deviation causes temporary abandonment of treatment and reduction of fertility opportunities in infertile women. Therefore, the need for education on the infertility treatment process, increasing modern medical facilities, and enhancing the social insurance system is felt to make infertile women adhere to the treatment process (34).

Infertility can affect all aspects of life. People seek treatment after becoming aware of this issue and follow the doctor's orders to improve the consequences of infertility (34). This is indicative of the acceptance of infertility, which has caused a person to have a rational approach to the problem, seek treatment, and follow the doctor's orders (36). Because infertility affects

self-esteem and psychological functioning negatively, seeking and following treatment can increase self-esteem, promote mental health, and improve treatment results (37, 38).

Another self-care behavior of infertile women was the mental symptom self-management. Although infertility threatens mental health, mental health management depends on the abilities of each person (39). Self-management is an empowering technique and psychological skill that enables women to manage their emotions, understand their abilities, and improve their well-being (39). Also, self-management of mental symptoms and higher self-efficacy have a significant relationship with less infertility-related distress (40).

Positive thinking and distraction from negative thoughts were among the strategies expressed by the participants concerning the self-management of psychological symptoms. Thus, many women tried to entertain themselves with different things (housework ...) remove negative thoughts, and improve their motivation to overcome the problem. Strengthening positive and hopeful thoughts contributes significantly to mental and physical health of infertile women (41). recognition of negative thoughts and dealing with them is a defense mechanism consciously chosen by people to increase relaxation and pregnancy rates while lowering the level of their anxiety and depression (42). Thus, teaching mental issues and being informed about mental health self-care behaviors can improve the mental health of infertile women.

Promotion of spiritual dimension was another strategy of self-management of psychological symptoms, used by the participants in various forms (praying ...). Infertile women believed that spiritual self-care and connection with God had a positive effect on psychological outcomes. A study showed that some people with mental health problems needed spiritual care, as an important aspect of treatment (43). The researchers found that among all types of diseases, infertility problems, and mental disorders were the fifth priority that required spiritual care, which played a complementary role in the treatment of these people (44). Several studies have revealed the role of this factor and its impact on physical and mental health, emphasizing that spiritual self-care causes well-being and increases the ability of people to continue treatment and endure the challenge of infertility (45). Spirituality is one of the methods of managing the psychological symptoms of infertility. Thus, besides focusing on the psychosocial needs of clients, attention should also be paid to their religious and spiritual issues (46). Because the process of diagnosis and treatment; psychological reactions to infertility, and economic, personal, and cultural-belief system have an effect on the infertile women's sexual health (47). Accordingly, it is necessary to provide spiritual care to infertile people based on their conditions, needs, and culture. Iranian culture is not an exemption, as relying on religious beliefs is a way of coping with life's problems.

Improved sleep hygiene was another method of mental symptoms self-management. Some interviewees complained about irregular sleep patterns (insomnia or oversleeping) and tried to manage their mental symptoms by enhancing their sleep hygiene. Seeking diagnosis and treatment, infertile women experience different psychological and physical problems (37). Sleep is one of the factors affecting metabolic and reproductive function, as there is a relationship between some causes of female infertility (polycystic ovary syndrome) and sleep disorders (48). While sufficient sleep reduces anxiety and nervous pressure, sleep disorders can increase mental problems (49). Some quantitative and qualitative changes in sleep function as diagnostic criteria for mental disorders, highlighting that people with better sleep quality enjoy more abilities of concentration, thinking, and problem-solving (50). Since high-quality sleep is one of the methods of mental health improvement, sleep problems need to be solved through taking timely action. Infertile women can prevent sleep disorders through self-care and observing sleep hygiene, which indicates the importance of providing them with education and awareness of sleep health self-care.

One of the strengths of the present study is its focus on mental health self-care in infertile women for the first time. One of the limitations of the study was that some participants did not allow researchers to record their voices.

However, the researchers overcame these problems by illustrating the confidentiality of the interviews and taking detailed notes during the interview process. The mental problems of infertile women and their solutions are somewhat similar all over the world (51), and the self-care behaviors that people use are acquired and influenced by family, society, and culture. Thus, the results of the present study can be modified and adapted to promote mental health self-care behaviors and alleviate anxiety and stress in infertile women.

Infertility-related educational, research, and personnel facilities are inadequate, and the members of a psychotherapy team cannot have a permanent presence in infertility centers. Given the significance of implementing the self-care model to improve the mental health, the findings of the research can be used to develop educational and health programs in the form of improved mental health self-care behaviors in infertile women. It is recommended that future studies explore and elucidate the concept of mental health self-care and its dimensions, specifically in infertile men.

Conclusion

Based on the results of the present study, infertile women adopt various self-care behaviors, such as emotion-focused stress coping skills, treatment seeking, and self-management of mental symptoms, to deal with the stress of infertility. Considering the significance of childbearing in line with the population policies of Iran and the increasing prevalence of infertility in the country, it is necessary to identify the self-care behaviors that promote mental health. It is also recommended to develop educational, therapeutic, and supportive programs as well as social policies concerning psychological wellbeing of infertile population.

Declarations

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Conflicts of interest

Authors declared no conflicts of interest.

Ethical approval

Received ethical approval from the Ethics Committee. The participants were assured that the information would remain confidential and conversations would be deleted. In addition, written informed consent was obtained.

Code of Ethics

(IR.SBMU.PHARMACY.REC.1400.011).

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Authors' contributions

FYK contributed in study design, data collection, data analysis and was a major contributor in drafting the manuscript. MS was also a major contributor in writing the manuscript, study design and data analysis. MF was a major contributor in writing the manuscript. MKH contributed in the revision of manuscript. MN contributed in analysis and revised manuscript. All authors read and approved the final manuscript.

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