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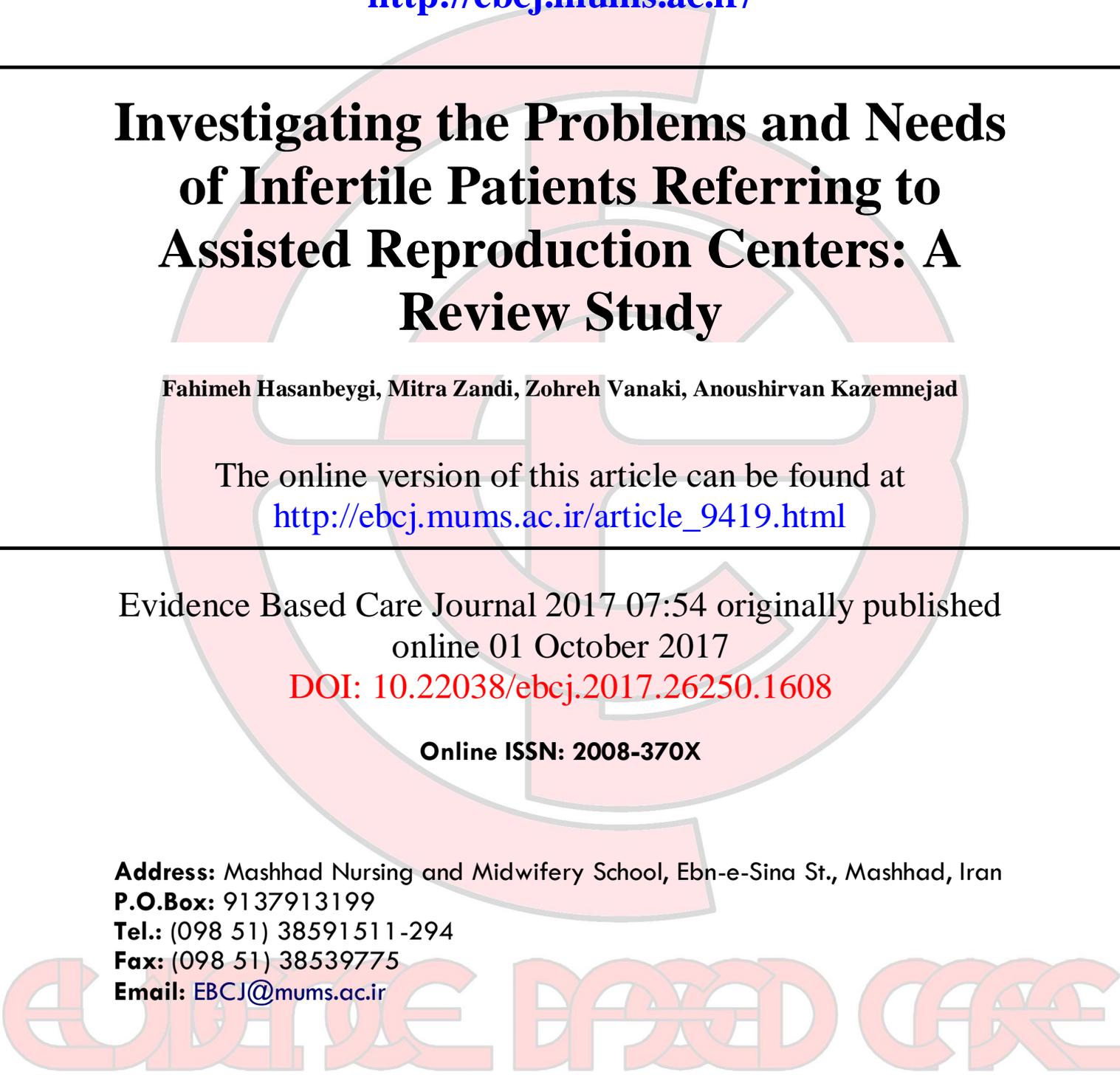
**Address:** Mashhad Nursing and Midwifery School, Ebn-e-Sina St., Mashhad, Iran

**P.O.Box:** 9137913199

**Tel.:** (098 51) 38591511-294

**Fax:** (098 51) 38539775

**Email:** [EBCJ@mums.ac.ir](mailto:EBCJ@mums.ac.ir)





## Investigating the Problems and Needs of Infertile Patients Referring to Assisted Reproduction Centers: A Review Study

Fahimeh Hasanbeygi<sup>1</sup>, Mitra Zandi<sup>2\*</sup>, Zohreh Vanaki<sup>3</sup>, Anoushirvan Kazemnejad<sup>4</sup>

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### Abstract

**Background:** The provision of optimal care is the most important goal in nursing, the fulfillment of which requires the identification of clients' problems and needs. However, based on the review of the literature, no review study has investigated the problems and needs of the infertile patients in Iran.

**Aim:** The purpose of the present study was to investigate the problems and needs of the infertile patients referring to the assisted reproduction centers.

**Method:** This review study was based on the traditional review procedure developed by Cronin et al., which entails five steps including: 1) choosing the topic of the review, 2) searching the manuscripts, 3) collecting, reading, and analyzing the texts, 4) writing the review, and 5) providing references. The articles published within 2003-2017 were searched in such valid databases as Google Scholar, Pub Med, Science Direct, Ovid, and Cochran. The inclusion criteria in this study were articles in Persian and English with the keywords referring to problems and needs of clients. Out of the 350 original articles, 31 cases were finally selected for this review study.

**Results:** In general, the infertile patients' problems were placed under four domains of mental-psychological, social, marital, and financial factors. The needs of the infertile individuals were grouped into six domains of physical, care, informational, financial, mental-psychological, and spiritual factors.

**Implications for Practice:** The identification of the patients' problems and needs can lead to the conceptualization of strategic points targeted toward the delivery of effective interventions facilitating the provision of patient-centered infertility care. This can enhance the quality of life and lower the levels of stress during the course of treatment.

**Keywords:** Assisted reproductive technology, Infertility, Nursing, Patient-centered care

1. MSc Student of Nursing, Students Research Office, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran
2. Assistant Professor of Medical-surgical Nursing, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3. Associate Professor of Nursing, Department of Nursing, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
4. Professor of Biostatistics, Department of Biostatistics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

\* Corresponding author, Email: mitra.zandi@yahoo.com

## Introduction

Infertility is considered as a state wherein pregnancy does not occur in women after 12 months of regular and unprotected sex (1). The prevalence of primary infertility has been reported to be within 10-12% across the world. Moreover, the total fertility rate and the number of children are on a declining trend worldwide (2). Based on a study conducted by Akhondi et al. (3), the prevalence of primary infertility is 20.2% in Iran that is almost double the global statistics. There are also many acquired and environmental factors leading to infertility (4). The inability to conceive is usually accompanied by depression, sexual problems, and work-related challenges.

Infertility can also have significant effects on the health status of the couples and their marital relationships, followed by mental imbalance and ultimately divorce (5). Over the past 25 years, assisted reproductive methods have been developed in parallel with the breakthroughs in other sciences (6). Undergoing Assisted Reproductive Technologies (ARTs) may be a shocking experience for the patients. Such technologies often seem confidential, isolating, and physically and emotionally painful (7). Considering the progressive speed of the ARTs, these technologies have imposed numerous challenges on the professional members of the healthcare teams, and also developed the nurses' roles. Therefore, in the rapidly progressive environment of the ARTs, the nurses need to update themselves with the latest technologies (7).

Moreover, the professionals must understand the problems of individuals involved in this domain and update their own information (8). Monitoring and ensuring the quality of care delivered to the patients by the healthcare teams are the duties assigned to the nurses (7). In a review study, Allan suggested that patients in the infertility centers expected kindness, comfort, ability to communicate, time qualifications, specific knowledge, technical skills, and efficiency from the nurses (9). Since the emergence of the ARTs, the nurses have also played a very important and strategic role in caring the women undergoing infertility treatments (10).

A review of the studies conducted domestically and internationally illustrated a wide range of problems and needs in the infertile patients (11, 13). However, no review study has been conducted to investigate the problems and needs of these patients yet. The provision of optimal client-centered care is the main goal of nursing, the fulfillment of which is achieved by the identification of the patients' problems and needs and provision of care based on such information. Regarding this, the present study was conducted with the aim of investigating the problems and needs of the infertile patients referring to the assisted reproduction centers using the traditional review technique. The findings of the current study can be helpful to be used as a basis for the formulation of care in line with the patients' problems and needs.

## Methods

This conventional review was conducted based on the traditional review process developed by Cronin et al. (2008). According to this model, a traditional review consists of five steps including: 1) choosing the topic of the review, 2) searching the manuscripts, 3) collecting, reading, and analyzing the texts, 4) writing a review, and 5) providing references (14).

### *Step 1: Choosing the topic of the review*

As a rule, it is better to choose a focused topic for the review, and then make it broader if needed (14). Since the prevalence of infertility in Iran is higher than its global rate (3) and regarding the fact that the provision of optimal care without attention to clients' problems and needs is not possible, the topic of this review was the investigation of the infertile patients' problems and needs to provide better services in this domain. The databases used in the present study included Google Scholar, PubMed, Science Direct, Ovid, and Cochran.

### *Step 2: Searching the manuscripts*

This step was related to searching the common methods for identifying the most relevant literature (14). In this study, the searching process was conducted using the following keywords (used both separately and in combination): "assisted reproductive nurses and infertility", "infertile patients' problems or needs", "assisted reproductive technologies and infertility", "quality of life and infertility", "infertility nursing", "assisted reproductive technologies", "infertility problems", "patient-centered care", "infertility care", and "quality of life". The maximum time framework for searching

the articles was within 5-10 years (14). In this study, the articles published between 2003 and 2017 were included.

### **Step 3: Analyzing and synthesizing the texts**

This step involved collecting and reading the suitable texts. After the initial reading, the texts were reread with a critical review. It was also useful to write a summary of each article in the language of the researcher while taking the strengths and weaknesses of the article into account (14). The articles written in the Persian and English languages containing the given keywords were included in the study. If any findings associated with the “problems and needs” in patients were cited in all the checked articles, they were included in the review within one of the sub-categories of problems or needs; otherwise, the study was excluded.

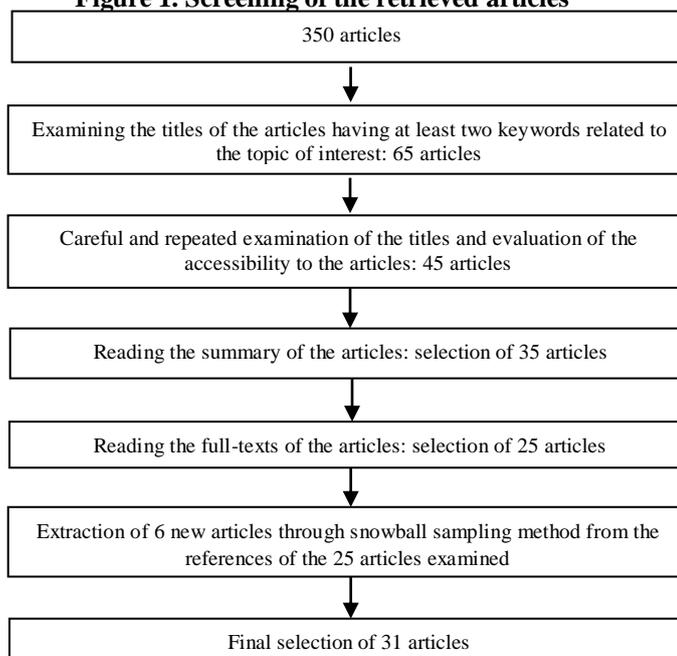
At the first step of searching, a total of 350 articles (in English and Persian) containing one of the given keywords were obtained.

After examining the titles of the studies, 65 articles had at least two keywords considered by the researcher. After reading the summary of these 65 articles, 40 articles related to the topic of interest were selected. After reading the full texts of these papers, 25 articles were selected and 6 studies were added through snowball sampling method from the references of these 25 articles. Finally, 31 articles were investigated and summarized. The process of screening the retrieved articles is illustrated in Figure 1.

### **Step 4: Writing a review**

After completing the critical study of the texts, it should be decided how to structure and write a review. The content should be organized objectively, and the review structure should maintain its integrity. In general, all review reports should include introduction, body, and conclusion (14). Based on the purpose of the study and the obtained results, the body of the article was divided into two general domains of problems and needs in the infertile patients. First of all, the infertile clients’ problems were categorized into mental-psychological, social, marital, and financial domains. Subsequently, the clients’ needs were grouped in physical, care, informational, financial, mental-psychological, and spiritual dimensions, which would be discussed in detail in the ‘findings’ section.

**Figure 1. Screening of the retrieved articles**



### **Step 5: Providing references**

The review of the texts should include a complete list of all books, journals, reports, and other cases

mentioned (14). In this study, it was attempted to list the references accordingly.

## Results

The purpose of this study was to investigate the literature to identify and evaluate the problems and needs of the infertile patients from their own perspectives. Based on the findings of the reviewed texts, the problems of the infertile patients could be categorized into mental-psychological, emotional, social, marital, and financial domains, which are described below. The reviewed articles are summarized in Table 1.

**Table 1. Summary of the reviewed articles**

List	Author/year	Purpose/ research question	Type of study	Study population	Results
1	Karaca & Unsel, 2015	Examination and diagnosis of the psychosocial problems of the Turkish women and their strategies to cope with these problems	Integrated quantitative-qualitative	118 infertile women	Themes extracted regarding psychosocial problems and coping methods: meanings attributed to having no child/ negative self-perception/ social isolation/ spiritual adjustment/ adoption of traditional methods after the failure of the conventional medical treatments
2	Huppelschoten et al., 2013a	Are quality of life and risk factors for emotional problems different in both infertile women and their spouses during and after the treatment?	Cross-sectional and qualitative	1620 infertile women	The score for quality of life and three of its sub-scales (i.e., emotional, social, and physical/ mental dimensions) were lower in women than that in their spouses. Women were at greater risks for emotional problems and had higher and more different risk factors, compared with their spouses.
3	Peterson, 2014	Are severe depression symptoms in men and women affected with infertility stress correlated in couples undergoing infertility treatments?	Cross-sectional	1,406 couples undergoing infertility treatments	Symptoms of severe depression were reported in 11.6% of the women and 4.3% of the infertile men that were significantly correlated with infertility stress.
4	Martins, 2013	Is social support, perceived by sexual partner, family, and friends, associated with increasing infertility stress?	Qualitative	391 women and 222 men	Infertility stress was associated with low family and marriage partner's support. The marriage partner's support was effective in relieving and reducing the complications and consequences of infertility.
5	Van Dongen et al., 2012	Investigating the possibility of screening patients in terms of emotional risk factors before performing the IVF	Prospective cohort study	304 males and females	One third of the patients were at the risk of emotional discomfort. 90% of the patients considered screening helpful. 21% of the patients demanded to receive professional assistance.

**Table 1. (Continued)**

English Articles	6	Kissi, 2013	Study of psychological responses such as anxiety, depression, and negative self-perception among infertile couples in Tunisia and comparison of the level of psychological distress between men and women	Quantitative	100 infertile couples	Women's anxiety scores were higher than those reported for men ( $3.65 \pm 5.74$ vs. $4.14 \pm 3.45$ ). Women's stress scores were higher than those obtained for males ( $4.76 \pm 3.35$ vs. $2.97 \pm 3.65$ ). The level of self-esteem in women was lower than that in men ( $34.01 \pm 6.11$ vs. $36.19 \pm 5.07$ ).
	7	Obeisat et al., 2012	Describing and interpreting the experiences and problems of Jordanian infertile women	Qualitative with a content analysis approach	25 infertile women	Four themes were obtained regarding the problems and sufferings of infertile women: sufferings of inadequacy/ social problems caused by infertility/ spouse's remarriage/ sufferings and problems due to the occurrence of changes in marital relationships
	8	Hammarberg, 2003	Investigating the experiences of infertile women in different phases of treatment using the ARTs	Descriptive	116 women	The phase of treatment failure, and then the waiting phase for treatment outcomes, the embryo transfer phase, and the phase of egg extraction were respectively the most stressful phases of treatment Stress sources: concerns about treatment complications and costs, number of extracted eggs, and husband's ability to produce sperms
	9	Cousineau et al., 2008	Developing and evaluating the impact of an online education and support program for infertile women	Clinical trial	190 infertile women	Women using online education programs reported lower social concerns, better treatment decisions, and lower sexual concerns associated with fewer childbirth
	10	Cai et al., 2014	-Examining the views of patients and providers of reproductive services in infertility care separately -Examining and evaluating the relationship of patients' characteristics with their priorities	Cohort study	417 infertile women and 83 treatment staff	The difference in patient's priorities and treatment staff concerning five dimensions was as follows: Patients' priorities were respectively: physicians' attitudes/ success rate/ distance from infertility centers/ continuing medical treatments by physicians/ type of infertility centers Preferences by the medical staff were respectively: success rate/ physicians' attitudes/ distance from infertility centers/ type of infertility centers/ continuation of medical treatments by physicians

Table 1. (Continued)

English Articles	11	Marcus, 2011	Investigating the causes of the lack of infertility treatment	Quantitative and descriptive	80 people	The causes of treatment discontinuation included financial problems (46%)/ emotional issues (35%)/ inadequate responses to treatment (29%)/ improper egg quality (19%)
	12	Rauprich, 2012	Investigating the views of the patients, professionals, and general public on meeting the costs of the ARTs	Descriptive	-	Paying grants to patients was proposed by two thirds of the doctors, one third of the patients, and three thirds of other groups participating in the study The allowance should cover 15-25% of the costs. As well, 80% of the patients had difficulty in paying for treatment costs, 61% of them had used their savings for treatment, and 45% of these individuals had lowered their daily expenses.
	13	Van den Broeck et al., 2009	Investigating the causes of infertility treatment discontinuation	Quantitative and retrospective	25 infertile women	Causes of infertility discontinuation from patients' perspectives in order of importance: Mental burden of treatment/ physical problems/ age/ communication problems/ inadequate empathy among medical staff / acceptance of other alternatives for children/ financial problems/ negative impact of treatment on social relationships/ insufficient expertise/ experience of the medical team
	14	Murad, 2009	Determining the factors affecting patients' experience and satisfaction in infertility care	Cross-sectional	1,499 infertile women.	Factors affecting various aspects of treatment included: Patients domain: demographic information, type of treatment, and general health status Environment management domain: care organization The least positive aspects were associated with waiting time, information provision, and emotional support
	15	Dancet et al., 2011	Determining the positive and negative experiences of patients towards infertility care	Qualitative study using a content analysis method	103 patients	Infertility patient care included 10 dimensions in 2 domains: 1. System factors (in priority order): providing information, staffing and clinical competence, coordination and integration, access, continuity, and physical comfort 2. Human factors (in priority order): attitudes and communications with personnel, relationships, patient participation and privacy, and emotional support

Table 1. (Continued)

English Articles	16	Dancet et al., 2012	Investigating patients' shared views towards fertility care across Europe	Qualitative study using a deductive content analysis method	48 patients	Among the 10 infertility patient-centered care dimensions, providing information was considered as the most important priority among patients in four countries of Australia, Spain, the United States, and Belgium
	17	Bennett et al., 2015	Determining fertility knowledge, information resources, and educational needs of 212 Indonesian infertile women	Cross-sectional and descriptive	212 infertile women	65% of women reported infertility counseling as the best source of information. 94% of them knew that infertility had a male and female cause. 84% of the patients knew the difference between sterility and infertility. 70% of these individuals were able to diagnose fertility during the menstrual cycle. 87% of them needed more information. 19% of these women had received written information.
	18	Read et al., 2014	-Exploring and explaining the psychosocial support needed by infertile couples to help address the stress associated with infertility - Examining psychosocial services and the benefits and barriers to using these services	Qualitative with thematic analysis approach	32 infertile couples	2 main themes: Need for help (studying the reasons for which the couples demand mental-psychological support) Type of assistance: Resources and those the couples wanted to receive help from
	19	Kalhor & Mackert, 2009	Evaluating the benefits and relying on sources of infertility information and support as well as the relationship between information and demanded online support in infertile women	Cross-sectional	567 infertile women	The most reliable sources of information were respectively the Internet (99%), books (93%), and infertility specialists (91.5%). Factors affecting the level of awareness among the patients included medical history, patient-doctor comfort level, encouragement by physicians to use the Internet, and entrusting the infertility specialist. However, these factors were not correlated with the use of the Internet.

Table 1. (Continued)

English Articles	20	Van De Belt, 2014	Comparison between the information provided and the information needed by the Danish infertile patients undergoing the ARTs	Comparative and observational	-	<p>The most important themes for the required information:</p> <p>Online discussions: blood loss during treatment (15%), complications of medications (15%), quality of the embryo and eggs (12.5%), and recommendations for quality of life (11.1%)</p> <p>Training sessions: use of medications (36.6%), treatment program (34.1%), number of embryos and eggs, and the amount of semen (9.8%).</p> <p>Comparison of required and provided information: 51% of patients' questions were not answered or they were answered through booklets</p>
	21	Pedro et al., 2013	Are positive experiences of different aspects of patient-centered care associated with a high incidence of consent for treatment in infertile patients?	Cross-sectional and descriptive	265 women and 83 men	<p>The positive experiences regarding receiving fertility care, respect to the priorities and values of patients, continuity of care, and competence of the staff were directly associated with patients' desires.</p> <p>Positive experiences of fertility care were indirectly associated with stress, participation in treatment, and communication with employees.</p> <p>Providing patient-based infertility care was associated with better quality of life and lower stress during treatment.</p>
	22	Omu & Omu, 2010	-Evaluating the emotional reactions of couples referring to an infertility clinic in Kuwait -Assessing the patients' perceptions about the role of nurses during infertility treatment phases	Integrated quantitative-qualitative	Quantitative: 286 infertile couples. Qualitative: 10 clients undergoing infertility treatment	<p>Quantitative results: emotional reactions in infertile couples:</p> <p>Anxiety: 12.7% in women and 6% in men</p> <p>Depression: 5.2% in women and 14.9% in men</p> <p>Decreased libido: 6.7% in women and 29.9% in men</p> <p>Qualitative results: successful understanding of the role of nurses:</p> <p>Establishing appropriate communications, educating the phases of treatment, providing emotional support through reassurance and empathy, helping physicians during embryo transfer, and attending by the patients after embryo transfer.</p>

Table 1. (Continued)

English Articles	23	Agostini, 2011	Evaluation of psychosocial support to infertile couples undergoing the ARTs in different phases of treatment	Prospective	83 women and 83 infertile men	During all three phases of treatment (i.e., early ovulation, egg extraction, and one month after embryo transfer), men received less social support than women
	24	Latifinejad & Allan, 2011	Examining the experiences and priorities of the Christian and Muslim women about infertility counseling	Grounded theory	30 infertile women (12 Shiite and Sunni Muslim women/ 18 Christian women)	Obtained themes: Investigating the meanings of infertility in terms of religion, application of religious adjustment strategies, and acquisition of faith-oriented power
	25	Dancet et al., 2013	Evaluating the quality indicators of infertility care dimensions as well as agreement between patients and treatment staff	Three-step Delphi method	9 gynecologists, 6 embryologists, 3 counselors, 4 nurses/midwives, and 8 patients	The patients and the professionals agreed on three indicators of quality of care, namely safety, effectiveness, and patient-centeredness. The most important indicator of quality of care from the medical professionals' views, except for psychologists, was patient-centeredness. The most important indicator of quality of care from the psychologists' point of views was patient safety
	26	Van Empel et al., 2010	Assessing weaknesses, strengths, and needs of reproduction care from the patients' viewpoints	Integrated quantitative-qualitative	Qualitative : 21 patients Quantitative: 369 infertile couples	Weaknesses: lack of care continuity (contradictory information by medical team and visits by several physicians) and lack of emotional support (insufficient information about support services) Strengths: respect to patients, education about injections, participation in decision-making, and physician perception Prerequisites: access to medical records, contacts with other patients, provision of a private room for sperm collection, presentation of written information

Table 1. (Continued)

English Articles	27	Maroufizadeh et al., 2015	Investigating the effect of the ART failure frequency on anxiety and depression	Cross-sectional and descriptive	122 infertile men and 208 infertile women	The mean scores of anxiety and depression were $8.40 \pm 4.51$ and $5.95 \pm 3.54$ , respectively. Anxiety scores in the patients undergoing a course of treatment were significantly higher than scores obtained by those who had not been treated. (Depression scores in patients with a history of two treatment failures was more significant than in those who were not previously subjected to treatments)
	28	Fahami et al., 2010	Investigating the experiences of infertile men	Qualitative (phenomenological)	10 infertile men	Obtained themes: individual tension/ communication challenge/ problems associated with treatment/ religious beliefs
Persian Articles	29	Jafarzadeh Kenarsari et al., 2015a	Investigating experiences and views of infertile patients based on their needs	Qualitative with a content analysis approach	26 women, 17 infertile men, and 7 treatment staff	The needs of infertile couples were grouped into four domains, including infertility and social support, infertility and financial support, infertility and mental support, and infertility and information support
	30	Jafarzadeh-Kenarsari et al., 2015b	Determining infertile couples' counseling needs	Qualitative with a content analysis approach	26 women, 17 infertile men, and 7 treatment staff	Needs for psychological counseling including management of emotional distress as well as sexual, marital, and family counseling. Information requirements included medical, financial, and legal counseling
	31	Khalili et al., 2012	Investigating infertile patients after treatment failure	Descriptive	198 Iranian infertile patients and 355 infertile patients in Turkey	Lack of treatment continuity in the Iranian patients was more than that in the Turkish patients (28.3% vs. 23.4%). Financial problem was the most important cause in both countries

IVF: In vitro fertilization, ART: assisted reproductive technology

### ***Mental-psychological and Emotional Problems***

According to the findings of various studies, the mental-psychological and emotional problems of the infertile patients are partly due to the nature of infertility as well as the outcome of undergoing different infertility treatments and failures in this respect. The mental and emotional problems of the infertile patients included fear, despair, continuing mental conflicts about infertility, negative self-perception (15), helplessness (16), stress (17), poor psychological adjustment (18), lack of emotional adjustment (19), low self-esteem (20), and a sense of incompleteness (21).

Moreover, stress sources included concerns about treatment complications, costs, number of eggs extracted, ability of spouse to produce sperms (22), as well as low support provided by family or marriage partner (18). Anxiety and depression during and after treatment in clients with a history of

depression (17) can also occur followed by treatment failure (23). Anxiety and depression caused by infertility can be similarly considered as risk factors for emotional problems in men and women during and after treatments (24).

### ***Social Problems***

The infertile patients also experienced social problems caused by infertility (21). These problem included communicational problems, social isolation, social pressures (15), social concerns related to infertility (25), and social tension (17). Furthermore, the reviewed studies showed that 1.3% of the infertile women and their spouses were at risk of not having social support (16).

### ***Marital Problems***

Infertility is accompanied by numerous marital problems, including divorce and spouse's remarriage (26), changes in marital relationships (21), sexual problems (15), sexual concerns (25), and marital conflicts (17). This problem can also lead to reduced sexual desire, especially in males (20, 27).

### ***Financial Problems***

The costs of infertility diagnosis and treatment methods are one of the important challenges faced by the patients (11). The investigation of the infertile patients' experiences regarding the financial problems demonstrated that 55% of the infertile individuals had encountered financial crises (28). Accordingly, 47% of these individuals had financial problems, and 64% of them spent costs more than their income for infertility treatments (29). The average cost of in vitro fertilization treatment in China was also estimated by \$4000 that was more than the household income (30).

Considering the high costs spent in this respect, the patients cannot sometimes get the desirable treatment outcomes and lose all their money (11). Moreover, 78% of the patients pay for all medical expenses by themselves (31). In a study conducted in Iran and Turkey, 33.9% and 41% of the Iranian and Turkish patients had failed in the ARTs, respectively, due to financial problems and refusal to continue such treatments (32). Based on the attitudes of the infertile couples, 80% of them had problems with paying their medical costs (33).

In addition to negative effects of financial problems on couples' relationships, these problems were directly correlated with physical ones in these individuals (34). The second purpose of this study was to identify the needs and expectations of the infertile patients. Studies in this respect shed light on a wide range of needs among these individuals (11, 12, 35). In this regard, the findings regarding the infertile clients' needs can facilitate the provision of better services for this group. In general, the patients' needs were grouped into six domains, namely care, informational, financial, mental-psychological, physical, and spiritual factors.

### ***Care Needs***

Based on the results of the retrieved studies, care needs of the infertile patients were divided into two parts: 1) access to care and 2) care continuity and coordination. In this respect, access to care means opportunity to establish relationships with medical teams (36), free and unlimited access to medical documents, and awareness of the issues that the clients should know (e.g., calling whom during holidays in case of emergencies) (12). Furthermore, care continuity and coordination refers to receiving integrated (inconsistent) information from the medical teams (12) and visits by doctors during the course of treatment (12, 30, 36). Care continuity and coordination as well as access to care are among the two important dimensions of the ten dimensions of care according to Dancet (37).

### ***Informational Needs***

The presentation of information was found to be considered as the most important priority among the patients (35). Accordingly, the investigation of informational needs among the patients was one of the significant goals in the patient-centered care. Lack of providing information about the support services was also considered as one of the noticeable weaknesses within the fertility care (12).

The clients' informational needs in this study were categorized as follows:

1. Presentation of infertility-related information: It included the provision of a definition for infertility, difference between sterility and infertility, physiological signs of egg placement (38), information about causes of infertility (38, 39), discussions about effects of infertility on couples

- (36), and information about effective fertility methods (39).
2. Presentation of information about the diagnostic and therapeutic procedures: It was comprised of treatment process (11), treatment schedule (40), therapeutic decision-making (25), new treatment methods (41), treatment success rate (11, 42), a clear plan for the future (36), information on the amount of blood loss during treatment, as well as information on the quality and extent of embryo, eggs, and semen (40). Moreover, the patients needed to provide information about the financial, legal (making decisions about the therapeutic methods as well as knowledge regarding the rules of gaining information about embryo, uterus, and egg donors), family, sexual, and marital counseling (11).
  3. Presentation of information about medications: It covered the type of medications and how to keep them (11), consumption methods for medicines (40), injection methods for hormonal medications (12, 42), and complications of the given medicines (12, 36, 42).

### ***Financial Needs***

The financial needs of the infertile patients were comprised of two parts, including diagnostic-therapeutic costs and lack of adequate insurance coverage. It should be noted that low success rate and non-achievement of desirable outcomes (11) had made the infertile patients to use financial support by the governmental and non-governmental centers. In some countries, there is no proper insurance coverage for the infertility treatments (21). Moreover, most of the companies consider infertility as a situation rather than insurance (32). Therefore, the patients should be supported by the governmental and non-governmental centers, which requires the expansion of medical insurance targeting toward helping the infertile individuals (11).

### ***Mental-psychological Needs***

One third of the infertile patients are at risk of emotional discomfort (19). Stress reduction and emotional support provision were among the important psychological needs in the patients (22). Moreover, the infertile clients were willing to talk with social workers, psychologists (36), and medical teams (20), and establish appropriate communications and interactions with the given teams (27, 35, 43).

Additionally, the infertile patients needed to receive support from the important people in their life (44), have their spouses' mutual understanding and collaboration during the course of treatment (11), and enjoy improved relationships with their sexual partners (42). It should be noted that supports provided by sexual partners could help in relieving and mitigating the effects and consequences of infertility (18).

### ***Physical Needs***

Physical needs in the infertile patients included the facilitation of physical comfort (35), preparation of patients for diagnostic and therapeutic procedures (27), and provision of a private room for the collection of semen samples (12).

### ***Spiritual Needs***

Before and after the treatment courses, the infertile patients required the presence of a religious adviser for calming them down. Furthermore, they needed a higher power to invoke assistance from and communicate with (11). The remarkable point about the spiritual needs of the infertile patients was that attention to spiritual issues was also of importance in the non-Islamic cultures. The results of a study carried out by Latifnejad and Allan on the Muslim and Christian infertile women in the assisted reproduction centers of Iran and England revealed that the religious infertile women considered infertility as a rich experience for achieving spiritual growth.

According to these women's viewpoint, infertility was not just an attempt to have a child but a life-like experience which could strengthen their faith in God. In the mentioned study, the positive adjustment mechanisms were reported to be participation in religious ceremonies, belief in miracles, as well as supports by clergymen and religious individuals (45).

### **Discussion**

The purpose of this study was to identify the problems and needs of the infertile patients through a review study. Based on the literature review and categorization of the results, the patients' problems

were grouped into four general domains of mental-psychological, emotional, social, marital, and financial factors. In addition, their needs were placed into six categories of care, financial, mental-psychological, physical, and spiritual domains. Furthermore, it was revealed that infertility could almost influence all aspects of an individual's life.

As the literature review indicated, mental-psychological and emotional problems were among the most common problems in the infertile patients. In a study conducted by Sharma, stress reduction as an important psychological need in the patients could lead to a sense of trust and satisfaction in the patients, and also facilitated the treatment process (46). Other mental-psychological problems in the infertile patients were lack of emotional and mental supports by the medical teams. In this respect, one of the complaints about the medical teams was their inappropriate behaviors (46).

Emotional support and patient anxiety were similarly included among the dimensions of patient-centered care that were addressed through contacts with others and emotional supports from the medical staff (13). Among the other interventions targeted toward the reduction of mental-psychological problems were those that could be established in different familial and social domains as well as medical contexts, helping the patients fulfill this process with fewer emotional problems.

Other mental needs in the infertile individuals were interest in patients as a person and the psychological effects of infertility on men (47). In a study performed by Zandi et al. (2013) based on the experiences of the surrogate mothers, one of the important needs among these women was having someone to rely on (i.e., spiritual support, spousal support, support by family and friends, and support by peers). Accordingly, the assisted reproduction centers can make use of methods such as helping to make informed choices and managing mutual relationships in third party assisted infertility technologies in order to facilitate the process of motherhood for the surrogate women (48).

The treatment team can meet the emotional needs of the patients through listening to them (27), planning to get professional assistance (19), paying respect to their values (43), and accompanying patients at the time of embryo transfer by nurses. The patients' experiences also demonstrated that they had considered receiving information from nurses and medical teams as representative of care behavior and a support dimension (10). Regarding this, supports by the medical team seemed to be of utmost importance since only 23% of the patients were receiving support by the medical staff (36).

Since infertility and use of the ARTs are taboos in Iran and families try to hide it (49, 50), the use of support sources, such as the utilization of the Internet allowing people to hide their identity and access to peer information, can moderate tensions and anxieties to some extent. Therefore, designing educational sites wherein the patients can interact with each other and with the medical team can be a source of information and support for these people.

A sense of social exclusion and deprivation from the relatives as well as reduced social interactions with friends were among the social problems faced by the infertile couples (51). The existing cultural barriers in a society, including lack of cultural awareness about some third-party ARTs (e.g., surrogacy) and negative attitudes towards this type of ART (52), were among the important social issues that had been less addressed.

The inadequacy of the services provided by the assisted reproduction centers was among the other social problems faced by the infertile couples. These inadequacies included failure to provide suitable facilities, malfunction to give information, and insult to clients by the healthcare workers (48). Consequently, the provision of correct and adequate information to the patients and protection of their privacy in the treatment contexts were among the important considerations reducing social problems in the patients and should be taken into account during care provision.

Furthermore, divorce and spouse's remarriage were among the important issues that could lead to family breakdown if there were no proper interventions. The factors affecting divorce included husband's decision to remarry and pressure from relatives for remarriage. Repeated treatments could also affect the instability of marriage and decision to divorce (51). In this regard, the provision of family counseling, awareness, and suitable information for couples in this domain can contribute to effective coping with this problem. Moreover, appropriate family counseling can sometimes prevent the family breakdown and help the couples achieve peace.

Given the rise in infertility rate and the use of the ARTs, attention to financial support and insurance coverage were among the significant issues that should be met in the infertile patients (33). In addition, expensive medications and lack of access to some foreign medicines due to sanctions on Iran

had also made the infertile couples to seek for financial governmental support.

Furthermore, giving grants to the infertile patients was among the main strategies to meet such financial needs. According to the answers of the study participants (i.e., infertile patients, physicians, lawyers, and the public), the given allowance should cover 15-25% of the costs (33). Moreover, it seemed that the effective strategy to tackle this problem was making more attempts by the medical teams and health policy-makers in order to expand insurance coverage in terms of diagnostic and therapeutic treatments for infertility.

Moreover, access to care is one of the aspects of patient-centered care. This aspect included the timely completion of visits and treatments by the patients, reduced waiting times, and continuation of treatment phases. The patients' long distance from the assisted reproduction centers and financial costs were two factors affecting access to care (53). Lack of care coordination was also one of the factors affecting the negative experiences of the infertile patients. The care needs entailed the devotion of enough time to talk with patients as well as patient participation in the selection of treatment methods (47) that were in line with the results of the present review study.

One of the important needs indicated in the majority of the reviewed studies by the patients was informational needs. The negative experiences of the infertile couples undergoing intrauterine insemination were caused by the non-provision of information about surrogacy treatment methods and its complications, therapeutic schedule, and success rate by the medical staff (47). One of the aspects of patient-centered care includes the provision of such information as presentation of written information and provision of information about the emotional aspects of fertility treatment and the way patients can help themselves (13).

Since the infertile women trying to get pregnant are prone to physical problems and pains, relieving such pains and providing physical comfort were among the demands of this group (54). Painful treatments were also among the factors reducing hope in the infertile women undergoing treatments with a history of failed treatments, which could highlight the importance of creating physical comfort (13). Physical comfort, including the location of infertility clinic and a separate clinic for the infertile patients, was another physical need in the infertile patients (13).

Physical needs were also among the needs directly stressing the provision of services by the healthcare teams, especially nurses. This was considered as one of the important strategic points that could be manipulated by the healthcare staff and nurses to meet the clients' needs, which could be accommodated through providing desirable care.

Spiritual needs were also among the other demands highlighted by the patients that received little consideration in the given studies and the care-related issues. Consequently, there is a need to give more attention to care. Spiritual sources, such as saying prayers, going to holy places, and blessings of the family, were among the promising factors affecting the infertile women with a history of treatment failure (55). In a qualitative study conducted by Romeiro et al. (2017), spirituality was mentioned as a source to cope with infertility problems. This domain included the use of religious strategies (e.g., saying prayers and going to holy places) (56).

### **Implications for Practice**

The investigation of the patients' needs and problems can facilitate the identification of strategic points targeted toward the implementation of effective interventions. It also allows for the provision of patient-centered infertility care, which is accompanied by better quality of life and lower stress during the course of treatment. According to the findings of the retrieved articles, mental-psychological, emotional, and care factors were the important problems and needs among the infertile patients. In this regard, the nurses have the ability and potential to provide a direct and effective intervention through supplying mental-psychological support and physical care. Therefore, training the staff on the way of supporting these patients would be of great help to mitigate the given problems and meet their own needs.

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### Conflicts of Interest

There was no conflict of interest.

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