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Qualitative research on the psychological experience of female patients undergoing in vitro fertilization and embryo transfer

Feijing Zhou
First Affiliated Hospital of Zhengzhou University
Kun Du
First Affiliated Hospital of Zhengzhou University
Yuezhi Dong (dyz62295@163.com)
Zhengzhou University First Affiliated Hospital

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Abstract

Background: Infertility and fertility treatment exacerbate the intensity of stress that couples experience and negatively affects the patients' quality of life. Stress is a crucial factor in reproductive health and is likely to be one of the psychological factors affecting ART success. The qualitative research method permitted an understanding of the patients' experience during the diagnosis of and treatment for IVF and identified the sources of psychological stress. This understanding could urge medical workers, families, and society at large to provide targeted help to these patients.

Methods: A qualitative research was conducted in the reproductive medicine center of our hospital. Women who received IVF treatment were randomly selected.

Results: In total, 16 interviews were conducted with female patients undergoing IVF-ET between May and October 2019. The psychological experience of female patients undergoing IVF–ET can be summarized into four themes: (1) negative emotions due to infertility; (2) suffering under stress; (3) eager to obtain family and social support; (4) desire for medical knowledge related to infertility.

Conclusion: Medical staff should fully understand the emotional state of the patient during the process of infertility treatment and careful attention should be paid to the patients' psychological needs. According to the individual differences between the patients, we should provide positive factors of social support. Furthermore, corresponding health guidance and psychological support to reduce the psychological stress of patients and thus improve their chances of getting pregnant should be provided.

Background

In recent years, with the progression and development in society, changes in the living environment, and increase in the pace of living, marriage and childbirth have become delayed, which has led to a year-by-year increase in the incidence rate of infertility. Statistics published by the World Health Organization demonstrated that 9–15% of childbearing-aged women are at risk of infertility [1]. Influenced by the traditional perception of fertility and marriage, infertility has become a significant factor in endangering family happiness and social harmony. Human assisted reproductive technology (ART) has provided a solution for this distressing problem for infertile couples. Owing to its psychological consequences, infertility is an intense experience. Patients and their partners constantly experience profound distress, and the female partners in particular experience high levels of distress [2, 3]. Infertility and fertility treatment exacerbate the intensity of stress that couples experience and negatively affects the patients' quality of life [4, 5]. Stress is a crucial factor in reproductive health and is likely to be one of the psychological factors affecting ART success [6].

Most previous studies on infertile women have been quantitative and have not been sufficient to elucidate the main issue. However, qualitative research is more concerned with real-life experiences and world outlook, which is not sufficient for quantitative research. Qualitative research is more suited for exploring the psychological experiences of infertile women. A range of factors such as family, society,

and individual factors increase the psychological burden of infertile women. These factors have different degrees of influence on the female endocrine system, hence affecting the outcome of the clinical treatment. Therefore, psychological nursing has become a crucial part of reproductive medicine and holistic nursing. Between May and October 2019., 16 infertile patients undergoing in vitro fertilization and embryo transfer (IVF–ET) were interviewed. The qualitative research method permitted an understanding of the patients' experience during the diagnosis of and treatment for IVF and identified the sources of psychological stress. This understanding could urge medical workers, families, and society at large to provide targeted help to these patients.

Methods

Study population

Women who received IVF treatment in the reproductive medicine center of our hospital were randomly selected. The inclusion criteria were: (1) No measures taken to avoid pregnancy and not pregnant one year after marriage; (2) normal sexual reproductive function; (3) good language indicating competence; and (4) willingness to participate in this study. All subjects were informed about the objective of this study and the informed consent was signed. The study was approved by the institutional ethics committee of the First Affiliated Hospital of Zhengzhou University, China.

Data collection

Before the interview, the interviewer instructed the participants that the research was voluntary and the participant was able to withdraw at any point. All personal data, interview recordings, and observation records were anonymized using a code. The data was sealed and stored by specialized personnel for research purposes only. Most patients were willing to participate in the study only after the recruitment notice was issued. Those that were willing to participate in the study left their contact details with the interviewer. The participants were contacted telephonically, and a location for the interview was agreed upon, which was either a private conference room at our hospital or a safe place chosen by the patient.

Interviews lasted for 30–60 min. Patients' privacy was protected by avoiding contact with other patients, their medical and nursing personnel as well as their family members. The researchers followed a semi-structured interview guide, covering topics, such as the physiological feeling regarding infertility and pregnancy failure after ART (Table 1). During the interview, no guidance was provided and the patient's conversation was not arbitrarily interrupted. The patients feelings were fully recorded, and positive responses were observed during the conversation. Interview notes to record facial expressions, body language, and researcher's notes were maintained to ensure the accuracy of data. All participants completed a brief, anonymous demographic questionnaire at the end of the interview. Informed consent was obtained in person prior to the interview. The semi-structured guide allowed interviewers to deeply explore these topics with the participants while maintaining consistency in data collection. With the participants' permission, interviews were recorded and transcribed for accuracy. The digital sound file of the interview was password protected and saved on a secure server.

Data analysis

After the interview, the researchers analyzed the data within 48 h and transcribed the interview notes word by word into a manuscript. Furthermore, the tone, facial expression, and body language of the participants during the interview were recorded. The sound recordings were transcribed into a manuscript, which was reviewed by the participants and corrected according to their feedback. Careful attention was paid to convey the participants' thoughts correctly and to ensure the truthfulness and accuracy of the information. All personal data, interview recordings, and observation records were anonymized. The interview materials were standardized and archived. Through telephone calls, WeChat, and family visits, the patient's current living conditions and progress during the treatment were obtained.

Manual coding and the Naviv08 Chinese format analysis software were used for data management and analysis. To avoid misinterpretation, the recordings were listened to repeatedly and the transcript was read carefully. The data was repeatedly encoded, including open coding, spindle coding, and selective coding. After two weeks, the researchers re-encoded and compared the data and finally analyzed the main themes.

Results

In total, 16 interviews were conducted with female patients undergoing IVF-ET between May and October 2019. Demographic characteristics of the participants are shown in Table 2. The psychological experience of female patients undergoing IVF–ET can be summarized into four themes: (1) negative emotions due to infertility; (2) suffering under stress; (3) eager to obtain family and social support; (4) desire for medical knowledge related to infertility.

Negative emotions due to infertility

The results from the interviews revealed that 16 female patients undergoing IVF–ET showed different degrees of negative emotions due to the diagnosis of and treatment for infertility, including inferiority, isolation, tension, fear, anxiety, depression, disappointment, helplessness, guilt, impatience, anger, and compulsion.

Inferiority and isolation are two negative emotions experienced by female patients due to infertility. The diagnosis of infertility leads them to experience low self-esteem and lack of confidence and the patients ultimately choose to isolate themselves. For example, respondent M: “When the doctor asked me about the relevant aspects of my marital life during the initial examination, I was suddenly red in the face. This was private, and I had to tell an outsider these details followed by a gynecological examination. I felt exposed.” Respondent A: "If it is not the weekend, I need to apply for a leave from the company. I always try my best to make up a variety of distinct reasons. I do not want others to know that I am having trouble getting pregnant. If my colleagues get to know, I cannot imagine how strangely they would look at me, hinting 'you're not a real woman' behind my back.” Respondent L: “I used to go out with my colleagues every weekend. They all have cute children. Honestly, I am very self-abased and pity myself. Now I would

rather stay at home, as being alone is better than being hurt." Respondent C thought: "I feel like I cannot raise my head in front of people because I am childless. People in the countryside like to discuss another person's right and wrong. Therefore, I work all day in the factory to avoid hearing any gossip. It will make me feel better."

Patients might experience tension and fear during the treatment for infertility. For example, respondent H: "Frequent B-type ultrasound examination, gynecologic examination, and injection of hormones makes me extremely nervous. I even began to fear being injected. I really do not want to continue, go to the hospital, and fail repeatedly." Some patients choose to bear the pain of infertility alone. There is lack of communication between spouses and their family. Respondent F: "I understand my husband's family, and they cannot see me suffer. I do not want to emphasize how I feel and how I suffer. There is little to talk about at home now except children, and I wonder if there is any pleasure in such a cramped life." Even though individual patients are peaceful, there is an underlying psychological suppression hidden. For example, respondent I: "I have a daughter, and I just want to have a boy." Because ovulation is related to the outcome of pregnancy, patients will experience psychological fluctuations before and after each menstrual cycle. Physiological tension increases closer to the ovulation period. For example, respondent D: "Every time my period ends, I keep praying that how good it would be to get pregnant successfully during ovulation. Sometimes, when my period is delayed, I consider myself lucky and think that because I adhered to my treatment diligently, this time I should be pregnant. However, when the treatment fails, I really do not know how to describe that kind of a disappointment." Respondent J: "Sex life has become a well-planned task, and every time we hope to become pregnant. We are all extremely nervous. The more nervous we are, the more likely we fail."

The traditional attitude of Chinese families toward these issues is to cause anxiety and depression. Once diagnosed with infertility, patients are often deeply emotionally disturbed. Moreover, they will face pressures from their families and the society. This causes their emotions to be suppressed, resulting in anxiety and depression. Respondent E: "I am diagnosed with polycystic ovary syndrome. I had previously negotiated with my husband and decided to have a natural childbirth. However, 3 years after my marriage, my husband also hopes to have a child quickly. He and his family are very fond of children. I am so worried. I am so scared all the time. If this goes on, then maybe we will get a divorce." Respondent G: "My husband's mother is more aware about my menstrual cycle than I am. She observes me daily, and every time I menstruate, she sulks. I was afraid to face her and hid in the shop for days." An increased expectation of getting pregnant and frequent hospital visits cause an increase in anxiety and depression when they fail. For example, respondent K: "In this regard, I have invested too much money, energy, and emotions, but failure after failure kept me from getting over it." When a couple does not use contraception for a year after marriage and fails to become pregnant, the first reaction is often to suspect that the woman's reproductive system has problems. For example, respondent A: "Currently, my husband thinks it is all my fault and is unwilling to accompany me to the hospital. His attitude makes me very anxious, making me doubt if I will ever be able to have children."

A failed infertility treatment often disappoints female patients and makes them feel helpless. For example, respondent J: “I also intermittently visited some old Chinese folk doctors and tried many remedies and recipes, but none of them worked. I do not know what else to do. Maybe I am destined to not have children.” Respondent A: “Because I cannot have children, my husband is more and more disappointed with me. His attitude in turn always makes me disappointed in myself too. However, having no children is not what I hoped for. I cannot control it. What should we do?” Respondent G: “Being busy can make me forget this for a while, but when I relax, I feel sad.” Respondent F: "I thought I was strong. After encountering this incident, it seems that my whole life has suddenly changed. I am more afraid of others even talking about children, as that feels like adding salt onto a wound.”

If the woman is not able to conceive because of her physical problems, then the patient often feels guilty. For example, respondent H: “When my husband was understanding and sincere to me despite my problems, I felt even more guilty. I felt sorry for him and his family.” Respondent E: “When we got married, I got pregnant, but because it was not planned, we thought that we were still young and we did not want it. Now we want it but I cannot get pregnant. It is ironic! If only we had made another choice.” Influenced by traditional Chinese cultures, the concept of inheritance has become a universally recognized virtue of fertility. Therefore, infertile patients often hope to be cured because of their sense of shame. For example, respondent L: “Family members, relatives, and friends are particularly concerned about me. This makes me feel even more guilty. I really want to get pregnant quickly. Spending more money and time is worth it.”

Some patients who have experienced many treatments and failures might be angry with the treatment and forced by family members to come to the hospital. However, because of family and societal pressures, they continue to seek medical treatment repeatedly, resulting in forced medical treatment. For example, respondent I: "The expectations of my family members are too high. If I do not cooperate, it will undoubtedly let them down. Therefore, to some extent, I only came to the doctor to complete the task, but this task is challenging.” During the consultation process, patients discussed among themselves and compared their experiences, which had an impact on them. For example, respondent A: "When I saw the patients who come to see the doctor at the same time as me, they became pregnant one by one. I was very lost, but I still had to continue fighting. This kind of contradiction and pain may be hard to understand.” During the process of diagnosis and treatment, the patient’s cumulative frustration, disappointment, and grievance may suddenly erupt. For example, respondent L: "I might be involuntarily angry, regardless of whom, but I cannot control it.”

Suffering under stress

All 16 female patients undergoing IVF–ET are subjected to a universal pressure during the treatment period, from three aspects: (1) stress from age and pregnancy success rate; (2) stress from the family, society, and surrounding environment; and (3) stress from the economic-professional career.

The female patients undergoing IVF–ET stated that the main psychological stress during the treatment period was “worrying about being infertile and not having children of their own.” The patients were

worried that with their increasing age, their chances of becoming pregnant was diminishing. However, the patients are also commonly concerned about the possibility of having a natural childbirth when undergoing IVF–ET. Respondent A: “I am getting older and older, so I really want to get pregnant and have a baby of my own.” Respondent J: “The doctor said since I was nearly 40 years old, my ovaries were not very functional. I had to try, there was no other way.” Respondent F: “Many mothers of test tube babies say that even if they are pregnant, there is still a risk of miscarriage.”

In our country, the ideology of having family successors is deeply rooted. In a family, children play a vital role. With increasing patient age, the probability of getting pregnant declines. The lack of understanding by relatives and friends and discrimination by colleagues leads to extreme psychological stress. Respondent I: “Both my parents are getting older. I can understand their urgent need for me to have children. They always express their thoughts intentionally or unintentionally, so I am very worried and under a lot of stress.” Respondent C: “In our countryside, it is shameful to be unable to have children. My in-laws might despise me. The neighbors might also point fingers, which makes me incredibly stressed.” Respondent L: “My colleagues and friends around me have already had their children, but I am still dealing with fertility issues. Every time they talk about children, I avoid talking because it is a severe blow to my pride.” Respondent G: “Every holiday, I hate to go home, three aunts and six women are staring at me and asking when will I give birth, and I feel like I am going to collapse.” Respondent P: “There was a group of colleagues who talked about me opting for a test tube baby, which made me sneak into the hospital and feel bad.”

Assisted reproductive treatment is not within the scope of medical insurances, so patients that repeatedly fail at getting pregnant are burdened by long-term money related stress. Respondent O: “We worked hard for years, most money we make we spend on the treatment of infertility. We are under a lot of economic stress.” Respondent D: “The economic stress is quite large. The key point is that I failed once. Now I am having to start again.” Most patients still go to work during the treatment of infertility and going to the hospital frequently interferes their work time, and their career is also affected. Respondent M: “I have to come to the hospital to draw blood frequently. My business volume has decreased significantly.” Respondent E: “The company wanted me to go abroad for further studies, but I had to give up because I really want to have children.”

Eager to obtain family and social support

Because of the long-term complexity and uncertainty of infertility treatments, patients showed a strong desire for family support and social tolerance. For example, respondent A: “If my husband can care more about me instead of being disappointed, I may not feel so sad and helpless. In fact, his concern is more important than anything.” Respondent I: “Now I am afraid to go home and talk about children because of the desperate hope of our parents. I am at a loss.” Respondent G: “When I am busy with work, I have my own personal time and space. My mother-in-law has too much control. I feel depressed. If she intervenes less, it would be helpful.” Respondent C: “Public opinions are terrible. I cannot stand the discussion of my

colleagues. Society should be more tolerant toward women so that I do not have to work hard to find distinct reasons to take leave."

The desire for medical knowledge related to infertility

With the change of the medical model, the healthcare requirement of the people is increasing daily. Although new social information is being obtained, people lack the initiative to learn professional health knowledge. Therefore, in the face of ovulation obstacle infertility, patients lack disease-related knowledge. Some patients do not understand the treatment process. For example, respondent B: "There are so many examinations. Sometimes, I have to undergo the B-type ultrasound once every two or three days. It is even more troublesome than cancer." Respondent J: "After the diagnosis, I do not know what to do next, where to get myself treated, or how to get myself treated. The examination is tedious, some of them are also counter-reviewed, but I do not know why they should be investigated." Respondent L: "Since I never got pregnant, I began to pay attention to this issue, but there is too much information on the internet. I do not know what is right and what is wrong." Respondent K: "I have had children before, which means I can give birth and can ovulate, so why can I not become pregnant now?" Respondent G: "I actively cooperate with the treatment. It is said that every patient has a strong compliance. It is unclear if my ovulation situation is good or bad. Is ovulation itself too complicated or is the treatment not suitable for me?" Respondent E: "After the transplantation, I lay all day and did not dare to move. I lay down for a week, and my back was sore."

Almost all patients thought that they lacked the knowledge of assisted reproduction and hoped to get explanation of the knowledge relevant to them from the medical staff. Respondents mentioned the way they obtained knowledge about reproductive medicine was through the internet, television, newspapers, and other people. There are numerous conflicts and contradictions in the information we receive these days, which make people unable to decide what to believe. Respondent B: "If we can popularize the knowledge of reproductive medicine, just as the whole society popularized the norms of civilization, people can better cope with medical issues, such as infertility." Respondent F: "The department's promotional brochures are very practical. If only healthy women could have access to such education." Respondent L: "If the hospital can provide more lectures for the infertile patients, then not only do they correctly obtain the reproductive medical knowledge but also cooperate actively with the treatment plan, as their doubts are reduced. That is supposed to be the best thing for both of us."

Discussion

In this qualitative study, we analyzed the follow-up feedback of 16 patients undergoing IVF. The results indicated that during the treatment and care of infertile patients, the medical staff should not only focus on the disease but also examine the patients' emotional response and the impact of family and social support on them. Furthermore, it is crucial to understand the emotional response of each patient to understand the problems individually. More information and reproductive health education should be provided to patients.

Most women are eager to have their own child and become a mother, especially women undergoing IVF–ET treatments. However, with increasing age and prolonged treatment, the success rate of getting pregnant is declining. Each failed pregnancy affects the woman, and the desire to become a mother can seem unattainable. Faced with this burden, women gradually lose confidence and develop more negative emotions [7]. Studies should emphasize that stress may influence the chance of getting pregnant by reducing the probability of conception through the hypothalamus-pituitary-adrenal axis and the sympathetic adrenomedullary (SAM) pathways of the reproductive system [8–10]. Medical staff cannot guarantee the success of getting pregnant through the IVF–ET treatment; hence, they should listen to patients with empathy, try their best to meet patient needs, reduce the perception of negative emotions, and guide patients to cooperate positively with treatments. The success rate of getting pregnant will, thus, naturally increase when a patient is relaxed and has reduced psychological stress [11–12]. Therefore, during the treatment for infertility, mental health is an essential factor that cannot be ignored. Infertility is a shared condition; therefore, both the partners should be assessed [13]. Effective interventions should be provided to female patients undergoing IVF or IVF–ET and their partners to reduce negative emotions and relieve them from their stress.

Infertility is a burden on many families, and it threatens most aspects of family life, including self-respect, hope for the future, and personal relationships [14]. Currently, most of the patients' relatives and friends are more concerned about treating the problem and often ignoring the patients’ psychological problems, which can also contribute to infertility resulting in the patient feeling lonely and helpless. Thus, family and societal support are essential to understand the source of stress. Family members should pay more attention to the patients’ mental health and support them accordingly [15–16]. Medical staff can guide patients to change their personal attitude and encourage them to shift their focus of life by engaging in recreational activities, traveling, and hobbies, thus, reducing the excessive attention paid to getting pregnant. In addition to the chronic stress caused by the disease itself, patients undergoing IVF–ET must also undergo invasive screening and treatments. IVF–ET is a complicated treatment accompanied by frequent hospital visits, high treatment costs, and several complications, which can increase emotional pressures. The inflated cost of the treatment is especially a test for families with low income. Some patients even stop the treatment because of money problems. Furthermore, the frequent hospital visits affect working women and limit their chances for getting a promotion.

Lack of information often leaves a patient feeling helpless, fearful, and anxious. Informational support is an important measure to relieve emotional pressures from infertile patients [17]. Medical staff should provide thorough information during the treatment to encourage communication between patients. In addition to providing brochures, lectures and telephone consultations should also be provided. The hospital should also guide patients to make full use of the resources found on the internet and the WeChat platform of the reproductive center that permits to obtain information as well as professional knowledge about the subject. By using the online communication platform, patients can solve their queries during difficult times.

Conclusion

This study discussed the psychological experiences of infertile women undergoing IVF-ET using a personal in-depth interview method of qualitative research, and their thoughts behind some phenomena were revealed. It indicates that the medical staff should fully understand the emotional state of the patient during the process of infertility treatment and careful attention should be paid to the patients' psychological needs. According to the individual differences between the patients, we should provide positive factors of social support. Furthermore, corresponding health guidance and psychological support to reduce the psychological stress of patients and thus improve their chances of getting pregnant should be provided. The results of this study are influenced by the subjects' background and personal experiences, and as a result, the study inevitably has some limitations. However, the patient's emotions as well as physical examination are useful for psychological interventions and comprehensive treatment plan preparations for infertile women.

Declarations

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Ethics approval and consent to participate: The study was submitted to and approved by the institutional ethics committee of the First Affiliated Hospital of Zhengzhou University, China. All subjects were informed about the objective of this study and the informed consent was signed.

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Tables

Table 1. Semistructured Interview Protocol Sample Questions
Contraception
1.What is your true feeling in the face of infertility? 2.What troubles does infertility bring to you? 3.How do you deal with infertility? 4.What do you think of test-tube babies? 5.If you can't conceive after treatment, how will you deal with it? 6.What kind of help do you want from the medical staff during your treatment?

Table 2. Demographic Characteristics of female patients undergoing in vitro fertilization and embryo transfer (N = 16)

Demographic Characteristics	Value
Age, mean (SD), y	31.2（5.8）
Residence, n (%)	
Urban	7（43.75）
Rural	9（56.25）
Education level, n (%)	
High school degree or below	6（37.50）
Junior college degree	5（31.25）
University degree or above	5（31.25）
Net family monthly income, n (%)	
<5000RMB	5（31.25）
5000~10000RMB	7（43.75）
>10000RMB	4（25.00）
Duration of infertility, n (%)	
<2years	3（18.75）
2~5years	8（50.00）
>5years	5（31.25）
Type of infertility, n (%)	
Primary	6（37.50）
Secondary	10（62.50）
Infertility factor, n (%)	
Female	5（31.25）
Male	3（18.75）
Mixture	6（37.50）
Idiopathic	2（12.50）