



A Qualitative Study of the Challenges Experienced by Iranian Infertile Couples After Unsuccessful Assisted Reproductive Technologies

Samira Ebrahimzadeh Zagami¹, Robab Latifnejad Roudsari^{1*}, Rokhsana Janghorban², Seyed Mojtaba Mousavi Bazaz³, Maliheh Amirian⁴, Helen T Allan⁵

Abstract

Objectives: Assisted reproductive technologies (ARTs) give hope to some infertile couples; however, in vitro fertilization (IVF) is expensive and not subsidized by the Iranian state. More than 75% of IVF cycles in Iranian couples are unsuccessful. The aim of this study is to describe the challenges experienced by infertile couples after unsuccessful treatment.

Materials and Methods: In this descriptive qualitative study, 36 participants including 29 Iranian infertile couples recruited after unsuccessful ART treatments, five infertility treatment team members and 2 relatives of infertile couples were interviewed at an Infertility Center in Northeastern Iran from April 2016 to June 2017. Data were collected using semi-structured, face-to-face interviews. Data analysis was carried out following Sandelowski.

Results: Iranian infertile couples' experiences following failed ART cycles are described. The findings presented here show that Iranian infertile couples experience stressors during treatment cycles and systemic challenges which may be unique to the Iranian cultural context.

Conclusions: Iranian infertile couples face particular challenges related to the cultural context in which ARTs are delivered. Further exploration of the effects of culture on the experiences of failed ARTs needs to be considered by infertility clinics in Iran.

Keywords: Assisted reproductive technologies, Infertile couples, Failed treatment cycles, Psychological stressors, Healthcare system challenges

Introduction

Infertility refers to the inability of couples to become pregnant after one year or more of regular sexual intercourse, and after 6 months in a couple where the woman is aged over 35 (1). A significant number of couples experience infertility and may be affected by its social, economic, psychological and physical effects (2). Infertility is psychologically threatening, emotionally stressful, economically expensive and often physically a complex painful life crisis (3-7). In addition, in vitro fertilization (IVF), the most common treatment of infertility, can have psychological effects on women and their partners (3). Seeking infertility treatment is often a difficult decision to make for couples and is linked to stress from the inability to naturally conceive and the loss of control over the body (8). Fertility clinics offer a variety of therapies including Assisted reproductive technologies (ARTs) to infertile couples (8). Any method or medicine for pregnancy is an ART and may include ovulation induction, intrauterine insemination, IVF, and intracytoplasmic sperm injection (ICSI) (9). ARTs also include all infertility treatments that

involve oocytes or embryos. IVF is the main intervention in ARTs. IVF involves the extraction of female oocytes, fertilization in a laboratory, and then the transfer of embryos to the uterus through the cervix (10); hormonal support is prescribed for up to 30 to 70 days after embryo placement to maintain pregnancy (10). ART outcomes, namely a pregnancy with a single embryo, have improved significantly since 1985 (11); nevertheless, only 35% of couples become pregnant following the use of ARTs (12). Success rates following ART vary according to the cause of infertility and treatment features such as age, infertility diagnosis, numbers of embryo transfer, ARTs method, delivery history, abortion, and number of previous ART cycles. Although the use of ARTs is still relatively rare considering the potential demand for it, its use has doubled during the last decade (10).

In Iran, many forms of ART (ART, third-party reproduction, donor services) have been legitimized with strong confirmation and support of Shi'a jurists. Iran leads in the provision of ARTs among the Muslim countries in the Middle East (13). In Iran, IVF was introduced in 1988

Received 26 April 2018, Accepted 19 July 2018, Available online 10 October 2018

¹Nursing and Midwifery Care Research Center, Mashhad University of Medical Sciences, Mashhad, Iran. ²Maternal-fetal Medicine Research Center, Shiraz University of Medical Sciences, Shiraz, Iran. ³Department of Social Medicine, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. ⁴Department of Obstetrics and Gynecology, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. ⁵Department of Adult Child and Midwifery, School of Health and Education, Middlesex University, London, UK.

*Corresponding Author: Robab Latifnejad Roudsari, Tel: 05138591511, Email: Latifnejadr@mums.ac.ir, rlatifnejad@yahoo.com



(14). In 1999, Ayatollah Khamenei, supreme jurisprudence of Shi'a Muslims in Iran, issued a fatwa (religious edict of Muslim scholars about special cases) allowing donor technologies to be used for infertile couples (15). There are over 70 infertility centers in Iran (16), which carry out 18% of assisted reproduction cycles in the public sector and 82% in the private sector (17).

ARTs are complex and stressful (18); women express having more psychological problems than men during the lengthy IVF treatment cycles because of hormonal therapy, side effects of medications as well as the burden of medical interventions (3). An IVF cycle usually requires 9 to 12 days of injection of strong fertility drugs to stimulate the production of oocytes, recovery of oocytes through transvaginal ultrasound, oocyte fertilization in a laboratory with sexual partner's or a donor's sperm, and finally the embryo transfer to the uterus. The couples then wait for 2 or three weeks to find out whether the implantation and, as a result, pregnancy have occurred (18). Patients' responses to unsuccessful IVF include tension, sadness, anger, depression, as well as feeling lonely, loss, and guilt (8). Studies, mainly quantitative, have investigated the impact of the intervention programs on marital satisfaction (19), coping strategies (20, 21) perceived infertility-related stress and anxiety (22, 23) and fertility quality of life (24) in infertile females undergoing in-vitro fertilization. A review study has shown the psychological consequences following the failure of IVF attempt (8). It was found that only one qualitative study has explored women's experiences of their challenges in the process of male infertility treatment in Iran (25). In addition, to our knowledge, no studies have explored the challenges of failed ARTs in Muslim couples or in Islamic countries. There are differences in the governance and funding systems of ARTs cross-culturally and particularly between Islamic and secular countries. For example, Iranian men and women whose partners are infertile are allowed to divorce their partners (13) which is not the case in secular countries. Qualitative inquiries are more appropriate to explore challenges of ARTs after failed IVF, as using these approaches, researchers may elicit in-depth descriptions of the experiences of participants in a particular sociocultural context (26). There is a need for a qualitative study to explore the challenges of ARTs experienced by infertile couples with a history of unsuccessful treatment in Iran.

Materials and Methods

To conduct this study, a qualitative descriptive design (QD) was used. The purpose of QD design is to summarize events in the everyday terms of those events in the words (or close to) the participants interviewed by the researcher. Researchers stay close to their data and to the description of events. QD designs typically use in-depth interviews (27). QD is an eclectic method for eliciting a direct description of the phenomenon under investigation

(28). The goal is to systematically convert a large amount of text into a highly organized and concise summary of key results (29). This study is part of an extensive study of infertile couples after unsuccessful treatment with assisted reproductive methods, and it was conducted from April 2016 to June 2017.

Setting

This study was conducted at an Infertility Center in Northeast Iran. The center was opened in 1996 and is equipped with the most advanced medical equipment, which, in addition to accepting patients from the province, has provided services for patients from neighboring provinces and countries. In addition, this Infertility center is considered one of the major centers providing therapy for overseas Muslim visitors including Arab Muslims from countries like Iraq.

Participants

In this study, purposeful sampling adopting maximum variation approach based on age, education, occupation, place of residence, duration of infertility, cause of infertility and type of assisted reproductive techniques was used. Out of the 36 participants who participated in the study, 29 participants were Iranian infertile patients willing to participate in the study, who had primary infertility and at least a history of one unsuccessful treatment with assisted reproductive techniques. Couples who adopted children were excluded. There were 5 participants from the treatment team including one gynecologist, three midwives with a master's degree in midwifery and one fertility nurse; there were also 2 participants who were the first-degree relatives of the patients. They were sisters of 2 infertile women.

Data Collection

Data collection was done using semi-structured, face-to-face interviews, which lasted between 30 and 90 minutes. The goals and process of the study were explained to the participants; the questions were answered and after obtaining their consent, interviews were conducted in a place where the participants felt comfortable, such as the Infertility Center, home or workplace of the participants. Interviews were recorded. Each interview started with the question "Can you tell your experiences of infertility treatments?" and according to the answers of the participants, continued with deeper questions such as "Could you explain more about this?" and "Could you elaborate more on this statement and make it clearer?" and ended with this question "Is there anything else you think you would like to say?"

Data Analysis

The interviews were recorded using a voice recorder, transcribed and coded. The data were divided into themes and sub-themes according to similarities and differences.

Data analysis was conducted using MAXQDA 10.

Trustworthiness

To ensure the accuracy and robustness of the data, good communication with the participants was established to gain their trust and enough time was allocated to them to express their experiences. Some participants also reviewed the transcripts.

Results

The findings presented here show that Iranian infertile couples experience stressors during failed treatment cycles and systemic challenges which may be unique to the Iranian cultural context (Table 1).

Stressors in the Treatment

Participants described several sources of distress after unsuccessful treatment. One participant, after failed IVF cycle with donated egg, feared further problems being diagnosed if she returned for another cycle.

“I fear. I think with myself that if I go back for treatment and (therapists) say that in addition to donating eggs, you must have a surrogacy. I’m afraid to go and realize there’s another problem” [P3, female, 16 years of treatment, combined infertility].

Another participant recognized she was too angry to try again.

“The second time of failure I get too angry, I did not want to do it again.” [P 10, female, 4 years of treatment, male factor].

For some women, stress arose from relationships with their husbands. One participant stated that after the second unsuccessful treatment, her husband threatened her with taking another wife and left her alone at home.

“After my first unsuccessful treatment, my husband said: “I do not want a kid but now, after the second unsuccessful

treatment, he says that “I want a baby. I want to marry again”. He did not come home for a while.” [P 17, female, 9 years of treatment, unknown].

Sometimes, participants described becoming very upset and angry when they were told that the IVF had not gone according to the plan. For example, after ovulation stimulation, their eggs had not reached optimal growth and they had to repeat further ovarian stimulation.

“[Doctor] said that my oocytes have grown very little and I have to take these ampoules [for injections] again. [They caused] ‘discomfort and I was angry and cried a lot’, I said no, I will not.” [P 3, female, 5 years of treatment, combined infertility.^[1]

Even after the second round of ovarian stimulation, ovulation stimulation was sometimes unsuccessful, causing distress in the women and some of them decided to stop receiving treatment.

“I took the injections. They said that the oocytes did not grow as much as they should have. One of my ovaries has just one oocyte. I was upset. Very upset. I was so upset that I went to the car crying and said that I’m not going to go to the doctor anymore. I do not want to. God does not want [us to have baby].” [P 3, female, 5 years of treatment, combined infertility]

Frustratingly, for some participants in repeated IVF cycles, in spite of taking more drugs than in the previous cycle, the number of released eggs was reduced and insemination failed.

“The first time I [was] referred to my doctor, ovulation stimulation was done. From five eggs, three were fertilized and placed in my uterus; but we did not get a result. In the second time of ovulation stimulation, they gave me much more drugs, but less result. They said that I had only 2 eggs. Two days later, they told me to get the test results to see if the eggs were fertilized or not. I called them; they said that none of them were fertilized.” [P 1, female, combined infertility]

Table 1. Emerged Themes and Subthemes

| Codes | Sub-themes | Themes |
|---|--|------------------------|
| Psychological stress caused by unsuccessful ovulation stimulation | | |
| Stress due to the need for an oocyte donation | Exposure to psychological stressors during treatment | Stressors in treatment |
| The challenges of donor selection | | |
| The problems of interaction with oocyte donors | | |
| Perceived distress in the Treatment process | | |
| Psychological arousal in the stages of treatment | Psychological distress during treatment | |
| Discomfort with the Spouse Behavior | | |
| Dissatisfaction with waste of time | | |
| Reaction to frequent visits | Dissatisfaction with the treatment environment | Systemic challenges |
| Poor access to specialist fertility services | | |
| High Costs of the services | | |
| Lack of Insurance coverage | Financial challenges associated with treatment | |

"They took seven eggs from me and after three days, they said none of them were fertilized." [P 28, female, 18 years of treatment, female factor]

Many participants reported that after a failed treatment, they were discouraged and frustrated with treatment and felt tired; these stressors not infrequently led to giving up on treatment and sometimes re-engaging years later.

"I was too tired. I would not get the result. I gave up for a few years, and then again started ... I was so discouraged and tired of coming and going to the center that decided to give up. When they told me to try something else, I said forget it, I am tired of these things." [P 5, female, 12 years of treatment, combined infertility].

Some participants stated that after several unsuccessful treatments, they were not prepared to get the results of another pregnancy test.

"My sister went to get the test result. I was too tired. I could not bear another negative result." [P 18, male, 3 years of treatment, combined infertility].

Difficulties of Egg Donation in Iranian Women

Some women stated that when they showed their test results to a doctor and the doctor told them that they had no eggs, they could not accept it at all and they became very upset by the suggestion when the doctor suggested them to use donated eggs.

"When I showed the doctor my test result, he said with such emphasis that I do not have any egg at all. I asked if there is any medicine or cure. She said no, I have no egg to give a medicine for it; and I should use a donated egg. Again, I went to get into my car while I was angry, upset and crying." [P 3, female, 5 years of treatment, combined infertility]

Women found egg donation difficult to accept for many reasons; in the following quote, the participant says she feels any resulting child would not be hers.

"After examination, they said [with emphasis] I should use donated eggs and rented womb. I said how it will be my child then?" [P 1, female, 2 years of treatment, combined infertility]

In the next quote, after failed IVF and the need for egg donation, the women stated that egg donation would affect their relationships with their husbands.

"(After failed IVF) I told my husband the same day that they say we should use donated follicle. Of course, I did not let him see my tears, I was watching another side. I had a bad feeling about insemination of another woman's follicle with my husband's sperm to make a fetus of which I will be only a carrier. I still cannot cope with the concept." [P 2, female, 1 years of treatment, combined infertility]

After failed IVF due to poor egg quality of failed ovulation, some participants were provided with names and phone numbers of donors by the center or the doctor; however, they could not find their desired donor.

"(After unsuccessful treatment) they told us to go and register for receiving donated eggs there. Then, the doctor

introduced an egg donation center to us. We went there. They gave us a few phone numbers. I called them but could not find the case I wanted." [P 3, female, 5 years of treatment, combined infertility]

Medical staff were aware that egg donation caused women distress.

"They are worried about their husband facing the donor. They have psychological concerns that what if their husband be attracted to the donor thinking that the egg belongs to the donor and choose the donor." [P 16, female, 18 years of work experience]

After failed IVF and the need for egg donation, some participants, having agreed on a price with a donor, found that during the treatment, they were asked for extra money and in some cases, the amount of money given to the donor in the end was more than twice the agreed amount.

"We were supposed to give her 30 million Rials. We spent 30.5-40 million Rials just for the treatment of her ovarian cyst. She once said that she needed 5 million Rials to buy ampoules. We paid that. Then, after 2 hours, she called and said she had an accident and the ampoules were broken. Overall, it cost us 100 million Rials." [Interview No. 27, male, 18 years of treatment, female factor]

This participant described the stress caused by the donor not answering their calls.

"That egg donor woman made such troubles for us and cost us a lot. She caused some psychological stress for us when we were calling her and she did not pick up." [Interview No. 28, female, 18 years of treatment, female factor].

Systemic Challenges

Women described feeling frustrated and dissatisfied with what they perceived as delays in treatment. They were dissatisfied with the amount of time spent during the course of the treatment and believed that the late appointments caused a loss of time.

"When they say come back in 2 months, I think my time is being wasted, maybe they can do something in these 2 months." [P 22, female, 5 years of treatment, unknown].

"I and anyone in my age would love to get results sooner. Now I have to wait for 6 months, I told myself the last month that these intervals definitely will be shorter in the first months. I should be pregnant, if not I could follow up. Unfortunately, I spoke to experts and they said no, you should wait at least six months or a year." [P 2, female, 1 years of treatment, combined infertility].

Most of the participants were unhappy with the frequent visits to the treatment center, as some had been referring to the center for several consecutive years and still had no result.

"This is a problem that we must accept and cope with. I am under treatment for about 7 years now." [P 29, female, 6.5 years of treatment, male factor]

"My wife has to change many buses to get to the infertility center, and when I'm at work and she is going alone, I just think if she has got there yet or if there was any problem?" [P

15, male, 3.5 years of treatment, female factor]

Participants frequently had to travel some distances from home to obtain specialized infertility treatment, which imposed extra costs to them and they need to provide for the costs.

“Well, this is a specialized center, this is a big city, it is not comparable to smaller cities, ..., I sold my house in a smaller city for 200 million^[2] Rials just for getting the money to come [here] for treatment while my house worth 400 million Rials.” [P 19, male, 2 years of treatment, male factor]

Some participants complained about the high cost of drugs, ovulation, embryo transfer, and maintenance of frozen fetus if there was any.

“The IVF now costs a little more, about 30 million Rials, 10-20 million Rials for drugs, about 10.5-10.8 million Rials for ovulation, and 8-9 million Rials for embryo transfer. Totally, it costs about 50-60 million Rials per course. The “X” hospital roughly costs us 60 million Rials every time.” [P 1, female, 2 years of treatment, combined infertility]

These high costs meant some couples had to delay further treatment cycles.

“We did not have enough money, so we had to wait to prepare the money and then go for the treatment again.” [P 31, male, 4 years of treatment, unknown]

For some women, even where IVF was advised, the high costs meant they had to give up on further IVF cycles.

“This time I was said to have IVF but if it costs too much I really cannot afford it.” [P 22, female, 5 years of treatment, unknown].

Discussion

The findings presented here show that Iranian infertile couples experience stressors during failed treatment cycles and systemic challenges which may be unique to the Iranian cultural context.

A key stressor was the psychological tension caused by unsuccessful ovulation stimulation and egg donation. Studies have shown that stressed women may have problems with induction of ovulation, missed cycles, reduced pregnancy rates and decreased number of oocytes (3,18,30). High levels of stress in women may lead to a reduced number of fertilized oocytes (3). Following unsuccessful ovulation stimulation, stress due to the need for donated eggs, challenges of donor selection, and problems of interaction with egg donors appear as other psychological stressors during treatment. Egg donation is a technique that emerged in the early 1980s (31). In Islamic countries, there are still legal challenges in using IVF methods and third-party reproduction but in Iran, infertility treatment with third-party reproduction was legalized by Shiite clerics (14). Similar to Ahmadi and Bamdad who reported that the use of donated gametes in Iran was less accepted than might be expected after religious approval through Fatwas (32), in this study, participants stated that it was difficult for them to initially cope with the idea of egg donation. It is known that personal values,

religious beliefs, and social prejudices may influence the decision of patients to go for the donated egg treatment cross-culturally (33). Even where egg donation was acceptable, some participants had difficulty finding an egg donor. Very few women are willing to volunteer to donate eggs (31) because egg donors are involved in aggressive treatments such as ovulation stimulation and transvaginal retrieval of oocyte under general anesthesia or conscious sedation. Latifnejad Roudsari et al found that Iranian couples have moral concerns about donor selection which are shaped by moral health, honor, and purity which are rooted in Iranian religious and cultural beliefs and practices (34). The limited number of donors also leads to the disagreement between supply and demand, and long waiting lists (33). Worldwide, donors of oocytes include 2 groups: 1) known donors such as couples' relatives or friends, and 2) anonymous donors (31). In Iran, there is no possibility of egg donation by sisters, and recipients of donated eggs tend to conceal egg donation. The main reason for this concealment is concern about socially negative attitudes toward the ARTs methods when using donated egg in Iranian culture; and this concern leads the couples to hide egg donation from family and friends in order not to lose their support and, as a result, they have to endure stress when using such techniques (35). In this study, we found that interaction with egg donors created both financial and psychological problems for infertile couples. Most donors donate eggs for financial gain. In this study, women expressed concern over the interaction of their husband with egg donors. Because, in Iran, the egg donor should be a widow or divorced woman yet this situation made the infertile women worry about the relationship between their spouses with donors; and, consequently, made them frightened of the stability of their own marital relationship. Lack of support or poor support from the male partner can make women's mental health worse during failed treatment and increase their stress. Equally, men may feel left out of treatment cycles as the focus is largely directed towards the woman. Although most women accept treatment because of the husband's great interest in the child, they feel guilty due to the infertility problem and fear divorce or remarriage of the spouse (36).

In Iran, women who cannot get pregnant may endure numerous pressures and threats such as divorce, exclusion from the family, husband's remarriage and stopping of financial support (37). Infertility in Iranian men and women and subsequent family interference for having a baby may lead to divorce (38). Women suffer in cases of unsuccessful treatment, through which they return to the trauma of infertility once again. Repeated ARTs cycles negatively affect the relationships between couples (39).

Systemic challenges were other themes in this study. Some Iranian couples face difficulties due to poor access to specialist fertility services due to the high cost of the services and the vast distances they have to travel as Iran is

a large country and provision of specialist fertility services is sparse.

In this study, dissatisfaction with the treatment environment was another challenge that infertile couples described. Wasting of time, frequent visits and poor access to specialist fertility services were expressed by some participants. Some participants were upset about the fact that they were late in initiating fertility treatment because of the lack of awareness among doctors and believed they had lost their precious time to conceive. Some also complained about the time-consuming treatment process and the frequent visits to treatment centers. Infertile couples who travelled from cities and villages to the Infertility Treatment Center described financial problems and they complained about the lack of services nearer to home (40). In many developing countries with limited resources, infertile couples face lack of access to infertility treatment services. Delay in infertility diagnosis, accessing infertility services and ARTs services negatively influences the likelihood of the success of treatment of infertile couples (41).

Most participants following infertility treatment and repeated treatment failure experienced tiredness, discouragement, and frustration of the treatment, and described all stages of the treatment as a very stressful time, especially when waiting for the outcome of the pregnancy test. Hasanpoor et al reported the emotional-affective reactions of Iranian infertile women to the infertility treatment process (42). Infertile patients reported that treatment with IVF is associated with low to very severe stress, and the most stressful time is the waiting period to find out the successful or failed outcome of IVF (8). Psychosocial stress can reduce the reproductive performance of women by affecting the central nervous system, endocrine glands and immune system (3). Therefore, IVF can be a source of psychological and emotional problems for couples who are trying to have a baby. Therefore, it seems that treatment with IVF is especially difficult in terms of its emotional effects (8). So it seems necessary for the multidisciplinary team who provide psychosocial support for infertile women to encourage them to use adaptive coping strategies (42).

Another challenge for infertile couples after unsuccessful treatment was an increase in the cost of treatment and inadequate coverage of insurance, which lead to delayed treatment or discontinuation of therapy in couples who could not afford the treatment costs. IVF treatments are expensive due to the high cost of drugs and the need for frequent monitoring (10). In order to overcome the above-mentioned barriers preventing access to infertility care, health sector authorities should consider the needs of low-income populations and provide ARTs services at the lowest cost (41). In the United kingdom, it is estimated that one cycle of treatment with IVF is 10% of the annual household cost (43). Although the cost of one cycle of treatment with IVF is less than \$2000 in Iran, it is relatively

high compared to the annual household income (16). Treatment costs in Iran are high and there is no financial support from the state for couples over the age of 42 years (17). Although there is financial support for women under 35 years in the UK (44). The fact that developing countries need to allocate limited resources for life-threatening and non-life-threatening illnesses does not justify the fact that infertility care is neglected as a health need (41).

Strengths/Limitations

This qualitative inquiry helped researchers explore the perceived challenges of infertile couples who had a history of unsuccessful treatment with assisted reproductive technique. In addition to the infertile couples, family members and some medical team members were interviewed to obtain a deeper understanding of the experiences of Iranian infertile couples after unsuccessful IVF cycles and the challenges these couples face. These interviews enriched our understanding of couples' experiences and the cultural context in which ART services are delivered. Due to the qualitative nature of the study, the generalization of the findings is not possible.

Conclusions

The present study showed that stressors during failed treatment cycles and systemic challenges are issues that infertile couples with a history of unsuccessful ARTs treatment face in the treatment process. It seems that recognition of these challenges by the policy-makers of the health system and the medical team, as well as efforts to reduce or eliminate them, will enhance the psychological and mental health of the infertile couples and also increase the possibility of treatment success.

Conflict of Interests

Authors declare that they have no conflict of interests.

Ethical Issues

This study was approved by the Local Ethics Committee of Mashhad University of Medical Sciences, Mashhad, Iran (IR.MUMS.REC.1395.120). Written informed consent to participate in the study was obtained from participants. Anonymity was observed at all stages of the study. Before the interview, the consent of participants to record their voices was obtained. Four participants did not allow us to record their voice and therefore extensive interview notes were recorded instead.

Financial Support

Research Council of Mashhad University of Medical Sciences supported this study.

Acknowledgments

We appreciate the Vice Chancellor for Research at Mashhad University of Medical Sciences and also the officials of Infertility Center especially Mrs. Firouzeh

Shafighi Shahri. This article is part of the Ph.D. thesis on reproductive health with code 941108.

Endnote

- [1] The causes of infertility are both male and female.
 [2] £1 is equivalent to 54,453 Rials and \$1 is equivalent to 41 790 Rials.

References

- Gurunath S, Pandian Z, Anderson RA, Bhattacharya S. Defining infertility--a systematic review of prevalence studies. *Hum Reprod Update*. 2011;17(5):575-588. doi:10.1093/humupd/dmr015
- Centers for Disease Control and Prevention (CDC). National Public Health Action Plan for the Detection, Prevention, and Management of Infertility. Atlanta: CDC; 2014.
- Terzioglu F, Turk R, Yucel C, Dilbaz S, Cinar O, Karahalil B. The effect of anxiety and depression scores of couples who underwent assisted reproductive techniques on the pregnancy outcomes. *Afr Health Sci*. 2016;16(2):441-450. doi:10.4314/ahs.v16i2.12
- Allan HT, Mounce G. Managing infertility in primary care. *Practice Nursing*. 2015;26(9):440-443. doi:10.12968/pnur.2015.26.9.440
- Allan HT. The anxiety of infertility: the role of the nurses in the fertility clinic. *Hum Fertil (Camb)*. 2013;16(1):17-21. doi:10.3109/14647273.2013.778423
- Pines D. *A Woman's Unconscious Use of her Body: A Psychoanalytic Perspective*. London: Virago; 1993.
- Raphael-Leff J. *Psychological processes of childbearing*. London: Chapman and Hall; 1991.
- Malina A, Pooley JA. Psychological consequences of IVF fertilization - Review of research. *Ann Agric Environ Med*. 2017;24(4):554-558. doi:10.5604/12321966.1232085
- Hoorsan H, Mirmiran P, Chaichian S, Moradi Y, Hoorsan R, Jesmi F. Congenital Malformations in Infants of Mothers Undergoing Assisted Reproductive Technologies: A Systematic Review and Meta-analysis Study. *J Prev Med Public Health*. 2017;50(6):347-360. doi:10.3961/jpmph.16.122
- Janat-Amsbury MM, Gupta KM, Kablitz CD, Peterson CM. Drug delivery for in vitro fertilization: rationale, current strategies and challenges. *Adv Drug Deliv Rev*. 2009;61(10):871-882. doi:10.1016/j.addr.2009.04.019
- Helmerhorst FM, Perquin DA, Donker D, Keirse MJ. Perinatal outcome of singletons and twins after assisted conception: a systematic review of controlled studies. *BMJ*. 2004;328(7434):261. doi:10.1136/bmj.37957.560278.EE
- Agarwal A, Majzoub A. Role of Antioxidants in Assisted Reproductive Techniques. *World J Mens Health*. 2017;35(2):77-93. doi:10.5534/wjmh.2017.35.2.77
- Tremayne S, Akhondi MM. Conceiving IVF in Iran. *Reprod Biomed Soc Online*. 2016;2:62-70. doi:10.1016/j.rbms.2016.07.002
- Behjati-Ardakani Z, Karoubi MT, Milanifar A, Masrouri R, Akhondi MM. Embryo Donation in Iranian Legal System: A Critical Review. *J Reprod Infertil*. 2015;16(3):130-137.
- Roudsari RL, Allan HT, Smith PA. Looking at infertility through the lens of religion and spirituality: a review of the literature. *Hum Fertil (Camb)*. 2007;10(3):141-149. doi:10.1080/14647270601182677
- Sadeghi MR. Access to Infertility Services in Middle East. *J Reprod Infertil*. 2015;16(4):179.
- Infertile couples sponsorship program and management and development of infertility treatment services. Tehran: MoHME; 2015:1-9.
- Boivin J, Griffiths E, Venetis CA. Emotional distress in infertile women and failure of assisted reproductive technologies: meta-analysis of prospective psychosocial studies. *BMJ*. 2011;342:d223. doi:10.1136/bmj.d223
- Latifnejad Roudsari R, Rasoulzadeh Bidgoli M. The effect of collaborative infertility counseling on marital satisfaction in infertile women undergoing in vitro fertilization: A randomized controlled trial. *Nurs Midwifery Stud*. 2017;6(2):e36723. doi:10.5812/nmsjournal.36723
- Rasoulzadeh Bidgoli M, Latifnejad Roudsari R. The effect of the collaborative infertility counseling model on coping strategies in infertile women undergoing in vitro fertilization: A randomized controlled trial. *International Journal of Women's Health and Reproduction Sciences*. 2018;6(1):47-54. doi:10.15296/ijwhr.2018.09
- Shu-Hsin L. Effects of using a nursing crisis intervention program on psychosocial responses and coping strategies of infertile women during in vitro fertilization. *J Nurs Res*. 2003;11(3):197-208.
- Latifnejad Roudsari R, Rasoulzadeh Bidgoli M, Mousavifar N, Modarres Gharavi M. The effect of collaborative counseling on perceived infertility-related stress in infertile women undergoing IVF. *Iranian Journal of Obstetrics, Gynecology and Infertility*. 2011;14(4):22-31.
- Kim M, Kim S, Chang SB, Yoo JS, Kim HK, Cho JH. Effect of a mind-body therapeutic program for infertile women repeating in vitro fertilization treatment on uncertainty, anxiety, and implantation rate. *Asian Nurs Res (Korean Soc Nurs Sci)*. 2014;8(1):49-56. doi:10.1016/j.anr.2014.02.002
- Li J, Long L, Liu Y, He W, Li M. Effects of a mindfulness-based intervention on fertility quality of life and pregnancy rates among women subjected to first in vitro fertilization treatment. *Behav Res Ther*. 2016;77:96-104. doi:10.1016/j.brat.2015.12.010
- Taghipour A, Karimi FZ, Latifnejad Roudsari R, Kimiaei SA, Mazlom SR, Amirian M. Women's perceptions and experiences of the challenges in the process of male infertility treatment: A qualitative study. *Electron Physician*. 2017;9(5):4349-4356. doi:10.19082/4349
- Corbin J, Strauss A. *Basics of Qualitative Research*. Tehran: Andesheh Rafie; 2013.
- Lambert VA, Lambert CE. Qualitative descriptive research: An acceptable design. *Pac Rim Int J Nurs Res*. 2012;16(4):255-256.
- Sandelowski M. Whatever happened to qualitative description? *Res Nurs Health*. 2000;23(4):334-340.
- Erlingsson C, Brysiewicz P. A hands-on guide to doing content analysis. *Afr J Emerg Med*. 2017;7(3):93-99. doi:10.1016/j.afjem.2017.08.001
- Sohrabvand F, Abedinia N, Pirjani R, Jafarabadi M. Effect of anxiety and depression on ART outcome. *Iran J Reprod Med*. 2008;6(2):89-94.
- Bracewell-Milnes T, Saso S, Bora S, et al. Investigating

- psychosocial attitudes, motivations and experiences of oocyte donors, recipients and egg sharers: a systematic review. *Hum Reprod Update*. 2016;22(4):450-465. doi:10.1093/humupd/dmw006
32. Ahmadi A, Bamdad S. Assisted reproductive technologies and the Iranian community attitude towards infertility. *Hum Fertil (Camb)*. 2017;20(3):204-211. doi:10.1080/14647273.2017.1285057
 33. Pennings G. Distributive justice in the allocation of donor oocytes. *J Assist Reprod Genet*. 2001;18(2):56-63.
 34. Latifnejad Roudsari R, Hadizadeh-Talasaz F, Simbar M, Khadem Ghaebi N. Challenges of donor selection: The experiences of Iranian infertile couples undergoing assisted reproductive donation procedures. *Iranian Journal of Obstetrics, Gynecology and Infertility*. 2014;16(88):1-13.
 35. Hadizadeh-Talasaz F, Latifnejad Roudsari R, Simbar M. Decision for disclosure: The experiences of Iranian infertile couples undergoing assisted reproductive donation procedures. *Hum Fertil (Camb)*. 2015;18(4):265-275. doi:10.3109/14647273.2015.1076579
 36. Ranjbar F, Behboodi-Moghadam Z, Borimnejad L, Ghaffari SR, Akhondi MM. Experiences of Infertile Women Seeking Assisted Pregnancy in Iran: A Qualitative Study. *J Reprod Infertil*. 2015;16(4):221-228.
 37. Milanifar A, Behjati Ardekani Z, Akhondi MM. An Evaluation of Iranian Judges' Decisions about The Act of Embryo Donation. *Int J Fertil Steril*. 2015;9(2):254-260.
 38. Amiri M, Khosravi A, Chaman R, et al. Social Consequences of Infertility on Families in Iran. *Glob J Health Sci*. 2015;8(5):89-95. doi:10.5539/gjhs.v8n5p89
 39. Agostini F, Monti F, De Pascalis L, Paterlini M, La Sala GB, Blickstein I. Psychosocial support for infertile couples during assisted reproductive technology treatment. *Fertil Steril*. 2011;95(2):707-710. doi:10.1016/j.fertnstert.2010.06.011
 40. Afshani SA, Abdoli AM, Hashempour M, Baghbehshiti M, Zolfaghari M. The attitudes of infertile couples towards assisted reproductive techniques in Yazd, Iran: A cross sectional study in 2014. *Int J Reprod Biomed (Yazd)*. 2016;14(12):761-768.
 41. Makuch MY, Bahamondes L. Barriers to access to infertility care and assisted reproductive technology within the public health sector in Brazil. *Facts Views Vis Obgyn*. 2012;4(4):221-226.
 42. Hasanpoor-Azghdy SB, Simbar M, Vedadhir A. The emotional-psychological consequences of infertility among infertile women seeking treatment: Results of a qualitative study. *Iran J Reprod Med*. 2014;12(2):131-138.
 43. Allan H, de Lacey S, Payne D. The shaping of organisational routines and the distal patient in assisted reproductive technologies. *Nurs Inq*. 2009;16(3):241-250. doi:10.1111/j.1440-1800.2009.00461.x
 44. Availability IVF 2018. <https://www.nhs.uk/conditions/ivf/availability/>.

© 2019 The Author (s); This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.