**Title: Trying for a second chance: Iranian infertile couples' experiences after failed ART**

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**Abstract**

**Introduction:** Despite significant advances, only 35% infertile couples conceive after ART. If IVF is unsuccessful, couples will need to decide whether to proceed again with assisted conception. The aim of this study was to explore Iranian infertile couples' experiences after failed ART to continue treatment.

**Method**s: In this qualitative study participants were selected using purposeful sampling method. Data were collected using 29 semi-structured face-to-face in-depth interviews at a regional Infertility Center from April 2016 to June 2017. All interviews were recorded, transcribed verbatim, and analyzed with conventional content analysis method using MAXQDA software.

**Results**: Our findings suggest that couples' decisions to continue treatment after unsuccessful ART is shaped by their social, emotional and financial circumstances. We have constructed two themes to describe their experiences: support to continue and trying for a second chance.

**Conclusion**: Our findings suggest that good marital and family support networks can support infertile couples during this period of decision making. Considering the depression and anxiety caused by failed ARTs, which itself could affect the success rate of any further ARTs, the clinical team should effectively assess psychological readiness of couples who decide to continue with another ART after unsuccessful treatment.

**Keywords**: Infertile couples, Assisted reproductive techniques, Unsuccessful treatment, Qualitative study.

**Introduction**: Existing data suggests that at least 50 million couples experience infertility worldwide (1). One in every four couples in developing countries are affected by infertility (2). The prevalence of primary infertility throughout a couple's lifetime is estimated to be between 17.3% (3), 20.2% (4), and 21.1% (5) in Iranian couples, which is higher than international prevalence (3, 4). Infertility is experienced as a life crisis in many cultures globally (6).And in Iran, as a Muslim country, fertility and procreation especially for women are notably valued (7). Indeed, infertility may lead to separation, polygamy, and eventually divorce in societies where the purpose of marriage is childbearing, because children are very important in these societies. They are the ones who preserve the family name and lead to the continuity of generations (8).

Recent advances diagnostics and in assisted reproductive technologies raise hopes among infertile couples and at the same time present challenges (9). Despite significant advances in ARTs, only 35% of couples attain live birth after each cycle(10). However, after 12 treatment cycles, the cumulative live-birth rate is expected to reach 85% in the long run(11). It is therefore

unsurprising that Daibes et al. (2018) showed that continued ART treatment was a common response among women to failed ART cycle (12).

However, continuing treatment cycles is not without risks. If the ART cycle is not successful, couples will face new decisions such as tolerance or intolerance of the second or third in vitro fertilization (IVF) cycle. Infertility and its treatment is a stressful process, and many women undergoing such treatment experience extreme emotional stress (13) Men feel embarrassed and angry(14) and they show negative psychological response after unsuccessful treatment (15). Financial, emotional, and physical considerations are taken into account in these decisions (16). Even couples who have a good prognosis and high motivation discontinue treatment in up to 60% of cases due to the psychological burden of ART, which may be due to fear of failure and lack of awareness (17). Tabong & Adongo (2013) found that infertile couples have different experiences after unsuccessful treatment in different family settings. Some couples receive support from their families, whereas some blame their families for their distress (18). A literature review showed that few studies have focused on the experience of infertile couples following unsuccessful ART treatment(19). Those studies which have focused on unsuccessful treatment, have studied the rate and causes of treatment discontinuation as well as the factors associated with unsuccessful IVF such as the cause of infertility using quantitative methodologies (19, 20). Other studies have measured the effect of psychological interventions to facilitate coping of couples during ART treatment cycles (21-23). However, there have been no studies on the decision-making of infertile couples about retreatment following unsuccessful AR treatment cycles.

**Materials and methods**

*Study design*

This study was a qualitative interview study using content analysis. Content analysis is a standard approach to health, treatment, and social sciences, which uses a set of methods to produce valid results from textual data(24). In this approach, categories are extracted directly from textual data, and the researcher achieves a deeper understanding of a phenomenon(25). The reason for using the content analysis approach in this study was to achieve the discovery of the meanings, priorities, and decision-making of infertile couples about retreatment after unsuccessful ART treatment.

*Study setting*

The present qualitative study, which was conducted from April 2016 to June 2017 at a regional Infertility Center in Iran. The setting of the study is considered as the referral center in eastern part of the country, which admits patients belonging to different social classes and with various causes of infertility.

*Study population*

*The sample size is relative in qualitative studies and is usually determined based on the need for information(26). Sampling was continued without any limit on the number of participants until the data were saturated. Saturation occurs in research when all major categories are fully developed, diverse, and integrated(14).*

There were 29 participants including nine couples, nine women, two men. Inclusion criteria included Iranian infertile couples with primary infertility that had a history of unsuccessful ARTs treatment with various causes of infertility and at least one failed cycle. Exclusion criterion was unwillingness to participate in the study, secondary infertility, having adopted offspring, history of positive pregnancy test and psychological disorders in infertile couples. Purposeful and snowball sampling were both used to select participants.

*Data collection*

Data were collected using semi-structured interviews. The present study is part of a PhD thesis that it was approved by the Regional Ethics Committee and permitted to be carried out in the infertility center. Prior to interviews, explanations were given to the subjects about the research objectives. Moreover, if they agreed to the interview, a written informed consent was obtained from them. Interviews were conducted in person *by author 1* and recorded after attaining their permission and were implemented at the earliest opportunity. Interviews began with general questions "How did you feel when you realized that your treatment was unsuccessful? What is most helpful or annoying to you in the current situation? Do you have any plans for the future?" Each interview lasted between 35 and 90 minutes.

*Data management and analysis*

All interviews were transcribed verbatim. Transcribed text was read several times line by line by the first author so that a general understanding of the content was obtained. The text was analyzed by qualitative content analysis as expressed by Graneheim and Lundman(24). The text was then divided and coded into condensed meaning units. The codes were compared, arranged, and then placed in more abstract subcategories and categories by the first two authors. Each interview was conducted after coding the previous interview to be aware of the gaps in the data. The data analysis was carried out using conventional content analysis method in MAXQDA 2010 software. Guba & Lincoln's criteria were used for trustworthiness of the data (27). To this end, a number of coded texts were given to the participants to verify the researchers' perceptions. All the study process was prepared in a thorough, accurate, and written manner and the text of the interviews, codes, and categories emerged was reviewed by two experts in the qualitative research, who were also members of the research team.

**Results:**

In this study, the age range of women and men was 21-46 and 30-46, years, respectively. A total of 29 interviews were conducted with infertile patients. The infertile patients' level of education ranged from reading and writing literacy to a Masters degree. The duration of couples' marriages was between 2-21 years and the duration of the treatment varied from 10 months to 18 years. The causes of infertility were as follows: male and female infertility (n=7 cases), female infertility (n=7 cases), male infertility (n=7 cases), and unknown causes (n=8 cases).

There were two main themes identified in the data analysis: support to continue and trying for a second chance (Table 1).

**Support to continue**

Support from a number of sources was important as the failed ART cycle was a significant set-back for the couples. Participants stated that they continue treatment because not to blame themselves in the future:

"*Just now, I mainly go for the treatment so that not to blame myself in the future and say if I went there, I got pregnant*" (Interview 5, female, 12, female and male infertility).

Some participants also stated that their husbands consoled them after every unsuccessful treatment and encouraged them for retreatment.

" *I told him (my husband): " The result of my pregnancy test was negative" and he said: " No problem, it's not important, now, you can try it once or twice, nothing happened"* (Interview 2, female, 10 months, female and male factor).

Some participants said their families expressed their agreement over the decision for continuing treatment and provided psychological support for them:

*"My family hundred percent agree with me to start treatment again*"(Interview 5, female, 12 years, female and male factor).

A participant also considered having a friend as a factor affecting the continued treatment:

"*My friend is there (at the treatment center). It's really one of the reasons I can repeat it so much without being bothered* "(Interview 1, female, 18 months, female and male factor).

In this study, the majority of participants stated that they will continue the treatment until the treatment is effective. As one of the participants, as an answer to the question of how long you will continue the treatment, said, "*I will continue the treatment until the postmenopausal period*."

Observing successful treatment among peers was a factor which raised hope for couples who were considering another attempt at ART:

"*When I saw one of the women became pregnant in the infertility center, I became very happy and more hopeful*" (Interview 14, female, 3.5 years, female infertility factor).

**Trying for a second chance**

The second theme was 'trying for a second chance' included sub-themes of saving up to continue treatment, finding another clinic and losing trust in AR.

After unsuccessful treatment, most of participants had financial problems and had to save up to pay for the second treatment cycle; they described saving, borrowing, taking out loans, or selling valuable items.

"*We borrowed so much. I sold my own gold so that we could do it*" (Interview 10, female, 4.5 years, male factor).

The decision to continue treatment was not only shaped by whether the couples enough money to pay for further cycles. It was also affected by their trust in the treatment center where they had had a failed treatment cycle.

Amidst the financial costs of another cycle, couples also described losing trust in ART and treatment cycles. Some of the participants, after unsuccessful treatment with ARTs, were thought

about using herbal treatments, acupuncture, and even non-scientific tasks such as fortunetelling. One of the participants stated that while interacting with her peers, she saw the success of the use of acupuncture in the treatment success, and decided to do so after a failed treatment. Two participants also stated that they had performed cupping after the previous unsuccessful treatment.

Most of the participants had doubts about whether to continue the treatment. Some were skeptical about ovulation induction, the use of donated eggs, or the use of alternative therapies such as herbal medicine, or the change of treatment site or physician.

The majority of the participants also changed between several treatment centers; particularly when after having several failed treatment cycles with a single specialist and health center.

Some of the participants also decided to continue treatment at a treatment center in a city other than their own, after an unsuccessful treatment, and went on a therapeutic trip.

**Discussion:**

We have presented two themes which describe a small sample of Iranian infertile couples' experiences of deciding whether to continue treatment after unsuccessful ARTs. These are: support to continue and trying for a second chance. Iranian culture is a collectivist culture where infertile couples experience stigma or remain marginalized due to negative psychological consequences as a consequence of the infertility and not being able to fulfil an expected maternal role in society. Yilmaz et al (2020) were shown that there was significant difference between the person paying for the treatment and cause of infertility with mean infertility distress scores(28). Iran is in other words, strongly pronatalist; marriage and childbearing are integral parts of social structure. (27). Among our sample, a failed ART cycle resulted in a significant set-back for the couples and they sought support to help them adjust to the loss of the cycle and plan for the

future. In order to manage continuing with treatment, they sought support from their marriage partner, their families and their peers before deciding to continue with another ART cycle, trying for a second chance; this continued treatment entailed saving up to pay for another cycle, while at the same time losing trust in ART and as a result, changing clinics to manage their loss of trust and build their hope in success in the next ART cycle.

The hope to have a child and the fear of not being able to get pregnant in the future is considered a conflict for all participants, all of whom were Muslim (29). Tokgoz et al (2020) were found that anxiety was more common in women with low ovarian reserve(30). The findings of the present research showed that marital reciprocal support and empathy between couples led to continuing treatment. Among infertile couples, men usually play the role of supportive partner during and after treatment (31). In a qualitative study on samples in the UK and Iran was found that infertile women interpreted infertility as a joint life project that they have to go through it, cooperatively, with their partners. They found that infertility and ART cycles could have a positive impact on their relationships due to caring about each other's happiness, having a loving relationship as well as a spouse's reassuring and supporting approach. As a consequence couples may become closer to each other through the journey of infertility (32).

In this study, relatives' encouragement after unsuccessful treatment led couples to continue their treatment. Social support also plays a key role in enabling an infertile couple to overcome infertility as a life crisis; support during a life crisis may include partners, family and friends (33). *Also psychological support improves quality of life in infertile women with stigma(34).*

In our study, some couples lost faith in ARTs treatment after their failed ART cycle and turned to traditional and herbal medicine methods. Consistent with the present study, researchers have found couples search for alternative and/or complementary interventions to enhance their chances of pregnancy after unsuccessful treatment (12). In the present study, another factor

which affected their decision to continue with treatment was the cost of further ART cycle. Studies in Iranian infertile couples show that some participants have to wait until they can afford the cost of treatment after an unsuccessful treatment(35). These findings have implications for health professionals who are working in fertility clinics. They need to consider all aspects of holistic care including psychosocial needs of infertile couples, when caring for women with fertility problems(36) .

As not much is known about Iranian or Muslim infertile couples' decisions to continue treatment after unsuccessful treatment, strength of this research is that it was conducted in an Iranian setting with an exclusively Muslim sample. The particular context of interviewing couples and family members is a strength. The sample included in this study was a relatively homogeneous sample with similar demographic characteristics and this is one of the limitations of the study.

A study was shown the importance of psychological impact of the COVID-19 pandemic on the infertile couples with IVF treatment(37). We suggest that similar studies should be performed during pandemic Covid 19.

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Table 1: Emerged Themes and subthemes from analysis of data

| Main codes | Subtheme | Theme |
|---|---|---|
| Continue treatment to prevent self-blame | Being affected by compensatory mechanisms | Support to continue |
| Non-logical decision-making to continue the treatment | | |
| Giving hope | ***Marital support*** | |
| Accompany | | |
| Encouragement for continued treatment | | |
| Spiritual support of surrounding people | ***Family and peers' encouragement:*** | |
| Insisting of family members to continue treatment | | |
| Hoping for the existence of frozen embryos | The presence of promising conditions for the continuation of treatment | |
| Expecting to have an ovum | | |
| Observing successful treatments in peers | contiguity with peers | |
| Comparing themselves with peers | | |
| Saving for retreatment | ***Saving up to continue treatment*** | Trying for a second chance |
| Selling valuable staff for retreatment | | |
| Borrowing | | |
| Getting loan | | |
| Having a mixed feeling of hope and fear to start retreatment | The confusion of mental and emotional fluctuations | |
| Being doubtful to start retreatment | | |
| Fear of getting worse by starting retreatment | | |
| Having mental preoccupation to continue treatment | | |
| Hesitance to continue treatment | ***Losing trust in ARTs*** | |
| Being doubtful to use a donor egg | | |
| Uncertainty about using herbal medicine | | |
| Unconvinced to change physician | ***Finding another clinic*** | |
| Being unsure to change the treatment center | | |