Original Article

Experiences of Mothers Receiving Donated Embryos

Abstract

Background: The efficacy of Assisted Reproductive Techniques (ARTs) or technologies used to treat infertile couples has been approved. One such technique is embryo donation. However, there is insufficient knowledge of the experiences of mothers receiving donated embryos. Thus, the present study was conducted with the aim to determine the experiences of mothers receiving donated embryos. **Materials and Methods:** This qualitative conventional content analysis study was conducted in 2018 for 8 months (from February to September). The research setting was Royan Institute. Mothers receiving donated embryos were selected from among those who were pregnant or were at the postpartum stage using the purposive sampling method. A total of 15 interviews were performed with 13 participants. The qualitative data were collected using deep unstructured interviews and analyzed using the Graneheim and Lundman (2004) method in (version 10; VERBI GmbH, Berlin, Germany) software. **Results:** Data analysis resulted in 412 open codes that were then categorized into 7 main categories and their subcategories. The main categories were as follows: sociocultural constraint, feeling of insecurity in personal and family identity, protection of personal and family identity, confounded support, pressure and hardship, and achieving relative tranquility. **Conclusions:** The results of this study showed that the mothers who underwent embryo donation experienced feelings of insecurity regarding both individual and family identities, were confronted with sociocultural difficulties, and faced various pressures. It is suggested that future care plans be focused on the identity crisis of these families and the children resulting from these methods, and that future plans balance the socioeconomic pressures resulting from the use of these methods.

Keywords: *Assisted reproductive techniques, embryo transfer, infertility, qualitative study*

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Introduction

The advancement of technology has increased the success rate of the treatment of infertile couples.[1] Accordingly, some of these technologies require third-person cooperation, one of which is embryo donation.[2] Assisted Reproductive Techniques (ARTs) with donated embryos have increased.[3] Undoubtedly, the use of donated embryos is instrumental to achieving success; however, its use in the community without creating a suitable context, and without considering the effects of these techniques on social relationships and the rational, ethical, and scientific predictions of the problems induced by gamete and embryo transfers is illogical.[2] The ARTs have been considered legal since late 1990s in Iran.[4] Unlike sperm donation, embryo donation is widely accepted by Iranian men. Thus, the demand for embryos is increased as almost all the couples who are eligible for sperm donation are considered as embryo donation candidates.[5]

Correspondingly, having children through receiving donated embryos has implications for family relationships. This has produced some concerns in the individual and social domains including concerns about the future of the child born using this method. Other issues in this regard originate in family and familial relations, and the third person who attempts to help the infertile couple.[6,7] Women can become mothers through various methods.[8] Regardless of the method through which they become mothers, women's transition to motherhood is normally associated with many challenges and damages.[8,9] Women using ART are mostly labeled infertile, and experience treatment failure, impaired body image, frequent referrals to healthcare centers, use of numerous medications and the complications resulting from them, staggering treatment costs, and fear

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of treatment failure which result in greater anxiety and challenges.[10] Paying attention to the mental and social needs of mothers is important during the motherhood process.[9] Nurses can provide mothers with the knowledge to prepare them for this experience and lead them toward a positive pregnancy experience, and can facilitate this process by increasing mothers' confidence.[11] Moreover, they can reduce mothers' fears and tension via identifying their problems and barriers and facilitating their acceptance of the role of motherhood through suitable training and support. Mercer believes that a new mother forms a part of a specific culture and is both influenced by and affects the cultural values, customs and rituals, and rules and regulations during interaction with the child.[12]

The results of previous studies have suggested that a woman's cultural and value system, the type of outlook toward motherhood, and women's previous experiences, which differ from community to community, affect the motherhood experience. However, there still is insufficient knowledge of the experiences of mothers receiving donated embryos in our country with its specific values, culture, and customs. Qualitative research as a group of approaches to the collection and analysis of data aims to provide an in-depth and detailed sociocontextual description and interpretation of the research topic.[13]

Conventional content analysis is generally used in a study undertaken to describe a phenomenon. This type of study design is usually appropriate when there is a limited existing theory or research literature on a phenomenon.[14] Previous studies have been performed on the process of becoming a mother among Iranian surrogates and commissioning mothers[15] and women receiving donated eggs,[16] but a review of the literature provided no study that directly investigated the experiences of mothers receiving donated embryos. Goedeke *et al*.[17] assessed how embryo donors and recipients understand and experience embryo donation. They showed that donors and recipients regard the genetic link between the donors and the donor-conceived infant as significant, and draw on the metaphors of embryo donation as adoption and building extended family networks to manage the complex interplay of the genetic, gestational, and social aspects of reproduction and family-building.[17] The present study was conducted with the aim to determine the experiences of mothers receiving donated embryos regarding becoming a mother in Iran.

Materials and Methods

This qualitative conventional content analysis study was conducted in 2018 for 8 months (from February to September). The research setting was the Royan Institute, which is one of the leading *In Vitro Fertilization (IVF)* centers in Iran. Mothers who had received donated embryos were selected from among those who were pregnant or were in the postpartum period, spoke Persian, and were willing to participate in the study. They were selected using a purposive sampling method among the clients (available samples) of Royan Institute. The study exclusion criterion was withdrawal from the study. To achieve maximum variation in sampling, mothers at various stages of pregnancy and postpartum were recruited.

The required qualitative data were collected via deep unstructured interviews. To do this, one of the personnel of the center who was in close contact with mothers called them and obtained their consent for taking part in the interviews. The phone numbers of mothers who agreed to take part in the study were given to the researcher who subsequently contacted them, explained the research goals and procedures to them, and then, made an appointment with each of them for the interview at their convenience. All the participants of the study suggested phone interviews due to their inclination for anonymity. Finally, 15 interviews were performed with 13 mothers who had received donated embryos; two complementary interviews were also performed with two mothers. The first interview was carried out with the following open-ended question: "Why did you decide to use this method?" The interview was then continued via co-construction to clarify the concept under study and deepen the concept using some elucidative exploratory questions such as "Could you explain more?," "What do you mean?," and "Can you give us an example?" At the end of each interview, the participant's consent was obtained for the continuation of her participation. If necessary, they were contacted to clarify any ambiguities in the recorded sentences or for the next interviews. The mean time of the individually performed interviews was 44 min. All the interviews were recorded with the permission of the interviewees. For bracketing, the first author, who performed all the interviews, tried to be a listener not a co-creator of the data. Moreover, she had not investigated embryo donation and did not have any experience in this specific field.

The qualitative data were analyzed using Graneheim and Lundman's method (2004), which is a systematic objective method for the description of phenomena that has been widely used in recent years in health research as a flexible method to analyze text data. The data were analyzed using qualitative content analysis with the following stages, inspired by the method of Graneheim and Lundman (2004)[18]: 1) After being transcribed verbatim, all interviews were repeatedly read through; 2) Codes and analytical traces were identified; 3) Overarching themes were subsequently identified and labeled; 4) The content of each theme was made clear and again validated against the raw data. Through this method, the researcher avoids the application of predetermined categories and allows the categories and themes to be extracted from the data. Hence, the researcher deeply contemplates the data to obtain a new understanding of or insight into the field under study.

In this study, all interviews were recorded using a voice recorder after obtaining the participants' permission. The

researcher listened to the voice recordings repeatedly on the same day that the interview was done and a few days later, the interview contents were transcribed verbatim, typed into Microsoft Word Processor 2007, and were then reread. The data were imported to MAXQDA (version 10; VERBI GmbH, Berlin, Germany) and analyzed concurrently with data collection. This was continued until data saturation was reached. The words, phrases, concepts, and sentences with specific meanings related to the research goals were identified as semantic units in the participants' assertions and interview texts and the primary codes were then extracted from them. Notably, the exact words of the participants or similar labels (codes) indicating that phenomenon were used. Next, the codes with similar meanings were grouped into separate subcategories. After the analysis and continual comparison of codes and subcategories, similar subcategories were identified and the main categories were formed. Thereafter, the analysis moved toward higher semantic levels and the concepts hidden within the data emerged. Finally, the main themes appeared. Reduction and merging, logical integration, and abstraction were performed during all stages of data analysis that ultimately resulted in seven main themes or categories. This is discussed in the "Discussion" section.

The credibility, confirmability, and dependability of the results were enhanced by over 10 years of experience of the first author with the subject, validation of the initial codes and concepts by team members, and scrutiny of the analysis by the research team. Moreover, peer debriefing and time triangulation (i.e., sampling of mothers at various stages of the pregnancy and postpartum period) increased the credibility, confirmability, and dependability of the findings. A research audit trail was also developed to establish the dependability, confirmability, and authenticity of the results.[19]

Ethical considerations

The ethical considerations observed in the study included briefing participants on the objectives of the study, significance, and methodology, obtaining permission from participants to record the interviews, letting participants know their right to withdraw from participating in the study and disallowing the recording of the interviews, letting participants decide on the time and place of their interviews, and maintaining the confidentiality of the data. Ethics code (Ec/93/1063).

Results

The demographic characteristics of the participants are presented in Table 1. Open coding resulted in 412 primary codes without accounting for data overlap. As the study progressed and the data were categorized, seven main categories emerged, including "sociocultural constraint," "pressure and hardship," "feelings of insecurity in personal and family identity," "protection of personal and family identity," "confounded support," and "achieving relative tranquility." These categories will be discussed in detail below [Table 2].

Sociocultural constraint

This category refers to the mother's exposure to customs and rituals, rules and regulations, values and beliefs, and knowledge and thoughts of the community in the form of incompatibility with motherhood through receiving donated embryos. In making the decision to receive the donated embryo, mothers first face "sociocultural constraint." This theme includes the two subthemes of "the taboo nature of the use of ARTs" and "inappropriate behavior of the community."

The taboo nature of the use of ARTs

The subtheme of the taboo nature of the use of ARTs refers to the negative attitude of society towards the existing infertility treatments, the lack of suitable conditions for using this method as one of the new technologies of assisted reproduction, and the consideration of this phenomenon as unnatural and bizarre in the society. "*There are many like me! I mean in our village. I am not the only one; there are a hundred people like me. They know about this method, but they do not try it. There are guys who have 10 cars,*

Table 1: Demographic characteristics of mothers participating in the study

Participant No.	Mother's age (year)	Occupation	Cause of infertility	Status	Duration of infertility (year)
1	37	Employee	Male factor	With children	5
2	41	Homemaker	Male factor	With children	16
3	35	Employee	Male factor	With children	16
4	36	Homemaker	Male factor	With children	12
5	41	Homemaker	Male factor	With children	16
6	40	Homemaker	Male factor	With children	18
7	40	Homemaker	Male factor	With children	18
8	30	Homemaker	Male factor	Pregnant	14
9	34	Homemaker	Male factor	Pregnant	12
10	33	Employee	Male factor	Pregnant	14
11	24	Homemaker	Male factor	Pregnant	8
12	36	Employee	Male factor	With children	13
13	34	Homemaker	Male factor	With children	12

Table 2: Categories and the related subcategories at the end of the coding

Categories	Subcategories	Sub-subcategories
Sociocultural constraint	The taboo nature of the use of Assisted Reproductive Techniques (ARTs)	
	Inappropriate behavior of the community	
Pressure and hardship	Mental pressure	
	Overwhelming treatment	
	Financial problems	
Feelings of insecurity in personal and family identity	Hesitation and lack of confidence	
	Fear and anxiety	Concern for losing the last hope
		Fear of disclosure and its consequences
Protection of personal and family identity	Seeking information and consultation	
	Acceptance of the last ray of hope	
	Sensitivity to donor selection	
	Attempts to maintain familial life	
	Challenging internal turmoil	Companionship
		Self-restraint
		Resorting to spirituality
		Concealing
		Ignorance and suppression
Confounded support	Support umbrella	Support from family and relatives
		Healthcare system support
	Deficiencies in the healthcare system	
Achieving relative tranquility	Reassurance	
	Substantiation of parental identity	
	Feelings of satisfaction	

*ARTs: Assisted Reproductive Techniques

guys who have 2 cars each costing 500 million [tomans], but they do not try this method because of what people will say" (Participant 11).

Inappropriate behavior of the community

The members of the community, the family, and the relatives may show unfavorable reactions to infertility and the use of ART. This phenomenon itself is a result of society's negative attitude towards infertility and its treatment. This inappropriate reaction is mostly verbal, and sometimes is reflected in behaviors like excessive curiosity, blaming, or sarcasm, the relatives' forcing the couple to divorce or remarry, and the relatives' putting the couple under pressure to have children. "*When my baby was born, my husband's family repeatedly said that she did not look like us at all, although others said that she looked a little like us. They repeatedly said that I was wearing a fake pregnancy belly"* (Participant 1).

Pressure and hardship

The category of pressure and hardship refers to the difficulties that mothers experience due to the treatment process, financial problems, and mental pressure, which includes the three subcategories of "mental pressure," "overwhelming treatments," and "financial problems."

Mental pressure

The feelings of loneliness, frustration, and annoyance as a result of infertility, feeling secluded due to not having children, self-sacrifice to hide infertility, tolerating inappropriate social behaviors such as excessive inquisitiveness, backbiting, sarcasm, and forcing the spouse to remarry, and problems and pain as a result of frequent treatment procedures, failure of futile treatments, and repeated pregnancy losses and abortions lead to mental pressure as well as the reduced threshold of tolerance in the mother. *"I would really like my husband's family to support me. "When they told me that they were going to force him to remarry another woman and asked me to go back to my father's home, my heart broke"* (Participant 1).

Overwhelming treatment

The subcategory of overwhelming treatment includes difficulties associated with repeated visits to therapeutic facilities, difficulties of hiding the treatment, lack of suitable accommodation, the long course of treatment, spending a great deal of time to see the physician, difficulties in finding a donor, tolerating the difficulties of a problematic gestation, complete bed rest during pregnancy, premature delivery, multiple difficult deliveries, and postpartum depression. *"I got injections to prevent miscarriage or abortions, which hurt me greatly. I was suffering from pyrexia (high fever). The shot was so febrifacient that it awakened me from sleep"* (Participant 7).

Financial problems

Financial problems include the high costs of diagnostic and

treatment procedures, lack of insurance coverage, as well as the costs of commuting to medical centers, residing in the city where the treatment is being done, daily living expenses, etcetera. "*I had financial problems, so I sold all my gold and borrowed money, but now I do not care about it at all. I spent at least 20 million tomans, and I could hardly make ends meet because my child is more important for me" (*Participant 4).

Feelings of insecurity in personal and family identity

This refers to a set of feelings of anxiety, hesitation, and lack of confidence experienced by mothers and includes the subthemes of "hesitation and lack of confidence" and "fear and anxiety" which threaten the mother's personal and family identity. Confounding of personal identity generally concerns the negative pregnancy test, abortion, etc., resulting in the infertility stigma posed by the community and being differentiated from ordinary community members. However, the confounding of family identity is the concern of losing familial integrity or not recognizing the family as an ordinary one with its own identity in the community. It consists of the following subcategories:

Hesitation and lack of confidence

Lack of confidence, i.e., inability to rely on others, is a subcategory of "feelings of insecurity in personal and family identity." The features of this concept include the mother's lack of confidence in the community, the donor, the spouse, the genetic father, and the embryo/child. Moreover, the mother experiences a lack of confidence in others for consultation, a lack of confidence in donors, hesitation in revealing or not revealing the secret to the child, and uncertainty in being accepted as a mother by the child and the community.

"I do not mean that my relatives and friends are bad. Yet, I know that they told everybody about it, since they used to chatter about anything to each other. They would talk about it to anybody. They will not keep this secret" (Participant 5).

"My husband said he wanted to tell them. I told him not to tell them, because in the existing atmosphere here, people tend to blame you for it… not everyone can be trusted" (Participant 1).

Fear and anxiety

The subcategory of "fear and anxiety" consists of the two sub-subcategories of "concern for losing the last hope" and "fear of disclosure and its consequences."

Concern for losing the last hope

The mother's anxiety about not having a positive pregnancy test, fetal health outcome and miscarriage, losing the last chance to have a baby, worrying about not knowing the donor in case the baby faces problems, worrying about the baby being taken away by the genetic parents, and worrying about losing the baby for any reason. "*I said I had spent a lot of money. They told me it was the last time. My sister-in-law (the donor) wanted to have a baby herself, she had become pregnant later, I no longer had any ovules or anything, that is why I was worried"* (Participant 2).

Fear of disclosure and its consequences

The mother has concerns for two reasons, the fear of disclosure to others, and the fear of disclosure to the child. In this regard, one of the biggest concerns of mothers is the lack of physical resemblance of the child to the parents, and his/her resemblance to the donor, and as a result, the disclosure of the secret. "*I was afraid that the child may come to know someday that he/she is not our own child or someone may find out and tell the secret to the child"* (Participant 7).

Protection of personal and family identity

This category refers to the measures taken by the mother to attain and maintain parental and family identities. It shows the method of coping with and overcoming the feelings of insecurity in personal and family identities. This category has various subcategories including "seeking information and consultation," "attempts to maintain familial life," "acceptance of the last ray of hope," "sensitivity to the donor's characteristics," and "challenging internal turmoil."

Seeking information and consultation

Mothers try to meet their information needs through various sources such as websites, studying books, obtaining information from peer groups, consultation with religious clergymen, physicians, and IVF personnel. The mothers' information needs were mostly related to the process of embryo donation and the treatment stages, legal issues, preparation for motherhood, as well as postpartum issues regarding the child's upbringing and the process of his/her mental and physical development. "*At first, I was highly advised to eat some things in order to have a successful embryo implantation, but I do not know whether it is true or not. I feel that the food I ate was effective. Those women who were there and had the implantation done before me, told me the same things I found online. They recommended some things like soy milk or starch. They said that this stuff can increase the rate of success. I thought that even if there was a small bit of truth to it, it would be good for me. I searched the internet and also asked others. Now, I spend most of my time searching online, for example, to see what I should do for my 14-month-old daughter, and what nutrients, vitamins, or iron supplements she should take?"* (Participant 3).

Acceptance of the last ray of hope

Acceptance of a donated embryo and even a definitive diagnosis of infertility are not achieved readily, which are associated with some resistance. The most important factors affecting the acceptance of this issue are the feeling of genetic separation from the child, lack of acceptance of

innovative methods by the community, and concerns about the differences in the appearance of the child and parents. The factors that finally make this method acceptable are the acceptance of the last ray of hope for maintaining the marital life, the decision to hide the embryo donation, peers' views, obtaining information on this issue, and confidence in this method. In some cases, even the acceptance of the child occurs step by step. *"I was at the end of the way. My family was under a massive pressure as well as my husband. I told that we would adopt. That's a pity to make our life problematic for it. It's not such a problem"* (Participant 8).

Attempts to protect familial life

This category refers to the individual's struggle to maintain familial integrity and prevent the disintegration of the family. Accordingly, this is accomplished through follow-up treatment due to the fear of the remarriage of the spouse, attempts to convince the husband to accept the donated embryo, ignoring the sarcastic remarks and reprimand of the community, and attempts to maintain the family and spouse. *"[my husband] did not want it [the embryo donation] at first. I suggested it. I even suggested an adoption, and he was against it, and told me that it should be ours. Then again, we had undergone surgeries 14 times, which were not successful. The doctor told me that I was taking too much risk, and it was harmful for my body. We came back and did not go there again. We understood that we had no other choice, so we decided to do this. I suggested it to him again and he accepted to do it"* (Participant 6).

Sensitivity to the donor's characteristics

All mothers have predetermined criteria before selecting the donor. These include the donor's physical, mental, and psychological health statuses, cultural similarity, physical appearance, blood group, religious beliefs, and belief similarities. *"I told the social worker that we prefer a child that resembles us in appearance and face. The skin color and blood group are also important. I have twins and their blood groups correspond to ours"* (Participant 5).

Challenging internal turmoil

This refers to the mother's strategies to calm herself and overcome internal turmoil. The subcategory of "challenging internal turmoil" consists of the following sub-subcategories: "companionship," "self-restraint," "resorting to spiritualties," "concealing," and "ignorance and suppression."

Companionship

"Companionship" means relieving internal discomforts and tensions by talking to trusted people like your spouse and your peers, talking to the fetus, talking to yourself when you are alone, and talking and socializing with knowledgeable and trustworthy people or close friends. "*I told my sister and mother about it. Well, I was more intimate with them. Besides, I knew they would not talk about it to anyone" (*Participant 5).

Self-restraint

"Self-restraint" is defined as not talking about inner issues, hiding one's annoyance about what others have said, self-censorship, silence, crying alone, pretending not to hear other people's sarcastic remarks and not responding to them, ignoring bad thoughts, entertaining oneself, and tolerating adverse conditions. "*Our own family taunted us. I was just crying. My spouse kept silent"* (Participant 6).

Resorting to spirituality

"Resorting to spirituality" is defined as resorting to God and saints to overcome difficulties, and surrendering affairs to the will of God, which are the fruit of inner belief in God's support and the supremacy of His power. Sending blessings (Salawat upon prophet Muhammad) for the health of the fetus, performing the night prayer for the health of the fetus, reciting the Qur'an, communicating with God and the Imams, praying, trusting in God, pleading with God, making vows, believing in fatalism, and accepting that one is being tested by God and surrendering to God's will are some examples of what people do in such a situation. "*When I had stress, I would sit and recite the Quran. When nobody was home, it would calm me down"* (Participant 5).

Concealing

"Concealing" is defined as hiding treatment follow-up and using ARTs to have children (receiving a donated fetus from relatives), hiding the cause of infertility from the relatives, insisting on receiving a fetus anonymously, lying, unwillingness to disclose to the relatives and the future child, and destroying all the documents. This strategy was very common. "*No one knows. I did not want anyone to know. In the future, it will affect this child if he/she is told that his/her parents are some other people. I was just afraid of this. Maybe it was selfish of me, but I did not want anyone to know. In the future, they may say that it is not our child, that he/she belongs to someone else"* (Participant 3).

Ignorance and suppression

"Ignorance and suppression" includes showing indifference, encouraging oneself, entertaining oneself, denying the role of the donor, not thinking about the donated embryo, believing in the less significant role of genetics, discarding negative thoughts, ignoring what relatives say, and suppressing their inquisitiveness. This strategy has been used by mothers to overcome stress and feeling of insecurity. "*Can you believe that I did not even think about who they (the donors) would be, what they would be, because if I wanted to think about it, it would hurt me. That is why I did not think about them"* (Participant 2).

Confounded support

This refers to the support received by mothers perfectly or imperfectly from accessible supportive resources in the family and community. It can consequently have mental, financial, informational, caregiving, or therapeutic aspects. This theme (category) consists of the subthemes of "support umbrella" and "deficiencies of the healthcare system."

Support umbrella

This category consists of the two subcategories of "support by family and relatives" and "Healthcare system support."

5-1-1 Support by family and relatives

The first sub-subcategory of "support by family and relatives" includes the spouse's confidentiality, acceptance of the donated embryo, establishing a relationship with the embryo in the mother's uterus, mother's support in facing relatives' inquisitiveness, support during pregnancy, self-restraint, financial support, patience and tolerance, psychological support, helping mothers accept the child, and helping her in childcare. Relatives' support has also been perceived as embryo donation by relatives, mental and physical support during pregnancy, lack of inquisitiveness, praying, confidentiality, mental and emotional support, urging, encouraging the use of modern methods of fertility, and support during childcare. It also includes peer group support. *"I was in my sister's house for 4-5 months. She soothed me. Her husband and children were also comforting. They have eliminated my stress by entertaining me"* (Participant 1).

5-1-2 Healthcare system support

"Healthcare system support" refers to a series of educational-supportive activities provided by some governmental infertility centers like Royan Institute, from the beginning of the treatment course and the selection of this method until the time of delivery and sometimes afterward. It includes the center's support in selecting a donor, providing awareness and consultation, and providing the required facilities. The center's support in donor selection includes mental and decisional support, finding the donor, support during selecting a donor similar to the parents, the center's attempts for anonymity of the embryo, investigation of the health history of the donor by the center, and generally speaking, the selection of a suitable donor. *"I had emphasized to the social worker that the donor should resemble us in face and appearance. Actually, they were great at Royan and, especially the doctors, they really encouraged me"* (Participant 1).

Deficiencies in the healthcare system

This category includes negligence of infertility facilities in Tehran, Iran, and townships, hospitals, and private offices in performing infertility services and deficiencies of healthcare staff. It includes cases such as inappropriate appointments, lack of response to clients' questions, long waiting lists, and inaccessibility of treatment staff on holidays, lack of mental support, inaccessibility of advanced equipment in townships, lack of insurance coverage, and lack of financial support.

"It is very crowded over there; everybody is standing in a queue. They performed our procedure after a few years; otherwise, they would not do it. We had a case filed in the facility for 12 years. They did it after 12 years" (Participant 7).

Achieving relative tranquility

Achieving peace is relative, not absolute, and is mainly experienced after perceiving the support provided by various sources, being assured of some things, and having a sense of satisfaction. This theme consists of the subthemes of "reassurance," "substantiation of parental identity," and "feeling of satisfaction."

Reassurance

"Reassurance" includes the feelings of tranquility and confidence at seeing the successful fertility of peers, confiding in the IVF center regarding observation of legal issues at the time of embryo donation, confiding in the IVF center regarding the screening of donors, reduced stress with the advancement of the pregnancy, reassurance, and assurance at perceiving fetal growth in the uterus, and feeling of peace and tranquility with fetal movements. *"When the fetus moved in my womb, I felt peaceful"* (Participant 4).

Substantiation of parental identity

"Eliminating the infertility stigma and substantiation of parental identity" refers to the community members' acceptance of the parents as the child's real parents as well as not having discriminatory attitudes towards them. These two factors lead to the substantiation of parental identity. These two factors result in substantiation of parental identity that includes deep happiness for childbirth, release from relatives' pressures, feeling of tranquility due to the child's resemblance to either of the parents, happiness for the similarity of the child's blood group to that of the parents, the emergence of peace in familial life with childbirth, and the unimaginable contentment of the mother with having a child. *"Finally, everyone accepted it; nobody talked about it anymore. For example, my husband and I both have blond hair. My daughter has black hair. They wondered whom she resembles. I told them that she resembles her maternal uncle, since my bother has black hair. I said it and everybody repeated that she resembles her maternal uncle. At last, I believed that these things are not that important"* (Participant 5).

Feelings of satisfaction

The "feeling of satisfaction" consists of satisfaction with services provided by the IVF center, especially,

the anonymity of the embryo by the donor, satisfaction with embryo donation, satisfaction with care provision, inclination to the repeated use of embryo donation, and feelings of regret and repentance for why they had not used this method earlier. *"I am really satisfied. Previously, I wanted to adopt a child. Yet, I wanted to really experience the sense of motherhood. Now, I am not repentant and it was a good experience for me. I am satisfied with Royan Institute, and its doctors. They were all very good"* (Participant 1).

Discussion

This study determined the experiences of mothers who received a donated embryo. They experienced mental pressure and feelings of insecurity in personal and family identities in the sociocultural constraint. This was also observed in other similar studies performed on infertility and the use of IVF and ARTs. Women experience more emotional problems compared to their spouses during their infertility treatment period because such treatments are associated with physical, mental, and financial challenges, such as loss of self-confidence, and consequently, low self-esteem.[10] Moreover, the study by Zandi *et al*.[15] on infertile couples' strategies for coping with infertility reported that coping with sociocultural constraints as background and social context involves the four features of the negative attitude of the community toward infertility and related treatments, insufficient familiarity with infertility treatments, an inappropriate attitude of the community toward infertility, and financial problems resulting from choosing egg donation.[20] These results were similar to those of the studies on women becoming mothers through the surrogate motherhood process, indicating that women sustained considerable mental stress during treatments needed for the motherhood process.[15]

A finding of the present study was perceived social support. In some cases, experiencing confounded support led to mental and financial pressures on the family. A study by Latifnejad Roudsari *et al*.[21] showed that there was a significant direct relationship between infertile couples' sociocultural beliefs and their attitude toward infertility treatment. The negative attitude of the community towards third-person involvement in IVF and ARTs was the main reason for infertile couples' attempt to hide who sought IVF procedures. This concern led the infertile couples to be deprived of support from family and friends; thus, they had to sustain considerable mental pressure while using these techniques, which is consistent with the present study.

As the findings suggested, an important experience of the participants of our study was the feeling of insecurity in personal and family identities. Some studies have also referred to the feminine and masculine identities and the negative effects of infertility on these identities. Among them, the study by Loftus and Namaste[22] using the identity theory explained the effects of infertility on feminine identity. Moreover, they demonstrated that women struggle to convert the potential identity of motherhood into a real identity and they experience more adverse outcomes if there is a gap between potential and actual identities. The above-mentioned study highlighted the threat of personal identity in infertile women, elucidating only one aspect of the major concerns of infertile women, i.e., insecurity in personal identity. This is consistent with our findings in one aspect. Kirkman[23] conducted a large-scale project on mental aspects of the process of having a child through a third person and investigated motherhood through the third person's involvement using narration analysis. They tried to understand how this phenomenon is perceived by those who receive a donated egg or embryo. All participating women who had a child via receiving a donated egg or embryo emphasized the happiness they felt through using this method and that they valued it. In the present study, the included women emphasized their motherhood identity like real mothers and downgraded genetic relationships, as a threat against the motherhood identity, as a defense mechanism against the feeling of insecurity. In another study, Mogobe theoretically clarified the infertility phenomenon from an infertile women's perspective in an African community (Batswana) and as a result achieved the framework of "denying and preserving the self." In their study, infertility was the experience of denial in infertile women's perspective. Loss of femininity, loss of socioeconomic security, loss of fertility experience, labor and delivery, and lactation and parenthood, loss of immortality, and loss of divine and ancestral support and/or punishment by them for infertility were noted as the major concerns of infertile women in the study by Mogobe. Correspondingly, women mostly used self-preserving as a strategy to cope with these losses. In Mogobe's[24] opinion, self-preserving is a personal strategy for self-protection or prevention and reduction of damage induced by others due to women's infertility. This includes seeking deeper meaning (deeper belief in God and a greater relationship with Him), succumbing to feelings (giving up to emotions, crying, depression, etc.), working on them (consultation and companionship with others to find a solution for the problem), endangering/correspondence (giving permission to or encouraging the spouse to remarry,…), greater engagement (self-entertainment, leaving treatment due to failure and burnout), and adopting a child. The results of the study by Mogobe,[24] are highly consistent with our findings; except that in their study, more than family identity, women emphasized the loss of femininity, experience of fertility, labor and delivery, lactation, and parenthood, and loss of support (somehow indicating feelings of insecurity in personal and family identity). Although, in the study by Mogobe,[24] fear of being repelled by the spouse, indicating insecurity in family identity in our study, was highlighted; however, the proposed strategies mostly focused on preserving the self as an individual, not on the family. The greater emphasis on personal identity

in studies in other countries compared to our study that highlighted family identity can be attributed to the social and cultural structures of the community, as Iranian women attach considerable importance to maintaining a monogamous family structure and hate polygamous men or families.

Nurses have direct and close contact with individuals and patients who have used these methods or intend to use them. Hence, they should be completely familiar with these methods to be able to provide comprehensive information to their clients. They may even donate an egg to the clients and support their relatives who want to use IVF and ARTs.[25-27] The findings of the present study can be used as a basis for developing guidelines to help clients protect their personal and family identities in embryo donation. In this way, their suitable strategies are strengthened, while their inappropriate strategies are corrected or modified to the extent possible. Zandi *et al*.[15] in their study on surrogate mothers, achieved a grounded theory based on the developed care model of surrogate motherhood clients in another separate study.[28] Since surrogate motherhood is known as one of the ARTs used by infertile clients, it has many features in common with ARTs. Given the negative effect of sociocultural constraints and the negative attitude of the community towards IVF and ARTs, which serve as influential factors in the failure of infertile couples in using these techniques to protect their personal and family identities, mass media can play a role in increasing public awareness to change their attitude toward these methods.

Generally, although our findings revealed that clients receiving a donated embryo mostly achieve acceptable results, they experienced many challenges and threats in their personal and family identities throughout the process of motherhood that demands deep, holistic, and purposive interventions. It is mandatory for all care providers, caregivers, and healthcare policy-makers to be aware of the experiences of our participants and use them in planning, developing, and providing practical evidence-based guidelines in the fields of ARTs, consultation, and support for infertile clients. Considering that the researchers aimed to collect some data to determine the experiences of mothers receiving a donated embryo in Iran, they encountered no specific limitations.

Conclusion

Mothers receiving a donated embryo experience mental pressure and feelings of insecurity in personal and family identities in the context of sociocultural constraints. Therefore, planning, developing, and implementing practical evidence-based guidelines in the fields of ARTs, consultation, support for infertile clients, and the use of expert opinions can serve as effective strategies in providing better care. Future studies can focus on the theoretical determination of the motherhood process in mothers receiving a donated embryo, and the development of models and care programs for infertile couples based on our findings.

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Conflicts of interest

Nothing to declare.

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