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To cite this article: Esra Şahiner & İlkay Boz (2021): Experiences of women undergoing infertility treatment from embryo transfer until pregnancy test and their conceptualization of their embryo, Journal of Psychosomatic Obstetrics & Gynecology, DOI: [10.1080/0167482X.2020.1865909](https://doi.org/10.1080/0167482X.2020.1865909)

To link to this article: <https://doi.org/10.1080/0167482X.2020.1865909>



Published online: 05 Jan 2021.



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ARTICLE



## Experiences of women undergoing infertility treatment from embryo transfer until pregnancy test and their conceptualization of their embryo

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### ABSTRACT

**Aim:** This study aims to explore women's experiences with embryo transfer (ET) until pregnancy test and their conceptualization of their embryo.

**Method:** The sample of this descriptive phenomenology study consists of 17 women with ET. The data were collected through in-depth interviews. The thematic analysis developed by Braun and Clarke was used for data analysis.

**Results:** Analysis of the interviews led to the emergence of five themes and 14 sub-themes. The theme "pregnancy in biological terms" has two sub-themes: "*considering herself pregnant*" and "*the first moment with the baby*". The theme "not an embryo, my child" has three sub-themes: "*world of hope*", "*unnatural but normal*" and "*attachment to embryo*". The theme "daily life after ET" has three sub-themes: "*living life in the usual way*", "*process of self-listening*", and "*the negative effects of drugs on the body*". The theme "seeking ways to ensure fertility" has four sub-themes: "*complete bed rest*", "*the search for information: the internet*", "*practice an infertility diet*" and "*spiritual support with prayer*". Finally, the theme "caring after the transfer" has two sub-themes: "*need more information*" and "*unmet women-oriented care*".

**Conclusion:** In this study, it was determined that women had intense physical and emotional experiences during the waiting period after ET and their daily lives were affected. It was also understood that the embryo means "baby/child/son/daughter" to them and that they establish a close bond with their embryos. Women's needs are not sufficiently known until post-ET pregnancy testing. Explaining the experiences of women after IVF-ET and the meanings of their embryo will help determine the issues they need in holistic care.

### ARTICLE HISTORY

Received 20 September 2020

Revised 25 November 2020

Accepted 15 December 2020

### KEYWORDS

Embryo transfer; conceptualization of embryo; phenomenological research; women's experiences

### Introduction

Infertility is a disease of the reproductive system defined as the nonoccurrence of pregnancy despite regular and unprotected sexual intercourse at least twice a week for a year [1,2]. Primary infertility, among the infertility types, is defined as non-achieved of pregnancy, and secondary infertility is defined as not being able to conceive again despite one or more pregnancy [3]. Infertility is diagnosed by anamnesis, physical examination and laboratory tests separately for male and female. Assisted reproductive techniques (ART) gather under three groups as *In Vitro* Fertilization and Embryo Transfer (IVF-ET), Intrauterine Insemination (IUI), and Intra-Cytoplasmic Sperm Injection (ICSI). It has been reported that, of all infertile couples, 40–50% are diagnosed to be infertile due to female related factors, 30–40% due to male related factors, 20% due to both female and male related factors, and approximately 15% due to idiopathic reasons

[4]. According to WHO, the prevalence of infertility is accepted to be between 10 and 15% [5]. It has been reported that a total of 306.197 ART was performed in the United States in 2018 [6]. According to data collected by Turkey Demographic and Health Survey (TDHS-2018), the rate of married women who not able to have children in the 15–49 age group was 7.6%, while the rate of women who received primary infertility treatment was 4% [7].

Infertility is a major life crisis that causes serious medical, psychological, and social problems [8,9]. Infertility places a burden on the individual/couple's coping skills and social support resources, leading to stress [10], depression and anxiety [11], low self-esteem, self-efficacy and quality of life [12–15] and deterioration in the marital relationship [16]. Also, the infertility treatment process decreases the quality of life of women due to drug use and invasive procedures [17]. Indeed, a qualitative study revealed that

the assisted reproductive techniques (ART) creates an existential angst [18].

For the women receiving infertility treatment in Turkey, having children means to gain respect, to be good in front of the men and their families and to continue the lineage [19,20]. Infertile women are exposed to behaviors such as scorn, blaming, stigmatization, violence, divorce and the threat of a fellow wife, especially in rural areas. Women who receive infertility treatment experience the social pressure intensely with adjectives such as “drying tree” and “infertile land” [19,21]. It has been stated in the studies that, although they do not have female infertility due to the patriarchal structure of society in Turkey, women are said to feel more social pressure [19,22,23]. The hadith “Heaven is under the feet of mothers” in the Turkish society, which is mostly Muslim, reflects the society’s perspective on motherhood in terms of religion. This perspective intensifies the social pressure on women receiving infertility treatment.

Studies conducted with women who have undergone ART have shown that the approximately 12-day period from the ET to pregnancy test is the most stressful phase of treatment [24,25]. It has been shown that couples attach a special meaning to ET and establish a bond with their embryos in ART [24,26]. A systematic review found that the embryo means “child/children”, “life”, “beginning of life”, “not just a group of cells”, “potentially human being”, “potentially life”, “potentially children”, “a baby” or “brothers or sisters” of existing children for infertile individuals [27]. In a study from Japan about the meanings of embryo during IVF-ET process, couples stated that they see their embryos as their children. Japanese women stated that the ET moment was a pseudo-pregnancy, the transfer made them feel like a mother, and that they are now responsible for the lives of two human beings. The study found that there was a symbiotic relationship between women and their embryos during ET [26]. Further qualitative research from different cultures is needed on the relationship between women and their embryos and the meanings of the embryo during ET.

Although IVF-ET has been found to affect the lives of women in many ways, the experiences of women in the period up to the pregnancy test after ET are less known [28,29]. The literature review yielded no studies conducted in Turkey to investigate the experiences of women after IVF-ET until the pregnancy test and the meanings they attribute to the embryo. Revealing the experiences of women after IVF-ET and

the meanings of embryo will help determine and meet their needs through person-centered holistic care. This descriptive phenomenological study aims to investigate the experiences that women with ET have had until the pregnancy test and to explore the meanings of their embryo.

## Methods

### Design

In this study, descriptive phenomenological design and thematic analysis approach based on Husserl’s philosophical perspective were adopted. Husserl argues that phenomenology suspends all assumptions, that the phenomenon is about consciousness and that it is based on the meaning of the individual’s experience. According to Husserl, the meaning of lived experiences can only be discovered through one-to-one interviews [30]. This design not only provides access to the essence of the experiences but also leads to rethinking and questioning about the phenomenon [31]. The descriptive phenomenological design was thought to be an appropriate method to comprehensively evaluate the impact of ET-related experiences on women and to reveal the meanings of embryo [23,27]. Consolidated Criteria for Reporting Qualitative Research-COREQ guidelines were followed in the reporting of this research [32].

### Setting and participants

The study was carried out with women who underwent ET in Akdeniz University IVF Center. Random sampling technique and maximum diversity sampling methods were used in the study in order to reach richer data and increase the credibility of the research [33–35]. The inclusion criteria were as follows: accepting to participate in the research, being between 18 and 45 years old, living in city center, being able to communicate in Turkish, and being primary infertile. The exclusion criteria were as follows: having a communication disorder or psychological problems. Based on the purposive sampling method, a total of 68 women were interviewed in the study. One woman who was unable to communicate in Turkish, one woman who was secondary infertile, and 15 women who lived outside the city center were not included in the study. Also, 34 women refused to participate in the study for reasons such as living with the parents of their husbands, not wanting to talk about the treatment process, not being allowed by the husband to participate in the study, not wanting their voices to be

**Table 1.** Semi-structured interview questions.

Main Questions	How did receiving infertility treatment affect your life? What do you think about being an Embryo Transfer? How was your embryo transfer day? How were your days after Embryo Transfer? Has Embryo Transfer affected your relationships? Can you express the meaning of embryo in your life? What were your expectations from healthcare professionals after Embryo Transfer?
Metaphor Questions	What if you wanted to compare being an Embryo Transfer to an object, a situation, an event?
Further clarifying questions	Please, tell me more about ... Please, describe how you felt ... Please describe as much details you can your experiences ... Could you give an example? Did you mean ... ?

recorded during the interview, and not having any free time because of work. When the data saturation was achieved and no new information was discovered, the data collection process was terminated with the participation of 17 women.

### Data collection

Data were collected between September 2019 and February 2020 through semi-structured in-depth interviews. Each participant was interviewed once. The personal information form consists of 10 questions related to sociodemographic and infertility. The semi-structured interview form was developed by reviewing the relevant literature [23,26,27] and consulting with four experts in the field of obstetrics and qualitative research. The semi-structured interview form consists of seven main questions and one metaphor questions aiming to reveal the experiences of women after ET and the meanings attributed to the embryo. The questions are arranged in a logical sequence (Table 1).

The interviews were conducted by the first researcher. The researcher went to the IVF Center three to five times a week, obtained information from the clinic secretary about the women to be treated with ET, and contacted the women. Prior to the ET, the women were informed about the study, and their verbal consent was obtained. Those who agreed to participate in the study were contacted by phone to arrange the date and time of the interview (about 10 days after ET, before the pregnancy test). The interviews were held at the women's homes due to the IVF Center was busy and crowded, that there was no quiet and suitable environment to hold the interviews, and that women could express themselves more comfortably in the home environment.

Prior to the interviews, the participants were informed about how the interview would be conducted and that their voice would be recorded with a recording device. Informed consent was obtained from all participants. The participants were first asked to fill

out the personal information form. Subsequently, semi-structured in-depth interviews were conducted. Interviews took an average of 40 min. During the interviews, the researcher observed each participant and took notes on the way they talked and behaved. The interview documents were sent to the participants *via* WhatsApp to receive the confirmation of the participant. None of the participants wanted to change their statements in the interview documents; only two added some statements to some of their answers.

### Data analysis

The audio recordings obtained and observation notes taken during the interviews were transcribed by the researcher. A text of 181 pages was obtained from the interviews. The data were analyzed according to the six stages of thematic analysis described by Braun and Clarke and using an inductive approach [36]. First of all, the transcriptions were read over and over by the researcher to become familiar with the data. Women's statements were compared in terms of similarities and differences. For coding, after the independent codings of the two researchers were completed, the codings were compared with crosstab query. Considering the purpose of the research, themes suitable for the expressions of the women were determined. Naming the themes was reevaluated considering the meanings obtained from the texts [37]. A total of 591 codes were obtained from the texts. Analysis of the interviews led to the emergence of five themes and 14 sub-themes.

### Ethical considerations

Ethical permission for the study was obtained from the Akdeniz University Clinical Research Ethics Committee (No:396, Tarih:19 June 2020). Written permission was obtained from Akdeniz University Hospital to conduct the study. The participants were informed that participation was voluntary, that they could drop

out of the study at any time, that the collected data would be kept completely confidential, and that data security would be ensured. Codes were used instead of names for the excerpts from the interviews (Participant 1 = P 1).

### Rigor

Rigor was based on four criteria in this study: credibility, transferability, dependability and confirmability [38]. To improve the credibility of the study, a conceptual framework obtained from the literature review was created while developing the interview form. Subsequently, the researchers evaluated the transcribed data as objectively as possible. Researchers focused on participants' statements rather than their own comments. In order to control the biases of the researchers during the analysis phase of the data, the researchers did not do detailed literature review and readings, and guided the interviews in the direction of the research questions. Notes were kept throughout the interviews to ensure the reliability of the study. Besides, the researcher avoided influencing the participants during the interviews. In order to increase the reliability of the study, the translation of the article from Turkish to English was made by an experienced translator independent of the research team. Afterwards, the naming of the themes and the comprehensibility of the whole text were compared by the researchers, and some expressions were changed. After the recent changes, another translator independent of the research was asked to translate the article from English into Turkish. The researchers worked on the translation until they were sure that the translation of the article corresponded to the Turkish version.

To ensure transferability, all of the findings were presented directly without any comment. The data obtained from the interviews were coded separately by the researchers. To assess the agreement and dependability between coders, the codes were compared by the two coders, and a consensus was reached after discussing the codes. The theming was performed separately and then finalized by the two coders. Then, two external experts were consulted for the inter-coder reliability (Kappa) analysis. Kappa analysis yielded a Kappa coefficient of 0.34. After editing the themes according to the experts' recommendations, the final version of the themes was sent to the experts again, the Kappa analysis was repeated, and the Kappa coefficient was calculated as 1 (perfect fit) [39].

In order to improve the confirmability of the study, an expert outside the research team was consulted

about the data collection tools, raw data, coding, and observation notes that form the basis of the report. The first researcher, who is a research assistant in the field of obstetrical nursing, has two year of working experience. The researcher also received training in qualitative research. The second researcher, who is a science expert in obstetrics nursing with 15 years of experience, conducts qualitative studies and gives courses on qualitative research at the graduate-level.

### Results

It was determined that the average age of women participating in the study was  $34.06 \pm 6.72$  (min:25, max:45), 35.3% had bachelor's degrees, and the average length of marriage was  $4.76 \pm 2.99$  (min:1, max:11), 64.7% of them did not work, and 70.6% had equal incomes and expenditures. Also, it was found that the average of the infertility diagnosis period was  $2.94 \pm 2.13$  (min:1, max:8), cause of infertility of 70.6% was idiopathic, 70.6% of them had not been treated before ET, and the average number of patients with ET was  $1.76 \pm 1.20$  (min:1, max:5) (as shown in Table 2). Analysis of data extracted five main themes including 14 sub-themes (as shown in Table 3).

#### Theme 1. Pregnancy in biological terms

##### Considering herself pregnant

Most of the participants stated that they considered themselves as pregnant during the waiting period after ET and that they felt that the physical changes they experienced were a result of pregnancy: *"I am having these painful contractions especially at night, I think to myself, these reactions are normal because something is growing inside me"* (P-6). A woman who felt she was a mother from the moment of ET stated: *"The child entered into my womb, my mood changed, I was feeling like, you are now a grown-up, you have a child in your womb, you are a mother now"* (P-14).

##### The first moment with the baby

Participants stated that the ET moment was a very special moment for them as they encountered their embryos for the first time. A woman seeing her embryo on the screen during ET stated: *"At that moment when I saw it (the embryo) on the screen, I felt emotional and cried"* (P-8). Some of the participants stated that they felt the presence of their baby as they looked at the ultrasound image: *"They gave me an ultrasound paper on this transfer, with the word babies written on it, whenever I saw it, I felt there was*

Table 2. Participants characteristics.

Participant	Age	Education Status	Income Status	Working Status	Marriage Duration	Inertility Diagnosis Duration	Inertility Treatment Duration	The Cause of Infertility	Previous ART* treatments	Number of ET***
P-1	37	High school	Income is equivalent to expenses	Not working	7 years	3 years	3 years	Male	No	4.
P-2	38	Middle school	Income is equivalent to expenses	Working	9 years	8 years	1 year	Idiopathic	No	1.
P-3	39	Primary school	Income is equivalent to expenses	Not working	3 years	6 months	6 months	Idiopathic	No	2.
P-4	36	Primary school	Less than income	Not working	2 years	2 years	6 months	Male	No	2.
P-5	26	Primary school	Income is equivalent to expenses	Not working	6 years	1 year	1 year	Idiopathic	1 time IUJ**	2.
P-6	27	University	Income is equivalent to expenses	Not working	2 years	2 months	2 months	Male	No	1.
P-7	42	University	Income is equivalent to expenses	Working	11 years	6 years	6 years	Idiopathic	3 time IUJ**	5.
P-8	27	Associate Degree	More than income	Working	6 years	3.5 years	2 years	Idiopathic	3 time IUJ**	1.
P-9	40	Primary school	Less than income	Not working	4 years	2 years	2 years	Idiopathic	No	3.
P-10	30	University	Income is equivalent to expenses	Working	3 years	1.5 years	1.5 years	Idiopathic	No	1.
P-11	45	High school	Less than income	Working	1 year	1 month	1 month	Idiopathic	No	1.
P-12	34	University	Income is equivalent to expenses	Not working	10 years	4 years	4 years	Idiopathic	4 time IUJ**	1.
P-13	28	Associate Degree	Less than income	Working	3 years	1 month	1 month	Idiopathic	No	1.
P-14	25	High school	Income is equivalent to expenses	Not working	4 years	3 years	3 months	Male	No	1.
P-15	38	Primary school	Income is equivalent to expenses	Not working	3 years	1 month	1 month	Idiopathic	No	1.
P-16	40	University	Income is equivalent to expenses	Not working	1.5 years	1 year	1 year	Male	No	2.
P-17	25	University	Income is equivalent to expenses	Not working	5 years	4 years	4 years	Idiopathic	1 time IUJ**	1.

\*ART: Assisted reproductive technology, \*\*IUJ: Intrauterine insemination, \*\*\*ET: Embryo transfer.

someone alive in me" (P-7). Some of the participants stated that they felt as if they were following the development of their children in this process: "I felt as if there was a child (in me) and as if I was looking at something about the development of my child" (P-15).

### Theme 2. Not an embryo, My child

#### World of hope

Most of the participants stated that they had positive thoughts about the treatment process and that ET was a source of hope for them to have children: "I mean, it is a world of hope" (P-7). A 27-year-old woman who had been receiving infertility treatment for two months said the following about ET: "I say it is a blessing" (P-6). A 40-year-old woman who has been receiving infertility treatment for one year stated: "(It is a) good feeling, you're giving a shot" (P-16). A 40-year-old woman who has been receiving infertility treatment for two years stated: "You don't have a baby without transfer" (P-9). The participants were also asked to use a metaphor for ET. Some of the women used medical terms, while others used words with emotional meanings: "experiment" (P-2), "playing house" (P-4), "surgery" (P-9), "getting pregnant" (P-12).

#### Unnatural but normal

The participants stated that they considered getting pregnant with ET as "unnatural" but it was also similar to getting pregnant in the normal way. A 38-year-old woman, who had been receiving infertility treatment for one year, expressed the unnatural of ET as follows: "Think of it as an experiment..." (P-2). Another woman compared the ET process to a short surgery. Only one woman stated that she thought conceiving in both ways is not different: "I think there's no difference between getting pregnant in the normal way and getting pregnant this way" (P-12).

#### Attachment to embryo

Women used the words "baby" and "child" to refer to their embryos. From the women's statements, it can be seen that the first time they attachment with their embryos was just after ET: "The baby comes to my mind (when I think of the embryo). To me, embryo equals baby" (P-13). A 25-year-old woman who had been receiving infertility treatment for three months: "Not an embryo, but a child; if my child loves his place in my womb, he will implantation to me, he will hug me" (P-14). A woman who stated that she felt the presence of her embryos said: "Now I don't feel like that, I have two living things inside me. Whether they

**Table 3.** Example of the thematic analysis: from codes to themes.

Codes	Sub-themes	Themes
It's as if everybody looks at me, thinks I'm pregnant, I feel like I'm pregnant. You look at yourself as pregnant, even if there is a clot. I have these painful contractions especially at night, I think to myself, these reactions are normal because something is growing inside me.	Considering herself pregnant	Pregnancy in Biological Terms
He gave an ultrasound photo in my hand, I started crying, I automatically entered the mood as if I was pregnant. The little thing they showed on the screen went well with his excitement and fear. You are excited, he shows it on the screen, somebody gave me a photo of this one as well. I mean, it is a world of hope It's a nice feeling, you're trying your luck. Fortunately, I'm not desperate. What would it be if they said no solution, don't try? I console myself like that Think of it as an experiment I think there's no difference between getting pregnant in the normal way and getting pregnant this way The room is what it was like to be pregnant, after holding it. It means a lot, we run behind it, we struggle.	The first moment with the baby  World of hope  Unnatural but normal  Attachment to embryo	Not an embryo, my child
Not the embryo, the child, if my child likes his place in my stomach, he will hold on and hug me. The only thing we hold on to our hope. We are waiting for him excitedly. It is necessary to continue your normal life after not putting yourself physically and spiritually stressed after excessive force. I try not to think too much, I continue my normal life. I continued my normal life as if it did not happen, I did not mold myself to be caught in it and not necessarily. A curious wait. Whatever you love in life, you will have that test; I loved children very much, I had a test. God willing, let our exam be easy. I'm making a list of things to buy for the baby, I am raising it in myself. The needles I used were very heavy, chest and groin pain continues. In these treatments, extreme forgetfulness, adaptation disorder. Insomnia makes nervous, stress. I have to lie down, I have to put my feet in the air, I have to hold on, I am in that psychology. I don't know if it is a feeling, I thought it would be more important to go to bed as the embryo has just been transferred. (I know) this is an urban myth ... (but) those who have achieved pregnancy are those who stayed on bed rest all the time. And I said to myself, "Let me, too, lie down". You constantly search the internet, what other women have experienced. He says brown staining will come on the internet, I don't have it, it doesn't work, I'm confused. I constantly search the Internet for everything I am curious about, like a comment or a word. I've been paying attention to my diet ever since I came home. Constant salad style, occasional chickpea salad, we need to have protein. I searched the internet to drink lots of water, heard about pineapple, avocado, pumpkin seeds, ate them. I do not drink too much tea or coffee. Nuts are good, I often eat fruit. I pray that if God is good, give it. Everyone is praying that I have a child, let them pray. They are always praying that I conceive a child. I pray not only for myself but for everyone. I pray that my God gives a child to all those who want. Even one word coming out of doctors' mouths is very important to us. They should talk to and enlighten us. Human awaits explanation. They (healthcare professionals) should inform (us). They should guide us, saying you should do that, you shouldn't do that. You feel yourself a little worthless. In this process, women feel psychologically worn out and seek special attention, (but) the nurse just speaks and leaves, just like a robot. I wish to talk doktors, if they show a little more interest recent. It would be great if the nurses could treat us a little better.	Living life in the usual way  Process of self-listening  The negative effects of drugs on the body  Complete bed rest  The search for information: the internet  Practice an infertility diet  Spiritual support with prayer  Need more information  Unmet women-oriented care	Daily life after ET  Seeking ways to ensure fertility  Caring after the transfer

*adhere to me or not, after all, I have a feeling that I have living things inside me" (P-7).*

### Theme 3. Daily life after ET

#### Living life in the usual way

Most of the participants stated that they tried not to think whether the embryo would adhere or not and

that they tried to continue living their life in the usual way: "I try not to think (about the embryo), I continue my normal life" (P-7). They stated that they did activities such as going for a walk, reading, and watching movies to reduce stress and anxiety during the waiting period. Some women stated that if they were destined, the embryo would implant, that being a childless mother was a test for them, and that

whether the embryo would implant did not have anything to do with physical activities: *"No matter how long you lie down, you won't have a baby unless God gives it to you. And if he gives it to you, it will adhere even if you do somersaults"* (P-14).

Some participants stated that they continued their daily activities but avoided sudden movements, that they did not take a shower with hot water because they thought it would cause the embryo not to adhere, and that they paid attention not to do hard and tiring physical activities. A participant stated that constantly lying down during the waiting period would not have an effect on embryo implantation: *"I know that constantly lying down does not increase success; what we must be careful about is to avoid sudden movements and hot water and to lie down (when necessary)"* (P-14).

Some of the participants stated that there was no difference in their social relations during the waiting period, that they received support from their social circles (friends, neighbors), and that this support made them feel good since they were not feeling alone. Some of the participants, on the other hand, stated that they did not like being asked questions about infertility treatment and children during the waiting period and that such questions stressed them out and therefore they did not talk to the people around them about the ET procedure: *"Many people are ignorant about the IVF process. They keep asking questions like, 'Did it not happen, when is it going to happen?' I don't want to talk to anyone about it even on the phone"* (P-5). Some women stated that the waiting period after ET affected not only them but also their husbands and their relationships with their husbands. Some of the women stated that their husbands were more caring and attentive, and tried to cheer them up and supported them: *"I had no problem with my husband. He is easy-going, he does what I want. Especially in this process, he was more careful"* (P-7). Few women stated that they experienced stress and anxiety due to the waiting period, and this situation negatively affected their relations with their husbands: *"My husband assumes a humble attitude, I shout at him in vain"* (P-14).

### Process of self-listening

Most of the participants stated that during the waiting process, they felt different feelings such as joy and sadness, curiosity and anxiety at the same time and that they felt emotionally strained: *"I was excited, we have nice, funny, emotional moments, four seasons at*

*the same time. Think of your happiest moment, even at that moment you can be unhappy, just like that"* (P-4).

Most of the participants stated that they were caught between feelings of hope and hopelessness about the embryo implantation during the waiting period and that they nervously waited for the test day when they would learn the result: *"A part of me feels that I'm pregnant, but then I don't want to raise my hopes too much"* (P-5). Some women stated that if they get a positive result, they will be warily happy until they are sure that their pregnancy is healthy: *"Even if it happens, I won't be very happy until I hear the heartbeat. Because what if it is another unhealthy pregnancy?"* (P-4).

Some of the participants stated that during the waiting period they dreamed of pregnancy and having a baby: *"I'm making a list of things to buy for the baby, I am raising it in myself"* (P-4). A woman said she was motivated for the treatment with the thought that she would conceive a child: *"I was injecting myself just like taking my pills, you motivate yourself even though you are afraid, you know that you will eventually have a child"* (P-13).

Most of the participants stated that if they did not get pregnant, they would try ET again and do their best: *"If it doesn't happen, there is nothing to do, you shouldn't give up hope"* (P-17). On the other hand, those who had previously had an unsuccessful ET trial stated that they had not thought that they would get a negative result, that they experienced trauma and felt bad after the negative result, that they started to be pessimistic, that they withdrew to themselves, and that they refused to talk about it: *"It was difficult to accept the negative result, you do not expect a negative result. The trauma I felt was awful"* (P-7).

### The negative effects of drugs on the body

Most of the participants stated that after ET, the drugs affected them physically and psychologically and their everyday life negatively. Some of the physical effects of drugs they mentioned include pain, bloating, flatulence, dizziness, desire to eat, unintentional weight gain, insomnia or somnolence, stomach spasms, frequent urination, and constipation: *"One or two drugs caused too much headache. I feel dizzy for hours. At times, I couldn't even open my eyes, one (of the drugs) even cause too much abdominal pain, I was constantly going to the toilet"* (P-2). On the other, as for the physical effects of the drugs, the participants mentioned stress, irritability, forgetfulness, adaptation disorder, being tired of using drugs, fear of misapplication of drugs: *"(Drugs) cause insomnia, irritability, stress..."*



(P-4). *"These treatments cause extreme forgetfulness and adaptation disorder"* (P-3).

#### **Theme 4. Seeking ways to ensure fertility**

##### **Complete bed rest**

Some of the participants stated that for the embryo to adhere, it would be good to lie down continuously but healthcare professionals do not recommend going on bed rest all the time: *"I was on bed rest for three days. The doctors had not recommended lying down continuously, but since I'm a bit overweight, I lay down all the time thinking embryo implantation might be hard"* (P-3). A woman described the time she spent lying down for the embryo to implantation: *"I felt like a hen, I felt like a hen laying eggs"* (P-3). Some of the participants, on the other hand, stated that people who achieve pregnancy after ET constantly lie down. One of the women said: *"(I know) this is an urban myth... (but) those who have achieved pregnancy are those who stayed on bed rest all the time. And I said to myself", "Let me, too, lie down"* (P-7). Most of the participants stated that although healthcare professionals only recommended avoiding heavy and tiring physical activities after ET, they completely restricted their physical activities for fear that pregnancy does not occur and something happens to the baby: *"... you think, even after going to the toilet, "what if anything happens to the baby?" and you feel anxious"* (P-11).

##### **The search for information: the internet**

Women stated that they searched about the waiting process after ET on the internet, especially by asking in online forums other women who conceived after ET: *"(The woman whom I asked) said she did not take a shower for at least 10 days, was careful about not using shampoos, deodorants, and she achieved pregnancy. So I tried to be careful"* (P-10). Some of the women, however, stated that they were stressed and confused by the comments and information available on the internet: *"You get really stressed as you read what is written on the internet"* (P-6).

##### **Practice an infertility diet**

Some of the participants stated that for the embryo to adhere, they were careful about their diets and that they consumed foods recommended by women whose ET was successful. *"I've been careful about my diet ever since I came back home (from ET). We must always eat foods like salad, and sometimes protein"* (P-3). On the other hand, some of the women stated that they did not consume foods that could, according to

the people around them, prevent the embryo from implantation. *"I don't eat pickles because I heard that you don't consume too many pickles during embryo implantation. I don't drink coffee (but) I drink tea"* (P-16).

##### **Spiritual support with prayer**

Most of the participants stated that during the waiting period, they prayed that both they and those who went through similar processes have children. A woman who has been receiving infertility treatment for one month stated: *"I pray not only for myself but for everyone. I pray that my God gives a child to all those who want"* (P-15). Some of the participants stated that they received moral support from the people around them praying for them. A woman who has been receiving infertility treatment for two years stated: *"Everyone is praying that I have a child, let them pray. They are always praying that I conceive a child"* (P-9).

#### **Theme 5. Caring after the transfer**

##### **Need more information**

Some of the participants stated that the explanations made and information given by healthcare professionals about the things they should do and should not do during the ET treatment process and the waiting period were important for them: *"They (healthcare professionals) should inform (us). They should guide us, saying you should do that, you shouldn't do that"* (P-6). The women stated that they experienced less stress and anxiety and that they had a more comfortable and hopeful process, thanks to the information provided by healthcare professionals about the ET process: *"The doctor said, 'Don't worry about the quality because there are people who conceive even with low-quality eggs'"* (P-3). *'Even one word coming out of doctors' mouths is very important to us. They should talk to and enlighten us"* (P-4).

##### **Unmet women-oriented care**

The participants stated that they experienced stress, anxiety, and uncertainties during the ET process, that they felt worthless, and that they expected to be cared for and understood by healthcare professionals in this special process. A woman who had been receiving infertility treatment for six years stated: *"You feel yourself a little worthless. In this process, women feel psychologically worn out and seek special attention, (but) the nurse just speaks and leaves, just like a robot"* (P-7). The participants stated that in this process they

did not want to receive treatment-oriented care but a treatment where they are valued as individuals: “It would be great if the nurses could treat us a little better” (P-8).

## Discussion

The present study investigated the experiences that women with embryo transfer have had until the pregnancy test and explored the conceptualization of embryo. It was found that the waiting process after ET affects both positively and negatively the participants’ lives psychologically, emotionally, physically, and spiritually. The participating women described the *transfer moment* as a *special moment* where feelings such as excitement, stress, curiosity, worry, happiness, and sadness are felt together. They also described the *transfer moment* as a process during which they got pregnant and they could see their baby on the ultrasound scan. In a study conducted with 58 Japanese women to examine the socio-cultural meanings attributed to the embryo, participating women stated that the ET moment was like a fake pregnancy to them, but the transfer made them feel like a mother [26]. The study also found that the ultrasound image given during ET brought babies to the women’s minds and made them feel like pregnant during the waiting period. No other studies reported any findings regarding the meanings women attribute to ultrasound images. Hence, this is an original result of this study. This result indicates that ET is more than a surgical procedure for women and therefore healthcare professionals should focus more on women and the meanings they attribute to the embryo.

The patriarchal structure in Turkey causes the male gender to dominate the female gender, women to go through sexual, social, economic violence and the burden of childlessness to lay on the woman. Especially in rural areas and in low socioeconomic areas, bringing in fellow wives, threats of divorce and violence are partner threats against women receiving infertility treatment [19,20,22,40]. In this study, some women refused to participate in the study, claiming that there was no suitable environment to be interviewed because they lived as extended families in the rural areas. Lack of information about these women’s experiences puts these women in a more riskier position. In addition, unlike the studies conducted in Turkey, in this study, most of the women stated that their biggest supporters in the waiting period were their husband. It was stated that the interest, understanding and support of their spouses affected the relations

with the spouse positively. It can be interpreted that the reason for this is that the women participating in the study were receiving infertility treatment due to idiopathic and male factors. More studies are recommended on the effect of idiopathic and male factor infertility on women’s ART experience.

In this study, it was determined that women receiving infertility treatment attribute meanings such as “baby”, “child” and “son/daughter” to their embryos. In Turkish culture, having children means continuing one’s lineage and keeping one’s surname alive in the future [41]. Therefore, the meanings attributed to ET and embryo by these women become more complex. Studies conducted in different cultures have examined how women determine the fate of embryos that are not transferred through ART and the factors affecting the decision-making process. The women with infertility expressed their thoughts about the embryo using technical, symbolic, emotional, or moral sentences [42–45]. This study, on the other hand, was the first study to explore the meanings attributed by women with infertility to the transferred embryo. Considering various qualitative studies conducted in different cultures, American women receiving infertility treatment stated that life begins with getting pregnant and that embryos are potentially children [42], Chinese women stated that embryos are unborn children and potentially human beings [43], and Japanese women stated that embryos are the insurance of fertility [45]. Studies revealed that women establish an emotional and moral bond with their embryos. In addition, further research is required to qualitatively examine the meanings of embryo by women/couples receiving ART.

According to studies, the first bond between the naturally conceiving mother and the fetus is established during pregnancy [46,47]. It has been stated that planning and desiring for pregnancy are effective in the bond between the mother and fetus [48,49]. However, it has also been argued that in infertility treatment processes, bonding and motherhood are different from that in women who conceive naturally [50]. In this study, it was found that women’s experiences such as planning the pregnancy, wanting to get pregnant, and trying for a long time to get pregnant affect the time when the mother establishes a bond with the fetus. In addition, although the pregnancy results are uncertain, it has been found that most women feel the presence of the embryo and experience many physical symptoms due to the embryo implantation. It can be said that bonding starts with ET in women who undergo ET. Nevertheless, there is still a need for more comprehensive research in this area.

The participants stated that during the waiting period, they searched online forums about their diets, daily activities, physical and psychological changes they experienced during the treatment process, and pregnancy symptoms. It was found that they followed the advice they received through online forums from doctors, especially from women with positive ET results. A study revealed that women communicated with, enlightened, and supported each other in this process through online forums [51]. A similar study reported that women sought information about early symptoms of pregnancy occurring during the waiting period from the people around them as well as on the internet [52]. The internet and other people's experiences are resources women frequently turn to; however, it has been reported that these sources may be risky due to information pollution and misinformation [53,54]. Therefore, health professionals as reliable sources of information should be accessible to women.

Participants in the study stated that the waiting process was emotionally challenging and painful. In a qualitative study by Ying et al., the participants stated that they suffered emotionally during the waiting period [55]. Likewise, in similar studies, the participants stated that they felt stress, anxiety, and excitement during the waiting period after ET [21,25], that they felt disappointed and anxious during this process [55], and that they were caught between feelings of anxiety, hope, and doubt [52]. This study also found that during the waiting process, women go through uncertainties on their own with intense and mixed feelings and feel psychologically worn out. Additionally, while the experiences of women with more than one ET during the waiting period, such as being neither hopeful nor hopeless, trying to continue life, and not being able to look at themselves as pregnant stand out, the experiences of women with ET in feeling hopeful, excited, and looking at themselves as pregnant for the first time come to prominence. In other words, it can be interpreted that, as the number of having ET increases, women's experiences are affected negatively.

The quality of the nursing care provided is related to the experience, wishes, and needs of the person receiving the care [56]. In this study, the participants stated that during ET, they expected understanding, attention, friendly manners, more information, and person-centered care from nurses. Similarly, in a qualitative study, the participants stated that they expected nurses to be cheerful and show a supportive and empathetic approach during the treatment process [23]. In this study, most of the women stated that they wanted

information from doctors about the treatment process and the outcome. Another study reported that women found medical information provided by healthcare professionals helpful but complained of a lack of psychological support [55]. The reason why women, especially when asking doctors for information, ask nurses to be nice, cheerful, caring, understanding and to show value, is due to the functions of the professions (doctors focus on treatment, nurses focus on care) and society's perspective on professions. Looking at these studies, it can be understood that women's needs for care and enlightenment are not adequately met during the ART, especially in the post-transfer period, and that nursing care is still not provided at the desired level. These demands and needs of women can be met with the widespread use of person-centered care in infertility. Person-centered care in infertility can provide continuity of communication, identification/empathizing with the woman/couple, meeting the needs expressed or not expressed by the woman/couple, and allowing the woman/couple to express their feelings about infertility or ART [28,57].

### Limitations

This research has several limitations. In the study, only women with ET were interviewed; women's husbands and other relatives were not included. The participants' infertility causes were male-induced and idiopathic, and women with female infertility factors did not participate in this study. The experiences of the female infertility factor until the pregnancy test after ET and the meanings they attribute to the embryo may vary according to the male infertility factor. In addition, the participants were interviewed only once. Besides, the data were obtained from women living in the city center. In this respect, the research does not reflect the post-ET experiences of rural women and the meanings of embryo. No funds were used in the research, and the researchers conducted the interviews with their own means. Therefore, the data of the study were collected with women living in the city center in order to make the interviews effective and easy. The research does not reflect the post-ET experiences of rural women and the significance they attribute to the embryo.

### Conclusion

This is the first study to investigate the post-ET experiences of Turkish women until the pregnancy test and to explore the conceptualization of their embryo. It

was found that women experienced a physically and emotionally challenging waiting period after ET and restricted their daily activities in order not to prevent the implantation of the embryo, and mostly rested in bed. It was understood that the women conceptualized their embryos as their babies/children/daughters. Making the transfer moment and women's first meeting with their babies through ultrasound valuable thanks to health care professionals will make it easier for women to cope with these challenging treatment processes and will reveal the artistic side of nursing care. Further qualitative research can be conducted on the meanings of embryo in different cultures. In addition, it can be suggested that the effect of infertility causes on the meanings of embryo is evaluated.

### Acknowledgements

We would like to thank all of the women are in with embryo transfer volunteering to participate in this research and contributing to nursing science; Akdeniz University Hospital IVF Center staff and managers for their contributions and indulgence during the data collection stage.

### Disclosure statement

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. This study was produced from a Master's Thesis.

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