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The experience of pregnancy resulting from Assisted Reproductive Technology (ART) treatment: A qualitative Brazilian study

L.M.N. Dornelles [a,b,*], F. MacCallum [c], R.C.S. Lopes [d], C.A. Piccinini [d], E.P. Passos [e]

[a] Núcleo de Infância e Família, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil
[b] Universidade de Caxias do Sul, Caxias do Sul, Brazil
[c] Department of Psychology, University of Warwick, Coventry, United Kingdom
[d] Instituto de Psicologia, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil
[e] Departamento de Ginecologia e Obstetrícia, Hospital de Clinicas de Porto Alegre, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil

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ABSTRACT

Background: Pregnancies achieved through medical treatments following a period of infertility may demand extra emotional and practical investment from women.
Aim: This paper aims at understanding the experience of pregnancy after Assisted Reproductive Technology, and exploring whether this experience is affected by previous failed infertility treatments.
Methods: This paper uses a qualitative approach. Participants were nineteen expectant first-time mothers from Brazil who conceived through Assisted Reproductive Technology treatment. During the third trimester of gestation, a semi-structured interview was administered to assess perceptions of and feelings about treatment and pregnancy. Interview transcripts were analysed using thematic analysis, and the sample was divided into two groups according to whether it was the participant's first treatment or not.
Findings: Themes identified include: tolerance of the demands of treatment and pregnancy, consideration of the mechanics of treatment and pregnancy, and emotionally painful aspects of treatment and pregnancy. Pregnancy itself was regarded as a reward or compensation for the difficulties undergone. Perspectives differed according to whether pregnancy followed the first Assisted Reproductive Technology treatment; those who had undergone previously unsuccessful treatments focused less on the mechanical aspects of the process but were more concerned about possible physical problems.
Conclusion: The similarities and differences found according to number of treatments attempted should be taken into consideration when providing psychological support for expectant Assisted Reproductive Technology mothers.
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1. Background

According to the World Health Organisation,[1] infertility affects up to 15% of reproductive-aged couples worldwide. Many of these will seek medical help to become parents. In high-income countries, fertility treatments have allowed women the freedom to reproduce without spontaneous conception.[2] Brazil is no exception to this trend, with over 56,000 babies born following Assisted Reproductive Technology (ART) treatment from 1990 to 2012.[3] It is often noted that increased use of ART to conceive has led to a shift towards older maternal age at first birth, which research shows is actually associated with relatively lower levels of depression and anxiety.[4] However, ART may lead more generally to a change in the meanings of conception, motherhood and pregnancy itself for women. This study aims to examine specifically the experience of pregnancy, and consider how it might be affected by ART.

Research suggests that post-infertility pregnancies, usually achieved after medical treatments, demand a sizeable investment of time, emotion, energy, and money. Furthermore, ART may increase the probability of pregnancy-related complications such as multiple gestations, multi-foetal reduction, high-risk-pregnancy and delivery, preterm labour or even the loss of the baby.[2] In line

* Corresponding author at: Rua Anita Garibaldi, 1786/711, Bairro Boa Vista, CEP 90480-200 Porto Alegre, RS, Brazil. Tel.: +55 5191157297.
E-mail address: liamaradornelles@gmail.com (L.M.N. Dornelles).

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with this, women who conceive after ART report higher levels of context-specific fears than women who conceive spontaneously, such as fear of the baby's death during pregnancy and/or childbirth and/or after childbirth,[5–8] fear concerning diseases, malformation, and fears concerning prematurity and the possibility of the baby having to stay in a neonatal intensive care unit. They also indicate more fears of labour,[9,11] and more anxiety regarding their own efficacy as mothers. ART mothers-to-be seem particularly focused on maintaining the pregnancy, possibly indicating that the lingering effects of infertility may affect these some of these women's engagement with mothering.[6]

Anxiety levels during pregnancy in the context of ART have been measured in several studies but their findings are divergent. Higher levels of anxiety specifically focused on the pregnancy outcome were reported, especially during the third trimester, compared to spontaneous conception women, although state and trait anxiety were lower.[5] In other studies, levels of anxiety in fact decreased during pregnancy in the *in vitro* fertilisation group (IVF),[10,12] whilst another found that levels stayed the same for both groups; spontaneous conception and IVF.[11] Qualitative reports from a group of Taiwanese ART mothers-to-be[13] showed that they emphasised the health and safety of their foetus but gradually formed maternal-foetal attachments and adapted to physical and physiological changes, suggesting positive adjustment to pregnancy is possible. However, a retrospective report following birth showed that Polish ART mothers were more emotionally vulnerable and more likely to present difficulties in adaptation to pregnancy than women who conceived spontaneously.[14]

For some women then, it does seem that the background of failure with negative feelings related to previous infertility can remain even after achieving pregnancy.[15,16] Thus, there may be challenges and feelings of incompetency brought about by infertility treatment, allied to their own psychological characteristics, which make pregnancy following ART a special path to parenthood.[6] Furthermore, these feelings may be heightened if previous treatments have not been successful. Despite the number of studies measuring quantitative aspects such as anxiety levels, qualitative research concerning women's perceptions of their experiences of infertility, successful ART treatment, and ensuing pregnancy is scarce (the study from Taiwan being one of few examples[13]), constituting an important gap in literature. Therefore, the first aim of this study is to understand the perceptions of the experience of pregnancy achieved after successful infertility treatment among a group of Brazilian women. The second aim is to explore whether this experience is qualitatively affected by previous failed treatment cycles.

2. Participants and methods

2.1. Design

The current study is part of a larger qualitative project "Transição para a parentalidade e relacionamento conjugal no contexto da reprodução assistida: da gestação ao primeiro ano do bebê" (Transition to parenting and marital relationship in the context of assisted reproduction: from pregnancy to the first year of the baby) developed in Brazil by Universidade Federal do Rio Grande do Sul, Instituto de Psicologia and Hospital de Clínicas de Porto Alegre (HCPA), a public hospital, and approved by the ethics committee of HCPA (number 07/153; July 6th, 2007).

2.2. Recruitment and participants

Inclusion criteria for the current study were that expectant mothers had conceived through ART after a treatment at HCPA or at a private clinic within the region, and lived in the state of Rio Grande do Sul. Participants from HCPA had the cost of their treatment partly funded by the government, paying only for the medication, whereas those from the private clinics received no funding. A list of expectant mothers was provided by the hospital or private clinic and all eligible couples were contacted by a researcher and invited to participate. Twenty-five women accepted, of whom nineteen were first-time mothers; these nineteen participants are included in this report. After obtaining informed consent from each participant, an individual interview was arranged. Women were assured that their responses were confidential and that they could withdraw from the study at any time without this interfering with their treatment. The participants ranged in age from 25 to 44 years (mean age 35), and almost all were Caucasian ($n = 16$; 89%). Most of the women's treatment was partly state funded with only five of the 19 being private patients. The majority were married ($n = 12$; 63%) and the remainder were cohabiting ($n = 7$; 37%). Regarding educational levels, the group was generally well-educated; 63% ($n = 12$) had a university degree (of which half had a post-graduate qualification), while the other 37% ($n = 7$) were high-school graduates. Considering the attributed cause of infertility, 79% ($n = 15$) was female, 10.5% ($n = 2$) was male, 5.3% ($n = 1$) was both and 5.3% ($n = 1$) was unknown. The most frequent treatment was straightforward IVF ($n = 15$; 79%), but artificial insemination ($n = 3$; 16%) and gamete donation ($n = 1$; 5%) were also used. Just over half of the participants had conceived following their first treatment ($n = 11$; 57%), while the others had undergone two or more treatments. Most pregnancies were singletons ($n = 15$; 79%), but one was a twin pregnancy ($n = 1$; 5%) and three were triplets ($n = 3$; 16%).

2.3. Data collection

Semi-structured interviews were conducted during the third trimester at the participants' home or other convenient place chosen by them. The interview was based on a measure used previously (Núcleo de Infância e Família, 1998/Childhood and Family Center, 1988, unpublished data) in research on spontaneous pregnancy (Estudo Longitudinal de Porto Alegre: Da Gestação à Escola/Longitudinal Study from Porto Alegre: from Pregnancy to School, unpublished data), and focused on the women's perceptions of and feelings about pregnancy and the baby. Questions about the impact of treatment on their pregnancies were added for this study, bearing in mind the premise that the experience of pregnancy following ART may be affected by previous infertility and the demands of the treatment.

2.4. Analytical approach

All interviews, which lasted one hour and a half, were recorded, transcribed and analysed using thematic analysis.[17] Data were categorised in themes and subthemes after two stages of analysis. In the first one, all interviews were read line by line and themes were identified and registered. In the second stage, emerging themes and subthemes were grouped according to their content and meaning. The chosen themes, subthemes and quotations were repeatedly compared with the original text to exclude the risk of having them also included in another theme or subtheme. These findings were discussed among the authors and in cases of disagreement, another colleague validated the results.

3. Results

Data relating to the experience of treatment and the experience of pregnancy were analysed and discussed together because these events were connected in the women's narratives. Furthermore, in order to examine whether previous failures in treatment may have

affected women's perceptions of their experience of pregnancy, participants were divided into groups by whether they had conceived following their first treatment (FT) or not (NFT). *Tolerance of the demands of treatment/pregnancy*, *consideration of the mechanics of treatment/pregnancy*, and *emotionally painful aspects of treatment/pregnancy* emerged as superordinate themes in both groups, whilst subthemes within these varied between groups. Quotations are used to illustrate each theme and are identified with a participant number, followed by the group to which they belong, FT or NFT.

3.1. Tolerance of the demands of treatment/pregnancy

This theme refers to accepting the stress of the treatment and subsequent pregnancy, including any adverse effects. This was further divided into two subthemes: *tolerance due to reward* and *tolerating as normal.*

Tolerance due to reward. Some women did not complain about the physical and psychological demands of the treatment and pregnancy since they felt they had been compensated by getting pregnant:

> "I didn't regret for that [treatment], it worked out fine [...] If we hadn't succeeded I think it would have been more painful [...] we feel rewarded" (1FT)

> "It does not make a difference if it was in your bed or in a bed in a hospital [...] I think I wanted so much to be a mother [...] then everything that comes is a new thing, another expectation, touching, great" (12NFT).

For others, the uncertainties inherent in the treatment, and the threat of failure remaining from previous treatments made them also experience pregnancy as a reward:

> "During fertilization you go through a process [...] in fact it's almost a torture [...] uncertainties [...] but everything compensated for the pain [...] difficult moments were easily overcome" (5NFT).

As can be seen, this subtheme was found among women regardless of whether it was their first treatment or not, suggesting that ART treatment may be seen as "the right thing to do" by both groups despite the difficulties it poses, because it is their only chance to become a mother. This is line with previous research in which women viewed ART treatment as worthy, a premium, a "price" to be paid to achieve parenthood, and something they would repeat if necessary.[18,19]

In contrast, a few participants still reported dissatisfaction with having to undergo infertility treatments,

> "I wish I could have conceived a baby naturally but if I was blessed by having one this way there is no problem" (17FT).

Such perceptions were also referred to in another study[19] where even after successful IVF some women maintained a burden of resentment and regret about the necessity of treatment.

Tolerating as normal. Unlike those who saw the treatment and pregnancy as difficult, other women normalised the experience:

> "There are no negative aspects about IVF [...] we get shocked by some changes in our bodies [...] but you have to accept because it was a dream for me to become a mother" (6FT).

Regarding the experience of treatment as normal was a subtheme present only amongst those who had conceived following the first treatment. In line with previous research, these women may have decided to leave the infertility experience behind as a defense against anxiety, *i.e.*, in order not to suffer from the emotional consequences of the treatment, they minimise its importance.[15]

3.2. Consideration of the mechanics of treatment and pregnancy

This theme addresses the technicalities of the medical procedures involved in the treatment and the pregnancy. Data were divided into 3 subthemes: *automatic*, *feeling over-controlled*, *normal × special.*

Automatic. Most women who conceived following their first treatment referred to the physical processes of treatment as being an automatic routine:

> "In the beginning everything is so automatic [...] you go to hospital, take some medicine, go back home [...] everything is mechanical, it's not romantic" (15FT).

When remembering the treatment, these women focused on physically going through the process rather than the emotional aspects involved. Other literature shows that once women start ART treatment they feel they must keep going, no matter the uncertainties and difficulties they may have.[19] This emphasis on the mechanical nature of the process was not reported by those who had undergone previously unsuccessful treatments.

Feeling over-controlled. The unconventional route to conception may have affected the way the women experienced pregnancy, since everything was so prescribed. For some, this extreme level of control resulted in feeling in a continual state of alert:

> "I know the day, the time, the way it was [...] I feel better now at the end of pregnancy" (2FT)

> "I think the ART was just to put the egg inside [...] because we know exactly the day [...] Then you are afraid of miscarriage" (4FT)

> "Everything [procedure] is so concrete [...] in the beginning it's scary" (8FT).

Complaints about the mechanics of treatment, and the mandatory events involved, making this a tightly controlled process, were also found in previous research, where some women reported having multiple obligations related to treatment, such as "investigations, ovulation testing, injections and trips to clinic to check the follicle growth".[19]

Normal × special. Despite the physical aspects of the treatment, some participants evaluated the course of the pregnancy as normal, maybe as a way to minimise distress and make them feel just like any other pregnant women:

> "I knew that the difference was only being fertilized in a lab...nothing else, because the rest would be the same [pregnancy]" (9NFT)

> "The only thing that bothered me about IVF was the expenses [...] During pregnancy I think that it would be the same [...] despite everybody said it was not a normal pregnancy for me it was always normal" (11NFT).

This finding is consistent with previous studies in which IVF women were anxious to normalise their pregnancies[20] and reported that becoming pregnant allowed them to feel like typical women, to "join the club".[21] Women who conceive by ART are more likely to deny the significance of the problems of pregnancy, attempting to regularise it,[18,20] despite requiring a complex identity shift from an infertile and childless identity to one of pregnancy and motherhood.[3] However, McMahon et al.[5] found this

to be more prevalent among women being treated for the first time, whereas in the current study it was observed only amongst those who had undergone previous unsuccessful treatments.

In contrast, some women saw pregnancy as rendered special by treatment, which may be a strategy to help them deal with the anxiety, fears and uncertainties of the experience of pregnancy:

> "As it was through a fertilisation I think it was special [...] I think it is different because it is a different way to become a mother" (16NFT).

Similarly, Ulrich et al.[22] found that pregnancy was considered very precious for some IVF women despite being stressful due to age-related problems.

3.3. Emotionally painful aspects of treatment/pregnancy

This theme refers to the psychological aspects of the treatment and pregnancy. Having to undergo a treatment to fulfil the dream of being a parent may be emotionally painful and affect the way pregnancy is experienced, particularly if previous treatments have not succeeded. Two subthemes were identified: *acknowledgement of emotional difficulties* and *concern regarding physical problems acknowledgement of emotional difficulties.* A few women, all from the group who conceived on their first treatment, referred to the treatment as emotionally painful:

> "Till you get pregnant there is distress" (2FT)

> "After the insemination [...] it disturbed me a lot [...] they keep on asking if something goes wrong [...] I did not want to listen to those questions [...] I didn't want to give them hope" (6FT).

It is important to consider that even though it was painful for these women, the treatment was successful. In contrast, because they have been rewarded by getting pregnant, some women may have felt they should not complain about the treatment, or even refer to it as painful. Possibly, due to their strong desire to be a mother, any sort of pain, emotional or physical, was seen as worth tolerating. These findings are supported by other studies which state that negative feelings and dissatisfaction with treatment are particularly expected when it is unsuccessful[21] and women may feel that to be happy following successful treatment is their "duty".[23] Consequently, just a few first treatment women (and none of the previously unsuccessful group) referred to intense negative emotions related to infertility.[8]

Concern regarding physical problems. Being afraid of miscarriage or feeling threatened by an unexpected event during pregnancy was reported only by the group who had experienced prior unsuccessful treatment:

> "when you have a spontaneous conception you don't have all that suffering [...] We were at the same time very happy, but too much worried [...] nausea, bleeding, contractions" (9NFT)

> "I think it's a very painful treatment, physically and emotionally [...] Until the third month I was in alert, I was afraid of everything [miscarriage until the 3rd month]" (18NFT).

Pregnancy for these women had a different beginning, having previous failure as a background, which may have influenced the way they experienced pregnancy, leaving them feeling vulnerable and unable to continue to the end. Similarly, in previous studies ART women perceived their pregnancies as being more risky and demanding,[13,24] more stressful and a less relaxed process.[24] They reported more complaints[21] and complications during pregnancy,[25] stayed in hospital more often and for longer[22] and showed higher levels of depression.[26] However, other studies have showed that ART women are not more anxious during pregnancy than the control group[27] and refer to their pregnancies as very satisfying and free of complaint.[22]

4. Discussion

Once these women got pregnant through infertility treatment, it was accepted by them as the path to become a mother. Even seen through different perspectives, the treatment was regarded as worthwhile, and pregnancy experienced as a reward by both groups. However, feelings of resentment and regret about being infertile and, consequently, having to undergo ART were also expressed by some women, showing the burden of infertility can linger.

Women referred to the mechanics of treatment and pregnancy in different ways according to whether they had conceived on their first attempt or not. For first treatment women, the novelty and the technical demands of this controlled and automatic process seemed to be the most outstanding concern. In particular, the women who got pregnant on their first treatment cycle seem to have dealt with the emotional and physical demands of treatment more easily, perhaps because the procedures were novelties, viewed as indispensable to achieve their goal. On the other hand, for those who had been through the treatment before, these procedures were intrinsic to the process, already experienced in previous unsuccessful cycles. Consequently, the women who had previously undergone unsuccessful treatment either normalised the procedures of the treatment and pregnancy, or considered their pregnancies as special. Attempts to either standardise or specialise the experience of pregnancy achieved after ART, seen as a way in which to cope with the demands, were viewed by Sandelowski et al.[18] as an effort to become a part of the world of fertile parents. The findings here suggest these strategies may be more common in those who have tried ART more than once.

A few women who had only been through one ART cycle referred to the treatment as "psychologically painful", however many others did not acknowledge this. One factor here may be that the reward of getting pregnant (as mentioned above) following just their first treatment could make the pain worthwhile and decrease its intensity. Perhaps their feelings of gratitude were enhanced since, for the vast majority, their treatment was partly funded by the government. Another point to be considered is that they may have felt that they should not complain to the interviewers, because these were seen as connected to the hospital or clinic where treatment had been conducted.

As considered in previous research, some indication of increased anxiety related to feeling threatened by miscarriage was seen, but only amongst previously unsuccessful women, suggesting this may be connected to their failed treatment experiences. This aspect of the interview was retrospective, so could be influenced by having subsequently had a positive treatment.

5. Conclusion

The experience of pregnancy following ART is interwoven with mixed feelings, such as happiness, a sense of triumph, but also regret and fears. Having infertility and its treatment as a background gives pregnancy a different start which may affect the way it is experienced. The findings of this study suggest that women reported the same issues arising in relation to the treatment and pregnancy regardless of whether they had previously been through unsuccessful cycles or not, although from slightly different perspectives, *i.e.*, these women had the same overriding concerns, but expressed them in a qualitatively different way. Both groups referred to the treatment as "the right thing to do" to be a mother. Pregnancy following ART was regarded as a reward that compensates for the physical and emotionally

painful demands of the treatment by all the women. However, having already had previous treatment failures may have made some women adopt different coping strategies, or feel less faith in a successful outcome and therefore have more concerns about the pregnancy.

Limitations of this study include not considering the effect of the duration of infertility treatment, not exploring the spouse's experience which may diverge from that of the mother, and the small and non-representative sample. However, the small sample size is justified considering the approach chosen (qualitative) and the purpose of this study, which was to consider the meaning in depth and avoid generalisability.

Overall, the results suggest that the experiences of treatment and pregnancy reported by both the first treatment and previous unsuccessful treatment groups show similarities and differences which should be taken into consideration when providing psychological support for ART mothers. Women undergoing their first treatment may need to be encouraged to think about their feelings during the treatment and express them, instead of focusing on each novelty of the treatment in order to cope with its demands. Those who are undergoing subsequent ART treatments could benefit from support which allows them to acknowledge the emotional consequences of the current and previous treatment cycles and also to talk through their anxieties. Those working with expectant ART mothers should view the pregnancy within the broader context of these women's experiences; a successful outcome does not necessarily put an end to the effects of infertility and its treatment.

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