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The Experience of Taiwanese Women Achieving Post-Infertility Pregnancy Through Assisted Reproductive Treatment

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Abstract

The purpose of this study was to describe the experiences of pregnancy of women in Taiwan after undergoing at least three cycles of assisted reproductive technology (ART) over a period exceeding 3 years. Fifteen previously infertile female patients diagnosed with primary infertility participated in this study within 1 year of delivering a baby. Participants were between the ages of 31 and 44 with an average age of 39.41. They had been married an average of 11.33 years and had undergone an average of 5.25 years of infertility treatment. A phenomenological qualitative method with in-depth interviews was employed for the collection of data. Our findings reveal that the safety and health of the fetus is the primary concern of previously infertile pregnant mothers. Other concerns include physical/physiological changes, psychosocial reactions, the transition of identity during pregnancy, insights gained through pregnancy and labor, and the impact of Taiwanese society on the pregnancy. The post-infertility pregnant women in this study endured a great deal to conceive through ART, safeguarded the health of their fetus, and managed their reactions. Practitioners of couple and family counseling should offer assistance to post-infertility pregnant women through psychological counseling and consultation to help them deal with their biopsychosocial reactions and identity transition.

Keywords

post-infertility pregnancy, Taiwanese woman

Maternal instincts are considered the main source of happiness, satisfaction, and sense of achievement for many women (Parker, 1995) as well as the core value of an adult woman (Daniluk, 2001). Instincts and maternal duty are considered natural desires, in accord with the development of relationships, and the realization of physical, psychological, and societal expectations (Urlich & Weatherall, 2000). As in the rest of the world, research specific to Taiwan has revealed the importance of motherhood to a woman's identity. The role of mother has been identified as the most crucial role for women in Taiwan and the mother is considered the most important person associated with the care of the child (Chuang, 1999).

Motherhood is viewed as the natural duty of women in Taiwan (Chuang, 2004; Lee & Chung, 1996). For most Taiwanese women, being a wife and mother are the two most critical stages of their life cycle (Pan, 2005). Not surprisingly, the majority of women expect to have children to fulfill their maternal role. The ideal image of mothers in Taiwan is that of mothers conducting their maternal duties as defined by patriarchal power (Lee, 2007). As a result, most Taiwanese women place motherhood at the core of their individual identity (Chuang, 2004) and are eager to have a son to carry on the family name (Ho, 1999; Lin, Tsai, & Kuang, 2004, 2006). For a woman, the inability to have a child removes one of the chief methods through which she defines her identity (Weinshel, 1990).

Global infertility rates are increasing and now affect nearly 15% of Taiwanese couples of childbearing age (Gong, 2008). Factors directly related to infertility included increasing age, a history of an ectopic pregnancy, smoking, obesity, and self-reported health issues (Kelly-Weeder & Cox, 2006). Many infertile couples turn to assisted reproductive technology (ART) treatment for help. ART includes a range of infertility treatments, such as artificial insemination (AI), in vitro fertilization (IVF), intracytoplasmic sperm injection, gamete intrafallopian transfer, and zygote intrafallopian transfer (Ho, 1999). IVF represents the most widely applied ART treatment in Taiwan with more than 9,000 cycles of IVF performed each year (Department of Health, 2011).

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Wives generally experience a higher degree of stress resulting from ART and medical examination than their husbands (Abbey, Andrews, & Halman, 1992) and report more distress specific to infertility (Newton, Sherrard, & Glavac, 1999). Infertile wives perceive the stress from infertility more acutely, feel a greater sense of responsibility for the infertility, experience more depression, more sexual dissatisfaction, and lower self-esteem compared to their husbands (Olshansky, 2003). Women receive most of the medical examinations and treatment during ART (Collins, Freeman, Boxer, & Tureck, 1992), which often lead to feelings of estrangement from their own body (Daniluk, 1997); feel invaded, a lack control of their bodies as well as perplexed and hurt (Wu, 2002). Women can be traumatized by multiple ART failures and lose confidence and feelings of self-worth (Chang & Kuo, 2000).

Women undergoing multiple ARTs show significantly more symptoms of depression, reduced self-respect and self-image, a deeper sense of guilt, and a reduced sense of satisfaction with their interpersonal relationships, compared with those receiving ART for the first time (Chang & Kuo, 2000). Two thirds of the women identify infertility as one of the worst and most stressful episodes they have undergone (Sundby, Schmidt, Heldaas, Bugge, & Tanbo, 2007). In 49% of infertile couples, women reported infertility as the most upsetting event of their lives (Freeman, Boxer, Rickels, Tureck, & Mastroianni, 1985). The quality of life of Taiwanese women seeking ART is worse than that of naturally conceiving women, particularly with regard to vitality and mental health (Xiao, 2007).

Women in Taiwan usually seek advice from medical doctors, doctors who practice traditional Chinese medicine, and folk therapists. Women with infertility problems tend to mix all of these treatments into their infertility treatment (Huang, 2002). They are active in seeking resources to solve problems and demonstrate their determination to be a mother (Wang & Lee, 2004). Post-infertility pregnant women highly value the experience of pregnancy, because they are older and have higher associated pregnancy risks (Gallina, 2005; Kuo, 1998). After women have succeeded in conceiving, they are afraid of losing the fetus. A failure to conceive and repeated disappointments influence a woman's self-respect and self-image, leading to concerns regarding miscarriage, death of the fetus, and other biological defects (Gallina, 2005). The attachment between mother and fetus may be postponed or be difficult to develop for post-infertility pregnant women (Garner, 1985).

Post-infertility pregnant women often bring their negative emotions into their pregnancy. Post-infertility pregnant women in Taiwan pay special attention to changes in their weight and size of their waist, and are inclined to demonstrate the typical behavior of pregnant women at a much later time compared with naturally conceiving women. They also tend to delay developing an attachment toward the fetus to avoid potential pain in the event of a pregnancy loss (Liao, 1990). In the same manner, post-infertility pregnant women in Taiwan reduce their participation in social activities, neglect hobbies, and rearrange or quit their jobs (Su, Deng, & Yang, 1994). They lack confidence in the normality of the fetus, so continually monitor physical changes, adjust their life style to facilitate fetal growth, and constantly remind themselves to hold back from celebrating the success of the pregnancy (Su, Yang, & Deng, 1997b). The maternal duties of post-infertility pregnant women focus on ensuring that they give birth to a healthy baby and that their family will accept the pregnancy (Su et al., 1994). Educational level and family functionality are key predictors for maternal–fetal attachment among post-infertility pregnant women (Chen, 2000). Age, job status, family functionality, complications during pregnancy, experiences with infertility, and treatment distress are factors that influence their coping behavior (Cheng, 2001).

Pregnancy is not a panacea for curing negative emotions and salvaging the low self-esteem of infertile women (Ferber, 1995). Pregnancy does not immediately equal a successful identity switch from infertile to pregnant woman (Olshansky, 1990). Olshansky (2003) found that women's identity is influenced by the experience of infertility and the process of ART. After learning they are infertile and going through the confusion and pain associated with the process of redefining themselves, they gradually develop an identity with infertility. Infertile women regard their infertility as central to their identity and marginalize other identities or set them aside as secondary. When entering pregnancy, infertile women go through the process of identity transition, switching from the identity of an infertile woman to that of a pregnant woman. During this process of identity transition, women are torn between two worlds: infertile and fertile.

Post-infertility pregnant women are more likely than women who conceive naturally to have multiple pregnancies, pregnancy complications, premature delivery, and other risks associated with childbirth (Allen, Wilson, & Cheung, 2006; Kuo, 1998). It is worthwhile therefore to pay additional attention to the experiences of post-infertility pregnant women. How do these pregnant women deal with a challenging pregnancy after so many struggles and failures? How do they overcome physical and emotional discomfort during pregnancy? How do they care for themselves and respond to the physical, psychological, and social changes that come with pregnancy? These research questions characterize the experiences of post-infertility pregnant women. The majority of studies in Taiwan have focused on women when they first learn about their pregnancy (Su, Yang, & Deng, 1997a), the early stages of pregnancy (Kuo, Lee, Hu, & Huang, 2003), the first trimester of pregnancy (Cheng, 2001), and specific topics such as maternal–fetal attachment (Chen, 2000), or maternal duty (Su et al., 1994). No existing research has focused on the overall process of pregnancy for post-infertility pregnant women in Taiwan. This study provides a comprehensive description of the pregnancy experience of Taiwanese women, after participating in the process of ART.

Method

In this study, we adopted the qualitative method of phenomenology to describe the experiences of post-infertility pregnant patients. Phenomenological research uncovers, expresses, or

illuminates and describes the meaning of individual subjective experiences. The phenomenological description of human experience reveals "turning from things to their meaning, from what is to the nature of what is" (Schwandt, 2001). This method entails a careful description of ordinary conscious experiences in everyday life (the lifeworld) and a description of things (the essential structures of consciousness) as one experiences them (Schwandt, 2001). Phenomenological research could be viewed as a way of directly exploring experiences through individual introspection. Thus, this method is suitable for answering the research question: What are the pregnancy experiences of post-infertility women?

Participants

The 15 participants were primary infertility patients seeking medical treatment at the Center for Reproductive Medicine in southern Taiwan. The participants at this center were selected mainly for reasons of convenience. Other reasons for selecting these participants are elaborated as follows.

Perhaps due to the lower degree of industrialization and urbanization in southern Taiwan than in northern and central areas, people living in southern Taiwan tend to more closely adhere to traditional Taiwanese socioculture (Liang, 2002), which may enhance the influence of traditional childbearing culture. According to the literature, infertile couples in Taiwan undergo an average of three cycles of ART treatment, and most infertile couples (86%) conduct one cycle of ART treatment per year (Department of Health, 2002). Women who have undergone at least three cycles of ART treatment over a period exceeding 3 years demonstrate a stronger desire than the average woman to become a mother. IVF was the most widely used form of ART (98.1%) in Taiwan in 2009 (Department of Health, 2011). This study selected infertile women living in southern Taiwan who had undergone at least three cycles of ART (AI, IVF, or others), and finally conceived using IVF.

Participants ranged from 31 to 44 years of age with an average age of 39.41. They were married for an average of 11.33 years. One participant was a Christian, 2 had no particular religion, and 12 believed in traditional Taiwanese folk religion. One lived with her parents-in-law and the others were in nuclear families. Participants were of middle to high socioeconomic status, five had master degrees, eight had bachelor degrees, one had a junior college degree, and one had a high school diploma. All of the women had received infertility treatments for 3–10 years, with an average of 5.25 years.

Interviewer

A research assistant (RA) with a master's degree in counseling conducted the interviews in this study. Prior to the study, the RA had completed courses in interview skills, counseling, qualitative research, and research methodology. In addition, she received training and completed pilot studies to refine her interviewing skills. She attempted to establish relationships with the participants based on trust and demonstrated a genuine and attentive attitude during the interviews.

Data Collection

A technician at the Center for Reproductive Medicine mailed out invitation letters to patients who had delivered at least one biological child after undergoing at least three cycles of any type of ART over a period exceeding 3 years. The technician then telephoned the patients to invite them to participate in the study. If the patient agreed, the interviewer would set up an appointment for an interview. Prior to the interview, the interviewer explained the confidentiality of the study and had the participant sign an informed consent form. The interviewer adopted general, open-ended questions, inviting participants to express their feelings, insights, perceptions, and thoughts related to the experiences of post-infertility pregnancy. Each participant had one interview, lasting 90–120 min.

Open-ended questions in the in-depth interview included: (1) Please describe your reactions when your pregnancy was first confirmed; (2) After confirming your pregnancy, how did you cope and adjust? (3) Were there any changes or modifications in your cognition, affection, and/or behavior in daily life after becoming pregnant? (4) Please describe your experiences during the first, second, and final trimester of pregnancy; (5) Were there any events or experiences that impressed you during the pregnancy? (6) How did the infertility treatments that you have undergone in the past few years influence you during the course of your pregnancy?

Data Analysis

Lincoln and Guba (1985) proposed dependability, confirmability, and transferability as the criteria of credibility, and these were also adopted in this study. The first and third authors served as analysts adopting the procedures proposed by Creswell (2009). These two analysts (1) optically scanned the material, typed field notes, and organized the data; (2) read through all of the data, obtained a general sense of the information, reflected on its overall meaning, took notes, and began recording general thoughts concerning the data; (3) began detailed analysis utilizing a coding process to organize the material into segments of text; (4) used the coding process to generate a description of the setting or people as well as categories or themes for analysis; (5) generated codes for description; (6) developed additional layers of complex analysis to go beyond description and theme identification and into complex theme connections; (7) described how the accounts and themes were represented in the qualitative narrative; and (8) interpreted the meaning of the data. The two analysts then discussed and reached an agreement on the themes and content description that emerged from data analysis.

The analysts employed the dependability strategies provided by Gibbs (2008). They (1) checked the transcripts against the original recordings, (2) continually compared the data with the codes and wrote about the codes and their definitions, and (3) cross-checked codes and compared results

that were derived independently. In addition, they adopted the strategies proposed by Creswell and Miller (2000) to enhance credibility. The two analysts (1) triangulated different sources of data, (2) used member checking to determine the accuracy of the findings through a review of the final report or specific descriptions or themes with the participants, (3) used rich descriptions to convey the findings and provide details of the setting and multiple perspectives about a theme, (4) clarified bias through self-reflection to create a narrative that resonated well with readers, (5) presented negative or discrepant information that ran counter to the themes, and (6) spent a considerable amount of time in the field developing an in-depth understanding of the phenomena to convey details regarding the site and the individuals to ensure the credibility of the narrative account. A peer debriefer was invited to review the process and ask questions, and an external auditor was employed to review the entire project.

Results

What are the experiences of post-infertility women with pregnancy? After confirming their pregnancy, participants described their reactions and elaborated on their progression through the course of the pregnancy. They also highlighted how their cognition, affection, and/or behavior altered after becoming pregnant. Major themes emerging from the data analysis, including an emphasis on the safety and health of the fetus, psychosocial reactions to physical and physiological conditions, the transition of identity, insights after going through pregnancy and labor, and the impact of society on pregnancy. Excerpts from participants are quoted to explain these points.

Emphasis on the Safety and Health of the Fetus

After multiple failures in conceiving, participants cherished their pregnancy and would therefore increase their nutritional intake, try to get sufficient rest, avoid unadvisable foods, maintain a stable mood, closely monitor physiological and physical changes, and attempt to safeguard the health and safety of the fetus.

Adjustment of daily life and behavioral patterns. After the pregnancy was confirmed, participants adjusted their daily routines, diet, behavior, and activities. Those who were recommended bed rest due to unstable physiological conditions tried their best to stay home and rest; leading a simple and healthy life allowing them to focus on the health of the fetus. They were extremely cautious in protecting themselves to compensate for their age, because conceiving was difficult, or because the pregnancy was unstable.

Participants ate a healthy diet, supplemented their nutritional intake, eliminated coffee, tea, and spicy food, and adopted a lighter diet. A number of participants were not in good physical condition and had to rely on injections of nutritional supplements or intravenous drips prescribed by the doctor to improve their physical condition. Some participants quit their jobs or took a leave of absence (LOA) to stay home, in order to get sufficient rest, and take care of the fetus full-time. Other participants kept their jobs but slowed their pace to safeguard the health of the fetus. Participant 8 said:

> I took a LOA for one year and rested in bed for a long time. There was only one focus in my life at the time, the babies inside me. I knew that only I was able to protect the two babies in my belly. I had to guard them with my life.

Observations of and reactions to physical and physiological changes. When participants experienced abnormalities with their bodies, such as bleeding, pain, diarrhea, severe vomiting, or insomnia, they promptly called medical staff or rushed to the hospital for medical care. They would actively consult with doctors regarding pregnancy and follow the recommendations of their doctor in considerable detail. Participant 3:

> On that night, I went to the emergency room right away . . . Actually I would rush to the hospital for any small thing . . . On that day, I found I had more secretions, so I went to the emergency room immediately . . . During my pregnancy, I would go to the emergency room for any abnormal symptoms.

Psychosocial Reactions to Physical and Physiological Conditions

The psychosocial reactions of participants were closely related to their physiological condition and physical changes. Subthemes within this topic are discussed as follows.

Reactions to first learning of the pregnancy. When participants first heard the positive results of their pregnancy test, whether through a home pregnancy test kit or notification by medical staff, they reported a feeling of disbelief. After numerous failures to conceive, they were pessimistic about the pregnancy test results. Although hopeful of good news, the women were in constant doubt about the test results. Upon a second or third confirmation of the pregnancy, their feelings of disbelief turned into joy and excitement. Participant 6:

> When the pregnancy test came out positive, I told myself it was impossible . . . When the urine test was also positive, I told myself once again the result was not true . . . When I was finally informed of the positive pregnancy test by a nurse, I was so thrilled. I asked myself why I was so lucky . . . Words cannot even begin to describe the feelings I had.

An emotional roller coaster of anxiety and joy. After the pregnancy was confirmed, most participants felt cautious and scared as well as joyful. Multiple failed attempts with ART over the previous several years had diminished the participant's confidence in their pregnancy. They felt happy but were anxious, particularly during the most risky first trimester. During this time, the participants were anxious and worried about whether the fetus would be healthy. Participant 2:

> I was very careful throughout the entire pregnancy . . . I felt that until the baby was safely born, there would always be uncertainty. The fetus was very fragile . . . I felt fragile, lacked confidence, and was scared (during the pregnancy).

Most of the women maintained a low profile when they first learned of their pregnancy. Aside from their spouse and a very few family members and friends, they were reluctant to share the news. They were fearful that they could lose the fetus, and keeping a low profile removed some of the pressure.

Participants had mixed feelings of anticipation, worry, curiosity, and excitement during their prenatal visits. They were particularly anxious before the results of the prenatal tests. Their pressure was relieved when they learned from the test results that the fetus was normal. Each prenatal appointment was an important step in moving forward. Participants were uneasy and fidgety during prenatal appointments, but joyful and relieved after they were told that the prenatal test results were normal.

Emotional roller coaster following physiological changes. Some participants were physiologically stable during pregnancy, feeling more relaxed, and agreeable; other participants suffered bleeding, severe vomiting, chest tightness, loss of appetite, sleep disturbances, or other symptoms during pregnancy, causing them to feel anxious, uneasy, sad, and depressed. Participants with more stable conditions were better able to enjoy their pregnancy, while those who were less stable experienced more discomfort, anxiety, fear, and depression. Two participants had different emotional reactions. Participant 15 described a positive emotional reaction:

> I actually enjoyed my pregnancy, after I conquered morning sickness, and my appetite finally returned . . . I was really happy at the time. I was in a good mood everyday . . . The entire pregnancy process was quite enjoyable. I did not feel that uncomfortable . . . I ate, watched TV, and slept, and did nothing else throughout the entire pregnancy.

While Participant 4 had a negative response:

> But when there was bleeding, I started to take time off and took bed rest. Perhaps my hormone levels changed, so I started to be very anxious. I could not breathe. I asked my doctor why everyone else seemed to be quite happy during the pregnancy, and why I couldn't feel good about the pregnancy. It seemed to me that as long as the baby was not yet born, I could not relax.

Confronting challenges during pregnancy. Some participants were quite uncomfortable and unstable during their pregnancy, particularly the two participants that bore twins and the one participant that bore triplets. These three women required medical assistance to relieve their discomfort. Participant 12:

> I told myself over and over that I had to go through this difficult time. I had conquered so many difficulties (during ART), so I had to overcome the challenge of pregnancy.

Reaction after a successful delivery. Words cannot begin to describe the joy and excitement of these mothers when they first saw their newborn after the hardships they had encountered. The only exceptions were the three participants who gave birth to twins or triplets, because the newborns were brought to the intensive care unit immediately after they were born. In these three cases, the worries about the health of the newborns briefly outweighed the joy of being mothers for the first time. Participant 2 elaborated on her frenzy of delight:

> I burst into tears when I first saw my baby. At that moment, I couldn't believe that I finally had a baby that was so tiny and so cute. I immediately forgot all the pain and suffering and I felt that all the efforts that I had gone through were worthwhile.

Transition of Identity

The participants had established identities as infertile women for several years, so when the pregnancy test was positive, they were shocked and doubtful. Their previous identity was shattered. The participants were not confident in their ability to be pregnant even after the pregnancy had been confirmed. They were still cautious and scared that the fetus might be lost due to an accident. In the early stages of the pregnancy, the participants wavered between the identity of an infertile woman and that of a pregnant woman depending on their physiological changes, the growth of the fetus, and the prenatal test results. Their new identity as a pregnant woman appeared fragile and unstable. Participant 10:

> My pregnancy was very unstable at the time . . . When there was bleeding, I thought my hope was once again gone. I was really sad at the time. The conception had already been terribly difficult, and now the bleeding. I was hit hard by it.

Participants perceived themselves as more cautious in protecting the fetus compared with women who conceived naturally, because they had endured multiple failures in ART. With all the time, energy, effort and money invested in ART, and the discomfort and mental anguish, they were alarmed during the first trimester. They were worried that they might lose the baby, and such disappointment might be even more hurtful than the failures associated with ART. In short, the identity of a pregnant woman in the early stage of the pregnancy was fragile, obscure, and unstable. Participant 5:

> I spent so much time and effort to have this baby, what if I lost the baby? . . . I felt so much pressure and worry . . . I was no longer young. I felt that this was my last chance to have a baby. If I had not been able to deliver the baby successfully, the disappointment would have been even bigger than if I had not been able to get pregnant.

As the pregnancy moved into the second or final trimester, the participants felt their pregnancy was more stable, their belly was getting bigger, physical changes were more apparent, fetal movement was more significant, and ultrasound fetal images

were more clearly visible. They frequently imagined how the baby would look and gradually developed, shaped, and accepted the identity of a pregnant woman and mother. Participant 14:

> My pregnancy gradually became stable only after the first trimester . . . My belly gradually became larger . . . I would talk to my babies, I told them that they had to go through this entire pregnancy with me. I told them that they went through a really difficult time; it was difficult for me too . . . Babies, way to go!

Insights After Going Through Pregnancy and Labor

After enduring ART and the process of labor, participants were able to treasure what they had and realized that they could not get pregnant or have a baby solely on their own. They appreciated the help of doctors and the medical team, as well as the love of God or Buddha. The participants were able to live their lives with greater modesty, care, and empathy than before; and believed that having their babies was the best gift of their lives. Participant 3:

> I could not have accomplished all of this myself . . . I understand that I could never have gotten what I wanted without the help and support of so many people. That is why after going through this process, I feel such gratitude.

Participants expressed appreciation for economic and moral support, assistance with chores, and encouragement from their husbands. Spouses were the most important support during pregnancy. Mothers and mother-in-laws mainly provided help in preparing meals. Friends and family shared in the experiences of pregnancy. All of these people helped the participants to stabilize their mood and confront the challenges of pregnancy. Participants viewed their family as more complete and happier, and felt that their lives were more meaningful after having a biological child. Participant 9:

> The joy of having a baby is much greater than winning a lottery . . . I think that is the greatest happiness in my life. This is something I could never have realized before I become a mom.

The participants felt that the process of pregnancy and labor had created ties with their husband's family. Compared with the time before they had children, they felt their status in the husband's family had improved, as had their communication with family members. They felt more connected to their spouse, family, and relatives. Participant 13:

> I was finally connected with my husband's family after having the baby, and the baby represented a biological link. Otherwise, I would always have been an outsider.

Impact of Society on Pregnancy

The participants spoke about the importance of having biological offspring. They viewed children as the core of a family and acknowledged their maternal role and duty. They also realized the significance of passing down their heritage to the next generation and felt grateful for having biological offspring. Participant 7:

> After delivering a baby, I had a clear goal for my life and my future . . . I no longer felt pitiful, and had dreams for the future. This is a big change in my life. The child is able to pass down my heritage; this is what mankind does. My genes, my upbringing, and my education will all be passed down to my child. Seeing this child is seeing my future. My child represents the continuation of my life.

The participants were willing to follow the kind reminders that people gave them regarding pregnancy, including related folk taboos and religious beliefs. Since they had suffered from many failures in attempting to conceive, they were less confident about their pregnancies and many demonstrated a willingness to believe in folk taboos and religious beliefs. The majority of the participants worshipped at temples to ask for good luck and made wishes for a smooth pregnancy.

Discussion

Research results revealed that post-infertility pregnant women gradually transformed from the identity of an infertile woman to that of a pregnant woman. When the women learned of their pregnancy, their identity as an infertile woman was challenged. When they suffered from physiological symptoms during pregnancy, they were torn between identities of fertility and infertility. This echoes the results found in Olshansky's 2003 research, in which post-infertility pregnant women often swung between identities of infertility and fertility, causing anxiety, confusion, and ambiguity. The findings of this study also mirror the concept of the "identity shift" which occurs when a woman attempts to employ an identity as a pregnant woman after adopting infertility as central to their identities for a period of time (Olshansky, 2003).

As the pregnancy proceeded, the participants gradually adapted to physical and physiological changes, slowly warmed to their role as a pregnant woman, and gradually developed the identity of mother. They sensed the existence of the fetus and were excited to see the ultrasound images. This indicates that the women gradually formed a degree of attachment to the fetus. As found in previous studies, our results indicate that maternal–fetal attachment grew with each week of pregnancy (Kuo, 2008) and pregnant women built closer ties with their fetus as the pregnant weeks increased (Lee, 1994).

Our results appear inconsistent with the findings of some previous studies in which post-infertility pregnant women had guilt and/or other negative emotions (Olshansky, 1990), low self-esteem (Gallina, 2005), and delayed attachment with the fetus (Garner, 1985) after experiencing infertility and multiple ARTs. The reason for the discrepancy between this study and those in previous studies might be the middle or higher socioeconomic classes of the women in this study, with a higher

educational background and better financial capabilities, stronger spousal relationships, functional families, and social support systems. In this study, the participants appreciated the economic and mental support, prenatal visits, assistance with chores, and encouragement of their husbands; received help from family members and friends to stabilize their mood and confront the challenges of pregnancy. In addition, they were able to utilize resources, strengthen their social support system, and conquer stress and the challenges of pregnancy after years of failure with ART. Our findings corresponded to the fact that financial capability, functionality in the family (Cheng, 2001; Yang, 2008), the support of family members (Yang, 2008), and a social support system (Hsu, 2003) are important factors influencing the experiences of pregnant women. Chen (2000) found that education and functionality of the family were important factors for maternal–fetal attachment of post-infertility pregnant women, and our study mirrored these results.

The participants viewed having babies as the best gift of their lives, considered children to be the core of a family, and realized the significance of passing down their heritage to the next generation. They felt that the process of pregnancy and labor had created ties with their husband's family. Our findings support the idea that Taiwanese women value their role as a mother (Chuang, 2004). This reflects the social norms and beliefs of Taiwanese society that adult women are responsible for passing along their heritage to their offspring (Ho, 1999; Kuo et al., 2003). Taiwanese women tend to be bound to their roles of a wife and a mother (Chuang, 1999; Pan, 2005) and recognize their mission to pass on heritage and become a mother (Ho, 1999; Kuo et al., 2003; Wu, 2004).

The women in this study, though they had higher levels of education and financial resources, were still ruled and regulated by giving birth to a child to bear the family name and pass on family heritage. The study results reveal that Taiwanese women tend to face the pressure of passing on heritage, expectations from society to have children, and their own maternal urges (Chuang, 2004; Lee, 2007; Lin, 2009; Lin et al., 2004, 2006). It appears that maternal duty and maternal instinct are deemed the ideal for women in Taiwan. In addition, our findings echo those in western countries, in which women value the role of being a mother (Wollett, 1996), which is regarded as the core value of adult women (Nicolson, 1998) and the most critical goal in life (Daniluk, 2001).

Participants in this study value folk customs associated with pregnancy. Because they had difficulty becoming pregnant, the women showed a willingness to believe in folk customs and avoid all pregnancy taboos. This is in agreement with the finding that most pregnant women avoided pregnancy-related taboos and followed traditional customs during pregnancy (Wong, 1996), and went to practitioners of traditional Chinese medicine to adjust their constitution prior to and during ART (Lee, 2003). One participant adhered to Christian traditions, while the other participants went to temples to worship and asked Buddha or supernatural powers to grant them a child. As Huang found in 2002, women were eager to become pregnant, so they were willing to ask for help from doctors who practice Chinese medicine and/or folk therapy, or even to ask for the assistance of supernatural powers.

Implications

The findings of this study could be applied to further understanding of post-infertility pregnant women from various religions and/or cultures where they are inclined to value biological children and to internalize the role of being a mother as the core of their individual identity, and to view motherhood as their natural duty. While the participants of this study are Taiwanese women, these findings could be applied to further understanding of post-infertility pregnant women from other cultures, regions, and/or countries where they are inclined to value biological child(ren) and to internalize the role of being a mother as the core of their individual identity, and to view motherhood as their natural duty.

Professionals involved in infertility treatment should provide not only medical services and prenatal tests to post-infertility pregnant women but also monitor their psychosocial and emotional changes through psychological counseling and consultation in the early stages of pregnancy. This would help clarify and evaluate the transition of identity, spousal relationships, the functions of the family, support systems, and lifestyles to better control potential stressors.

Practitioners of couple and family counseling not only provide psychological assistance in coping with stress resulting from infertility and ART but can also offer counseling to post-infertility pregnant women dealing with biopsychosocial reactions after enormous pregnancy-seeking efforts over several years. Family counselors and psychotherapists could apply the study results to assist post-infertility pregnant women in dealing with their progression through the course of pregnancy, especially alterations in cognition, affection, and/or behavior after becoming pregnant. Practitioners of couple and family counseling could provide treatment to assist women in dealing with anxiety related to the safety and health of the fetus, to handle the psychosocial reactions to physical and physiological conditions, and to develop the identity of a pregnant woman.

Researchers in counseling and mental health could investigate how these women transform their identities from that of an infertile woman to that of a pregnant woman and mother; assist the women in adjusting to the psychosocial reactions triggered by physiological symptoms and physical changes during pregnancy; and respond to their own beliefs with regard to maternal instinct and the role and impact of family, society, and culture on pregnancy.

Limitations

The participants in this study were recruited from just one center for reproductive medicine, and thus represent a somewhat homogeneous sample. The fact that the women agreed to participate in the study indicates that they were active and open-minded and their characteristics might differ from those who refused to be interviewed. All participants were part of a heterosexual married

couple who were involuntarily infertile, without biological children, experienced at least 3 years of ART, and highly anticipated having biological offspring. Consequently, the results of the study might somewhat differ from experiences of women who are homosexual, single, or who conceived naturally.

Conclusion

Taiwanese post-infertility women in this study struggled to conceive through ART, safeguarded the health of their fetus, and worked through their biopsychosocial reactions. As the pregnancy progressed, these women's identities gradually transformed from that of an infertile woman to that of a pregnant woman. They tried Chinese medicine, avoided pregnancy-related taboos, and followed traditional customs during pregnancy. Unlike participants from similar studies, participants in this study did not report several negative emotions about their pregnancy. Perhaps being from a middle to higher socioeconomic background, with medical and financial resources, and the support of significant others protected the participants in this study from guilt and/or other negative emotions, low self-esteem, and/or delayed attachment with the fetus after experiencing infertility and multiple cycles of ART.

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