MIDWIVES' SUPPORT DURING PUERPERIUM AMONG WOMEN WHO HAVE UNDERGONE INFERTILITY TREATMENT

Yuki Kanazawa[1], Atsuko Kawano[1], and Komachi Ouki[2]
[1]Faculty of Medicine, University of Tsukuba, Tsukuba, Japan
[2] Former University of Tsukuba, Tsukuba, Japan
Corresponding email: ykanazawa@md.tsukuba.ac.jp

Abstract

This study aims to reveal the types of midwives' support to postpartum mothers after infertility treatment. Sixteen midwives, who had experience dealing with mothers in the puerperium after infertility treatment participated in semi-structured interviews. The question included mothers' experiences related to their roles after infertility and the difference between the support provided to puerperal women after infertility treatment after a natural pregnancy. Text mining analysis was used to anlysis the data. The following nine categories regarding midwives' support for puerperal women after infertility treatment were identified: 1) midwives listen more carefully to puerperal women who have undergone infertility treatment than to those who have experienced natural childbirth, 2) midwives encourage adding milk when breast milk is insufficient for the baby's 3) midwives assist women who have undergone an emergency caesarean section overcome the feeling of regret and remain optimistic, 4) midwives recognize that there are many elderly women, 5) midwives' level of support during the puerperium after natural pregnancy and after infertility treatment is identical, 6) midwives are involved in the step-by-step process of the mother becoming a parent, 7) midwives are involved in raising the child positively, 8) during the semi-monthly and monthly health check-ups, midwives encourage and instill confidence in mothers, and 9) midwives help mothers cope with anxiety regarding the lack of or poor weight gain among their children. Midwives significantly reduce anxiety among puerperal women who have undergone infertility treatment by providing consistent emotional support to such women, even after discharge.

Keywords: Infertility treatment, midwife, puerperium, semi-structured interviews, support

INTRODUCTION

Fertility is one of the most important things for women. In 2019, Japan had an overall fertility rate of 1.36 children per woman, so the birth rate continues to decline (Ministry of Health, Labor, and Welfare, 2020a). Nevertheless, pregnancy and childbirth rates after infertility treatment continue to increase (Ministry of Health, Labor, and Welfare, 2020b). Pregnancy through in vitro fertilization and embryo transfer (IVF-ET) was successful in Japan throughout the 1980s. Since then, assisted reproductive technology has evolved significantly. In 2018, the fertility rate resulting from in vitro fertilization (IVF) accounted for 6% of Japan's overall fertility rate (Japan Society of Obstetrics and Gynecology, 2018), and the Number of infertility patients was expected to increase.

The Cabinet Office (2021) and the Ministry of Health, Labor, and Welfare (2020c) began taking measures such as improving working environments and providing subsidies for infertility therapists. Women on infertility treatment often focus on becoming pregnant or giving birth and not on raising children, but most of their concerns end after giving birth (Ibeyama, 2010). Women who have undergone infertility treatment tend to have high rates of cesarean section and obstetric complications due to advanced maternal age, multiple pregnancies, and preterm births (Takagi et al., 2004). Women who experience premature births, cesarean sections, or whose babies have been hospitalized in a newborn intensive care unit (NICU) have negative feelings toward delivery and feel guilty for not giving birth to a healthy baby (Okajima & Ibeyama, 2010). Further, they tend to have low self-esteem and core self-evaluations owing to the feeling of defeat (Okajima & Ibeyama, 2010). Although they want to raise children, they do not have an image of childcare after childbirth (Ibeyama, 2010).

After infertility treatment women perceive themselves negatively and as infertile, resulting in difficulties with child-raising (Okajima & Ibeyama, 2010). It has been reported that women undergoing infertility treatment are more likely to become depressed two months after giving birth (Huang et al., 2019). Therefore, existing literature has established that women who have been treated for infertility need support during infertility treatment and after childbirth. In achieving this objective, midwives are suggested to be involved with puerperal women who have

undergone infertility treatment, and this approach will play a significant role in establishing a support system for such women. This study aimed to clarify how midwives help mothers who give birth after infertility treatment.

METHODS

Study Design

The qualitative approach was applied in this study

Ethical considerations

The interviews were conducted after obtaining consent from the participants. The researchers explained that consent could be withdrawn before the interviews were analyzed. The interviews were recorded, and the interview data will be strictly managed and stored for ten years. This study was approved by the Faculty of Medicine Ethics Committee, University of Tsukuba (No. 1579; approval date: October 15, 2020).

Sample and Settings

We sent a research cooperation request form, a survey content manual, and a leaflet to the directors of 33 practising midwifery hospitals in prefecture A to solicit their cooperation. Those who wished to participate in the study contacted the researchers via e-mail and the interview date was determined. Sixteen midwives—who were experienced in dealing with puerperal women after infertility treatment—participated in this study.

Data Collection

The semi-structured interviews were conducted over Zoom. The participants' consent and their subsequent interviews were recorded. The interview time was 51 minutes on average. Interview guide, we asked two main questions. The first question was, "After childbirth, what helps a woman who has undergone infertility treatment establish her role as a mother?" The second question was, "What is the difference between the support provided to puerperal women after infertility treatment after a natural pregnancy?"

Data Analysis

First, the interviews were transcribed verbatim. Second, KHcorder (Higuchi, 2020) was used to perform text mining analysis (Sueyoshi, 2019; Ushizawa,

2019). Third, morphological analysis was performed. It involved the words that were not used during text mining, including all alphabets, thank you (*Arigatou*), feel (*kanji*), feel (*kanjiru*), think (*omou*), yes (*soudesune*), well (*kekkou*), really (*honntouni*), yes (*hai*), think (*kangaeru*), question (*shitsumon*), case (*baai*), literature (*bunken*), fact (*jissai*), the person (*hito*), and earlier (*sakihodo*). The compulsory words for extraction included decubitus (*jyokuhusan*), after fertility treatment (*huninchiryougo*), voice (*koekake*), midwife (*jyosannshi*), be careful (*kiwotsukete*), specific (*gutaiteki*), delivery experience (*bunbentaiken*), burnout (*banaut*), mother-child separation (*boshibunri*), advanced maternal age (*koureishussan*), post-natural pregnancy (*sizenninshingo*), and NICU. Fourth, a co-occurrence network analysis involving a minimum of 20 frequently used words was conducted. Fifth, we returned to the initial text from the frequently used words in each group of the co-occurrence networks, selected the network that suited the purpose, and extracted the categories. The analysis involved discussions with collaborators to select networks and extract categories.

RESULTS

Participant attributes

Ten of the participants were in their 40s. Nine of the participants had between 10 and 20 years of experience as midwives and four participants had between five and ten years of experience as midwives.

Midwife support for women who give birth after infertility treatment

Midwife support was divided into the following nine categories. (1) Because many women undergo infertility treatment, *midwives listen carefully to women's stories*. (2) Puerperal women who have undergone infertility treatment strongly desire to breastfeed their children and do their best. Therefore, *midwives talk about the benefits of breast milk so that puerperal women who have undergone infertility treatment always want to breastfeed their children*. (3) Women who have undergone infertility treatment successfully are prone to depression in cases where an emergency cesarean section is required. Therefore, *midwives acknowledge and praise the efforts of puerperal women who have undergone infertility treatment, so they have a positive attitude*. (4) Because women who

have successfully undergone infertility treatment often give birth at an older age, *midwives are involved in carefully grasping the recovery statuses of their bodies without overdoing such involvement*. (5) Because women who have successfully undergone infertility treatment unknowingly believe that they are different from other women, *midwives do not discriminate against puerperal women who have undergone infertility treatment*. (6) Women who have successfully undergone infertility treatment perceive their children as precious beings. Therefore, *puerperal women who undergo infertility treatment strongly desire to become perfect parents. As a result, midwives can control their ability to do so step by step*. (7) Women undergoing infertility treatment are more satisfied with having a baby. Therefore, *midwives create positive feelings among puerperal women who have undergone infertility treatment but are not confident regarding childcare*. (8) Women who have undergone infertility treatment have low self-esteem. Therefore, *midwives attempt to increase their self-esteem as mothers, even during the semi-monthly and monthly maternal and child health examinations after discharge*. (9) Owing to trivial matters, puerperal women who have undergone infertility treatment become increasingly anxious regarding the well-being of their children. Therefore, *midwives reduce such anxiety by increasing the weight of the child*. Table 1 shows a list of the frequently used words in each category. In the table, the categories are indicated using square brackets. The words spoken by the participants have also been translated and summarized. The co-occurrence network used in this study is presented in Figure 1.

Table 1. List of Frequently used Words in Each Category

Category	Frequently used words; Japanese (Number of appearances)
[Midwives listen carefully to women's stories]	Mom, *okaasan* (656); Treatment, *chiryou* (503); Infertility, *hunin* (475); Say, *iu* (468); Baby, *akachan* (407); Myself, *jibun* (367); Many, *ooi* (302); Pregnancy, *ninshin* (261); Now, *ima* (255); Childcare, *ikuji* (237); Listen, *kiku* (234); Story, *hanashi* (124); Nature, *ahizen* (107)
[Midwives talk about the benefits of	Breast milk, *bonyu* (138)

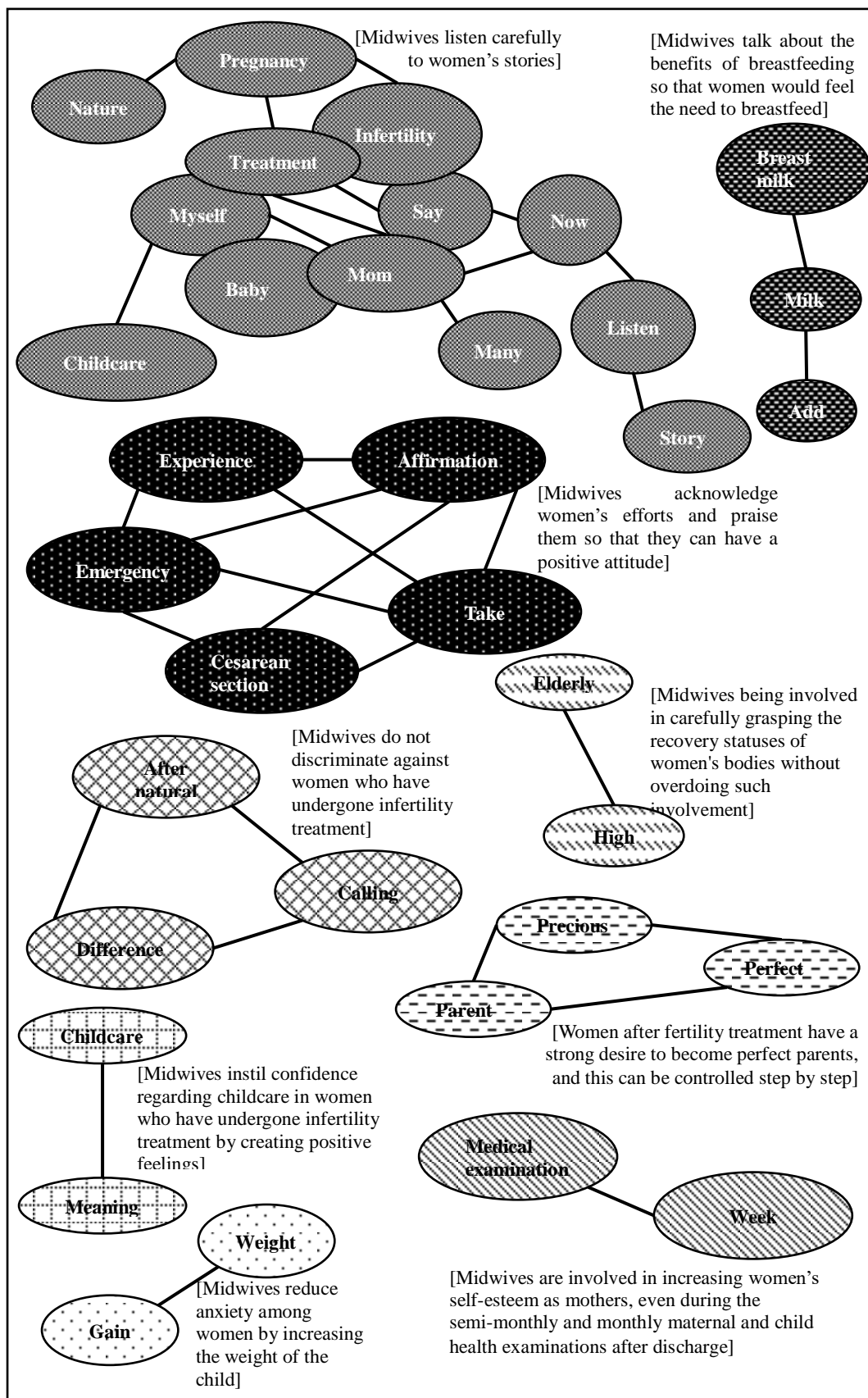|	
breastfeeding so that women always want to breastfeed]	Milk, *miruku* (42)
	Add, *tasu* (20)
[Midwives acknowledge women's efforts and praise them so that they can have a positive attitude]	Cesarean section, *teiousekkai* (104)
	Affirmation, *koutei* (41); Take, *uketomeru* (40)
	Experience, *taiken* (36); Emergency, *kinkyu* (27)
[Midwives being involved in carefully grasping the recovery statuses of women's bodies without overdoing such involvement]	High, *takai* (81)
	Elderly, *kourei* (78)
[Midwives do not discriminate against women that have undergone infertility treatment]	Difference, *Michiga*n (51)
	Calling, *koekake* (45)
	After natural pregnancy, *shizenninnshin* (22)
[Women who have undergone infertility treatment have a strong desire to become perfect parents, and midwives can control their ability to do so step by step]	Precious, *kichou* (39)
	Perfect, *kanpeki* (28)
	Parent, *oya* (23)
[Midwives instill confidence regarding childcare, in women who have undergone infertility treatment, by creating positive feelings]	Childcare, *kosodate* (37)
	Meaning, *imi* (27)
[Midwives are involved in increasing women's self-esteem as mothers, even during the semi-monthly and monthly maternal and child health examinations after discharge]	Medical examination, *kenshin* (29)
	Week, *shuukan* (21)
[Midwives reduce anxiety among women by increasing the weight of the child]	Weight, *taijyuu* (22)
	Gain, *hueru* (20)

Figure 1. Co-occurrence Network of Midwives' Support for Women after Infertility Treatment

(1) Midwives listen carefully to women's stories

The Number of extracted words was more than 100. The words spoken by the participants were about "listening" to women who have undergone infertility treatment. Midwives often listen carefully to stories of women who have undergone infertility treatment right from the beginning of the stories rather than listening to them later.

Typical narrative: "I accept the long-time desire of a post-fertility woman to work hard to give birth to a baby, and I gradually build up trust in her."

（2）Midwives talk about the benefits of artificial milk because puerperal women who have undergone infertility treatment feel the strong need to breastfeed their children

As shown in the co-occurrence network presented in Figure 1, the frequently used words "breast milk," "milk," and "add" were related. The term "breast milk" was used as many as 138 times, showing that women undergoing infertility treatment require breastfeeding support.

Typical narrative: "Although puerperal women who have undergone infertility treatment are weak, they still want to breastfeed their children. They believe it is good to do so. However, as women undergoing infertility treatment have low hormone levels, their ability to produce milk is limited. We strive to satisfy their hopes but remain careful not to make them feel inferior owing to low secretions."

（3）Midwives acknowledge the efforts of women who have undergone infertility treatment and praise such women so that such women can have a positive attitude

The word "caesarean section" was used as many as 104 times. In addition, words frequently used were "cesarean section," "affirmation," "take," "experience," and "emergency." In Japan, women who have undergone infertility treatment often have scheduled cesarean sections, and they believe that urgent cesarean sections are not good. Therefore, midwives help such women perceive the experience of cesarean section positively.

Typical narrative: "When a woman who has successfully undergone infertility treatment requires an emergency cesarean section, she and I will review the delivery process so that she can maintain a positive attitude."

(4）Midwives are involved in carefully grasping the recovery statuses of women's bodies without overdoing such involvement

The frequently used words were "high" and "elderly." However, midwives recognize that women with advanced maternal age are highly likely to undergo infertility treatment. Therefore, midwives guide childcare techniques after confirming that the woman's body has recovered fully.

Typical narrative: "Women undergoing infertility treatment are often not very young. Many older women who give birth are mature and successful human beings. I respect and love them. I feel that the infertility treatment process is significantly painful. Therefore, I want to work with them, and I want to help them. Women undergoing infertility treatment have a strong will and a sense of responsibility."

(5）Midwives do not discriminate against women who have undergone infertility treatment

The frequently used words were associated with "after natural pregnancy," "calling," and "difference." Midwives do not speak differently to both post-fertility and post-natural pregnancy women. Midwives help women without discrimination.

Typical narrative: "Whether it is a woman who has undergone infertility treatment or has experienced a natural pregnancy, I do not discriminate."

(6）Women who have undergone infertility treatment have a strong desire to become perfect parents, and midwives can control their ability to do so step by step

The frequently used words were associated with "precious," "perfect," and "parent." Instead, midwives consciously support how women perceive their children after infertility treatment and what kind of parents they want to be.

Typical narrative: "I tell women who have undergone infertility treatment that they do not have to be perfect mothers right from the start. There is no specific method for motherhood, and they should learn childcare slowly and steadily."

(7）Midwives create positive feelings among puerperal women who have undergone infertility treatment but are not confident regarding childcare

The frequently used words were related to "childcare" and "meaning." Midwives help women who have undergone infertility treatment feel satisfied with their childcare approaches and make sense in raising their children.

Typical narrative: "I help women who have undergone infertility treatment remain as positive as possible, even if they feel negative about their children."

(8) Midwives increase the self-esteem of puerperal women who have undergone infertility treatment, as mothers, even during the semi-monthly and monthly maternal and child health examinations after discharge

The frequently used words were "medical examination" and "week." In Japan, women are discharged after four to five days of hospitalization after delivery. After discharge, women go to an obstetric outpatient clinic every two weeks for one month after delivery. At that time, midwives help puerperal women who have undergone infertility treatment to remain confident as mothers of their children.

Typical narrative: "I praise women for their hard work. I praise them for their good childcare because it increases their motivation and self-affirmation. Women who have undergone infertility treatment may have less self-affirmation than women who have experienced natural pregnancy. Therefore, complimenting breastfeeding, even after discharge, seems to reassure puerperal women who have undergone infertility treatment."

(9) Midwives reduce anxiety in puerperal women who have undergone infertility treatment by increasing the weight of the child

The frequently used words were "weight" and "gain." Midwives are attentive to weight gain among the children of women who have undergone infertility treatment. This crucial support provided by midwives prevents anxiety among women who have undergone infertility treatment.

Typical narrative: "Children born through infertility treatment may be small. Therefore, the inability of such children to gain weight may be due to their inability to suck their mothers' milk or their mothers' limited milk production. I support puerperal women who have undergone infertility treatment through such detailed explanations."

DISCUSSION

Midwives provide support without discriminating between women undergoing infertility treatment and those who experience natural pregnancy. Women undergoing infertility treatment have different treatment, family, and social backgrounds (Mori & Ibeyama, 2008). Additionally, women undergoing infertility treatment have unique psychological characteristics (Nakano et al., 2010). However, the main characteristics of women undergoing infertility treatment often involve pregnancy and childbirth (Ibeyama, 2010). Even if they give birth normally, such women still feel that they are not normal. As a result, they have two phases of emotions: they want midwives to treat them as normal pregnant women, and they want midwives to reduce their anxiety levels (Warmelink et al., 2016). Therefore, midwives must understand the feelings of puerperal women undergoing infertility treatment and support them based on their individuality rather than discrimination.

Midwives must be careful about the bodies and minds of women who have undergone infertility treatment because they often give birth at an older age. During the postpartum period, women undergoing infertility treatment tend to have high levels of physical pain and fatigue due to their older age and high cesarean section rates (Takagi et al., 2004). Therefore, midwives must assess the degree of fatigue among women. Specifically, we believe that it is crucial for midwives to encourage women to rest after childbirth.

Essentially, midwives play a significant role in providing emotional support to puerperal women undergoing infertility treatment. During pregnancy, such women cannot perceive themselves as mothers or understand their roles as mothers (Ibeyama, 2010). On the other hand, women who have undergone infertility treatment tend to have high ideals regarding childcare because they believe they must be perfect parents to their children (Okajima & Ibeyama, 2010). Therefore, midwives must provide support using step-by-step approaches, enabling women to raise their children effectively.

The need for support of puerperal women who have undergone infertility treatment to breastfeed their babies is a significant aspect associated with the

midwife's role. Midwives must also remain involved with and increase confidence among such mothers, even during their post-discharge medical examinations. Additionally, midwives must alleviate anxiety among puerperal women undergoing infertility treatment by helping their children gain weight steadily. When breastfeeding difficulties occur, such mothers tend to believe that it is hard to raise children. This belief results in delayed attachment formation, which may affect the development of mother-child and parent-child relationships (Yokoyama, 2002).

Additionally, compared to women who experience spontaneous pregnancy, those who have undergone infertility treatment have a more extended infertility period of over two years, and deliveries through cesarean section have a more significant effect at the start of breastfeeding (Castelli et al., 2015). Therefore, breastfeeding support for women who have undergone infertility treatment should be provided more carefully. Further, it is crucial to understand the problems faced by women who have undergone infertility treatment and take preventive measures to avoid increased levels of anxiety in such women (Oomine et al., 2002). Therefore, based on the results of this study, it is necessary to prioritize the time of medical examination, the promotion of weight gain among children, and the provision of breastfeeding guidance to puerperal women who have undergone infertility treatment. We believe midwives can ensure that puerperal women who undergo infertility treatment form attachments with their children.

Limitations and directions for future research

In this study, we interviewed midwives regarding their support for puerperal women after infertility treatment. In Japan, infertility treatment and childbirth facilities are often different. Therefore, after childbirth, there is a limitation in midwives' abilities to recognize that a woman has undergone infertility treatment. Additionally, in Japan, information regarding women who have undergone infertility treatment and are raising children is not recorded in the mainstream maternal and child health handbook. Therefore, healthcare workers cannot know unless such women speak up. Undergoing infertility treatment is indeed highly likely to affect the quality of childcare. Moreover, pregnant women with poor

knowledge during pregnancy are highly likely to experience complications (Dewi, Ermiati, & Hidayati, 2018; Mamuroh et al., 2020). Although this study focused on the postpartum period, women undergoing infertility treatment are at an increased risk of complications. Therefore, developing a system that provides sufficient knowledge to such women during pregnancy is necessary.

CONCLUSION

In this study, midwives' support for puerperal women undergoing infertility treatment was categorized into nine types of support. It was suggested that midwives reduce anxiety among such women by providing consistent emotional support, even after discharge.

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