INTRODUCTION
Breastfeeding during infancy is known to have both short- and long-term immunological and nutritional benefits for the infant. 1 Full breastfeeding for at least 6 months of age and breastfeeding with complementary foods for an acceptable period up to 1 year of age or older are recommended. 2 Of course, breastfeeding does not take precedence over anything else. However, if both the child and the parents choose breastfeeding, it is hoped that this will be...
maintained. Moreover, the Ministry of Health, Labor, and Welfare has issued a guide suggesting that those involved in childcare should also support mothers who breastfeed.³

According to a recent survey, the most common duration of childcare leave taken by Japanese women is between 10 and 12 months.⁴ Since most of them enter childcare facilities before their children turn 1 year old, it is desirable to have an environment that allows them to continue breastfeeding if they wish after entering the facilities.

However, the parents' wish to have their children drink expressed breast milk at childcare facilities after admission is not always realized in the current situation.⁵ There are reasons why childcare facilities cannot accept breast milk, or even if breast milk care itself is provided, there are strict conditions for its continuation. For this reason, there are cases in which the mother cannot return to work at the desired time because it is unavoidable that the mother wants to continue breastfeeding but is forced to stop breastfeeding before entering the nursery⁶ or because it is necessary to delay admission to the nursery to prioritize breastfeeding. In our experience and in the past literature, it is suspected that there are regional differences in the number of childcare facilities that accept breastfeeding, and continued breastfeeding is not reported to be a barrier to using childcare facilities in some areas.⁷ Additionally, most of the reports conducted in Japan so far have investigated differences within regions on a prefectural basis.⁸ A common factor that supported parents' continuation of breastfeeding was the provision of physical space for breastfeeding and facilities for storing breast milk in a qualitative study conducted among managers of childcare facilities in other countries.⁹ However, it is unclear how facility staff feel about the handling of breast milk. There are no qualitative studies that have explored what perceptions and environments are barriers or facilitators to breastfeeding in childcare facilities in Japan.

This study aimed to conduct a survey of childcare facilities in several cities in Japan regarding whether or not they accept breastfeeding. It likewise sought to clarify the thoughts and feelings of managers and childcare staff of childcare facilities regarding the acceptance of breastfeeding.

2 | MATERIALS AND METHODS

2.1 | Design and participants

In this qualitative study, we explored how childcare facility staff handle and feel about breastfeeding milk. In three cities in Japan, childcare facilities were selected for the questionnaire survey, considering regional differences. Following the questionnaire survey, we conducted semi-structured interviews for childcare facility staff that accept breastfeeding milk. For the interview study, the interviewees were managers or employees of childcare facilities that provide breastfeeding care and are involved in breastfeeding care daily.

2.2 | Study period

A questionnaire survey and an interview study were conducted from May 2012 to September 2015.

2.3 | Data collection

We selected three cities in Japan and made a list of childcare facilities in those cities from the viewpoint of regional differences and the feasibility of interviews. We sent questionnaires to the listed 211 childcare facilities by mail, and we received responses from 55 facilities regarding whether they accepted breastfeeding and whether they were willing to participate in the interview study.

We selected some of the facilities and contacted the facilities that responded, provided breastfeeding care, and were willing to participate in the interview. Semi-structured interviews were conducted with the subjects who consented to participate in the study. Two researchers (SY and YM) visited the childcare facilities in question and conducted interviews using an interview guide at locations and times specified by the facilities. The interview was conducted when there were no parents present, and the psychological burden on the participants was minimal. Statements were recorded with an IC recorder, and verbatim recordings were made for qualitative analysis. One of the facilities where the interviews were conducted was a childcare facility that the co-author’s child attended.

2.4 | Analysis

The recorded interview data were transcribed verbatim immediately after each interview. The textual data were analyzed via thematic analysis, which is a common method of qualitative descriptive methodology.¹⁰ Three authors (CY, SY, and YM) each performed the initial coding. The analysis results were discussed and compared, and the themes were organized. From similar themes, we generated subcategories and superordinate concepts to further categories. The analysis of the data was conducted in an iterative design, where the analysis of some interviews was completed before moving on to the analysis of the next interview data, and the previous data were continuously referenced to refine the code. Theoretical saturation had not been reached when all the data analysis was completed. Co-authors (DS and YT) with experience in qualitative analysis worked together to generate code names and superordinate concepts and discuss their validity.

2.5 | Ethics

Consent was obtained by explaining in writing that participation in the study was based on free will, that no disadvantage would result
from not consenting, that the study could be suspended at any stage, and that personal information would be anonymized. This study was approved by the Ethics Committee of Mie and conducted (Approval No. 2347). The authors declare that they have no conflict of interest for this article.

3 | RESULTS

Of the 211 childcare facilities in three cities in Japan, 55 facilities responded to the questionnaire (valid response rate: 26.0%). Twenty-one of the 55 facilities accepted breastfeeding (Table 1).

Six staff members from four out of the six facilities that indicated their willingness to participate in the interview were interviewed (Table 2).

Forty-two codes, 10 subcategories, and three categories were generated from the text data (Table 3). The content of each category is described below.

3.1 | The value that caregivers see in breastfeeding

As the value that caregivers find in breastfeeding, they mentioned the material benefits of breast milk. Such reflects the nutritional and immunological aspects and psychosocial benefits of breast milk. It includes communication with parents and the connection between mother and child, and breast milk as part of dietary education, such as the connection with life.

Of course, there's the mother's mental side, too. It is also possible to give the baby immunity, depending on the needs of the mother.

(#3)

They bring it for insurance, to ease the worries of their mothers. It's not like indulgence, but yes.

(#2)

It's all about living, you know. That's why when a baby is weaned from breast milk, then artificial milk, then formula, and now weaning, even if it's just a little bit more, it's a great joy when the baby eats, even if it's just a little bit.

(#4)

3.2 | Difficulties associated with breastfeeding in the childcare facilities

All of the facilities mentioned factors that they considered to be burdensome, such as difficulties in managing frozen expressed breast milk in childcare facilities and the mental burden of the staff in handling the expressed breast milk. Moreover, they acknowledged that the handling itself was also a mental burden in addition to the burden related to the handling of the expressed breast milk.

The temperature of the milk is quite delicate. Although I thaw the milk, it may not be thawed yet even though the baby is hungry and crying, I have to make him wait, so timing is quite difficult. Also, if the baby has fallen asleep after heating it up, I try to give it to him as soon as it's thawed and warmed up, so it would be wasted.

(#1)

In the past, we have had several children who were on frozen breast milk. When the time overlaps, the staff must make sure that there is no mistake, so it is certainly stressful for them. But it's different from just pouring milk.

(#4)

As I said before, it's really painful to throw away or waste the milk that the mother has taken the time to squeeze out.

(#3)

Adding to the problems of management on the part of childcare facilities, there were also concerns about difficulties related to managing frozen expressed breast milk by parents on the part of those who express and manage the milk.

"Also, if the cooling bag is cheap, it will not be effective in keeping the milk cool. This is especially true in the summer, when there is a chance that frozen milk will melt when arrived, so we suggest that mothers who have experienced this several times or fathers at the morning drop-off should choose a bag with a better cooling effect." (#4)

| Region | Target facilities (number of surveys sent) | Number of valid responses (valid response rate) | Number of facilities that accept breastfeeding | Number of facilities that agreed to cooperate in the interview |
|--------|---------------------------------------------|-------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------|
| X      | 36                                          | 26 (72.2%)                                      | 0                                             | 0                                                           |
| Y      | 118                                         | 16 (13.6%)                                      | 14                                            | 4                                                           |
| Z      | 57                                          | 13 (22.8%)                                      | 7                                             | 2                                                           |
| Total  | 211                                         | 55 (26.0%)                                      | 21                                            | 6                                                           |
3.3 Devices and elements for breastfeeding by the childcare facilities

We described specific devices and elements that were individually implemented in each facility to facilitate breastfeeding. We also observed measures for accident prevention and hygiene management. There were differences in the strictness of management and the perceptions of mental burden depending on the facility. Although there was a "childcare facilities’ perception that expressed breast milk is subject to strict control," there are also devices that prevent excessive burdens as seen in "operation of rules that are not too strict" at the facilities that provide it.

There are preferences. Some children like their breast milk warm, while others prefer it not so hot. However, we try to keep the temperature as close as possible to the temperature that comes out from the mother’s breast, but even so, the temperature drops if the baby doesn’t drink well while feeding. So, I try to keep it warm for a while.

 Regarding staff education in the facility, some of it was associated with the value found in breastfeeding. However, some of it was associated with crisis management such as hygiene and accident prevention.

I think the desire to breastfeed is the same for both mothers who work and leave their babies at daycare centers and mothers who raise their babies at home, so we want to do whatever we can do on behalf of mothers, not only breastfeeding, but also toilet training and weaning.

When there is a lot of breast milk, or when there are a lot of children with allergies, we need to speak up. We make sure actually aloud, "I’m making someone’s milk" and ‘Yes, that’s whose breast milk you’re making,’ and give it to the baby, so it’s really like a double double check.

It was also suggested that they believe that the decision is not solely determined by factors on the part of the childcare facility. Rather, it is determined by other factors such as the child’s adaptation to the environment or the caregivers’ enthusiasm.

Even with frozen breastmilk, there are times when babies don’t accept silicone nipples and cannot drink it.

There are also mothers who say that they have been breastfeeding directly for a long time and would like to use breastfeed milk. They say they have been breastfeeding their babies with nipples, and they have never fed with a bottle, and that their babies cannot drink it.

4 DISCUSSION

This study revealed that for the childcare facility staff, breastfeeding was positioned as a means of communication and reassurance to the mother, and the immunological and nutritional benefits of breast milk. In other words, communication between the childcare facility and the parents occurred through breastfeeding to ensure smooth breastfeeding. Moreover, although there was a "childcare facilities’ perception that expressed breast milk is subject to strict control," there are also devices that prevent excessive burdens as seen in the "operation of rules that are not too strict" at the facilities that provide it.

This study suggests that in facilities that are reluctant to accept breastfeeding, equipment issues, time and effort, and inadequate manuals are barriers to accepting breastfeeding and have been pointed out in previous Japanese studies. This is reinforced by the fact that previous studies overseas have also reported that the lack of literacy regarding breastfeeding and the perceived risk of handling breast milk among childcare facility administrators were barriers. The results of this study also pointed out difficulties in managing frozen expressed breast milk in childcare facilities. Moreover, childcare facilities’ systematic innovations were made to deal with it, specifically the "maintenance of environment that can guarantee hygiene," the "creation of manuals for staff on handling frozen breast milk," the "devices for prevention of breast milk mix-up," and other innovations related to hygiene management, accident prevention, and other crisis management.

However, other factors play a large role in the practice of breastfeeding. These include "a sense of mission to nurture the child’s heart," "a desire to fulfill the mother’s wishes," and "the role of the caregiver in conveying the joy of breastfeeding and nurturing to the child." It was suggested that the childcare facilities’ perceptions and attitudes toward childcare like those mentioned above were factors in overcoming the sense of burden associated with breastfeeding.
| Category                                                                 | Subcategory                                                                 | Theme                                                                 |
|-------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------|
| The value that caregivers see in breastfeeding                          | Material benefits of breast milk                                            | Immunological benefits of breast milk                                  |
|                                                                        |                                                                            | Nutritional benefits                                                   |
|                                                                        | Psychosocial benefits of breast milk                                        | Emphasis on communication through breast milk care                      |
|                                                                        |                                                                            | Breast milk as a reassurance for the mother                             |
|                                                                        |                                                                            | Breast milk as an emotional connection between mother and child         |
|                                                                        | Breast milk as part of dietary education                                    | The idea that breast milk leads to life                                  |
|                                                                        |                                                                            | Sharing joy with children when they can drink breast milk               |
| Difficulties associated with breastfeeding in the childcare facilities  | Difficulties in managing frozen expressed breast milk in childcare facilities | Difficulties related to the thawing of frozen expressed breast milk     |
|                                                                        |                                                                            | Differences in temperature control between breast milk and artificial milk |
|                                                                        |                                                                        | Expiration date of breast milk after thawing                           |
|                                                                        | Mental burden of the staff in handling the expressed breast milk           | Childcare facilities' perception that expressed breast milk is subject to strict control |
|                                                                        |                                                                            | A sense of urgency regarding the possibility of mishandling             |
|                                                                        |                                                                            | Awareness that precious breast milk should not be wasted               |
|                                                                        |                                                                            | Resistance of breastfeeding children to bottles                          |
|                                                                        |                                                                            | Gaps in perceptions with parents regarding the handling of frozen breast milk |
|                                                                        | Difficulties related to managing frozen expressed breast milk by parents   | Problem of milking place                                               |
|                                                                        |                                                                            | Problems with storage of expressed milk at work                        |
|                                                                        |                                                                            | Issues related to transportation of expressed milk                      |
| Devices and elements for breastfeeding by the childcare facilities       | Childcare facilities' systematic innovations                                | Creation of manuals for staff on handling frozen breast milk            |
|                                                                        |                                                                            | Sharing information and providing written explanations to parents regarding the handling of frozen breast milk |
|                                                                        |                                                                            | Devising personalized breastfeeding                                      |
|                                                                        |                                                                            | Routine handling of frozen breast milk                                  |
|                                                                        |                                                                            | Maintenance of environment that can guarantee hygiene                   |
|                                                                        |                                                                            | Devices for prevention of breast milk mix-up                           |
|                                                                        |                                                                            | Learning new knowledge about breast milk                                |
|                                                                        |                                                                            | Exchange of information with other facilities about breast milk         |
|                                                                        | Childcare facilities' perceptions and attitudes toward childcare           | Communication between childcare facilities and parents through breastfeeding |
|                                                                        |                                                                            | Recognition that frozen breast milk is the same as artificial milk and food |
|                                                                        |                                                                            | Operation of rules that are not too strict                              |
|                                                                        |                                                                            | Staff awareness and education about the importance of breast milk       |
|                                                                        |                                                                            | Lightening of the burden of breastfeeding for caregivers                |
|                                                                        |                                                                            | Recognition that breastfeeding in a childcare facility is an alternative to mothering |
|                                                                        |                                                                            | A desire to fulfill the mother's wishes                                 |
|                                                                        |                                                                            | A sense of mission to nurture the child's heart                         |
|                                                                        |                                                                            | Willingness to accept breastfeeding no matter how many breastfeeding children there are |

(Continues)
The breast milk that childcare facilities handled was frozen breast milk in all of the facilities interviewed this time. Difficulties in managing frozen breast milk, such as "difficulties related to the thawing frozen expressed breast milk" and "differences in temperature control between breast milk and artificial milk," were characteristics of the burden felt by childcare facilities. It is suggested that there is a perception that frozen breast milk should be managed more strictly than the medically required level, and this may have been part of the burden. It was also suggested that other options such as refrigerated breast milk were unknown. In a survey in Kanagawa Prefecture in Japan, it was reported that the storage period of frozen breast milk was operated for a much shorter period (less than 1 week) than the evidence-based recommended period (3–6 months). Such finding suggests that there is a lack of accurate information among facility staff. Correct information sharing from a medical perspective regarding the handling of these expressed breast milk would help reduce the burden on childcare staff.

Studies on breastfeeding worldwide indicate the importance of policy recommendations and support at the national and local levels. Study in the United States and Australia showed that encouragement, written policies, resource/materials distribution, and training for breastfeeding were significantly higher in Australia, despite similar rates of availability of facilities such as places to breastfeed and refrigerators for storage in childcare facilities. In other countries, the benefits of breastfeeding are emphasized in accordance with WHO guidelines. However, in Japan, there is a lack of understanding of breastfeeding in the workplace and there are challenges such as the burden of breastfeeding management in childcare facilities as seen in the current study. In the United States, the American Academy of Pediatrics has issued a statement on breastfeeding, and we expect strong support from academic organizations in Japan as well. In addition, the understanding and support of working mothers in the workplace is also a critical factor, because supportive environments in workplaces and facilities are the factors promoting breastfeeding.

One of the strengths of this study is that it is a qualitative exploratory study among staff members of childcare facilities that actively accept breastfeeding. It revealed positive communication between caregivers and parents mediated by breastfeeding, which has not been mentioned in previous studies.

The limitations of this study include the fact that the theoretical saturation has not been reached because of the small number of interviewees. Furthermore, research is needed on the barriers to accepting breastfeeding because we were not able to interview facilities that do not accept breastfeeding.

### 5 | CONCLUSIONS

This study found that childcare facility staff find value in breastfeeding. However, these staff also feel the burden associated with breastfeeding. In reality, breastfeeding is practiced through various innovations. It was suggested that to reduce the burden of breastfeeding on caregivers, caregivers must have no material barriers and beliefs regarding childcare and values emphasizing communication with parents.

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### CONFLICT OF INTEREST

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

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