

# Does Family with Children Need Information about Infectious Disease?

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## Abstract

This paper reports a study of the necessity of providing information that is of the most concern of caregivers: health management, responses to sudden onset, and outbreaks of infectious diseases. We asked users and providers of Child Care Support Service in ward A of Tokyo, as respondents, whether they would like to receive information related to infectious diseases. Of questionnaires sent by mail to 383 providers and 3101 users, we received 18 responses from providers and 88 responses from users. All providers and users were required to provide information related to infectious diseases. The most often reported responses were “straight-out hand washing, mask wearing, gargling, and disinfection”, followed by “voluntary restraint of outside activities”, and “measures for illnesses of the family or children.” Results show that caregivers would like to receive information about infectious diseases because they have many health management concerns about their children.

## Keywords

Caregivers, Child Care Support, Infectious Diseases, Outbreak Situation, Prevention

## 1. Introduction

In a society with a declining birthrate, providing safety and security to children is an important social demand and aspect of child care support. In Japan, the share of mothers who continued working after their first childbirth was only 29.7% in 1992. This figure rose dramatically to 53.1% in 2015 [1]. Governments have been multiplying and expanding nursery schools to accommodate the rapidly raise number of working mothers. In addition, improving nursery school

quality is necessary.

Infants are physically and immunologically vulnerable, and are therefore easily infected. They are frequently infected when living in groups, as they do at nursery schools, but are also infected in family situations. Moreover, they sometimes have infection-associated complications. Caregivers should arrange their working schedules and family nursing when children show illness if caregivers have job. However, the most frequent trouble in child care cited by caregivers is the response to sudden onset of infectious diseases in children [2].

Caregivers can take nursing leave up to five days per year in Japan, during which time caregivers of preschool children can care and nurse illnesses or injured children. The Declining Birthrate White Paper in 2017 in Japan reported that the rates of caregivers taking such leave were 5.2% for male caregivers and 25.3% for female caregivers in 2014 [3]. Therefore, it is expected to be difficult to rearrange working schedules even if family nursing leave is guaranteed by law. A child care support policy intended to alleviate some anxiety of caregivers might not be promoted or realized.

Moreover, children in nursery schools or schools are easily infected because of their group life situation. Outbreaks of infectious diseases might widen at those facilities [4]. They have therefore adopted some measures for infectious diseases and use the Nursery School Absenteeism Surveillance System (NSASSy) to support the detection of outbreak situations in the community [5]-[10].

Many studies conducted worldwide have specifically examined school absenteeism [11]-[16], but NSASSy uses aspects of Japan's own unique nursery school culture. Caregivers of children who are absent from nursery school usually report their symptoms and diseases if they were diagnosed by a doctor to their nursery school. Therefore, we can conduct surveillance by symptom as well as diagnosed disease using information from caregivers. School surveillance in other parts of the world [11]-[16] cannot achieve similar coordination because they have no culture of notification from caregivers about the reason for absence.

Therefore, at best, such school surveillance counts reflect the total number of absences irrespective of the reason, or absences caused by illness or influenza-like-illness only. Moreover, those studies specifically examine schools, not nursery schools. In this sense also, NSASSy is unique.

Through NSASSy, nursery schools and schools are made aware of the situation in the surrounding community and are informed as staff and as caregivers. Particularly, because caregivers come to nursery schools twice a day to leave their children and to take charge of them, nursery schools can provide some information about infectious diseases to caregivers every day. Moreover, public health centers monitor the circumstances at each facility and give timely advice to them [17].

However, for security reasons, caregivers cannot access NSASSy directly. Moreover, caregivers of children who belong to no nursery school are unable to receive such information from NSASSy.

This paper reports a study assessing the necessity of information that is of the most concern of caregivers: health management, responses to sudden onset, and outbreaks of infectious diseases, under corporation with the Child Care Support Service.

The Child Care Support Service was established in 1994 by Ministry of Labour (at that time) in Japan to combine working and child care or nursing care in women. Since 2015, it was one of the Community Child Rearing Support project available to all caregivers with children irrespective of their working status. Half of them are provided by local governments. The other half are operated by commissioned contractors from local governments including non-profit organizations. The organization matches users who require child care support and providers who can support child care. The Child Care Support Service takes care of children before opening and after closing of nursery schools, leaving children off and taking charge of them at a nursery school, and taking care of children when nursery schools are closed or when caregivers need a break from their responsibilities. The service established in 833 municipalities throughout Japan as of the end of 2017; those account for about 45% of all municipalities in Japan [18]. As of March 2016, there were 0.6 million users and providers in Child Care Support Service nationwide. The share was about 12% assuming each users has one preschool child.

To date, child care support has specifically addressed persons requiring medical support or disabled people [19] [20]; rarely have studies specifically examined caregivers who have received some services. No report of the relevant literature describes a study of child care support for children in general.

## 2. Methods

Subjects of this survey of the necessity for information of infectious diseases were participants of Child Care Support Service in ward A in Tokyo, Japan. We asked users and providers of the Child Care Support Service, as respondents, whether they would like to receive information related to infectious diseases. The questionnaire, administered anonymously, included questions related to age, gender, frequency of Child Care Support utilization, type of (nursery) school that the child attends, utilization of services for sick children, whether the (nursery) school that the child attends provides information related to infectious diseases, information about the child health condition when Child Care Support Services are used, records of child vaccination, child vaccination for influenza, and internet utilization through smart phones. Regarding infectious diseases, we asked them about the necessity of information related to infectious diseases, concern about outbreak situations in the (nursery) school that children attend, and whether it is possible to arrange a schedule when a child has high fever. Additionally, we asked for their responses while providing information in a free format.

The requesting document was sent to users and providers form the Child Care

Support Services in December 2017. It asked them to reply the questionnaire anonymously on the internet.

### 3. Ethics

This study was approved by the Ethical Committee of Tokyo Women's Medical School on 24 November, 2017 with approval number 4561.

### 4. Results

Of questionnaires sent by mail to 383 providers and 3101 users from Child Care Support Service in ward A of Tokyo. We received 18 (6.0%) responses from providers and 88 (2.8%) responses from users.

**Table 1** presents the results. All providers were women. Most providers were in their 50s (44.4%), followed by those in their 40s (27.8%). In addition, 82 users were women. Users in their 30s accounted for 48.3% of all users followed by those in their 40s. Regarding the frequency of service provision, more than four times each month was the highest (77.8%). However, regarding frequency of usage, none was the highest (30.3%), followed by utilization in the past (21.3%), and more than four times (20.2%). Users who responded that they had never used the service included many users who had joined the service recently, but who had not used it.

**Table 1.** Questionnaire responses from providers ( $n = 18$ ) and users ( $n = 88$ ).

		Providers	%	Users	%
Basic characteristic		18		88	
Gender	Male	0	0.0	6	6.7
	Female	18	100.0	82	93.3
Age class	20s	0	0.0	2	2.2
	30s	2	11.1	42	48.3
	40s	5	27.8	40	44.9
	50s	8	44.4	3	3.4
	60s	3	16.7	1	1.1
Frequency of service	More than four times a month	14	77.8	18	20.2
	Sometimes	3	16.7	15	16.9
	None	1	5.6	26	30.3
	Used it in the past	0	0.0	19	21.3
	Unanswered	0	0.0	10	11.2
Type of school (multiple responses)	Nursery schools	16	88.9	47	52.8
	Kodomoen	10	55.6	14	15.7
	Kindergarten	6	33.3	10	12.4
	Elementary schools	5	27.8	18	20.2

## Continued

	Special supporting schools	0	0.0	0	0.0
	Others	1	5.6	4	4.5
	None	6	33.3	10	11.2
(nursery) school place	In A ward	17	94.4	75	85.4
	Outside A ward	1	5.6	6	6.7
	Not got to	0	0.0	7	7.9
Utilization of services for sick children	Yes	13	72.2	48	53.9
	No	5	27.8	40	46.1
Information provision about children's health condition When Child Care Support services used	Yes	18	100.0	39	43.8
	No	0	0.0	49	56.2
Record of children's vaccination	Yes			88	100.0
	No			0	0.0
	Every year	4	22.2	62	69.7
Vaccination for influenza in children	None	14	77.8	15	18.0
	Sometimes	0	0.0	11	12.4
Internet use through smart phone	Yes	14	77.8	86	97.8
	No	4	22.2	2	2.2
Necessity					
Request information of infectious diseases	Yes	18	100.0	88	100.0
	No	0	0.0	0	0.0
Are you concerned about outbreaks in the (nursery) school that children attend?	Yes	8	44.4	73	83.1
	None	10	55.6	8	9.0
	Child does not attend (nursery) school	0	0.0	7	7.9
Does the (nursery) school that children attend provide information about infectious diseases?	Yes	6	33.3	66	74.2
	No	12	66.7	15	18.0
	Child does not attend (nursery) school	0	0.0	7	7.9
Are you concerned about outbreak in the (nursery) school that children attend?	Yes			87	98.9
	No			1	1.1
Can you arrange your schedule when your child has a high fever?	Yes			52	59.6
	No			15	16.9
	Neither			21	23.6

Related to the type of (nursery) school children attended, preschool facilities such as nursery schools, kindergarten or kodomoen (a nursery schools and kindergarten hybrid) were the highest for both providers and users. However, there were cases many elementary school and even preschool children for whom no facilities were available to attend.

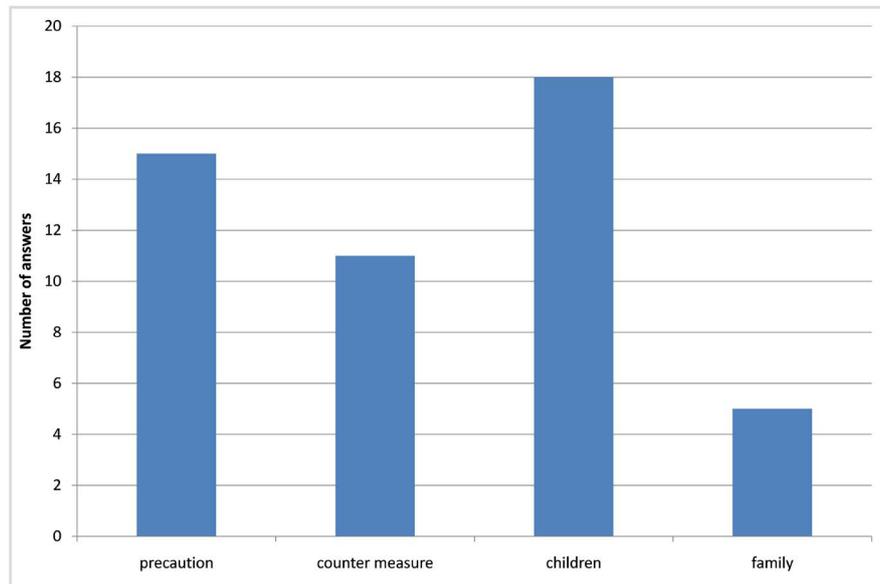
Almost all (nursery) schools the children attended were located in ward A. In addition, 72.2% of providers and 53.9% of users registered sick child care. The reason of 46.1% of users did not register sick child care might be the simultaneous registration of usual care and sick child care, which had been abandoned recently.

All providers report the children's health condition when Child Care Support Services are used. However, about half of users (56.2%) only report a child's condition to the provider. That result might reflect the fact that many users have never used the service. All users managed the child vaccination history. Results show that 77.8% of providers did not take influenza vaccinations every year. However, 69.7% of users received them every year. Many providers and users used the internet through smart phones for information such as weather forecasts.

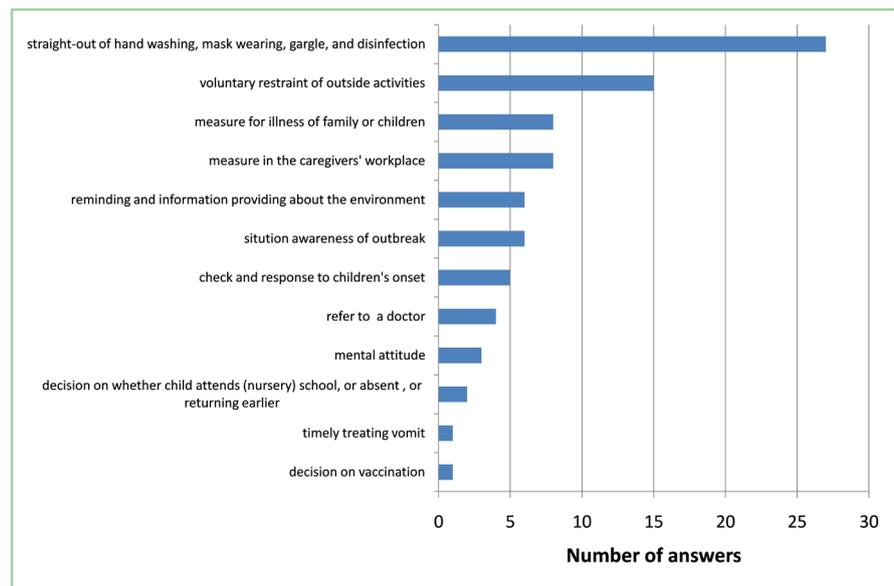
All providers and users required to receive information related to infectious diseases. Although 55.6% of providers were unconcerned about outbreaks at the (nursery) school that children attended, 83.1% of users were concerned. In addition, 66.7% of providers did not know the situation of infectious diseases at the (nursery) school that the child attended from the (nursery) school, but 74.2% of users reported that they were notified. Particularly, almost all users were concerned about clusters of illness at the (nursery) school that the child attended. Actually, 59.6% of users reported being able to arrange their schedule to care for a child with a high fever. However, 16.9% of users reported being unable to do so.

**Figure 1** presents the number of categorized caregivers' responses about receiving information about infectious diseases as "precaution", "countermeasure", "children", and "family" when using a free response format. "Children" was the highest, but "precaution" followed. More detailed classifications are shown in **Figure 2**. There were 12 classifications: straight-out hand washing, mask wearing, gargling, and disinfection; voluntary restraint of outside activities; measures for illnesses of the family or children; measures in the caregivers' workplace; reminders and information provided about their environment; situational awareness of outbreaks; checks and responses for children's onset; referral to a doctor; mental attitude; decisions about whether a child goes to a nursery school or being absent from it, or going back earlier; timely treatment of vomiting; and decisions related to vaccination.

The most often reported classification was "straight-out hand washing, mask wearing, gargling, and disinfection", followed by "voluntary restraint of outside activities", and "measures for illnesses of the family or children."



**Figure 1.** Categorized caregivers' responses about receiving information about infectious diseases in free format, (Number of responses). Note: horizontal axis labels denote "precautions", "countermeasures", "children", and "family".



**Figure 2.** Number of detailed categorized caregivers' responses about whether they receive information related to infectious diseases in free format.

## 5. Discussion

Child Care Support Service includes many users whose preschool children go to nursery school, kindergarten or do not attend either one. In other words, it includes not only working caregivers but also non-working caregivers. One might access caregivers of preschool children who attend nursery school or kindergarten, but access to caregiver of preschool children who do not attend either is apparently very difficult. Collaboration with the Child Care Support Service

enables us to access caregivers of preschool children irrespective of where the preschool children attend or not. Therefore, we can evaluate our project while minimizing bias from sampling by collaboration. It covered about 24% of preschool children residing in ward A if we assume all users have one preschool child. It is perhaps the largest database of preschool children other than that of the local government of ward A.

Because **Figure 2** depicts the top three responses were “straight-out hand washing, mask wearing, gargling, and disinfection”, “voluntary restraint of outside activities”, and “measures for illnesses of the family or children,” it might indicate that behavioral change for measurement in families. It might reflect measurement for infectious disease at (nursery) schools. However, “measures in the caregivers’ workplace”, which was the fourth most frequent response, is interesting. Onset in children usually occurs suddenly. It is very difficult for caregivers to rearrange a working schedule if a child shows sudden onset. For that reason, they sometimes cannot be absent from work. In such cases, those ill children can also not be absent from nursery schools and visit a doctor.

If caregivers know the community situation related to infectious diseases before sudden onset in children, then caregivers can inform their workplace before onset about possibility of absence to care for a child. The workplace might rearrange their working schedule or take family nursing leave into consideration if so. Finally, when often absent from their workplace, children can be absent from nursery school and can then visit a doctor. Therefore, timely information related to common infectious diseases in infants in a community situation can ease the disruption caused by the work absence of caregivers. Caregivers can also take family nursing leave more readily.

Moreover, such information might contribute to avoidance of outbreak in (nursery) schools and therefore in communities by the absence of ill children, and increased quality of life of ill children themselves by earlier consultation with a doctor.

Results of this study demonstrate that both providers and users of the Child Care Support Services would like to receive timely information about infectious diseases. Such information is expected to improve many aspects of health management for children. Caregivers also expect it to be useful.

In the near future in Japan, declining quality of nursery schools might occur because of the expanded quantity of nursery schools. To allay such concerns, information related to infectious diseases can provide support to caregivers. Moreover, we demonstrated that providers looking after children use such information to protect themselves. Particularly, providers who look after several children might be able to diffuse outbreaks among classes or (nursery) schools. Both results can reduce outbreaks occurring in the wider community.

Because this study was performed in a small community, a ward, we cannot generalize the results nationwide. We presume that the necessity of caregivers was affected by employment, family composition, going to a (nursery) school

outside their school zone, and the participation rate of preschool children in nursery school or kindergarten. We must conduct similar studies throughout Japan, to evaluate these results. However, because the Child Care Support Services were established per municipality as described previously, it is apparently difficult to collaborate with the Child Care Support Services beyond the municipality. That is expected to be our next research challenge.

Moreover, we must consider the possibility of similar system other than that in Japan. We presume some necessity for information of infectious diseases even in other countries. However, it needs real-time surveillance system like (N) SASSy. Construction of real-time surveillance system might be first step for the similar system in other countries.

## 6. Conclusion

Providing safety and security to children is a challenge for all society. Results show that caregivers would like to receive information about infectious diseases because they have many health management concerns about their children. Hereinafter, based on the observed necessity, we expect to provide information related to infectious diseases and then evaluate its usefulness. Finally we attempt to expand such services year-round and throughout Japan to realize a society in which all children can grow healthily.

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## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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