



Ethnographic Research on the Impact of COVID-19 on Families with Older Adults Residing on Remote Islands in Japan: Directed Content Analysis Based on the Concentric Sphere Family Environment Theory

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Article History

Submitted: 12-03-2023

Revised: 28-03-2023

Accepted: 29-03-2023

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ABSTRACT

Coronavirus disease 2019 (COVID-19) impacts not only on the health of individuals, but also on family functioning and a family's well-being. Japan's remote outer islands, with their aging populations, harbor a unique culture, and it is believed that the COVID-19 pandemic has impacted on such populations in a distinct manner. This study aims to clarify the impacts of COVID-19 on families with older adults residing on remote islands, using the Concentric Sphere Family Environment Theory (CSFET) as a theoretical framework. We conducted family ethnographic research including semi-structured interviews with 14 families on Japanese islands whose total population numbers approximately 34,000, and performed directed content analysis of impacts on the families using CSFET. Forty-three categories were extracted according to the five systems of the CSFET. For example, negative impacts such as "occurrence of concerns over the scarcity of medical institutions" in the macro system; positive impacts such as "growing consideration of the life span of older adult family members" in the chrono system; and context-sensitive impacts such as "changes in family's awareness of infections arising from the contents of information on infectious diseases" in the macro system were identified. The islands' characteristics, such as vulnerabilities in terms of medical care, isolated environment and strong community ties, were considered as impacting both within and outside of the family. Accordingly families with older adults experienced negative impacts, but also found positive impacts in their difficulties.

KEYWORDS

COVID-19, remote islands, family well-being, directed content analysis, Concentric Sphere Family Environment Theory

How to cite

Hohashi, N., Pinyo, J., Araki, S., & Taniguchi, M. (2023). Ethnographic Research on the Impact of COVID-19 on Families with Older Adults Residing on Remote Islands in Japan: Directed Content Analysis Based on the Concentric Sphere Family Environment Theory. *Journal of Rural Community Nursing Practice*, 1(1), 1–19. <https://doi.org/10.58545/jrcnp.v1i1.89>

1. BACKGROUND

The first case of Coronavirus disease 2019 (COVID-19) was identified in China in December 2019, and the first case in Japan

confirmed a month later (Kawana, 2020). By April 2020 the Japanese government issued stay-home advisories to citizens, and while some measures are believed to have been

effective (Hiroi, 2020), these had a pronounced effect on people's social activities (Ouchi et al., 2021). In Japan, as of March 27, 2023, eight waves of COVID-19 have occurred, with 33,424,672 confirmed cases of COVID-19 and 73,764 deaths, with most of the deaths being persons 60 years old or over (Ministry of Health, Labour and Welfare, Japan, 2023). In addition to the sickness, the COVID-19 pandemic has been blamed for increases in mental illness, suicide, domestic violence and abuse of children and older adults (Shigemura, Takahashi, Oe, & Kurosawa, 2020). Older adults in particular are less physically fit, have lower immunity and are more susceptible to severe and fatal infections than are the young (Westmeier et al., 2020), and for this reason seniors' awareness toward COVID-19 infection has been comparatively high. The impacts of the COVID-19 pandemic on older adults included social isolation and loneliness, which are associated with anxiety, depression, cognitive decline, and mortality (Gorenko, et al., 2021).

The impact of the COVID-19 pandemic has not been confined solely to individuals, but continues to affect families. Since its emergence, deterioration of family relationships and decline in family functions

have been observed over the course of time (Soejima, 2021). In recent years in Japan, the nuclear family, declining birthrate, aging society, and increasing divorce have all contributed to deteriorating family functions (Kumagai, 2010; Hohashi, & Honda, 2012) and the COVID-19 pandemic might have further aggravated family functioning. COVID-19's impact on families varies depending on changes outside the family, involving, as it does, requests to remain at home, school cancellations and so on (Soejima, 2021). It is therefore necessary to consider the impact of the pandemic on the family environment. In addition to the primary impact, such as closures of schools and day-care centers, chained effects in the form of secondary impacts, such as the increase in parents' time spent together with children, and tertiary impacts, such as the increase in negative interactions between children and parents, are also believed to have occurred (Gadermann et al., 2021).

The Japanese archipelago consists of as many as 14,125 islands (not all of which are inhabited) (Geospatial Information Authority of Japan, 2023). The geographical locations of some of these small islands make accessing them inconvenient, and moreover their industrial activities have

stagnated, while education, medical care, and welfare systems are generally inadequate. Moreover, island demographics reflect declining and aging populations. Nevertheless, because few people come and go from the island and the inhabitants tend not to move away from the islands, indigenous culture is easily transmitted from generation to generation, and relatives and neighbors have continued to maintain close relationships since ancient times (Hiratani, & Hohashi, 2016). The impact of COVID-19 on these islands, with their own unique cultures, is also considered to be unique.

The Concentric Sphere Family Environment Theory (CSFET) proposed by Hohashi is a middle-range family nursing theory that holistically captures the family environment that affects the well-being of the family system unit (Hohashi, & Honda, 2011). Based on CSFET, the family environment consists of five systems: the supra system, the macro system, and the micro system, which constitute the family external environment system; the family internal environment system; and the family chrono environment system. The theoretical basis of CSFET enables the obtaining of a comprehensive understanding of the impact on families that are in interaction/transaction with the family

internal and external environments. In addition to the primary impact, we believe this enables the tracking of successive impacts, such as secondary and tertiary impacts, over time from the perspective of the family chrono environment system.

Based on the above, the purpose of this study was to clarify the impact of the COVID-19 pandemic on families with older adults residing on remote islands.

2. METHODS

Design

The study undertaken was a qualitative descriptive study employing family ethnographic research (Hohashi, Ota, Lin, & Watsuji, 2022), in which fieldwork was conducted to share experiences between family members and fieldworkers of family life situations. Methods included a combination of participant observation, ethnographic interviews (formal and informal) and collection of existing books, literature, and Internet resources.

The operational definitions of terms (Hohashi, Honda, Shimada, & Michigami, 2016) were as follows (Figure 1):

- 1) supra system: “the outer frame that creates the family environment, which is directly or indirectly related to other family environments, and encompasses the entire family environment.”

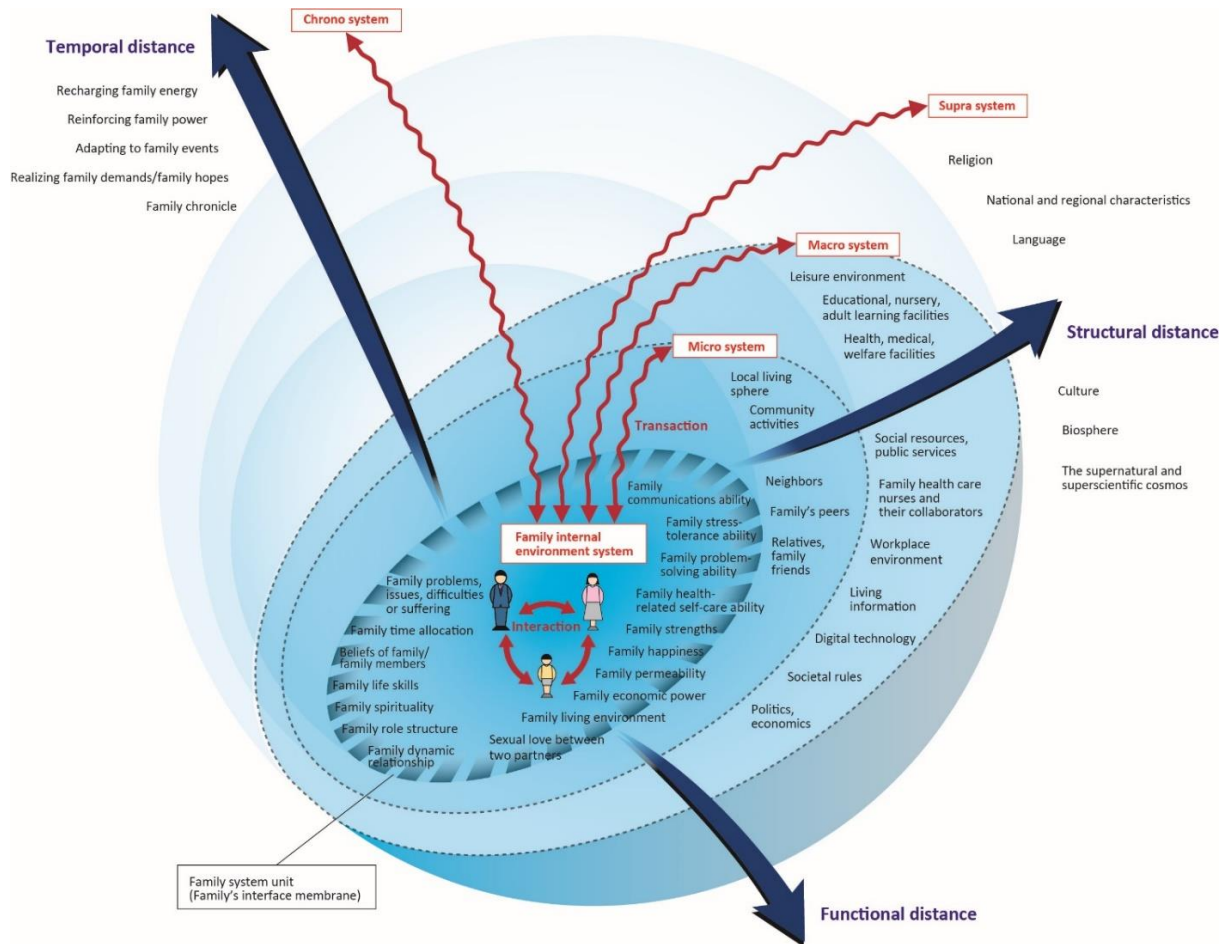


Figure 1. Model diagram of Concentric Sphere Family Environment Theory (CSFET) (Ver. 3.4)

- 2) macro system: “family members’ sphere of daily activities that is distant from the family system unit, based on comprehensive physical/objective and psychological/subjective assessments.”
- 3) micro system: “a familiar area in the neighborhood of the family system unit, based on comprehensive physical/objective and psychological/subjective assessments.”

- 4) family external environment system: “the family environment outside of the family system unit (supra system, macro system, and micro system).”
- 5) family internal environment system: “the family environment that exists within the family system unit, which is the area within the family system unit where individual family members interact with each other.”

- 6) family chrono environment system: “a concept to indicate the process of temporal change and transformation of the family internal environment system, family external environment system and family system unit in a time frame from the past to the future.”
- 7) family system unit: “another term for family to clarify that the family is a system and a unit.”
- 8) impact: “the result of the action by one thing on another.” The term “impact” is used to include the chain of effects that may accompany one effect (primary impact) and cause other effects (secondary impact, tertiary impact, and so on).

Participants and Setting

The area of study consisted of four islands incorporated as a city in Japan. The city has a total population of approximately 34,000, of which some 14,000 are aged 65 or older ([Goto City office](#), 2021). Following standard administrative practice in Japan, older adults were defined as those aged 65 or older (United Nations, 2019). The participants of the study were families with older adult members who reside on these islands.

Semi-structured interviews were conducted as formal interviews based on the culture and a sense of values of the families residing on the islands and the islands’ characteristics. The purpose and outline of the study and inclusion criteria for research collaborators were explained to a home-visit nursing station, a home-care nursing office, a long-term care welfare facility for the older adults, a social welfare council and a gatekeeper. Family members with older adults in their household were introduced to the study by the respective facilities, and their consent to participate in the study was obtained. Semi-structured interviews were conducted with a gradually increasing number of families, eventually reaching 14 families (composed of 22 family members), at which point data saturation was achieved. Twenty-two were in their thirties to seventies. The average interview time was 106 min (in the range of 97 to 126 min). Some family members had a history of hypertension (five family members) and diabetes (three family members). Religious beliefs/affiliations were predominantly Buddhist (nine families), Christian (one family), and non-religious (four families). All families had family members living off-island.

Ethical consideration

This study was conducted after obtaining the approval of the affiliated university's Institutional Review Board (Approval No. 617), and written consent for participation in semi-structured interviews was obtained from the participants. Both participants and field workers adopted thorough precautions to prevent COVID-19 infection.

Data collection

Researchers spent 147 days engaged in observation on the islands between January 2021 and February 2023. During their observation, researchers always carried a field note pad and wrote down what they saw and heard, along with impressions and details of the atmosphere of the venue and so on. During the ethnographic interviews, in addition to the subjects' narratives researchers also noted details of non-verbal communication, such as subjects' facial expressions, the interviewer's own impressions and so on.

In March 2022, we collected books, literature, and Internet resources related to the islands and their impact on the lives of the older adults. Using CSFET as a theoretical framework, an interview guide was developed based on FEAI (Family

Environment Assessment Index), a collection of example sentences that provides killer questions to accurately collect family information necessary for family assessment (Hohashi, & Watanabe, 2021). For example these questions included: "Did the COVID-19 pandemic cause any problems for the entire family?"; "Has the COVID-19 pandemic served to help your entire family?"; "Has the COVID-19 pandemic altered the meaning of your family's existence in any significant way?"; "Has the COVID-19 pandemic changed communications between your family members in any significant way?" and others.

Semi-structured interviews were conducted from August to September 2022. The interviews lasted approximately 120 min per family and were recorded with an IC recorder.

Data analysis

Verbatim transcripts of the semi-structured interviews were produced. Directed content analysis (Hsieh, & Shannon, 2005) based on CSFET was performed on the contents of the transcripts and field notes (Elo, & Kyngäs, 2008), with the flow of analysis as follows: (i) the impacts of the COVID-19 pandemic on

the families were extracted, and were divided into small, meaningful units, or codes; (ii) the codes were classified by focusing on similarities and differences, and codes that were found to be conceptually similar were grouped into more abstract concepts termed subcategories; (iii) the subcategories were grouped to create categories and abstraction levels were heightened; and then (iv) categories were classified into CSFET's five systems.

Trustworthiness

Researchers skilled in family ethnographic research were assigned to conduct the semi-structured interviews.

They continued to perform coding and analysis at the end of each interview, from the first family to the last. Interviews were terminated when the same answers were obtained with no new contents, at which point the interviews were considered saturated.

In the subcategorization and categorization, category names underwent repeated reviews until all four researchers were in accord on category terminology, upon which their perceptions corresponded. To ensure trustworthiness, nine experts in family nursing and qualitative research supervised the process.

3. RESULTS

Table 1. Impacts of COVID-19 on Families with Older Adults Residing on Remote Islands
(continue to page 8)

System	Impact	Category
Int	P	<ul style="list-style-type: none"> Reinforced normative consciousness of outward appearances possessed by family members Enhanced awareness of infection prevention among family members based on information from family members who are medical welfare workers Differences in awareness of the sense of crisis about infection among generations Family members' psychological stabilization through information gathering by family members Promoted family control by family members having leadership Enhanced family members' awareness of infection prevention arising from changes in the routines of funerals
	N	<ul style="list-style-type: none"> Decrease in family members' sense of urgency due to accustoming to the situation with no infected people in proximity
Fsu	P	<ul style="list-style-type: none"> Strong family bonds evoked by restrictions on the return of off-island family members Enhanced awareness of infection prevention among families based on infection news about celebrities Maintenance and enhancement of the family belief that health comes first Placing high importance of families residing on the same island

System	Impact	Category
		<ul style="list-style-type: none"> Improvement of family self-care ability with increased frequency of family contact Activation of the family's willingness to help each other
	N	<ul style="list-style-type: none"> Low family well-being due to lost opportunities to return home
	S	<ul style="list-style-type: none"> Family self-regulation for the prevention of infectious diseases Household budgets affected by changes in the number of tourists
Mic	P	<ul style="list-style-type: none"> Promotion of infection prevention practices by family members to family friends Implementation of help for relatives using SNS Occurrence of concerns over family's neighbors
	N	<ul style="list-style-type: none"> Decreased fear of infection caused by information from relatives Decreased mutual help with neighbors on a daily basis Fewer opportunities for families to become involved with people in the community
	S	<ul style="list-style-type: none"> Conflicts in families between feelings of mutual help for neighbors and infection prevention
Mac	N	<ul style="list-style-type: none"> Dissatisfaction with the contents of information broadcast by disaster prevention radio Reduced sense of involvement in events on the island Occurrence of concerns over the scarcity of medical institutions Increased local rumors about infected people on the island
	S	<ul style="list-style-type: none"> Utilization of disaster prevention radio as a means of obtaining information on infectious diseases Changes in family's awareness of infections arising from the contents of information on infectious diseases Occurrence of a proportional relationship between policy strength and a sense of crisis over infectious diseases in the family
Sup	P	<ul style="list-style-type: none"> Enhanced mutual help between families and local people who have a religious-based mindset of mutual help Sense of family security toward island visitors who have undergone antigen tests
	N	<ul style="list-style-type: none"> Occurrence of greater psychological distance between island visitors and family members Family's resistance to becoming a source of infection on the island Family's psychological instability due to the cancellation of community and traditional events
	S	<ul style="list-style-type: none"> Family decision-making more influenced by island conditions
Chr	P	<ul style="list-style-type: none"> Raising awareness of infection prevention among family members due to the infection history of family members Increasing family's reassurance of safety for travel on and off the island by vaccination and testing Changes and adaptations in the form of visits to family graves according to infection status Growing consideration of the life span of older adult family members Resuming homecoming of family members residing outside the island
	N	<ul style="list-style-type: none"> Emergence of acquiescence toward infection in the midst of thorough measures that can be implemented against infectious diseases
	S	<ul style="list-style-type: none"> Emergence of a digital divide between families regarding vaccination

Note: Int = family internal environmental system; Fsu = family system unit; Mic = micro system; Mac = macro system; Sup = supra system; Chr = chrono system; P = positive impact; N = negative impact; S = context-sensitive impact.

1 Impact of COVID-19 on the family internal environment system

“Reinforced normative consciousness of outward appearances possessed by family members” was a positive impact in that the family and family members became more society-oriented so as not to cause troubles to others. Comments made by interviewees included “I don’t go out much because I know I could infect someone else with Corona.”

“Decrease in family members’ sense of urgency due to accustoming to the situation with no infected people in proximity,” a negative impact, was a result of family members’ becoming desensitized to COVID-19 due to the lack of infected people around them. The isolation of the island from urban centers, where the infection was spreading, and lack of infected people in the immediate vicinity reduced the sense of urgency among the family members.

2 Impact of COVID-19 on the family system unit

“Placing high importance of families residing on the same island,” was a positive impact, in that the importance of families increased in the face of COVID-19 difficulties. The family members felt a greater sense of

security in having their family members nearby.

On the other hand, “Low family well-being due to lost opportunities to return home” was a negative impact, in that family well-being decreased due to the voluntary restrictions on family gatherings. A typical comment went, “My sister, who lives abroad, usually comes home every year, but she couldn’t come back because of the pandemic, which caused our mother to become depressed.”

3 Impact of COVID-19 on the micro system

“Implementation of help for relatives using SNS,” was a positive impact in that use of digital technology enabled providing of support to relatives who were undergoing difficulties during the COVID-19 pandemic, when it was difficult for family members to meet face to face. Family provided material support via SNS to relatives who were infected with or had been in close contact with COVID-19.

“Fewer opportunities for families to become involved with people in the community,” was a negative impact, meaning that families’ opportunities to transact with people in the community decreased. The number of community events affording opportunities for families

to transact with people in the community decreased.

4 Impact of COVID-19 on the macro system

“Occurrence of concerns over the scarcity of medical institutions,” was a negative impact, in that island families harbored concerns about the COVID-19 pandemic due to the scarcity of medical facilities. Lack of medical facilities may have also discouraged off-island family members from visiting the island.

“Occurrence of a proportional relationship between policy strength and a sense of crisis over infectious diseases in the family,” reflected on the relationship between the strength of policies and families’ sense of crisis over COVID-19. When the weak policies in force at the time when cases of COVID-19 began increasing, the decrease observed in family members’ sense of crisis toward infection, and vice versa, led to this being classified as a context-sensitive impact.

5 Impact of COVID-19 on the supra system

“Enhanced mutual help between families and local people who have a religious-based mindset of mutual help,” was a positive impact in that the mutual help between families and local residents had been strengthened through the religious

spirit of mutual help. Based on religious thinking, mutual help toward the family and the locality was observed under the COVID-19 pandemic.

“Family’s psychological instability due to the cancellation of community and traditional events,” was a negative impact, which indicates that families experienced psychological instability due to the cancellation of community and traditional events. Families felt a sense of loss and concern about the discontinuation of traditions.

6 Impact of COVID-19 on the family chrono environment system

“Growing consideration of the life span of older adult family members” was a positive impact, as families began to think more deeply about the lifespan of their older adult family members over the passage of time, despite the many restrictions implemented during the pandemic. Remarks such as “I want to take my grandmother to various places now, while she is still healthy” were heard.

“Emergence of acquiescence toward infection in the midst of thorough measures that can be implemented against infectious diseases,” was a negative impact of acquiescing to infection because the

individual had been taking all possible measures against infectious diseases, such as going out only when as necessary, performing disinfection and wearing masks. Statements such as “I’ve done everything I can do as usual, so it can’t be helped if I get infected,” were voiced.

4. DISCUSSION

All families made remarks that they differentiated between on-island and off-island. This does not necessarily mean on-island and off-island in the simple sense of the term, but reflects the participants’ perception that a large functional distance exists between on-island and off-island, such as not carrying a new strain of coronavirus to the island. Consequently, it is appropriate to classify the impacts on the family, which relate to it being a closed area surrounded by the sea, not as a micro system that includes local living spheres, neighbors, and so on, but rather as a supra system that includes a biosphere, national and regional characteristics, and so on.

1 Impact of COVID-19 on the family internal environment system

The reinforcement of the normative sense of public appearance is based on the fact that society guides the activities of family members, influencing them to behave

in a manner that will not lead to embarrassment that would result in criticism or social ostracization (Murayama, Amagasa, Inoue, Fujiwara, & Shobugawa, 2019). On islands, people come and go less frequently, and the close relationships among relatives and neighbors, which have persisted in Japan since ancient times, are still present (Honda, Hohashi, Nose, & Murakami, 2008). Family members thereby act with a strong sense of public appearance, leading to family members’ desire to engage in “correct” behavior as relates to infection prevention.

Conversely, since few cases of novel coronavirus infection occurred on the island, family members became accustomed to the fact that there were no infected people in the neighborhood, leading to a diminished sense of crisis among family members, a situation that may heighten the risks of novel coronavirus infection among family members.

2 Impact of COVID-19 on the family system unit

The family members in the island were able to rely upon each other for help under the restrictions on activities, and they came to recognize the importance of the family through family gatherings, which reaffirmed

the importance of the family under the difficulties brought on by the COVID-19 pandemic.

On the other hand, a negative impact of the COVID-19 pandemic was a decrease in the level of family happiness due to the loss of opportunities for family members to return home. On the islands, there is a strong outflow of young people to the mainland for purposes of higher education and employment (Kuwahara, 2012), and all participant families had children or grandchildren on the mainland. It has been customary for these off-island family members to return home during vacations such as the mid-summer Obon holiday and New Year, which was a source of family enjoyment. The most stressful factor caused by the COVID-19 pandemic was the inability to meet family members, loved ones and partners living far away (Kandula & Wake, 2022), which we believe caused family happiness to diminish.

3 Impact of COVID-19 on the micro system

In the island where the study was conducted, older adults have the advantage of using the Internet extensively, especially for making online purchases of daily necessities (Hiratani, Honda, & Hohashi, 2016). Consequently, it is believed that use

of SNS was effective in providing material support to relatives who were infected or had close contact with infected persons. The COVID-19 pandemic is classified as one of the CBRNE (Chemical, Biological, Radiological, Nuclear, and Explosive) disasters (Chong, 2020). In the future, when disasters other than COVID-19 occur, use of the media will be effective in providing mutual support between family members.

A negative impact of the pandemic was the reduced interaction between members of the local community. A “shame culture” exists in Japan (Etezady, 2010), and people tend to be concerned about what others think of them. Consequently, it is thought that families have refrained from participating in local events considering the appearance for local people. Fewer opportunities for family members to interact with others in the community also led to diminished mutual help between community residents.

4 Impact of COVID-19 on the macro system

The location of the study is classified as a remote island in the government’s medical plan, and emergency patients are transported to mainland hospitals by helicopter. The island has a large population of older adults, who are generally at higher

risk of serious illness because of COVID-19 (Shahid et al., 2020). This situation may have contributed to a behavioral change in which family members living off the island refrained from returning home for visits, as they strongly felt the need to avoid spreading the novel coronavirus infection on the island.

Furthermore, the family's sense of urgency about the spread of the novel coronavirus was also influenced by administrative measures (Chen et al., 2021). When administrative measures such as restrictions on activities were more lenient, family members' sense of risk for COVID-19 were correspondingly low; but when administrative measures became more stringent, family members' sense of risk toward COVID-19 became heightened.

5 Impact of COVID-19 on the supra system

Ten of the 14 families in this study were religious, which is a significantly higher ratio compared to the 36% of Japanese who, according to nationwide survey data, ascribe to a religion (Kobayashi, 2019). The regional nature of this study suggests that even under the difficulties posed by the COVID-19 pandemic, the families and local residents placed high value on the spirit of mutual help

in accordance with their religious beliefs and practices.

On the island where the study was conducted, numerous annual events are held and are passed down from generation to generation. Older adults in particular felt a great sense of loss when these traditional events were discontinued, because they had actually participated in the process of being passed down through successive generations. Furthermore, many older adults are retired, and participation in community activities creates an opportunity for them to reconnect with others in the community (Irie, Hohashi, Suto, & Fujimoto, 2022). As such, it is believed the cancellations of local events and traditional activities had a strongly negative psychological impact on such individuals.

6 Impact of COVID-19 on the family chrono environment system

Over the passage of time following the outbreak of the COVID-19 pandemic, it has become clear that advanced age is a high risk factor for COVID-19 severity (Pijls et al., 2021). Particularly in families with older adults, this has provided an opportunity for family members to discuss life and death, leading them to think more deeply about older adult family members' life expectancy.

It is possible the long-term persistence of the COVID-19 pandemic may have influenced family members' views of life and death as well as family spirituality.

To control the COVID-19 pandemic, it is important for individuals to acquire accurate and up-to-date knowledge and adopt correct measures (Ngwewondo et al., 2020). However, as the number of COVID-19 cases increased explosively, a feeling of resignation toward infection arose, even in the face of infection control measures. This can be regarded as a long-term negative impact of COVID-19.

5. CONCLUSION

In families with older adults on Japan's remote islands, impacts of COVID-19 were observed in the family internal environment system, family system unit, micro system, macro system, supra system and family chrono environment system, respectively. The CSFET is considered to be an effective method for family assessment because its framework encompasses not only interactions within the family, but also transactions outside the family, as well as the family's temporal changes and transformations. Moreover, these effects stem from the islands' distinctive characteristics such as vulnerabilities in

terms of medical care, isolated environment and strong community ties. Nursing professionals need to consider these characteristics and conduct holistic family assessments based on the CSFET, so as to enable appropriate family support.

AUTHOR CONTRIBUTIONS

Substantial contributions to conception, data collection, and analysis: Naohiro Hohashi, Shiho Araki, Minami Taniguchi. Writing: Naohiro Hohashi, Jaroensuk Pinyo, Shiho Araki, and Minami Taniguchi. Manuscript revisions: Naohiro Hohashi.

FUNDING

This work was supported in part by a Grant-in-Aid for Scientific Research (B) from the Japan Society for the Promotion of Science in Japan (Grant Number: JP22H03400).

CONFLICT OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

DATA AVAILABILITY STATEMENT

The data are not publicly available due to privacy or ethical restrictions.

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