Association between Disaster Knowledge Level and the First Step of Stockpiling Food for a Disaster

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(Received April 9, 2024)

Summary This study clarifies the association between disaster knowledge levels and beginning to stockpile food at home as a disaster preparedness. This survey was conducted between 18–20 December 2019 using a self-administered web-based questionnaire. The participants were recruited from panel members of an online survey company. A total of 1,200 adults living in the five Japanese prefectures with the highest predicted food shortages after the anticipated Nankai Trough earthquake, took part in the study. Multivariable logistic regression analyses revealed a significant positive relationship between disaster knowledge level and beginning food stockpiling (p for trend <0.001). Compared with those who had a low level of disaster knowledge, participants who had a medium level of knowledge were 2.11 times more likely to begin stockpiling food (adjusted odds ratio [OR]: 2.11, 95% confidence intervals [CI]: 1.49–2.97), whereas those with the highest knowledge level were 2.52 times more likely to begin stockpiling food (adjusted OR: 2.52, 95% CI: 1.79–3.56). Beginning food stockpiling can be the first step toward disaster preparedness. It is considered that people with low disaster knowledge levels are more likely to have no beginning food stockpiling and are at high risk for disasters. These findings suggest ways to approach prioritizing people facing high disaster risk.

Key Words disaster preparedness, disaster knowledge, food for disaster, food shortages, food stockpiling

Lack of food and nutrition can cause health problems after disasters or pandemics. In Indonesia, it was reported that the prevalence of global acute malnutrition was 12.7% three weeks after the disaster in areas were affected by a tsunami (*1*). Additionally, in Sri Lanka, weakness, stunting, and underweight were reported one month after an earthquake (*2*). In Japan, poor food quantity and quality were reported even one month after the Great East Japan Earthquake (*3*). Previous studies have shown an association between poor food and nutrition and health problems (e.g., hypertension, chronic diseases, constipation, etc.) (*4–6*). It is important to remember that food supports human life, and it is precisely in times of disaster or pandemic that this must not be forgotten.

In addressing disaster preparedness, food preparation is essential, as people affected by disasters will often face food shortages (*7*). Avoiding food shortages will protect the lives and health of survivors and minimize the damage caused by disasters. Large-scale disasters are more serious because of the large amounts of food required and because the disaster area is likely to be widespread (*8*). One of the primary causes of food shortages during a disaster is the lack of stockpiled food. Indeed, in Japan, 46.2% of households did not have food stockpiled in 2019 (*9*). Furthermore, even though the Japanese people have experienced many disasters in the past 10 y, the food stockpiling rate has risen by only 6.4% (*9*, *10*). Therefore, promoting the first step of stockpiling food is an urgent issue. During the coronavirus pandemic lockdowns in 2019 (COVID-19), excess stockpiling of food was found to be associated with knowledge (*11*). However, its relationship with stockpiling food in advance of a natural disaster remains unclear.

Previous studies on promoting stockpiling for disasters have shown some factors associated with stockpiling (e.g., emergency kits, etc.). These studies reported that the associated factors included individual or household characteristics, such as age, sex, income, educational level, and disaster knowledge (*12–17*). Additionally, Thomas et al., reported that disaster knowledge was a significantly associated factor, as well as age or sex (*16*). Regarding the association between food stockpiling and knowledge, individuals who stockpiled food excessively during the COVID-19 lockdown had prior knowledge of government stockpiling recommendations (*11*). However, the previous study investigated only a single food stockpiling knowledge factor. Although it seems that a greater amount of knowledge is important rather than just one knowledge factor (*16*), there is no evidence related to the effects of greater

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disaster knowledge on food stockpiling for disaster preparedness.

The purpose of this study was to investigate the association between the level of disaster knowledge and beginning to stockpile food at home as a disaster preparedness.

MATERIALS AND METHODS

Settings and participants. This study originally sought to recruit 1,200 Japanese individuals aged ≥20 y who were registered with an online survey company (Rakuten Insight, Inc., with a total of 2.2 million registrants). The online survey company invited adults who were interested in participating and included some financial incentives (Rakuten Points) for participation. The rule was that the first to answer questions received participation incentives. The company then requested selected registrants respond and closed recruitment when the total number of participants exceeded the sample size target. The authors received answers from 1,200 participants after the survey company excluded those whose response time was extremely short or those who gave inconsistent answers. The study populations were from the five prefectures in Japan where the estimated number of evacuees (*18*) per population (*19*) is expected to be high after a Nankai Trough earthquake, according to the Japanese government. These included Kochi, Tokushima, Wakayama, Ehime and Mie prefectures. The Japanese government estimates that the food shortages that would be experienced after a Nankai Trough earthquake would be greater than those caused by the Great East Japan Earthquake (*18*). Consequently, the risk of food shortages is expected to be high in these five prefectures. The target individuals included those who mainly prepared meals for the family because it was assumed that they would also be the ones who would stockpile food for the family as a disaster preparedness. The following screening question was asked: "Who in your family mainly prepares meals?" The possible answers were: "myself," "someone other than myself," or "do not eat at home." Only individuals who answered "myself" were included in the study. Individuals who agreed to participate in the study completed an anonymous online questionnaire between 18 and 20 December 2019, which included various questions regarding their lifestyle and stockpiling food as a disaster preparedness.

Instrument.

This study used a self-administered questionnaire containing 35 items. Participants completed the questionnaires online using personal computers or smartphones, and 13 of the 35 questionnaire items were analyzed (Table S1, Supplemental Online Material). The questionnaire had three parts, as shown below.

Part 1: Sociodemographic information of individuals: This part included questions regarding the individuals' sex, age, employment status, educational background, prefecture, disaster experience, and community activities (participating or not). It also included items related to their families, such as household income, family composition, and vulnerable people in the family (presence or none).

Part 2: Disaster knowledge (exposure): This part examined knowledge about disaster preparedness and contained six items. Five of the six items were modified into the Japanese versions by the authors and were

Table 1. Participants characteristics (n=1,200).

	All participants (n=1,200)	
	n	(%)
Sex		
Male	370	(30.8)
Female	827	(68.9)
The others	3	(0.3)
Age		
20–34 y	348	(29.0)
35–59 y	612	(51.0)
≥60 y	240	(20.0)
Employment status		
Unemployed	408	(34.0)
Employed	792	(66.0)
Educational background		
Below undergraduate	742	(61.8)
Above college degrees	453	(37.8)
Others	5	(0.4)
Disaster experience		
None	986	(82.2)
Have experience	214	(17.8)
Community activities		
Do not participate	825	(68.8)
Participate	375	(31.3)
Prefecture		
Mie pref.	368	(30.7)
Wakayama pref.	221	(18.4)
Tokushima pref.	164	(13.7)
Ehime pref.	333	(27.8)
Kochi pref.	114	(9.5)
Household income		
<6 million yen	718	(59.8)
≥6 million yen	287	(23.9)
Unknown	195	(16.3)
Family composition		
Single household	358	(29.8)
Other	842	(70.2)
Vulnerable people in family		
Absence	885	(73.8)
Presence	315	(26.3)
Items of disaster knowledge		
The need to assemble an emergency bag	1,117	(93.1)
Awareness that disasters were likely to occur in Japan	1,095	(91.3)
The need to decide how to communicate between families in an emergency	1,074	(89.5)
Appropriate amount of stockpiling disaster food recommended by the Japanese government	642	(53.5)
The meaning of outdoor warning sirens in a residential area	613	(51.1)
Where to sign up for first-aid training	336	(28.0)

Table 2. Knowledge factors of participants at the beginning of food stockpiling for a disaster.

Number of knowledge	Total (n=998)[1]	Food stockpiling		p for trend
		Never stockpiled (n=466)	Beginning stockpile (n=532)	
0	18 (1.8)	15 (3.2)	3 (0.6)	
1	25 (2.5)	20 (4.3)	5 (0.9)	
2	42 (4.2)	34 (7.3)	8 (1.5)	
3	181 (18.1)	105 (22.5)	76 (14.3)	<0.001
4	343 (34.4)	150 (32.2)	193 (36.3)	
5	269 (27.0)	94 (20.2)	175 (32.9)	
6	120 (12.0)	48 (10.3)	72 (13.5)	

n (%).
[1] Excludes participants whose responses to questions about sex and educational background are "other" and whose household income is "unknown" (n=202).

based on a previous study from the United States (*16*). The responses were "I know" or "I don't know." The five questions examined the following topics: (1) the need to assemble an emergency bag; (2) the need to decide how to communicate between families in an emergency; (3) awareness that disasters were likely to occur in Japan; (4) the meaning of outdoor warning sirens in residential areas; and (5) where to sign up for first-aid training. The last of the six items, an additional item, addressed knowledge about stockpiling food for disaster preparedness in Japan. The question addressed the appropriate amount of food to stockpile as recommended by the Japanese government (*20*). Participants who answered correctly were considered knowledgeable.

Part 3: Beginning of food stockpiling at home for a disaster (outcome measures): Responses related to food stockpiling status were obtained using six items referring to the transtheoretical model (TTM) of Prochaska, which proposes stages of change (*21–23*). The items were as follows: (1) not interested in stockpiling food for disasters; (2) intending to stockpile food for disasters in the next 6 mo; (3) ready to stockpile food for disasters in the next month; (4) have stockpiled food for disasters but have not replaced it; (5) have stockpiled food for disaster and have replaced it more than once; and (6) used to have a stockpile, but not now. Respondents who selected (1)–(3) were classified as "never stockpiled" and those who selected (4)–(6) were classified as "beginning stockpile." The amount and types of food in the stockpiles were not restricted. Only whether or not stockpiling had begun was considered.

Data analyses. The characteristics of the participants are presented as numbers and percentages for categorical variables. Trend tests were conducted to determine the amount of participant knowledge at the beginning of food stockpiling for a disaster. Additionally, the Fisher Exact test was conducted to identify the participants' characteristics and the association of other factors at the beginning of food stockpiling.

Logistic regression analysis was used to explore the statistical association between the levels of disaster knowledge and beginning food stockpiling as a disaster preparedness. To assess the relative disaster knowledge levels of the participants, the number of disaster knowledge was classified into three categories (low, medium, and high) in ascending order so that the ratios would be approximately the same. These three categories were described as disaster knowledge level. Logistic regression analysis was conducted with "beginning stockpile" as the dependent variable (reference category: "never stockpiled") and disaster knowledge level as the independent variable. A total of 998 responses were entered into the logistic regression model after excluding responses from participants whose responses to sex and educational background were "other" and whose household income was "unknown." Results were displayed as crude or adjusted odds ratios (ORs) with 95% confidence intervals (95% CI). Additionally, factors comprising three or more categories showed p-values for trends. We initially examined the variables using univariable analyses and then performed multivariable analyses (forced entry method) to adjust for factors. The adjusted factors included the following: sex (male or female), age (20–34, 35–59, and ≥60 y), employment status (employed or unemployed), educational background (below undergraduate or college degree and above level), disaster experience (none or having experience), community activities (participate or do not participate), prefecture (Mie, Wakayama, Tokushima, Ehime, or Kochi), household income (<6 million yen or ≥6 million yen), family composition (single household or other) and vulnerable people in the family (absence or presence). All these categories were classified to avoid <10% of the total number in each factor. The p-values were two-sided, with $p<0.05$ considered statistically significant. All analyses were performed using SPSS Statistics for Windows, ver. 26 (IBM Corp., Armonk, NY, USA).

Ethics approval and consent to participate. This study was conducted according to the principles expressed in the Declaration of Helsinki. Participation in this study was voluntary and the confidentiality of the data was

Table 3. Participant characteristics and the association of other factors at the beginning of food stockpiling (n=998)[1].

	Food stockpiling		p for Fisher Exact test
	Never stockpiled (n=466)	Beginning stockpile (n=532)	
Disaster knowledge level			<0.001
Low (0–3)	173 (65.4)	92 (34.6)	
Medium (4)	150 (43.7)	193 (56.3)	
High (5–6)	142 (36.5)	247 (63.5)	
Sex			<0.001
Male	189 (56.8)	144 (43.2)	
Female	277 (41.7)	388 (58.3)	
Age			0.001
20–34 y	167 (53.7)	144 (46.3)	
35–59 y	229 (46.1)	268 (53.9)	
≥60 y	70 (36.8)	120 (63.2)	
Employment status			0.065
Unemployed	132 (42.3)	180 (57.7)	
Employed	334 (48.7)	352 (51.3)	
Educational background			0.093
Below undergraduate	292 (48.9)	305 (51.1)	
Above college degrees	174 (43.4)	227 (56.6)	
Disaster experience			0.468
None	382 (47.3)	426 (52.7)	
Have experience	84 (44.2)	106 (55.8)	
Community activities			<0.001
Do not participate	357 (53.0)	317 (47.0)	
Participate	109 (33.6)	215 (66.4)	
Prefecture			0.573
Mie pref.	128 (43.5)	166 (56.5)	
Wakayama pref.	87 (47.0)	98 (53.0)	
Tokushima pref.	74 (50.7)	72 (49.3)	
Ehime pref.	135 (48.7)	142 (51.3)	
Kochi pref.	42 (43.8)	54 (56.3)	
Household income			0.042
<6 million yen	348 (48.7)	366 (51.3)	
≥6 million yen	118 (41.5)	166 (58.5)	
Family composition			<0.001
Single household	182 (57.6)	134 (42.4)	
Other	284 (41.6)	398 (58.4)	
Vulnerable people in family			0.193
Absence	354 (48.0)	384 (52.0)	
Presence	112 (43.1)	148 (56.9)	

n (%).

[1] Excludes participants whose responses to questions about sex and educational background are "other" and whose household income is "unknown" (n=202).

strictly observed. The study was approved by the Research Ethics Committee of the Graduate School of Tokyo Kasei University (approval number: R2-3) and the Institutional Ethics Committee of the National Institute of Health and Nutrition (approval number: KENEI127). All participants in this study were registered with the online survey company that obtained their written informed consent.

RESULTS

Characteristics of participants

A total of 1,200 participants responded. Table 1 shows their characteristics. More females than males responded (68.9% vs 30.8%) and the respondents were aged 20–34 (29.0%), 35–59 (51.0%), and ≥60 (20.0%) y. Knowledge about the need to assemble an emergency bag (n=1,117, 93.1%) was the highest. In contrast, knowledge about where to sign up for first-aid training (n=336, 28.0%) was the lowest.

Table 2 shows the knowledge levels of participants at the beginning of food stockpiling. The percentage of those who began stockpiling food was 53.3% (n=532). In contrast, the percentage of those who "never stockpiled" was 46.7% (n=466). The knowledge levels were 0 (1.8%), 1 (2.5%), 2 (4.2%), 3 (18.1%), 4 (34.4%), 5 (27.0%), and 6 (12.0%). The disaster knowledge level

Table 4. Statistical association between disaster knowledge level and other factors and beginning of food stockpiling for a disaster (n=998)[1].

Variables	Crude		Adjusted[3]	
	OR (95% CI)[2]	p for trend	OR (95% CI)[2]	p for trend
Disaster knowledge level		<0.001		<0.001
Low (0–3)	1.00 (Reference)		1.00 (Reference)	
Medium (4)	2.43 (1.75–3.39)***		2.11 (1.49–2.97)***	
High (5–6)	3.29 (2.37–4.56)***		2.52 (1.79–3.56)***	
Sex				
Male	1.00 (Reference)		1.00 (Reference)	
Female	1.84 (1.51–2.09)***		2.12 (1.51–2.97)***	
Age		<0.001		<0.001
20–34 y	1.00 (Reference)		1.00 (Reference)	
35–59 y	1.36 (1.02–1.80)*		1.65 (1.20–2.27)**	
≥60 y	1.99 (1.37–2.88)***		2.35 (1.51–3.65)***	
Employment status				
Unemployed	1.00 (Reference)		1.00 (Reference)	
Employed	0.77 (0.59–1.01)		0.94 (0.68–1.29)	
Educational background				
Below undergraduate	1.00 (Reference)		1.00 (Reference)	
Above college degrees	1.25 (0.97–1.61)		1.42 (1.07–1.89)*	
Disaster experience				
None	1.00 (Reference)		1.00 (Reference)	
Have experience	1.13 (0.82–1.56)		1.11 (0.79–1.57)	
Community activities				
Do not participate	1.00 (Reference)		1.00 (Reference)	
Participate	2.22 (1.69–2.93)***		1.76 (1.30–2.38)***	
Prefecture				
Mie pref.	1.00 (Reference)		1.00 (Reference)	
Wakayama pref.	0.87 (0.60–1.26)		0.77 (0.52–1.15)	
Tokushima pref.	0.75 (0.50–1.12)		0.68 (0.44–1.04)	
Ehime pref.	0.81 (0.58–1.13)		0.80 (0.56–1.14)	
Kochi pref.	0.99 (0.62–1.58)		1.08 (0.66–1.77)	
Household income				
<6 million yen	1.00 (Reference)		1.00 (Reference)	
≥6 million yen	1.34 (1.01–1.77)*		1.10 (0.80–1.50)	
Family composition				
Single household	1.00 (Reference)		1.00 (Reference)	
Other	1.90 (1.45–2.49)***		1.33 (0.95–1.86)	
Vulnerable people in family				
Absence	1.00 (Reference)		1.00 (Reference)	
Presence	1.22 (0.92–1.62)		0.999 (0.71–1.41)	

[1] Excludes participants whose responses to questions about sex and educational background are "others" and whose household income is "unknown" (n=202).
[2] OR: Odds Ratio, CI: confidence interval.
[3] All variables listed in the table were adjusted.
*** p<0.001, ** p<0.01, * p<0.05.

was divided into three categories according to the number of correct answers: low level, 0–3 correct answers; medium level, 4 correct answers; and high level, 5–6 correct answers. Although not shown in the table, the results revealed that 26.7% of participants had a low knowledge level, 34.4% had a medium knowledge level, and 39.0% had a high knowledge level.

Association between disaster knowledge level and beginning of food stockpiling

Table 3 shows the participants' characteristics and the association of other factors according to the beginning of food stockpiling. Participants with a high disaster knowledge level were more likely to have begun food stockpiling (p for Fisher Exact test <0.001).

As shown in Table 4, logistic regression analysis revealed that a higher disaster knowledge level and beginning to stockpile food for a disaster were significantly associated after adjustment for other factors (p for trend <0.001). Compared with those who had a low [0–3] disaster knowledge level, respondents who had a

medium [4] knowledge level were 2.11 times more likely to begin stockpiling food (adjusted OR: 2.11, 95% CI: 1.49–2.97), whereas those who had a high [5–6] disaster knowledge level were 2.52 times more likely to begin stockpiling food (adjusted OR: 2.52, 95% CI: 1.79–3.56). Additionally, beginning food stockpiling was significantly associated with being female (adjusted OR: 2.12, 95% CI: 1.51–2.97), being of advanced age (p for trend <0.001), having a higher education level (adjusted OR: 1.42, 95% CI: 1.07–1.89), and participating in community activities (adjusted OR: 1.76, 95% CI: 1.30–2.38).

DISCUSSION

The present study investigated the association between disaster knowledge level and beginning food stockpiling at home as a disaster preparedness, using an online survey. The results reveal that there was a significant positive association between high disaster knowledge level and beginning to stockpile food at home in areas with a high risk for food shortage after the anticipated Nankai Trough earthquake.

A smaller percentage of the respondents had all the knowledge, compared to a previous study (*16*). We believe that this result represents a difference in the target population. The authors of the previous study discussed that knowledge reported might have been biased toward responses deemed more socially desirable among a population of public health employees (*16*). Additionally, compared with previous studies that examined factors associated with preparedness and emergency kits, the present findings for the association of sex were the opposite. Previous studies also reported that males were associated with preparedness with emergency kits. There is a possible reason for this discrepancy. In contrast to the emergency kit finding, this result suggests that women are more likely to be in charge of stockpiling food at home. Indeed, the Japanese national survey found that for the questions answered by those who were in charge of stockpiling food, 68.0% of the respondents were women (*9*). Additionally, many women had also stockpiled extra food during the COVID-19 lockdown (*11*). Therefore, the results suggest that a variety of target people may have to be approached to promote the stockpiling of emergency kits and food, accordingly. It is necessary to clarify these issues in the future, including who in the household is stockpiling food as a disaster preparedness.

This study was a cross-sectional design so it is possible that not only did the increase in disaster knowledge begin food stockpiling but also the beginning of food stockpiling, in turn, increased disaster knowledge. Beginning food stockpiling at home can be the first step of disaster preparedness. Additionally, disaster knowledge relates to disaster preparedness (*24*). Therefore, the interrelationship in promoting disaster knowledge and food stockpiling may be positively related to community participation may be the stimulus. Among the factors associated with the beginning of food stockpiling revealed in this study, the level of disaster knowledge and community activities are modifiable factors. These community activities included friendship networks, membership in religious associations, and participation in voluntary groups (*25*). This participation allows people to create networks for disseminating information and to access social support (*26*, *27*). Those who participate in community activities engage in lower-risk health behaviors (*25*). In other words, through the network created by participating in community activities, disaster knowledge will be acquired and actions will be taken to reduce the risk of disasters (e.g., stockpiling food). Additionally, studies have shown that encouraging participation in community activities or disaster prevention training events can have positive results, such as preparing emergency kits and/or having a family emergency plan (*17*, *28*). Therefore, community activities may be an effective promotional approach that promotes both disaster knowledge and the taking of the first step of food stockpiling.

If beginning food stockpiling at home may improve the level of disaster knowledge, beginning to stockpile food may contribute to triggering interest in and attention to disasters. Interest in new behaviors requires a trigger to raise awareness (*22*). For those who already have an interest in food anyway, the first step of stockpiling food at home may be the gateway that leads to an interest in disasters. In particular, the method of "home stockpiling and home stock rotation (i.e., "rolling stock" in Japanese)" has been recommended in recent years (*20*). This method is a way of maintaing a large amount of food, which is eaten daily, and then buying more after it is consumed. This buying and holding could be a gateway to an interest in disasters. Conversely, one reason for beginning to stockpile food because of may be "optimism bias." "Optimism bias" is a tendency for people to adopt an overly optimistic view of themselves and the likelihood of experiencing negative events (*29*). It is a type of defense mechanism, so to speak, in which people try to maintain psychological stability when faced with an unexpected situation (e.g., a disaster). For example, the statement "I didn't think I would suffer damage" is a typical example of optimism bias. However, people knoledgeable about negative events can suppress their optimism bias. A previous study reported that perceiving risk about skin cancer was negatively associated with an optimism bias toward skin cancer (*30*). In the present study, it is possible that acquired knowledge about negative events associated with disasters could somewhat control disaster-related optimism bias. As a result, it is suggested that this can lead to the first step of food stockpiling. Particularly, the disaster knowledge addressed in this study includes respondents' knowledge about their own communities, including "the meaning of outdoor warning sirens in residential areas" and "awareness that disasters were likely to occur in Japan." By acquiring familiar disaster knowledge, study participants may have been able to suppress their optimism bias centered on the thought that "at least I am okay." This suggests that the use of community activities, especially those with local residents, may

be useful.

This study has several limitations. First, the possibility of selection bias cannot be denied and the population might not have been estimated correctly because the study participants were recruited from monitors of an online survey company. Additionally, it was conducted only in specific areas. Furthermore, access to the survey was restricted because the survey was terminated when the number of respondents exceeded the target of 1,200. Second, the questionnaire used in this survey did not examine the validaty of online surveys. Moreover, the question items related to disaster knowledge were modified into a Japanese version by the authors and no validation of this version was conducted. Therefore, it is difficult to make a simple comparison with the original concept. Third, this study used a TTM-based questionnaire to investigate the beginning of food stockpiling. As this is not a direct question, it may not have accurately captured the data. Furthermore, the validity of adapting the TTM to food stockpiling has not been examined, and further studies are needed to verify whether this modification is appropriate. Fourth, the study participants were limited to those who prepared meals in the family. As mentioned earlier, the risk factors could change depending on who in the family conducts the stockpiling. In future work, it will be necessary to clarify who in the household makes decisions related to food purchases for stockpiling. Finally, given that this study was cross-sectional in design, the existence of causal relationships could not be confirmed.

CONCLUSION

This study revealed that higher disaster knowledge level was significantly associated with beginning to stockpile food at home as a disaster preparedness in areas where there is a high risk of food shortage due to the predicted Nankai Trough earthquake. This study was a cross-sectional design and thus, cannot explain any causal relationships. Beginning food stockpiling at home can be the first step toward disaster preparedness. Therefore, these findings suggest that association between having disaster knowledge and the first step of food stockpiling at home may lead to minimize damage caused by disasters.

Authorship

MH, NT-K, JO and RK designed the study. MH, NT-K and RK conducted the survey. MH, NT-K and RK led the data analysis. MH drafted the manuscript. All authors were involved in the interpretation of the results and revision of the manuscript, and all approved the final version of the manuscript. The corresponding author (NT-K) attests that all listed authors meet the authorship criteria.

Disclosure of state of COI

No conflicts of interest to be declared.

Acknowledgments

The authors are grateful to the Rakuten Insight, Inc. participants. This survey was conducted using Rakuten Insight, Inc. (https://insight.rakuten.co.jp/en). Also, the authors would like to thank Enago (www.enago.jp) for the English language review.

Funding

This study was supported by the maintenance priority grant of the Graduate School of Tokyo Kasei University, the Ministry of Health, Labour and Welfare, Health and Labour Sciences Research Grant Number 24LA2001 and JSPS KAKENHI Grant Number 18K02228, 15K00868 and 21K11641. The funders had no role in the study design, data collection and analysis, decision to publish or preparation of the manuscript.

Supporting information

Supplemental online material is available on J-STAGE.

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