Research Square

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Assessment of the Current Status of Sick-Day and Disaster-Related Medication Counseling: A Questionnaire Survey of Pharmacists in Ishikawa Prefecture, Japan

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Research Article

Keywords: Sick day, Diabetes Mellitus, Chronic Heart Failure, Chronic Kidney Disease, Medication Counseling, Disaster

Posted Date: May 28th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-9460117/v1

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Additional Declarations: No competing interests reported.

Abstract

Background Sick-day medication counseling (SDMC) is important in diabetes and other chronic conditions such as chronic heart failure and chronic kidney disease. Furthermore, during disasters, situations similar to sick days might occur, requiring appropriate management. This study investigated the current status of SDMC and disaster-related medication counseling (DRMC), defined as counseling that includes medication adjustment and preparedness during disasters, among pharmacists in Ishikawa Prefecture, Japan, using a questionnaire survey.

Methods An anonymous web-based survey was conducted from April 1, 2025, to June 30, 2025, among community and hospital pharmacists in Ishikawa Prefecture. The questionnaire included items on respondents' backgrounds and experiences with SDMC, including counseling for sodium–glucose cotransporter 2 inhibitors, and DRMC. For each item, respondents were asked about their counseling experience, target diseases, target medications, and the counseling content.

Results The survey response rate was 18.3% (251/1370). Among the respondents, 170 pharmacists (69.1%) had experience providing SDMC, and of these, 88 (51.8%) had experience providing SDMC for sodium–glucose cotransporter 2 inhibitors. Meanwhile, 45 pharmacists (18.3%) had experience providing DRMC. Experience providing SDMC or DRMC was significantly more common among pharmacists who held certified educator qualifications or had experience in disaster relief. Regarding target diseases, counseling experience was significantly less common for chronic kidney disease and chronic heart failure than for diabetes. In particular, for DRMC experience was significantly less common for chronic kidney disease than for chronic heart failure. Regarding target medications for SDMC, counseling experience was significantly less common for diuretics/antihypertensive agents than for antidiabetic drugs.

Conclusions Although SDMC and DRMC have primarily been provided to patients with diabetes, with a focus on antidiabetic medications, their provision for chronic heart failure and chronic kidney disease has been limited. Expanding the scope of SDMC and DRMC to include chronic diseases other than diabetes represents an urgent priority.

1. Background

A "sick day" refers to a situation in which a patient experiences an acute illness or infection, such as the common cold, influenza, gastroenteritis, or respiratory infection, necessitating additional management of an underlying chronic disease, such as diabetes[1)]. Sick-day medication counseling (SDMC) provides explanations concerning "sick-day management," including the temporary discontinuation or adjustment of specific medications, to patients and guidance on appropriate medication use to prevent serious adverse drug reactions[2)]. SDMC is becoming increasingly important in the management of diabetes mellitus (DM) and other chronic conditions including chronic heart failure (CHF) and chronic kidney disease (CKD) [3, 4)]. In particular, sodium–glucose cotransporter 2 (SGLT2) inhibitors, a drug class covered by SDMC, have exhibited efficacy against DM, CHF, and CKD, leading to an expansion of their indications[5–7)]. In addition, several medications, including antidiabetic drugs, nonsteroidal anti-inflammatory drugs (NSAIDs), angiotensin-converting enzyme (ACE) inhibitors, and angiotensin receptor blockers (ARBs), increase the risk of hypoglycemia or acute kidney injury (AKI) when used during sick days or in the perioperative period[4, 8, 9)]. Therefore, patients should be instructed to temporarily discontinue these medications during sick days[10)].

A failure by patients to fully understand the information provided by healthcare professionals during SDMC could lead to inappropriate treatment continuation or discontinuation, resulting in deterioration of their conditions[11, 12]. Pharmacists play a key role as educators in providing SDMC, and several studies have demonstrated the effectiveness of this counseling[13–15]. Although pharmacist-led SDMC has proven effectiveness, the extent to which such counseling is implemented in routine clinical practice has not been sufficiently investigated.

Natural disasters occur frequently in Japan, and during such events, patients might lose access to hospitals, clinics, or pharmacies and lack the ability to communicate with healthcare providers. Furthermore, previous studies observed the deterioration of health conditions following earthquakes, including worsening glycemic control and an increase in infectious diseases[16–18]. Changes in dietary intake and reduced fluid intake during disasters can also result in conditions similar to those of sick days. Therefore, pharmacists should be involved in counseling regarding medication adjustment during disasters. However, to our knowledge, no studies have examined the implementation of disaster-related medication counseling (DRMC), defined as counseling that includes medication adjustment and preparedness measures during disasters.

During the 2024 Noto Peninsula Earthquake (January 1, 2024; magnitude, 7.6), Ishikawa Prefecture in Japan experienced substantial damage to its regional healthcare system, and many pharmacists gained experience in disaster response. Therefore, this study conducted a questionnaire survey among pharmacists in Ishikawa Prefecture to investigate their experience providing SDMC and DRMC, as well as the target diseases and medications involved, and identify factors associated with these experiences.

2. Methods

This study was approved by the Ethical Review Committee of Kanazawa Medical University Hospital (approval number: H423). Before completing the questionnaire, participants were provided a written explanation stating that the survey did not include any personally identifiable information, that participation was voluntary, that there would be no disadvantage to non-participation, and that the results would be published. Respondents were eligible only after providing informed consent. This study was conducted in accordance with the tenets of the Declaration of Helsinki.

2.1 Survey participants

The questionnaire survey was conducted from April 1, 2025, to June 30, 2025, among 810 pharmacists working at 469 community pharmacies affiliated with the Ishikawa Prefecture Pharmaceutical Association and 560 pharmacists working at 78 hospitals affiliated with the Ishikawa Prefecture Hospital Pharmacists Association. Each association distributed a request via email, including a QR code linking to the survey form, to its member pharmacies or pharmacists, and the survey was conducted as a census of all eligible pharmacists. The request letter and email included instructions to avoid duplicate responses. The questionnaire was developed using Google Forms, and responses were collected anonymously via a web-based survey.

2.2 Question content and comparison

The contents of the questionnaire are presented in Fig. 1. All questionnaire items were multiple-choice, and free-text responses were allowed only when “Other” was selected.

The questionnaire items under “Characteristics” included place of employment (community pharmacy or hospital), years of experience as a pharmacist, facility location (medical region), certification status as a Certified Diabetes Educator, Certified Heart Failure Educator, or Certified Kidney Disease Educator, and experience in disaster relief. Concerning facility location (medical region), respondents were asked to select one of four regions: Northern Noto, Central Noto, Central Ishikawa, or Southern Kaga (Fig. 2).

The SDMC survey items covered experience providing counseling, target diseases, target medications, the counseling content, and prior consultation with a physician. For target diseases, target medications, and counseling content, multiple selections were allowed, and “Other” was an option for each item. A separate survey was conducted for SGLT2 inhibitors in SDMC, in which respondents were asked about their experience providing counseling and the target diseases (DM, CHF, and CKD).

DRMC was defined as medication counseling related to disasters, including guidance on treatment continuation or discontinuation during earthquakes and other disasters, measures to prevent dehydration, and preparedness measures in routine settings. The survey items covered experience providing such counseling, target conditions, and the counseling content. Multiple selections were allowed for both target conditions and counseling content, and “Other” was a response option for counseling content-related items.

To assess the association between counseling experience and background factors, the presence or absence of counseling experience was compared according to the following variables: place of employment (community pharmacy vs. hospital), location (Noto region [Northern Noto and Central Noto] vs. other areas [Central Ishikawa and Southern Kaga]), possession of a certified educator qualification, and experience in disaster relief. In addition, to examine the association between counseling experience and years of pharmacist experience, the presence or absence of counseling experience was compared between pharmacists with ≤ 20 and > 20 years of experience. Medications subject to counseling were classified as antidiabetic agents (oral hypoglycemic agents, insulin, and glucagon-like peptide-1 receptor agonists) or diuretics/antihypertensives, and the proportion of respondents with experience providing counseling was compared between these categories. Diseases subject to counseling were classified as DM, CHF, or CKD, and each pair of groups (DM vs. CHF, DM vs. CKD, and CHF vs. CKD) was compared regarding the proportion of respondents with experience providing counseling. In addition, the presence or absence of prior consultation with physicians regarding the content of SDMC was compared according to the type of workplace (community pharmacy vs. hospital).

2.3 Statistical analysis

Categorical variables were expressed as n (%). Intergroup comparisons were performed using Fisher’s exact test or McNemar’s test, as appropriate. All analyses were two-sided, and $P < 0.05$ was considered statistically significant. For multiple comparisons, Bonferroni’s correction was applied, with $P < 0.017$ considered statistically significant. Statistical analyses were performed using JMP version 17.2.0 (SAS Institute Inc., Cary, NC, USA).

3. Results

The overall response rate was 18.3% (251/1370). In total, 246 respondents were included in the analysis after excluding respondents who did not provide consent. The response rates were 17.7% (143/810) and 18.4% (103/560) for community and hospital pharmacists, respectively.

3.1 Characteristics

The characteristics of the respondents are listed in Table 1. The largest group had 21–30 years of experience as pharmacists, whereas the smallest group had fewer than 5 years of experience. The most common facility location was Central Ishikawa, whereas 13% of respondents were located in the Noto region. Thirty-seven pharmacists (15.0%) held certified educator qualifications, including one pharmacist certified in both diabetes and kidney disease. Sixty-three pharmacists (25.6%) had experience in disaster relief, and multiple responses were recorded for the type of support activities.

3.2 Sick-day medication counseling

The proportion of pharmacists with experience providing SDMC was 69.1% (170/246). SDMC experience was significantly more common among pharmacists with certified educator qualifications and those with experience in disaster relief (Table 2). Among pharmacists with SDMC experience, no respondent characteristics were significantly associated with experience providing SDMC for SGLT2 inhibitors (Table 2). Among pharmacists with SDMC experience, 90 (52.9%) had ≤ 20 years of experience as a pharmacist, whereas 80 (47.1%) had > 20 years. No significant association was found between the presence or absence of SDMC experience and years of pharmacy experience ($P = 0.678$). Regarding target diseases, the proportion of respondents providing SDMC and SDMC for SGLT2 inhibitors was significantly lower for CHF and CKD than for DM (Table 3).

Regarding target medications, a significantly lower proportion of respondents provided counseling on diuretics/antihypertensives (n = 22 [12.9%]) than on antidiabetic agents (n = 169 [99.4%], $P < 0.001$). Regarding the content of counseling, more than 50% of pharmacists provided counseling on sick-day symptoms; dehydration prevention and dietary intake; communication with healthcare providers; and treatment continuation, discontinuation, or modification (Table 4). Among pharmacists with SDMC experience, only 36 (21.2%) had prior consultation with physicians regarding the content of SDMC. Hospital pharmacists were significantly more likely to consult with physicians than community pharmacists (38.4% [28/73] vs. 8.2% [8/97], $P < 0.001$).

3.3 Disaster-related medication counseling

In total, 18.3% (45/246) of pharmacists had experience providing DRMC, which was significantly lower than the proportion with SDMC experience ($P < 0.001$). DRMC experience was significantly more common among pharmacists with certified educator qualifications and those with experience in disaster relief (Table 2). No significant difference in DRMC experience was observed between the Noto region and other regions (Table 2). The proportion of pharmacists with DRMC experience did not differ between those with ≤ 20 (n = 21 [46.7%]) and > 20 years of pharmacy experience (n = 24 [53.3%], $P = 0.321$).

Regarding target diseases, significantly fewer respondents had experience providing DRMC for CHF and CKD than for DM and for CKD than for CHF (Table 3). Regarding the content of counseling, “carrying a medication record book and My Number Card” was most common, followed by “keeping an additional supply of medications” and “SDMC” (Table 4).

4. Discussion

To the best of our knowledge, few studies have clarified the real-world situation of pharmacists’ experience providing SDMC and DRMC. Our findings illustrated that a significantly lower proportion of pharmacists had experience providing SDMC for CHF and CKD than for DM. In addition, the proportion of pharmacists with experience providing DRMC was significantly lower than that for SDMC. Furthermore, these counseling experiences were associated with holding certified educator qualifications and experience in disaster relief.

Although most pharmacists had experience providing SDMC, experience with SDMC for CHF and CKD was significantly less common than that for DM. A similar trend was observed for SDMC involving SGLT2 inhibitors. In addition, experience providing counseling for diuretics/antihypertensives was significantly less common than that for antidiabetic medications. Previous reviews summarizing the current status of SDMC found that most studies focused on patients with DM, whereas relatively few studies have targeted patients with CKD or heart failure[19]. Therefore, possible explanations for the observed differences in SDMC experience across diseases include the limited availability of evidence for chronic conditions other than DM and the insufficient dissemination of such evidence into clinical practice. In DM, sick-day management has been established on the basis of clinical guidelines[20], with substantial accumulation and dissemination of supporting evidence. Conversely, current guidelines for CHF[21] do not explicitly address sick-day management. Furthermore, among recommendations for SGLT2 inhibitors across different diseases[22–24], sick-day management is addressed in DM and CKD, whereas that in heart failure only mentions perioperative discontinuation without addressing sick-day management. Although the 2023 guidelines for CKD[25] began to explicitly address sick-day management, the findings of this study suggest that its dissemination remains insufficient compared with that for DM. As indicated by the SADMANS rule[2], in addition to antidiabetic agents, ACE inhibitors/ARBs, diuretics, and NSAIDs used in other chronic conditions are associated with an increased risk of AKI. Therefore, temporary treatment discontinuation is recommended during sick days. Further accumulation of evidence and its dissemination and broader implementation in clinical practice are needed to promote SDMC in chronic conditions and for medications beyond DM.

Regarding the content of SDMC, more than half of pharmacists reported providing counseling on specific sick-day symptoms, as well as on the following items described in the guidelines[20]: consulting healthcare providers, treatment continuation, discontinuation or modification, and fluid and dietary intake. These findings indicate that the SDMC content generally consistent with guideline recommendations. However, few pharmacists had prior consultations with physicians regarding the content of SDMC, and the rate was significantly lower among community pharmacists than among hospital pharmacists. Because decisions regarding treatment continuation, treatment discontinuation, or dose reduction during sick days vary depending on the specific drug, discrepancies in SDMC content between physicians and pharmacists might lead to patient confusion. To enhance patient education, further promotion of prior consultation with physicians regarding the content of SDMC is needed, and systems that facilitate sharing of SDMC content among healthcare professionals using tools such as sick-day cards should be developed.

In Ishikawa Prefecture, which experienced major disasters in 2007 and 2024, a significantly lower proportion of pharmacists had with experience providing DRMC than providing SDMC. During disasters, difficulties in securing medications and interruptions in treatment increase the risk of deterioration of diabetes and diabetic ketoacidosis[26, 27]. To prevent these outcomes, preparatory actions by patients, such as maintaining an emergency supply of medications and carrying a list of current medications, are essential for sustaining self-management during disasters[28]. Consistent with this, a substantial proportion of pharmacists reported providing counseling on preparatory actions, including “carrying a medication record book and My Number Card,” as well as maintaining an additional medication supply. Enhancing public awareness of disaster preparedness is crucial for minimizing disaster-related harm, with disaster education playing an important role in improving this awareness[29–31]. Therefore, expanding routine medication counseling to incorporate DRMC is necessary to promote patients’ preparation for disasters.

No regional differences were observed concerning DRMC experience, whereas differences were observed according to the target disease. For DM, the risk of blood glucose fluctuations caused by interruptions in insulin supply and changes in dietary intake during disasters is widely recognized, and disaster response measures have been clearly described domestically and internationally[32, 33]. Contrarily, the mechanisms underlying deterioration in conditions such as CHF and CKD during disasters might not be intuitive for either patients or healthcare professionals. Although previous studies reported an increase in cardiovascular diseases, including AKI and heart failure, following disasters[34, 35], these findings have not been sufficiently disseminated in clinical practice. In particular, patients with CKD often exhibit few overt changes in symptoms during disasters, making their risks less likely to become clinically apparent. Taken together, these findings suggest that approaches to DRMC for patients with CHF and CKD are less well systematized and less widely recognized in clinical practice compared with those for DM, illustrating the need to improve risk awareness, particularly for CKD.

The results of the present study suggest that experience providing SDMC and DRMC is associated with holding certified educator qualifications and having experience in disaster relief. Obtaining such certifications requires training in sick-day management and self-management, and disaster situations often require responses similar to those used for sick days. Pharmacists with certified educator qualifications or disaster relief experience are considered to possess such knowledge and experience, alongside higher levels of awareness regarding sick-day management and disaster preparedness, making them more likely to incorporate SDMC and DRMC in routine medication counseling. To promote wider SDMC and DRMC implementation, systematic sharing of the knowledge and approaches of certified educators and pharmacists with disaster relief experience is needed, namely enhancing pharmacy education and pharmacist training through the development of structured academic curricula and learning programs.

The response rate for this survey was relatively low, which might limit the generalizability of the findings to all pharmacists in Ishikawa Prefecture. However, when comparing the distribution of facility locations with the number of pharmacists by medical service area as of 2020[36], the distribution of respondents in this study was generally comparable. These findings suggest that the survey findings reflect the actual situation of pharmacists in Ishikawa Prefecture to some extent. Although a higher response rate is generally desirable[37], recent online surveys and studies targeting healthcare professionals have reported relatively low response rates of approximately 20%[38, 39], consistent with the current results. The relatively low response rate might have been attributable, in part, to the use of email for survey distribution and the fact that the survey targeted individual pharmacists rather than institutions.

Several limitations must be considered when interpreting the results of this study. First, because the survey was anonymous, duplicate responses could not be verified. However, respondents were explicitly instructed to not submit duplicate responses in the email invitation; therefore, this possibility is considered low. Second, because the survey was conducted using a web-based format 1 year after the 2024 Noto Peninsula Earthquake, recall bias based on participants' memory could have occurred, and the inclusion of pharmacists who had been transferred to other institutions might also have influenced the results. Third, the possibility of selection bias cannot be dismissed, as the respondents might have had greater interest in SDMC and DRMC, potentially leading to an overestimation of the findings. In particular, the relatively small number of respondents with fewer than 5 years of experience might also reflect such bias. However, no significant association was observed between experience providing SDMC or DRMC and years of pharmacy experience, suggesting that the influence of experience was limited. Fourth, this study could not fully assess and adjust for background factors that could influence

pharmacists' experience providing counseling, such as their individual educational backgrounds and institutional structures of their workplaces. As this study was designed to assess the current status of SDMC and DRMC, the findings might be useful as a basis for hypothesis generation and the development of educational interventions to promote these practices.

5. Conclusions

Among pharmacists in Ishikawa Prefecture, experience providing SDMC for CHF and CKD was significantly less common than that for DM, and similar patterns were observed for DRMC. Furthermore, these counseling experiences were associated with holding certified educator qualifications and having experience in disaster relief. In addition to further accumulation of evidence and its dissemination regarding sick-day management for conditions and medications beyond DM, it is necessary to expand routine medication counseling to incorporate SDMC and DRMC. The development of structured academic curricula and training programs is warranted to promote the wider implementation of SDMC and DRMC.

Abbreviations

SDMC
sick-day medication counseling
DM
diabetes mellitus
CHF
chronic heart failure
CKD
chronic kidney disease
SGLT2
sodium–glucose cotransporter 2
NSAIDs
nonsteroidal anti-inflammatory drugs
ACE
angiotensin converting enzyme
ARB
angiotensin receptor blocker
AKI
acute kidney injury
DRMC
Disaster-related medication counseling

Declarations

Ethics approval and consent to participate

The research was conducted ethically in accordance with the World Medical Association Declaration of Helsinki. This research was conducted after obtaining approval from the Ethical Review Committee of Kanazawa Medical University Hospital (H423).

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated during the current study are available from the corresponding author upon reasonable request.

Competing interests

The authors state that the study was conducted without any commercial or financial relationships that could be interpreted as a conflict of interest.

Funding

This study was supported by the Kanazawa Medical University Hospital Research Grant-in-Aid for Allied Health Professionals (H2025-6).

Authors' contributions

Ryoji Takata, Yoshihiro Nishita, Asuka Hirano and Morihiro Okada conceived and designed the study and wrote the study protocol. Ryoji Takata and Shota Kobayashi conducted the data collection. Ryoji Takata, Yoshihiro Nishita and Morihiro Okada performed the statistical analysis. Ryoji Takata wrote the first draft of the manuscript. Takefumi Miyake and Togen Masauji substantially contributed to the revision of the manuscript drafts. All authors commented on and revised the manuscript. All authors read and approved the final manuscript.

Acknowledgments

We would like to express our sincere gratitude to the community pharmacists of the Ishikawa Pharmaceutical Association and the hospital pharmacists of the Ishikawa Hospital Pharmacists Association for their valuable cooperation in this study.

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Tables

Tables are available in the Supplementary Files section.

Figures

[1] Respondent Characteristics

[1-1] What is your current workplace?

□ Community pharmacy □ Hospital

[1-2] How many years of experience do you have as a pharmacist?

□ < 5 years □ 5～10 years □ 11～20 years □ 21～30 years □ >30 years

[1-3] What is the location (medical service area) of your facility?

□ Northern Noto Medical Service Area (Wajima City, Suzu City, Anamizu Town, Noto Town)

□ Central Noto Medical Service Area (Nanao City, Hakui City, Shika Town, Hodatsushimizu Town, Nakanoto Town)

□ Central Ishikawa Medical Service Area (Kanazawa City, Hakusan City, Kahoku City, Nonoichi City, Tsubata Town, Uchinada Town)

□ Southern Kaga Medical Service Area (Komatsu City, Kaga City, Nomi City, Kawakita Town)

[1-4] Which of the following certifications do you hold? (Select all that apply.)

□ Certified Diabetes Educator □ Certified Heart Failure Educator □ Certified Kidney Disease Educator □ None of the above qualifications

[1-5] What is your experience with disaster relief? (Select all that apply.)

□ Disaster Medical Assistance Team (DMAT) □ Japan Medical Association Team (JMAT) □ Disaster Psychiatric Assistance Team (DPAT)

□ Diabetes Medical Assistance Team □ Pharmacy Disaster Life Support (PhDLS) □ Disaster Pharmacy Coordinator

□ Disaster deployment/volunteer as a pharmacist □ General disaster deployment/volunteer □ No disaster relief experience □ Other

[2] Sick-Day Medication Counseling

[2-1] Have you ever provided sick-day medication counseling?

□ Yes □ No

[2-2] For which diseases have you provided counseling? (Select all that apply.)

□ Diabetes mellitus □ Chronic heart failure □ Chronic kidney disease □ Hypertension □ Cancer □ Autoimmune diseases

□ Hematopoietic stem cell transplantation or organ transplantation □ Other

[2-3] For which medications have you provided counseling? (Select all that apply.)

□ Oral hypoglycemic agents □ Insulin □ GLP-1 receptor agonists □ Diuretics □ Antihypertensives □ Immunosuppressants

□ Antirheumatic drugs □ Anticancer drugs □ Other

[2-4] What content did your counseling include? (Select all that apply.)

□ Explanation of sick-day symptoms □ Criteria for seeking medical attention or contacting a physician □ Contacting a pharmacy

□ Continuation of medication □ Discontinuation of medication □ Dose adjustment or modification of medication

□ Hydration guidance for dehydration prevention □ Encouraging food intake as tolerated □ Blood glucose and urinary ketone monitoring

□ Other

[2-5] Have you ever consulted with a physician in advance regarding the counseling content?

□ Yes □ No

[3] SDMC for sodium–glucose cotransporter 2 inhibitors

[3-1] Have you ever provided sick-day medication counseling for sodium–glucose cotransporter 2 inhibitors?

□ Yes □ No

[3-2] For which diseases have you provided this counseling? (Select all that apply.)

□ Diabetes mellitus □ Chronic heart failure □ Chronic kidney disease

[4] Disaster-Related Medication Counseling

[4-1] Have you ever provided disaster-related medication counseling?

□ Yes □ No

[4-2] For which diseases have you provided counseling? (Select all that apply.)

□ Diabetes mellitus □ Chronic heart failure □ Chronic kidney disease □ Hypertension □ Cancer □ Autoimmune diseases

□ Hematopoietic stem cell transplantation or organ transplantation □ Other

[4-3] What content did your counseling include? (Select all that apply.)

□ Criteria for seeking medical attention or contacting a physician □ How to contact medical institutions □ Sick-day medication counseling

□ Continuation, discontinuation, or modification of medication □ Dehydration prevention □ Infection prevention and control

□ Carrying a medication notebook and My Number card □ Managing situations where medications are difficult to obtain

□ Taking photographs of medication records or medication information sheets □ Keeping extra medications available □ Other

Figure 1

Survey questions

This figure presents the actual content of the survey. Questions that do not include the phrase “Select all that apply” required a single answer.

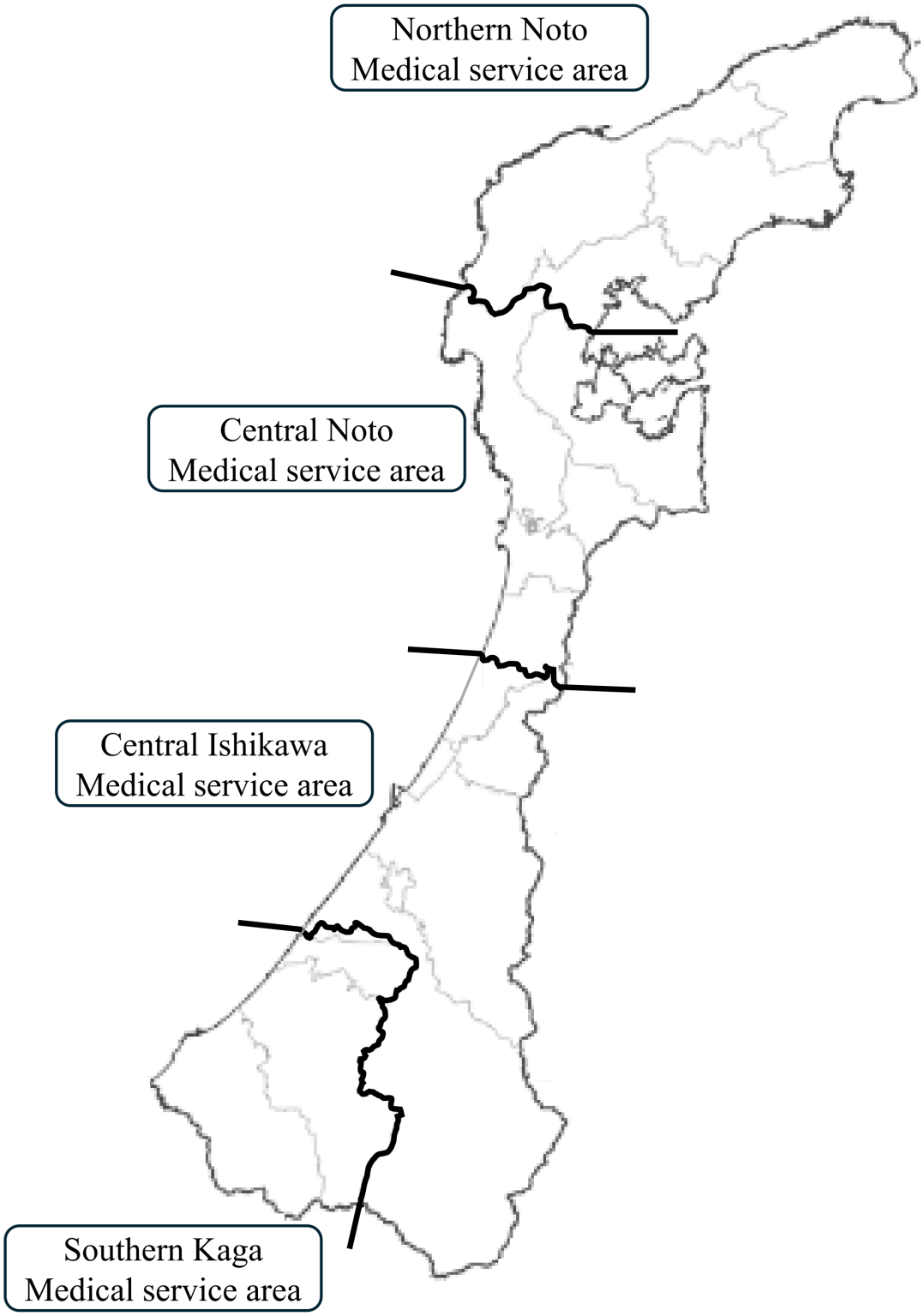


Figure 2

Medical service areas of Ishikawa Prefecture

Northern Noto Medical Service Area: Wajima City, Suzu City, Anamizu Town, Noto Town

Central NotoMedical Service Area: Nanao City, Hakui City, Shika Town, Hodatsushimizu Town, Nakanoto Town

Central Ishikawa Medical Service Area: Kanazawa City, Hakusan City, Kahoku City, Nonoichi City, Tsubata Town, Uchinada Town

Southern KagaMedical Service Area: Komatsu City, Kaga City, Nomi City, Kawakita Town

This map illustrates the medical service areas in Ishikawa Prefecture. The epicenter of the 2024 Noto Peninsula Earthquake was located in Wajima City, which is located in the Northern Noto Medical Service Area.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Table14.xlsx