**Appendix 3: A sample illustration of the coding procedure: The codes derived from the information units of the selected articles related to 2011 Great East Japan Earthquake**

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| **Author/Title** | **Text** | **Code** | **The relevant research question topic** |
| **Hashimoto, Japan****Need for more proactive use of pharmacists in the COVID-19 pandemic following lessons learnt from the Great East Japan Earthquake** | East Japan (2011): After Earthquake pharmacists worked with local pharmaceutical wholesalers and other professionals to establish a supply system for drugs and sanitary materials, | **establishing a supply system for drugs and sanitary materials by the pharmacists in GEJE like 2011 earthquake experience** | **Recommendation** |
| In this context, we believe the experience of the 2011 Great East Japan Earthquake (GEJE) will provide helpful information to better define the role of pharmacists in ongoing COVID-19 pandemic and future disasters. | **Providing helpful information to define pharmacists’ role in ongoing COVID-19 pandemic**  | **Recommendation** |
| Nevertheless, pharmacists have not been ready to utilize their advanced skills fully in the current medical and social framework in Japan, especially in times of emergency, | **Lack of full utilization of the current medical/social framework in Japan** | **challenge** |
| While physicians and nurses already have their specific roles in major disasters, and limited information is available on how pharmacists can be engaged in relief activities in large-scale disasters. | **The engagement of the pharmacists in relief activities in large-scale disasters** | **Recommendation** |
| Pharmacists could have helped raise the awareness of evacuees to the appropriate use of disinfectants or sanitation of temporary toilets, as well as the temperature and humidity in evacuation sites. Would be valuable during the COVID-19 pandemic for pharmacists to **proactively intervene in the improvement of the living environment** where infections are likely to occur | **Raising awareness of the evacuees to observe sanitation in the sites by the pharmacists** | **Recommendation** |
| Reflecting the GEJE, the training was started for “Pharmacy Disaster Life Support (PhDLS)” personnel who were destined to be responsible for the supply of drugs and the planning of pharmaceutical support activities in a large-scale disaster [8]. Large quantities of relief materials were haphazardly piled up at evacuation centers after the GEJE and on-site health care professionals (HCPs) were confused due to the mix of brand name drugs and generics. Pharmacists had checked the ingredients of drugs and suggested alternatives to prescriptions written by physicians based on availability. The practical role of such pharmacists is one of the most insightful and important points for future disasters preparedness. | **Reflecting the GEJE, Pharmacists helped insightfully the confused on-site health care professionals with checking the ingredients of drugs and suggested available alternatives to prescriptions**  | **Recommendation** |
|  | However, supply systems had not functioned effectively during the COVID-19 outbreak, and from March to June 2020, some HCPs were forced to use the same face masks for several days and wear rain gear or other alternatives to proper Personal Protection Equipment (PPE) and as a result, operations for infection control were inadequate in some hospitals [2]. Additionally, during the COVID-19 outbreak, PhDLS [8] had not been engaged in any activities, as far as we know | **Ineffective supply system distribution during COVID-19 outbreak and lack of engagement of PhDLS**  | challenge |
| **Hori, Japan****GEJE 2011****Exacerbation of Subthreshold PTSD Symptoms in a Great East Japan Earthquake Survivor in the Context of the COVID-19 Pandemic** | This case demonstrated the characteristics of subthreshold PTSD caused by two disasters that shared a similar sense of insecurity, the scale of impact on the society, invisibility of the threat, restricted movement, and authoritative conflicts. These commonalities led to a recurrence and exacerbation of initial symptoms. | **The commonalities of the two disasters led to a recurrence and exacerbation of initial symptoms of subthreshold PTSD** | Challenge |
| Lack of social support and a dependent personality that made him attached to the stricken area soon after the disaster were considered factors Contributing to his symptoms’ chronicity. | **Attachment to the area and lack of social support contribute to symptom’s chronicity** | Challenge |
| The urgent atmosphere of the town, resulting from the COVID-19 outbreak was similar to that of the nuclear accident and acted as a trigger for the patient’s traumatic reactions, namely, insomnia and impatience. | **The urgent atmosphere of COVID-19 as a trigger for another traumatic reactions** | Challenge |
| The involved professionals should be aware of the possibility that PTSD may occur not only in those who experience the actual life-threatening like ICU admission but in those who experience the atmospheric change of society during a disaster. | **Being aware of the possibility that PTSD may occur for both the infected and those experiencing atmospheric change of society** | Recommendation for the involved professionals |
| Stakeholders should be aware that recognizing the horrors of a large-scale disaster can have a calming effect on patients’ emotions; at the same time, lack of recognition can be highly frustrating for patients. | **The stakeholders’ awareness of the calming effect of recognizing the horrors of disasters; lack of recognition: frustration** | Recommendation for the stakeholders |
| We should also inform the community about the great psychological damage that an atmosphere of harsh condemnation (disapproval/criticism) of certain people could cause during a disaster. | **Informing the community about the great psychological damage caused by atmosphere of harsh criticism** | Recommendation for the stakeholders |
| Established remote support system for mental care can be useful for mental support in same disaster such as covid-19 | **Establishing remote support system for mental care** |  |
| **Nogami, Japan****Mandatory annual disclosures for listed companies during crises in Japan: COVID-19 and the Great East Japan Earthquake** | The former (GEJE) triggered a sudden change in energy policy, and the latter triggered major changes in how and where individuals work and interact (COVID), a situation that persists as this analysis is being written. | **Major changes caused by the two disasters; Maintaining energy policy and how/where people work and interact** | Challenge |
| The impact of both emergencies (radioactivity versus virus) was not physically visible, so people tended to rely on social media to obtain related information. | **Invisibility of both radioactivity and virus make social media the source of information** | Challenge |
| Both destroyed industrial supply chains, in both disasters, at first directly and in Covid indirectly. | **Destruction of industrial supply chains** | Challenge |
| Behavioral economics theory teaches that investors will hesitate to invest in stocks when the condition of many companies is unclear, as was the case under these uncertain circumstances. | **Hesitation of the investors in unclear circumstances** | Challenge |
| A disaster has various effects on many companies, and the type, magnitude and duration of these effects vary. Even essential businesses could be so heavily damaged as to require government support to sustain them through the crisis. | **Government support to sustain the businesses through the crisis** | Recommendation |
| Stakeholders (sponsors) should understand the need to sustain essential businesses and make a timely decision about supporting them. | **Sustaining essential businesses in disasters by timely backing** | Recommendation |
| **Thus, providing high quality information from management (of the business) is so important in times of crisis.** | **High quality information (disclosure) from the business management** | Recommendation |
| **Cooperation between management and other stakeholders is key to surviving through hard times.** | **Cooperation between management and stakeholders** | Recommendation |
| **Sacamoto, Japan****Implementation of evacuation measures during natural disasters under****conditions of the novel coronavirus (COVID-19) pandemic based on a review****of previous responses to complex disasters in Japan** | The deterioration of hygiene conditions in disaster-affected areas and the forced confinement of many victims within small spaces in evacuation centers increase the risk of transmission of infectious diseases.  | **The increased risk of transmission of infectious diseases in evacuation centers** | challenge |
| Therefore, a countermeasure focusing on maintaining a sanitary environment within evacuation centers is critical. | **Necessity of maintaining sanitary environment in evacuation centers**  | Recommendation |
| In the event of a large-scale earthquake, it is likely that administrative agencies themselves will be damaged. In addition, not only the staff of the evacuation centers but also the evacuees must protect themselves against infectious diseases at small evacuation centers because of the lack of human resources. The evacuees are required to be **self-reliant**. Okada et al. [17] noted that **community empowerment** has greatly contributed to the maintenance of healthy environments at evacuation centers. | **Community empowerment and self-reliance at the evacuation centers** | Recommendation |

**Appendix 3.** Sample categories-deriving procedure from Mutual Earthquake-COVID-19 *Challenges* observed in the studies related to *Great East Japan’s Earthquake (2011*)

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|  | Information units of the Challenges | Codes | Categories |
| Hashimoto, Japan | (Pharmacists) Lack of full utilization of the current medical/social framework in Japan  | Inefficient utilization of the pharmacists’ advanced skills | Inefficient engagement of the pharmacists |
| Ineffective supply system distribution during COVID-19 outbreak  | Ineffective supply system distribution during the pandemic | Ineffective supply system distribution |
|  lack of engagement of PhDLS | Lack of engagement of the pharmacists | Inefficient engagement of the pharmacists |
| Hori, Japan | The commonalities of the two disasters led to a recurrence and exacerbation of initial symptoms of subthreshold PTSD | Exacerbation of initial symptoms of subthreshold PTSD | Exacerbation of initial symptoms of subthreshold PTSD |
| Attachment to the area and lack of social support contribute to symptom’s chronicity | Confinement and lack of social support causing chronicity of initial symptoms of subthreshold PTSD | Exacerbation of initial symptoms of subthreshold PTSD |
| The urgent atmosphere of COVID-19 as a trigger for other distressing reactions such as insomnia and impatience | Triggering more distressing reactions due to COVID-19 | Exacerbation of initial symptoms of subthreshold PTSD |
| Nogami, Japan | (Businesses) Major changes caused by the two disasters; Maintaining energy policy(by earthquake) and how/where people work and interact (by COVID-19) | Maintaining energy policy by earthquake and the way people work and interact by COVID-19 | Detrimental impacts of the two disasters on businesses |
| Invisibility of both radioactivity and virus make social media the source of information | Social media the source of information [businesses were shut down] | Detrimental impacts of the two disasters on businesses |
| Destruction of industrial supply chains | Destruction of industrial supply chains | Detrimental impacts of the two disasters on businesses |
| Hesitation of the investors in unclear circumstances | Hesitation of the investors | Detrimental impacts of the two disasters on businesses |
| Sacamoto, Japan | The increased risk of transmission of infectious diseases in evacuation centers | The increased risk of transmission of infectious diseases in evacuation centers | Increased risk of infection transmission in evacuation centers |

**Appendix 3.** Sample categories-deriving procedure from the *Recommendations* observed in the studies related to *Great East Japan’s Earthquake (2011)*

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| **The selected study** | **The information unit in the study** | **The code** | **The Category** |
| Hashimoto, Japan | (For pharmacists) **establishing a supply system for drugs and sanitary materials by the pharmacists** in GEJE **like 2011 earthquake experience** | establishing a supply system for drugs and sanitary materials by the pharmacists | What pharmacists can do during COVID-19 pandemic |
| **The engagement of the pharmacists in relief activities** in large-scale disasters | The engagement of the pharmacists in relief activities | What pharmacists can do during COVID-19 pandemic |
| Providing helpful information **to define pharmacists’ role in ongoing COVID-19 pan**demic | to define pharmacists’ role in ongoing COVID-19 pandemic | What pharmacists can do during COVID-19 pandemic |
| Reflecting the GEJE**, Pharmacists** helped insightfully the confused on-site health care professionals with **checking the ingredients of drugs and suggested available alternatives to prescriptions** | Checking the ingredients of drugs and suggested available alternatives to prescriptions by the pharmacists | What pharmacists can do during COVID-19 pandemic |
| **Raising awareness of the evacuees to observe sanitation in the sites by the pharmacists** | Raising awareness of the evacuees to observe sanitation | What pharmacists can do during COVID-19 pandemic |
| Hori, Japan | Being aware of the possibility that **PTSD may occur for both the infected and those experiencing atmospheric change of society** | Awareness of PTSD occurrence for both the infected and those experiencing drastic life changes | Consciousness raising to mitigate the psychological impacts of the two disasters |
| The stakeholders’ awareness of the calming effect of recognizing the horrors of disasters; lack of recognition= frustration | The stakeholders’ awareness of the calming effect of recognizing the horrors of disasters | Consciousness raising to mitigate the psychological impacts of the two disasters |
| Informing the community about the great psychological damage caused by atmosphere of harsh criticism | Informing about the psychological damage of harsh criticism | Consciousness raising to mitigate the psychological impacts of the two disasters |
| Establishing remote support system for mental care | Establishing remote support system for mental care | Establishing remote mental care support system  |
| Nogami, Japan | Government support to sustain the businesses through the crisis | Sustaining businesses through government support | Possible businesses-sustaining measures |
| Sustaining essential businesses in disasters by timely backing | Sustaining businesses through timely backing | Possible businesses-sustaining measures |
| High quality information (disclosure) from the business management | High quality information (disclosure) from the business management | Possible businesses-sustaining measures |
| Cooperation between management and stakeholders | Management-sponsor cooperation | Possible businesses-sustaining measures |
| Sacamoto, Japan | Necessity of maintaining sanitary environment in evacuation centers | maintaining sanitary environment in evacuation centers | Possible community empowerment measures at evacuation centers |
| Community empowerment through self-reliance at the evacuation centers | Prior self-reliance empowerment at the evacuation centers | Possible community empowerment measures at evacuation centers |