The lasting impacts of work-attendance decisions of health care employees under uncertainty: Japanese hospital nurses’ experiences outside the evacuation zone after the nuclear accident

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Abstract - Following the earthquake-triggered nuclear accident in Fukushima, Japan, in 2011, local hospitals outside the evacuation zone remained functional, but some of the employees were temporarily absent. This study aims to elucidate long-term workplace experiences based on work-attendance decisions among nurses working under conditions of uncertainty in hospitals operating outside, yet near, the former evacuation zone at the time. Twenty-seven nurses (including those who were temporarily absent) from seven hospitals were interviewed. The data were analyzed using the grounded theory method. We placed the workplace experiences of nurses into two core categories: “repeatedly choosing whether to attend work or not regardless of one’s emotions” and “going through parallel inconsistencies in the functioning workplace.” Our findings demonstrated the lasting impact of work-attendance decisions on nurses’ workplace experiences after the disaster. The findings could be useful in understanding hospital nurses who work under conditions of continuous uncertainty.

1. INTRODUCTION

On March 11, 2011, an earthquake and tsunami triggered a nuclear accident in Fukushima, Japan. The evacuation zone was repeatedly extended within 24 hours (Iwaki City, 2012, p. 32), forcing all residents within 20 km of the nuclear power plant to evacuate. People within 20 to 30 km were instructed to stay indoors on March 15. Even without the evacuation order, many residents beyond the 30-km zone relocated themselves until they eventually returned within a few months (Cabinet Office, Government of Japan, 2015). Similarly, local hospitals that were not under evacuation order faced a temporary decline in their number of employees, including nurses (Morioka et al., 2015; Ochi et al., 2016). In one hospital, nurses’ voluntary relocation peaked (at 15.8%) on March 18, with nurses beginning to return around March 20 (Sakamoto, 2011; 2012). Although the impact was not limited to the evacuation zone, there has been little focus on the experiences of hospital nurses who were expected to work in the affected areas outside the evacuation zone. What were the experiences of nurses in hospitals where continuity of patient care was essential, with some nurses temporarily leaving the workplace in the face of unimaginable risks and uncertainty? In the workplace, there were both nurses who continued to work and nurses who temporarily left, but they gradually started to work together again. Throughout this time, patients received continuous care. Understanding the experiences of nurses in these workplaces can help us comprehend the working conditions of nurses or other essential workers in crisis and how to support them.

2. LITERATURE REVIEW

Research on nurses in disaster situations has focused on individual decision making and psychological conflicts over
work attendance. A nurse’s decision about work attendance during a disaster is believed to be based on that individual’s willingness or ability (Barnett et al., 2012; Fung and Loke, 2013; Stergachis et al., 2011; Veenema et al., 2008). In an integrative review, Chaffee (2009) reported that hospital nurses during disasters decide whether to work based on their willingness, which is influenced by individual factors, such as family situations or personal concerns about safety. Additionally, a qualitative study of hospital employees who experienced wildfires revealed that they experienced tension between family obligations and work demands (Davidson et al., 2009). A questionnaire study conducted among health care workers in the United States showed that the most frequently cited reasons for employees’ unwillingness to work during a disaster were fear and concern for the family and self (Qureshi et al., 2005). Similarly, a qualitative study that described the experiences of nurses who were employed in a psychiatric hospital in Fukushima during the earthquake revealed that, as they were disaster victims themselves, continuing to work gave rise to conflicts between work and family responsibilities (Nakayama et al., 2019). Research on nurses in Fukushima has also focused on psychological aspects, such as dilemma regarding work attendance (Nakayama et al., 2019), and mental health (Nukui et al., 2018; Sato et al., 2018). These studies provide a good representation of the personal and subjective experiences. However, in order to portray their workplace experience in a more authentic way, the workplace as a context should be considered. In particular, their choice-making whether to attend work or not took place in a workplace where people were working together. Both choices occurred in the workplace, where every member’s choice was obvious to all members. Thus, the consequence of each member’s choice might have affected other members’ choices. Such workplace interactions must be considered when describing such choices and experience.

The workplace conditions during and after the Fukushima nuclear disaster have been reported from the perspective of nurses themselves, mainly managers (Yamazaki, 2011). These reports describe the impacts on hospital operation and how the disaster response was handled administratively. However, they stem from the relatively early stages of disaster response, and most of these reports are single case reports with a short-term perspective. There must have been medium- to long-term reactions in the workplace, considering the fact that the hospitals did not cease to operate and the nurses who chose to be absent eventually returned to work. What happens in the workplace after people who continued to come to work and those who were temporarily absent start to work together again, has not been well studied, but suggestions have been made. As Tomczyk et al. (2008) have noted in their guidelines on the role of occupational health nurses in health care facilities during a disaster, conflicts can arise as normal operations resume between employees who reported to work and those who did not. Nurse administrators from hospitals near the Fukushima evacuation zone acknowledged tensions between the nurses who remained working and those temporarily absent (Yamazaki, 2011). However, while we know from the accounts of the managers that there was tension in these relationships, research has not clarified how this tension was experienced by the nurses themselves, whether it was affected by certain factors, or indeed when and how the nurses returned to normal following the disaster, or whether they ever returned to normal.

The nurses made choices between going to work and not going to work while the hospitals outside, yet near, the evacuation zone continued to operate. There were both choices, and those who chose to be absent from work were still employees even while they were not working. Therefore, the workplace experience of the nurses who made different choices can be commonly described. However, no study has elucidated the nurses’ workplace experience from the perspective of its members regardless of their choice. No study, in particular, has focused on nurses’ workplace experience, a commonly observed phenomena in multiple organizations, over a longer period of time, including the time after the once-absent nurses returned to the workplace.

These research gaps suggest the need for more focus on the workplace, a place of organizational continuity and intra-organizational interactions, to elucidate the nurses’ overall experience in this context, including how they chose to be at work or absent from work in hospitals operating uninterruptedly in the face of unfathomable risk and uncertainty, how they experienced their own and others’ choices, and how their experiences changed over time. To do so, rather than describing individual experiences in detail, we focus on depicting people’s common workplace experiences, whereby they continued to interact within organizational activities. Finding commonalities in the experiences of different individuals and structuring them as a comprehensive experience of their workplace provide clues to how to achieve a deeper understanding of the complexities of the workplace, as opposed to a deeper understanding of individuals. Using our perspective and findings, personal experiences can be made more generalizable, which may allow people to find points of relevance to their own experience in organizations under similar circumstances. Furthermore, by depicting changes from a long-term perspective, we can contribute to a better understanding of the workplace and the people who work there. This allows us to understand what essential workers, including nurses, would experience when faced with great unknown risks while working in organizations that continue to provide service to people in extraordinary circumstances. This study can also serve as reference material for the consideration of ways to support anyone in an organization operating under uncertain conditions, regardless of whatever choice one may make.

The purpose of this study is to elucidate the long-term workplace experiences of nurses in hospitals operating outside, yet near, the evacuation zone, following the
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Fukushima nuclear accident, where there was choice over work attendance.

3. METHODS

3-1. Design

In this study, we intended to describe the nurses’ workplace experiences not as personal stories but rather as organizational phenomena. Therefore, we adopted a qualitative design guided by Charmaz’s grounded theory approach (2014). The grounded theory is appropriate when studying a fairly unknown area and aiming to provide theoretical explanations of phenomena based on empirical data (Birks and Mills, 2015; Flick, 2018). Grounded theory approach enables us to construct organizational phenomena from the nurses’ workplace experiences while being grounded in the data of individual narratives. Charmaz’s approach, in particular, assumes that rendering participants’ experiences offers an interpretive portrayal of the studied world (Charmaz, 2014), an assumption that we considered would fit with our focus on nurses’ workplaces, by which we have attempted to construct a comprehensive interpretation based on how individual nurses experienced specific phenomena following the earthquake and the nuclear accident.

3-2. Participants

Purposive sampling was used to select nurses who were employed in operating hospitals located approximately 50 km from the plant at the time of the disaster because we assumed that they would provide rich data on nurses who were working outside, yet close to, the 30-km evacuation zone. Initial sampling was based on the administrative districts designated for “Compensation Offerings to Voluntary Evacuees” (Fukushima Prefectural Government, 2011), which officially designated the accident-affected areas outside the evacuation zone.

Snowball sampling, flyers, and a website announcement were used for nurses and nurse directors who were interested in the study and wished to contact the researchers personally. As data collection and coding progressed, sampling became more purposive, to increase the number of participants. All prospective participants were provided with a description of the study details before being invited to volunteer.

A total of 28 nurses participated in the study. One participant was excluded because of consent withdrawal. The following four sets of data were used as referential data: from one participant who was on parental leave, from one participant whose hospital ceased to function completely, from one participant whose hospital was further inland than the other hospitals, and from one participant whose hospital was within the evacuation zone but who nevertheless offered to participate in the study.

Consequently, data from 23 nurses across four hospitals constituted the theoretical framework. The four hospitals were located within 40 to 50 km of the plant, with the number of beds ranging from 200 to over 500. All 23 nurses were full-time employees. Three of the participating nurses were temporarily absent from work because of relocation, but they subsequently returned. The other participants did not voluntarily relocate. Eighteen (78%) were female. Fifteen (65%) worked in inpatient settings; the rest worked in ambulatory care within the hospitals. With respect to total years in nursing, participants ranged from new graduates to long-standing employees, including five participants with leadership roles in their units. Two participants had stopped working at the hospitals in which they worked at the time of the nuclear accident but were still working at nearby hospitals. Data from nurse administrators/managers obtained for the primary project, which we conducted in tandem with this study, were referenced to better grasp hospital situations from an operational standpoint.

3-3. Data Collection

Semi-structured, individual interviews were conducted from June 2016 to November 2018. Each interview was conducted once in a private room in or outside the hospital, depending on the participant’s preference, and was audio-recorded. To enhance the validity of the interpretation of the narratives, two interviewers were present at each interview. The interviewers were researchers, including the authors.

The interview guide provided by the authors included the following questions:

- “What was your floor like when your colleagues started to evacuate?”
- “What were your thoughts or feelings back then?”
- “What made you keep going (back) to work?” and
- “What do you remember most about the remarks or words exchanged with your colleagues or your manager?”

The interviews with 23 participants lasted between 69 and 120 minutes, averaging 87 minutes.

3-4. Data Analysis

All interviews were conducted retrospectively and transcribed by the authors. Following the grounded theory method of Charmaz (2014), data analysis began with initial coding, which entailed a close reading of the data. Similarities and differences in incidents or episodes specific to either the nurses who continued to work or those who relocated (voluntarily evacuated) were attentively confirmed to illustrate the overall status of their workplace, composed of both nurses who attended work and those who did not. Through group discussions and memo writing, possible categories emerged from a constant comparison among data/codes/properties. Comparing referential data also helped to establish the analytical direction and to discuss data saturation. The categories and the relationship between them were reconstructed repeatedly to obtain conclusive ones that best explained the nurses’ workplace experiences.

3-5. Ethical Considerations

The study was approved by the Research Ethics Committee of the Graduate School of Medicine, the University of Tokyo (No. 11176). All participants were
informed of the study’s purpose and methods; measures to ensure confidentiality; and the voluntary, anonymous nature of participation, after which they provided written informed consent. They were reassured that they could withdraw their consent at any time and that their decision about participation would not be disclosed to anyone, including the nurse directors who nominated them.

3-6. Rigor
Two of the authors had experience conducting grounded theory studies; the other had finished a course in grounded theory while conducting the study. All interviewers had experience as hospital nurses outside Fukushima and had no personal (as opposed to academic) interest in the research topic. Continuous group discussions were held throughout the study process. Coding notes, analytical memos, and discussion notes formed an audit trail.

4. RESULTS
Concepts are presented in the following forms: *core category[/category]/[subcategory]*. While describing these elements within the manuscript, minor grammatical modifications have been made to the wording of these elements, so that they are meant as complete sentences in this section. For example, the category I-1 reads as follows: “Unable to tell whether the situation posed or could pose a threat to our local areas” (Table 1 and Figure 1). However, within the text, “our” has been modified to “their” for grammatical sense as follows: “... nurses in hospitals near the evacuation zone were [unable to tell whether the situation posed or could pose a threat to their local areas]” (I-1).

Nurses’ workplace experiences constituted two phases that could be represented as two core categories: (I) repeatedly choosing whether to attend work or not regardless of one’s emotions, comprising eight categories, and (II) going through parallel inconsistencies in the functioning workplace, comprising ten categories. Although these two core categories were distinctive, they were inseparable on a continuum, subtly transitioning from Phase I to II, and shared one category named “E” (representing “Emotion”) (Figure 1). Throughout their experiences, inconsistent or incompatible situations occurred concurrently, which are depicted by a lightning bolt in Figure 1. A detailed description of each category follows in the form of a storyline.

4-1. Repeatedly Choosing Whether to Attend Work or Not Regardless of One’s Emotions
Within two or three days of the nuclear accident, nurses in hospitals near the evacuation zone were unable to tell whether the situation posed or could pose a threat to their local areas (I-1). They were flooded with multisourced information implying that something dangerous was happening, such as TV news or rumors inside and outside the hospital and were not entirely sure how dangerous their
### Core category I. Repeatedly choosing whether to attend work or not regardless of one's emotions

| Categories | Subcategories |
|------------|---------------|
| [1-1] Unable to tell whether the situation poses or could pose a threat to our local areas | Flooded with multi-sourced information implying that something dangerous is happening | Not quite sure how dangerous our areas are, despite an eerie atmosphere existing in the surroundings |
| [2-1] Aware that caregiving persists while the normality of work is affected | Conscious that our areas might soon be under evacuation orders |
| [3-1] Grasping what appears to prevail out of interwoven selves | Acknowledging that we are muddling through for the patients in need of care |
| [4-1] Developing a personal understanding of the current situation and what ensues | Finding ourselves undergoing operational changes and reconfiguring the way we work to take care of patients |
| [5-1] Attending or not attending work being determined by the formula | Forming a view as to whether staying here is/will be safe enough |
| [6-1] Briefly inspecting the process of actions leading up to my working/not working now | Estimating the ability to attend work |
| [7-1] Beginning to form the concept of attending/not attending work by observing the decisions made by colleagues and leaders | Having expectations about what is required of us at work based on observing the functional capability of the hospital |

### Core category II. Going through parallel inconsistencies in the functioning workplace

| Categories | Subcategories |
|------------|---------------|
| [1-1] Having a sense that our local areas were probably spared from danger | Feeling that things are getting back to how they were |
| [2-1] Realizing that the workplace is regaining its order | Understanding that the evacuation zone did not expand to our local area after all |
| [3-1] Discerning the different consequences that those who were absent experience | Having a slight suspicion that we were in danger |
| [4-1] Wondering if the process leading up to my decision and that of the colleagues was reasonable | Trying to keep the workflow flowing no matter what |
| [5-1] Positioning myself as a professional in the workplace | Going through what is perceived as the hospital's normal functioning |
| [6-1] Feeling uncertain that my decision back then was the only option | Appreciating that we are being reunited and working again |
| [7-1] Recognizing that the workplace relationships are different than they used to be | A group of those who were absent occurs in the workplace |
| [8-1] The notion that choosing to go to work is preferable becomes impractical | Noticing that there are distinctive demeanors and tones of speech toward those who were absent or things that only such people experience |
| [9-1] Gaining a new perspective that perceptions and feelings toward either a decision or the people who made that decision could change | Learning the decisions of leaders and colleagues working/not working alongside each other or knowing that leaders and colleagues are making the necessary arrangements to attend work |
| [10-1] | Making conjectures about what led others to their decisions based on their circumstances |

### Commonly observed in core categories I and II

| Categories | Subcategories |
|------------|---------------|
| [E] Acknowledging personal impressions of attending/not attending work and what follows, as well as sentiments toward working/nonworking others | Developing one's attitudes about attending/not attending work |
| | Reacting to what happened in the workplace |
| | Allowing specific feelings toward others at work/absent, including those undergone events after their decisions |
areas were, despite an eerie atmosphere in their surroundings, such as the entire town turning into a virtual ghost town or fire trucks warning people to stay indoors. Nevertheless, they were conscious that their areas might soon be under evacuation orders.

However, with no official evacuation orders, the nurses were aware that caregiving persisted while the normality of work had been affected (I-2). They acknowledged that they were meddling through for the patients in need of care. Consequently, not feeling that their hospital was not going to shut down, they found themselves undergoing operational changes and reconfiguring the way they worked to take care of patients. Even those who were absent from work knew what their colleagues were going through in (I-2) because they had experienced similar situations before leaving the workplace or maintained contact with those who remained at work.

When the nurses were to decide whether to attend work, they saw multiple selves, with each particular responsibility emerging simultaneously. As shown in the excerpt below, the self as a nurse sometimes predominated, whereas the self as a hospital employee, child of an aging parent, or a wife took turns appearing. However, the self as a nurse inherently possessed all these selves:

“Not that I had any particular patients to attend to, but as long as I was a nurse and the hospital was working, I had no choice but to stay…plus, I couldn’t leave my mother behind. So, I told my husband that I would stay for work, but I begged him and his parents to evacuate.”

Additionally, norms, beliefs, previous behaviors, or relationships with others also constantly crossed their minds. For the participant above, being a nurse and the fact that the hospital was still operating formed the basis of her/his beliefs and principles, which were constantly on her/his mind. All of the above were interwoven to represent each nurse. The nurses grasped what appeared to prevail out of interwoven selves (I-3). What prevailed out of their interwoven selves (I-3) was influenced by their perception that they were providing care to the patients (I-2). The nurses also developed a personal understanding of the current situation and what ensued (I-4). The nurses grasped what appeared to prevail out of interwoven selves (I-3). What prevailed out of their interwoven selves (I-3) was influenced by their perception that they were providing care to the patients (I-2).

The nurses also developed a personal understanding of the current situation and what ensued (I-4). The nurses became alarmed that the remaining areas close to the evacuation zone might be dangerous and formed a view as to whether staying there was/would be safe enough. This is evident in one of the participants’ statements: “I didn’t evacuate after all, but I had a feeling that this nuclear thing might affect us more and more…” The narrative went on to estimate the ability to attend work and have expectations about what was required of them at work based on observing the functional capability of the hospital as follows:

“Back then, the hospital was understaffed. When I went up to the inpatient floors to help, patients were being discharged or transferred to more capable facilities. There weren’t many patients left, so I was pretty sure we were going to shut down, but nobody assured us of it. So, we kind of had to remain on standby. Then, we, the remaining members, worked out our shifts, …calculated how many nurses we would need to cover the night-time emergencies…”

These interpretations of the surroundings were largely based on (I-1) and (I-2).

As soon as a nurse simultaneously grasped what appeared to prevail out of his/her interwoven self (I-3) and developed a personal understanding of the current situation and what ensued (I-4), she/he had a constellation of clues when deciding whether to attend work. Then, the nurse’s possibility of attending work was calculated while much weight was attached to certain clues, which resulted in her/his attending or not attending work as determined by the formula (I-5). Once the nurse’s attendance or absence was calculated by the formula, her/his chosen decision became known in the workplace, which appears in Figure 1 as a flag marked either with “attend work” or “not attend work.”

As the nurse’s decisions were made, each nurse briefly inspected the process of actions leading up to her/his working/not working then (I-6) by being mindful of why she/he was at work/not at work and trying to trace how her/his actions had been carried out. Concurrently, the nurses began to form the concept of attending/not attending work by observing the decisions made by their colleagues and leaders (I-7). By learning the decisions of their leaders and colleagues working/not working alongside each other, or by knowing that the leaders and colleagues were making the necessary arrangements to attend work, which resulted in making conjectures about what led others to their decisions based on their circumstances.

Each nurse’s decision-making was not a one-time process, but it kept repeating while being influenced by (I-6) and (I-7). The next round of what appeared to prevail as the self (I-3) may have changed significantly from the first instance. For example, the self as an employee tended to be more prevalent because of her/his course of action toward the decision or from having observed the decisions of colleagues. Similarly, the way a nurse saw the current situation and what would ensue (I-4) may have been influenced by the decisions made by colleagues and leaders (I-7), because observing others who were working may have offered some kind of relief, whereas observing certain people’s absence may have unnerved her/him. Similarly, the nurse may have developed a different understanding of the current situation because of (I-6). Recognizing “I am not working now” may convince those who left the workplace that “it was too dangerous to continue working.” Determining the more important clue—that is to say, the formula to determine whether to attend work (I-5)—was also influenced by (I-6).

As mentioned above, each nurse’s decision-making process repeated itself. This continuous process occurred for those who did not stop working and for those who were
absent. Even after leaving the workplace, a nurse underwent the same process of repeatedly considering whether to return or not return to work. Furthermore, the process was so rapid that the nurses did not notice it. The substantive process leading up to their decision was stifled until it became recognizable, as their decisions became apparent in the form of either presence or absence from work.

Along with this fast-paced process of their attending or not attending work being chosen repeatedly, the nurses acknowledged personal impressions of attending or not attending work and what followed, as well as sentiments toward working/nonworking others (E). They developed their attitudes about attending or not attending work. They also had reactions to what happened in the workplace as a consequence of each nurse’s decision, such as the increased workload, claims of unfairness from other members who continued working, and so on. Their reactions may have become sufficiently powerful to allow specific feelings toward others at work/who were absent, including those undergoing events after their decisions. For example, a sense of camaraderie from working with others or a grudge against the nonworking others may have increased.

The attitudes, reactions, and feelings experienced in (E) were not synchronized with the iterative process of nurses who were repeatedly choosing whether to attend work or not. Regardless of whether the activated emotions were positive or negative or how strongly they were felt, the process itself was set aside and repeated.

4-2. Going Through Parallel Inconsistencies in the Functioning Workplace

With the phenomena observed in Phase I disappearing, the nurses were beginning to sense that their local areas were probably spared from danger (II-1), instead of (I-1). They felt that things were getting back to how they were and understood that the evacuation zone did not expand to their local areas after all. Nevertheless, they had a slight suspicion that they were in danger. Each nurse had no consistent sense of whether they were in danger (inconsistency within a category).

They also came to realize that the workplace was regaining its order (II-2) as (I-2) wound down, and those who were absent started to come back to work. Thus, the process of choosing between attendance or non-attendance came to an end. They went through what was perceived as its normal functioning and appreciated that they were being reunited and working again. Regardless, they tried to keep the work flowing no matter what. While sensing that the workplace was back on track, they also sensed that efforts were being made to keep things flowing (inconsistency within a category).

Categories (II-2), (II-3), (II-4), (II-5), and (II-7) were experienced, while the nurses worked together. They were placed in the grey box labeled “Experiences while working together” (Figure 1).

While working with others, every nurse discerned the different consequences that those who were absent experienced (II-3). A grouping of those who were absent now formed, and the nurses noticed that there were distinctive demeanors and tones of speech toward those who were absent or things that only such people experienced, such as aloofness, critical remarks, or hearings being held. They also learned that some sort of unfavorable actions had been taken against those who were absent, such as pay cuts, delayed career advancement, or delayed promotion.

As Phase I ended, they could now spare a thought for other nurses. They started to wonder if the process leading up to their decision and that of their colleagues was reasonable (II-4). They reviewed their circumstances and decisions to survey the path of their decision making. In contrast to a brief inspection of the process (I-6) during the fast-paced Phase I, a deliberate attempt was made to trace the process. They also imagined the backgrounds of others by detecting and observing the circumstances they faced. They even made up stories about leaving and coming back to work by associating the situations with the decisions of those who were absent from work, which made them try to determine how inevitable the process of leaving the workplace was. Not only the nurses who remained working but also those who had been absent earlier made up stories for the other nurses who were absent and tried to figure out how inevitable the process of leaving the workplace had been. Hence, each nurse formed some sort of judgment about leaving the workplace, and this judgment was influenced by (II-1), such as the fact that the evacuation order did not expand to their local area and the slight suspicion that they were in danger.

Concurrently, each nurse positioned her/himself as a professional in the workplace (II-5). Each nurse was certain that having attended/not attended work was consistent with his/her recognition and was able to locate where she/he was in a group, which entailed either favorable or unfavorable evaluations. The nurses then contemplated their relative position both in and out of the two “classes” by comparing their situations and backgrounds with those of others. Whether or not they attended work, where they located themselves in a favorable or unfavorable group, and their relative position compared to others were not always consistent with each other (inconsistency within a category).

While (II-4) and (II-5) were being processed, each nurse’s decision (i.e., the flag), in the case of (I-6) and (I-7) in Phase I, to attend or not attend work surfaced and became apparent to others, influencing their judgment toward decision-making processes (II-4) or positions in the workplace (II-5). However, their judgment and positions were not always consistent with each other. The narratives below reflect the inconsistency between (II-4) and (II-5).

“I had to protect my family. That’s why I…I had to leave.”

“Those who remained working should be looked up to; I mean, if you are a nurse, that’s what you’ve got to do, to...
Although this participant regarded the process leading up to the decision to leave the workplace as reasonable, s/he positioned her/himself as a lesser professional than those who remained working.

When the nurses reflected upon their own decision, they [felt uncertain about whether their decision back then had been the only option] (II-6). They were unsure of whether the decision was the best possible one for themselves and their families, and eventually, they came to the view that they might have decided differently. How unconfident they felt about their decision was influenced by (II-1), and how it was influenced varied for each decision. For example, if they had a stronger sense that they were actually in danger, it would have been more of a relief for those who evacuated (i.e., feeling more confident about the decision). Moreover, although they considered that the process leading up to their decision was reasonable (II-4), they were not always confident about their decision (II-6). An example of such an inconsistency between (II-6) and (II-4) is found in the following excerpts.

“I don’t really know if my decision of not evacuating was good or bad for my children. But…I felt sorry for them; that’s for sure. A lot was going on in my mind back then because my life was all about work.”

Given that all these events were occurring simultaneously, the nurses also [recognized that the workplace relationships were different than what they used to be] (II-7) because they were aware that the actions, reactions, and feelings of the others were different, and each nurse sensed that the expressed or perceived reactions of the others were close to her/his or far from her/his reactions. All the nurses even felt that both she/he and the others were trying to control the awkwardness arising from differences in reactions or feelings. They felt the awkwardness among themselves (II-7), but such awkwardness did not necessarily affect their working together. The narrative below shows the inconsistency between (II-7) and the fact that the workplace was regaining its order (II-2).

“I could tell she was feeling uncomfortable. We might have even looked at her like, ‘uh, she is one of those who evacuated then.’ …But we had no problem carrying on with our job.”

Meanwhile, [the notion that choosing to go to work was preferable became imprinted] (II-8) in the workplace. As the understanding took root that choosing to go to work is legitimate for a nurse employee, the nurses envisaged what to do if something similar happened while considering work attendance as a prerequisite. How firmly the notion was imprinted was influenced by (II-1). If nurses were more inclined to believe that their local areas were safe enough to stay, they deemed attending work to be preferable. Furthermore, (II-8) was largely attributed to all the things they “experienced while working together” (Figure 1). Even when the nurses were uncertain of their own decision (II-6), choosing to go to work nevertheless was deemed preferable (II-8). The following excerpt explains such inconsistency between (II-6) and (II-8).

“There is no right or wrong decision whatsoever. Evacuating or not, I can’t answer which was better. But ever since we chose this profession—if we leave, patients’ lives would be lost—we just have to accept that there is no way we could evacuate.”

Along with all the above categories in Phase II occurring with various inconsistencies between each category or sometimes within a category, the nurses acknowledged the personal impressions of attending or not attending work and what followed, as well as the sentiments toward working/nonworking others (E), which were also not always consistent with the remaining categories in Phase II. While several inconsistencies emerged in the nurses’ workplace experience, their work itself nevertheless proceeded undisturbed. Moreover, the analysis revealed that in Phase II, one category was not always a condition or consequence of another category. However, the nurses were aware of each phenomenon. Thus, the nurses were going through parallel inconsistencies in the functioning workplace.

Over the years, the nurses gained a new perspective that perceptions and feelings toward either a decision or the people who made that decision could change (II). They came to understand that anyone might make the choice to leave the workplace if the situation had been different, and they also sensed that their feelings and the others’ acceptance of those who left the workplace had changed. What was once held as an opinion about the process leading up to the decision made by themselves and others (II-4) and what was once held as an expression of emotions toward either the decision or the people who made it could be transformed into a new perspective as indicated in (II’). The nurses were well aware that their perceptions and feelings could change. Moreover, the nurses came to understand that a shared notion of a preferable decision as a nurse employee (II-8) could be flexible (II’). On the other hand, the consequences of (II-5) and (II-6) persisted. Additionally, perceptions about one’s position and some of the emotions harbored in remained unchanged for a long time.

5. Discussion

This study explored the workplace experience of nurses who were employed at hospitals outside, yet near, the evacuation zone after the Fukushima nuclear accident. Two core categories on a time continuum—repeatedly choosing whether to attend work or not regardless of one’s emotions followed by going through parallel inconsistencies in the workplace.
The nurses’ working environment—emerged from the narratives of individual nurses regarding their workplace experiences during and after, up until several years after, the nuclear accident.

5-1. Nurses’ Workplace Experience of Spontaneous Choice Making About Work Attendance Following the Nuclear Accident

This study revealed that the nurses’ attending or not attending work was not a result of their deliberate decision making; rather, it was a consequence of an instant calculation based on various perceived clues. As previously mentioned, much of the literature assumes that nurses’ decisions whether to go to work during a disaster come from their own logical, reasonable thinking, using the word “willingness” (Barnett et al., 2012; Chaffee, 2009; Fung and Loke, 2013; Stergachis et al., 2011; Veenema et al., 2008). However, such logical decision making based on the clear awareness of one’s willingness or ability was not necessarily observed among the nurses according to the present study findings; instead, their attending or not attending work was determined so rapidly that they had little time to consider the matter thoroughly. The process also repeated itself so that each nurse’s choice about attending work (or returning to work) was repeatedly determined on a daily or even hourly basis. This rapid and continuous process may have been reflective of the quickly and ever-changing environment during the acute phase of the disaster, and the interactions among individuals who were each making a choice meant the nurses did not feel that their choice was definitive or that they were stuck in the instant calculation of ever-changing information about the disaster situation. The nurses were thus involved in continuous rounds of decision making until the situation became less critical.

5-2. Parallel Inconsistencies in the Functioning Workplace

As the community recovered from the confusion and the absent nurses returned to work, all the nurses in the workplace experienced multiple inconsistencies in situations, perceptions, judgment, consequences, emotions, etc.; moreover, these inconsistencies were experienced both within the self and also between self and the other(s). In contrast to the decision-making process in Phase I, where each category served as either a condition or consequence of another category, the categories in Phase II existed independently from each other.

The inconsistencies were not always recognized by the nurses. The functioning workplace seemed to reflect the continuity of organizational activities, but it also seemed to have negated the inconsistencies underneath. Although it has been previously reported that conflict occurred between those who attended work and those who did not (Yamazaki, 2011), we assume that the so-called conflicts may have only been a part of their workplace experiences, wherein particular inconsistencies surfaced as work became disturbed by their strained relationships. The nature of the inconsistencies varied among each nurse, and the experiences did not necessarily occur in a fixed pattern. Thus, the experiences and inconsistencies existed in parallel, meaning that they did not influence one another in the study context. This may have made it difficult for the nurses to share their experiences and feelings, while the execution of work itself appeared to have proceeded smoothly. Even when the inconsistencies did not surface as conflicts, the nurses may have been able to sense an element of uneasiness or something “not feeling right” in the atmosphere.

5-3. How the Workplace Experiences of Hospital Nurses Were Described

This is the first study to empirically examine the workplace experience of the nurses employed at hospitals in areas neighboring the evacuation zone, emphasizing the continuity of their workplace experiences in a workplace that did not cease operation following the accident. We paid particular attention to the workplace as the locus of interactions among individuals and within the continuity of organizational activities. Therefore, the nurses’ experiences in Phase I had impacts on Phase II, which subsequently impacted later perceptions over the years.

This study also illustrates the nurses’ workplace experiences beyond the differences in facilities and units, because the analysis focused on identifying commonalities in the nurses’ workplace experience rather than on describing their personal and psychological aspects. By doing so, the nurses’ workplace experiences were elaborated as organizational phenomena common to multiple organizations in the area included in this study. This allowed us to delineate the specificities of working in a hospital near the evacuation zone while continuing to maintain its functions against a background of invisible and uncertain risks. On the other hand, working within the evacuation zone must have been a different experience, where crisis responses and management were a major part of the work. Regardless of the proximity to the evacuation zone, the continuation of services in the community was expected in hospitals outside the evacuation zone. Thus, the nurses’ workplace experience entailed not only events within the hospitals but also events occurring in the community. Given that the nuclear radiation was invisible and that the situation was highly uncertain back then, the environmental factors outside the hospitals became incorporated into the nurses’ perceptions of their workplace.

Additionally, the described workplace experiences were shared among the nurses, regardless of whether they relocated or were absent from work because the fact of being nurses employed in a hospital near the evacuation zone was common to all of them. Thus, by not separating them by their decisions/actions, the study findings can provide a new perspective on staff nurses in the workplace, not as divided members of a group but as colleagues who share common workplace experiences. Although the studied phenomena were context-specific, understanding what the nurses experienced as employees in hospitals operating...
under invisible risks and uncertainty could provide a rationale for nursing management practices under similar circumstances in which difficult decision making is required, such as those in which working during a novel disease pandemic, unpredictable wildfire, or volcanic disasters. The knowledge of our findings may apply not only to employees in hospitals but also to employees in other public service industries, which are expected to continue their operation during a disaster.

5-4. Limitations

The study has some limitations. First, all the interviews were conducted more than five years after the nuclear accident. Thus, there is a possibility of recall bias or narratives being influenced by later-revealed facts and recent experiences. However, the chronological distance from the nuclear accident allowed the participants to recall their overall experiences in a less emotion-driven way so that the situations of their workplace were described with greater clarity and authenticity. Second, as opposed to 20 participants who continued working, there were only three participants who were absent from work. Therefore, there is a possibility that the larger number of participants who were absent from work might have provided new categories or new properties. There is also a possibility that different categories might be generated if the data were analyzed by classifying the participants by their decisions (i.e., remained working vs. relocated) and focusing on their subjective experiences, respectively. Nevertheless, given that the analytical focus of this study was to elucidate nurses’ workplace experiences as a whole, rather than detailing the personal experience of each nurse, we assumed that it was unlikely that the categories under those approaches would have been much different from the current ones.

6. CONCLUSION

The workplace experiences of the nurses who were employed at hospitals in nearby areas of the evacuation zone were elucidated through two core categories on a continuum. Our findings reflected the uninterrupted operation of the hospitals and thus the lasting impacts of work-attendance decisions on nurses’ workplace dynamics. Although the nurses’ perceptions and emotions varied individually, they shared common workplace experiences, regardless of whether they remained working or were absent from work. This enabled us to develop a comprehensive understanding of the nurses’ experiences. Our findings could be useful in understanding employees’ experiences in organizations influenced by the external environment. The findings also have implications for practice and further research involving the management of organizations under extraordinary situations, whereby staff members’ stress levels are high.

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DECLARATION OF INTEREST

The authors declare no conflicts of interest associated with this manuscript.

DATA AVAILABILITY

Due to the sensitive nature of the topics in this study, participants were assured raw data would remain confidential and would not be shared.

NOTES

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