





SPECIAL ISSUE ARTICLE

Exploring the experience of health professionals who cared for patients with coronavirus infection: Hospitalised isolation and self-image

Sujin Kim RN, MS, PhD Candidate¹  | Hyun A. Shin RN, MS, PhD Candidate¹  |
Kieun Hong RN, BS²  | Sue Kim RN, PhD, Professor³ 

¹College of Nursing, Yonsei University, Seoul, Korea

²College of Nursing, Korea University, Seoul, Korea

³College of Nursing, Mo-Im Kim Nursing Research Institute, Yonsei University, Seoul, Korea

Correspondence

Sue Kim, College of Nursing, Yonsei University, Seoul, Korea.
Email: suekim@yuhs.ac

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Abstract

Aims and objectives: This study aimed to examine the lived experience of physicians and nurses who underwent hospitalised isolation during the Middle East respiratory syndrome coronavirus outbreak that hit Korea in 2015, and how it may have affected their professional self-image.

Background: Health professionals caring for patients during infectious outbreaks such as the Middle East respiratory syndrome have reported negative psychological effects. However, little is known about how the experience influences their professional self-image.

Design: An interpretive phenomenological approach was applied using individual in-depth interviews.

Methods: Through purposeful and snowball sampling, 11 health professionals who had experienced hospital isolation due to suspicious symptoms of Middle East respiratory syndrome during the outbreak, participated in face-to-face interviews (50–90 min). We adhered to the Consolidated Criteria for Reporting Qualitative Research guideline for reporting.

Results: Six themes were identified: (a) engulfed in chaos and exhaustion; (b) feeling hurt and constrained by the rejection and blame; (c) anxiety induced by the enclosed environment; (d) dread of this uncertain and critical disease; (e) sustained by family and colleagues; and (f) reflection at this turning point, expanding self-understanding and seeking a balance.

Conclusion: Hospitalised isolation was a “turning point” that appeared to change health professionals’ sense of identity and direction.

Relevance to clinical practice: Preparedness for infectious epidemics should ensure tangible assistance, protection, and clear communication with health professionals, with careful attention to their psychological needs and affirmation of their self-image in the aftermath.

KEYWORDS

health professionals, hospitalised isolation, Middle East respiratory syndrome coronavirus, phenomenology, qualitative research, self-image

1 | INTRODUCTION

After the initial identification of Middle East respiratory syndrome (MERS) in South Korea in May 2015, 38 deaths, 186 diagnosed cases (Korea Centers for Disease Control & Prevention [KCDC], 2015), and 16,693 isolations (Korea Ministry of Health & Welfare [KMOHW], 2016) followed. The diagnosis, an acute infection caused by the MERS coronavirus (MERS-CoV), carries a high mortality rate (34.4%), especially compared to the 9.6% mortality rate of severe acute respiratory syndrome (SARS; Centers for Disease Control & Prevention [CDC], 2003; World Health Organization [WHO], 2019). A distinctive characteristic of the MERS outbreak in South Korea was the concentrated contagion within medical settings (Choi, 2015) and the high number of health professionals diagnosed with MERS (i.e., 39 [21%] health professionals out of the 186 cases, of whom 15 were nurses; KMOHW, 2016).

At that time, such a major infectious outbreak had never occurred in South Korea, and hospitals designated as MERS intensive care facilities did not have a contingency plan for the safety of the health professionals involved in the treatment and care of MERS patients. Isolation was the first method adopted to guard the public from the rapid widespread of MERS and for swift diagnose and treatment. Three types of isolation took place during the outbreak: (a) 14-day self-isolation (house isolation) for those who had close contact with diagnosed patients but did not show symptoms at the moment; (b) facility isolation, similar to self-isolation but done in a facility rather than at home; and (c) cohort isolation, where entire hospital wards were isolated without the possibility of leaving until the MERS incubation period expired (The Korean Society of Infectious Diseases [KSID], 2017). After said isolation period, three MERS diagnostic checks were conducted and if all three were negative, patients were allowed to go home, whereas if any were positive, patients were sent to a government appointed hospital for treatment. If a health professional showed any symptoms (i.e., body temperature over 38°C, coughing, shortness of breath, headache, chilling, sore throat, nausea, diarrhoea), they were also categorised as suspected MERS cases and isolated alone at designated wards. The need for hospitalised isolation was usually announced at short notice and resulted in limited capacity for developing personal action plans.

2 | BACKGROUND

Although health professionals' isolation is practiced to prevent further spread of infectious diseases, high levels of stress, anxiety, fear and other negative repercussions have been reported by those involved (June & Choi, 2016; Maunder, 2004; Maunder et al., 2003). However, prior studies on nurses caring for MERS patients (Kim, 2017, 2018) also report a widened perspective and sense of pride in their profession resulting from the MERS ordeal.

With globalisation trends in newly emerging diseases, health professionals in medical institutions are increasingly exposed to

What does this paper contribute to the wider global clinical community?

- In light of the current COVID-19 pandemic, it is critical to understand how health professionals are personally and professionally affected by being on the frontline of infectious epidemics.
- Policies that facilitate tangible assistance, protection and clear communication for health professionals in all processes can decrease personal risks and the adverse effects related to providing patient care during an infectious outbreak.
- Assessment of health professionals' self-image and psychological needs both during and after the outbreak is required to adequately support them.

new infectious sources (Kim, Tandi, Choi, Moon, & Kim, 2017). As such, isolation measures may be inevitable for health professionals, especially hospitalised isolation. It is valuable to understand what hospitalised isolation means to health professionals as well as how it may affect their professional self-image. This is important for efforts to construct a more efficient and holistic action plan for handling future infectious disease outbreaks and supporting health professionals in the aftermath.

Thus, this study aimed to explore the lived experience of hospitalised isolation of health professionals caring for MERS patients in the 2015 MERS outbreak, especially its meaning and how it may have influenced their self-image as health professionals. Our main purpose was to provide a deeper understanding of their experience to facilitate practical preparations and management plans for health professionals dealing with various infectious crises that may arise in the future.

3 | METHODS

3.1 | Study design

Interpretive phenomenology seeks to explore the lived experience and is commonly used in nursing science that aims to interpret and determine the meaning of participants' experiences (Tuohy, Cooney, Dowling, Murphy, & Sixsmith, 2013). The present research adopted an interpretive phenomenological approach to explore the experiences and meaning of hospitalised isolation occurrences in health professionals who treated and cared for MERS patients, by unveiling the influence on their professional self-image. This manuscript followed the Consolidated Criteria for Reporting Qualitative Research (COREQ) guideline (Tong, Sainsbury, & Craig, 2007).

3.2 | Researchers

Two of the present research's authors (SJK, HAS) worked as nurses in a tertiary hospital that treated MERS patients during the 2015 MERS outbreak. Having colleagues who experienced hospitalised isolation after caring for MERS patients, they were intrigued by its impact on health professionals' personal and professional lives, which formed the research question guiding this study. One author (SK), a PhD and professor, teaches a graduate course on qualitative research methods and has conducted and published many qualitative studies. The other authors (SJK, HAS), doctoral students, have taken graduate level qualitative research classes and participated in various qualitative interviews. All authors were female nurses.

3.3 | Participants

Physicians and nurses who cared for MERS patients and experienced hospitalised isolation due to suspected symptoms of MERS, regardless of whether they had MERS confirmed by testing, were included to participate in the in-depth interviews. Because there were various isolation locations and types, the sample included both hospitalised and facility isolation in designated facilities. We narrowed participation to health professionals who had moved to another workplace or quit since the 2015 MERS outbreak, to avoid potential conflicts of interest within the institutions. Health professionals who were still in the same institution were excluded.

Recruitment and purposive sampling were conducted in conjunction with analysis to identify data saturation, resulting in a total of 11 participants. First, two health professionals who met the selection criteria and were willing to share their full hospitalised isolation experience were recommended by a colleague at a MERS intensive care hospital. Following prior studies on MERS (Ha & Ban, 2017; Kim, 2017), snowball sampling was then used. We aimed to include participants from various medical institutions to understand different isolation treatment contexts and identify the essential structure of MERS impact on health professionals' self-image. The research team had phone conversations with potential participants to explain the research in general and to invite them to voluntarily participate in face-to-face interviews. Roughly 50 potential participants were referred to us and invited but many did not meet the inclusion criteria or were unable to participate because of personal circumstances or because it was too painful for them to discuss.

We met those who chose to participate in person and explained the purpose and procedures of the study, voluntary nature of participation and principles of confidentiality. An information sheet was provided and written informed consent was obtained, along with separate consent for audio recording the interview. Participants were informed that the researcher might request additional interviews via phone or in person, if needed for clarification.

3.4 | Data collection

Prior to the study, ethics review approval (IRB No. Y-2019-0018) was obtained. Written consent was obtained from each participant and an in-depth interview was conducted face-to-face at the location most comfortable for the participants (e.g., a private room, quiet location at the library), between April and December 2019. The two researchers (SJK, HAS) who conducted the interviews worked at a MERS intensive care hospital at the time of the outbreak, and participants were given the opportunity to choose the interviewer to ensure their comfort and privacy. The researchers and participants had no prior relationship and no one else was present during interviews.

Audio recordings were transcribed verbatim by the interviewers immediately after the interview. Any personal identifying information revealed during the interview was encrypted to ensure participants' safety and privacy. The researchers compared the interview recordings and transcripts to check for missing or inaccurate information. Details from field notes on participants' nonverbal cues (e.g., facial expression, body language, accent) were also added to the transcripts for a more complete representation of the participant's account.

Researchers engaged in general and nonspecific everyday conversation at the beginning to create rapport. Prior to the interview, participants completed a brief survey on sociodemographic characteristics, current workplace, clinical career, their past MERS diagnosis status, and whether they were living with family members when they were in isolation.

Two core, open-ended questions were asked: "How would you describe your hospitalised isolation experience during the MERS outbreak?" and "How did this experience affect your self-image as a health professional?" Additional probing questions were asked as needed. The interviews lasted for 50–90 min and participants were encouraged to take breaks as needed in consideration of their physical and psychological fatigue. A beverage gift card worth about 10 US dollars was given to the participants at the end of the interview as a token of appreciation. Additional interviews (three instances) were completed via phone to clarify or further probe for responses.

In case participants experienced any emotional distress as they recalled past events, we informed them that a mental health nurse-specialist with 13 years of experience (KH) was available for counselling and for any necessary follow-up measures during their participation in the study. When some participants became tearful during the interview, time was taken for them to collect themselves and/or decide whether to proceed. All interviews ended without any requests for further assistance.

3.5 | Data analysis

Colaizzi's (1978) phenomenological method was used to identify emerging themes. Each researcher independently read the transcripts repeatedly line by line to fully grasp the broad meaning and identify significant statements and formulated meanings,

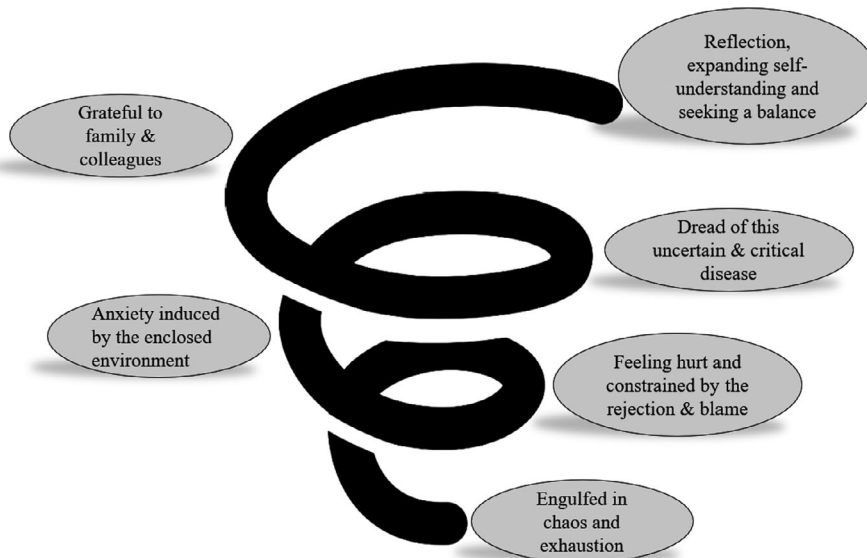


Image from public domain

FIGURE 1 Themes from the experience of Middle East respiratory syndrome hospitalised isolation

which were shared over nine team meetings to construct a coding scheme. The coding scheme was then applied to all transcripts for independent analysis and identified meanings were clustered into themes, with this process repeated when the coding scheme was revised. Participants' significant statements were compared to each related theme to ensure exhaustive description. For reflexivity, in research team meetings, we discussed our potential biases and sensitivity towards the data and used negative case analysis (Morse, 2015) to determine any existing differences with what was occurring more commonly. This reiterative process was conducted during regular research meetings to ensure the rigour of the analysis. Lastly, we produced and sought verification of the fundamental structure (Morrow, Rodriguez, & King, 2015). Analysis was done with the original Korean transcripts and translation into English was done at the final stage of writing the manuscript. A bilingual colleague independent to the study translated the significant statements into English, which were compared with the Korean transcripts by the research team to confirm the nuances of the original description.

3.6 | Qualitative rigour

To maintain rigour and ensure the quality of the research, we applied the strategies proposed by Morse (2015). For prolonged engagement, phone calls and text messages were sent after the interview to keep participants engaged and facilitate follow-up contact. Ample interview time (50–90 min) was allowed and immediate transcription was done to ensure dense and rich descriptions. The researchers who conducted the interviews made the transcripts themselves and spot checks were done to ensure accuracy. A coding system was carefully developed, and inter-rater reliability was sought through repeated discussions, as described above. To reduce researcher bias, peer review was also used. Considering the limitations of member

checking (Morse, 2015), we did not ask participants for opinions about the elicited themes. However, negative case analysis and other measures described above were used to support the rigour of this study.

4 | RESULTS

4.1 | Participants' characteristics

Of the 11 participants, six (55%) were married, five (45%) had children, and the majority ($n = 10$, 90%) were female nurses. Although we attempted to recruit physicians, only one male physician participated in the study. While many physicians were exposed, most were residents or full-time fellows who had moved on to new employment sites and it was difficult to reach them. Considering that male nurses constitute about 10% in Korea, most nurse participants were female. Seven participants (64%) experienced MERS-related symptoms and four (36%) were eventually diagnosed with MERS. Also, most ($n = 8$, 73%) participants were situated in the early stages of the MERS epidemic (from mid-May–mid-June 2015), with three different medical institutions involved. Health professionals with MERS-related symptoms were admitted in separate wards apart from the general MERS patients. Although the criteria and guideline for hospital isolation varied for each medical institution, participants shared that in the designated wards all rooms (including single rooms and rooms of 2–6 beds) were used as an isolation room for their use only.

4.2 | Main themes

Six themes were identified from the interviews and are depicted in Figure 1.

4.2.1 | Engulfed in chaos and exhaustion by the war zone of MERS and lack of communication

The first theme was related to the intense MERS crisis, described by many as a “war zone.” The lack of communication and guidelines on how to cope with the situation occurred at both the national and organisational levels, which added to the confusion on how to maintain daily life. Participants described the lack of guidelines, increasing workload, and exhaustion as follows:

Actually, at the time, it was at the initial stages, so we didn't have any protocols when it came to deal with MERS patients. Even the government had no guidelines when it comes to self-isolation. But I had more awareness in these matters. So, I put myself in self-isolation (at home), brought some disinfectants and disinfected surfaces and tried to limit contact with my children. When I went back to work at the hospital two weeks later the hospital was a mess. As a manager I had a lot of work and the work had piled up. And it wasn't like I rested while at home. I was constantly in contact with the hospital and, in reality, I was working. And I came back to more work. Anyway, my hospital was caught up in this MERS incident.

[A]

Due to lack of manpower, I was an intensive care unit (ICU) doctor, but now I had to get calls from the ward, the ICU, and the emergency room. Well, there were a lot of confirmed cases of infection coming from within the hospital, and honestly, at the time. I didn't think I was going to get infected. Uh, we were in a situation where the infection control in the hospital itself had to be strengthened, and we got instructions to carry out self-testing for fevers regularly. Now, Since we were short of staff we were getting overloaded, and we were tired.

[B: Confirmed MERS-CoV case]

Due to the rapid increase of confirmed MERS patients and lack of communication, some participants didn't receive proper notice or information, which made them very confused. This confusion had led to conflicts and discord among the health professionals, and as time went by, the health professionals became more exhausted:

The manager didn't give us any explanation about (the situation), and we just went to work. I wasn't aware of anything. Why I had to take care of a certain patient? Why I had to wear certain (protective) clothing? I didn't hear any explanations. There was one patient per room, and all of them were potential MERS. And

then there were confrontations (among staff). Yeah, why didn't they inform me of the situation before asking me to come to work? And those with family were angrier, because they had kids at home. There was just a confusion. We were all fighting. Anyway, we had to accept it and get to work.

[D]

4.2.2 | Feeling hurt and constrained by the rejection and blame, isolated from the outside world, and sorrowful to family

Although participants were health professionals doing their job with great dedication, the social atmosphere surrounding the MERS crisis was quite negative and blaming.

Participants expressed they felt hurt that outsiders were quick to blame and denounce them, despite their sacrifice and the hospital's commitment to managing the situation. Many felt that the stigma of MERS seeped over to family members, especially to their child(ren) at school and in the neighbourhood. Some did not reveal their hospitalised isolation experience with family until much later, fearing that it would cause distress and pain. Talking about family repercussions triggered intense emotions in participants, with many becoming tearful, despite the time lapse of four years since the event. In such cases, participants said that:

In the past whenever I told them I was a nurse, they would say, “Wow, I envy you” and “My parents are such and such” and ask me what they should do. People who asked me this, these people (slight pause), they turned away from me. At the time, in my neighborhood...hmm, looking at us like insects. And not just me, but my family and children. This is how I felt. I was very sorry to my kids. I'm still most sorry about this.

[H]

At the time, when I took a taxi and said, “Please take me to this hospital,” the taxi driver refused and told me to get out. I felt really upset. We're here to help, and I'm sure when there's a news report about (the hard work of health professionals) people will say ‘good job’ and “thank you” but when they face such situation, it was a shock to see them respond like “Don't get on,” “I refuse to give you a ride,” “You can't stay here,” “Not in the same accommodation with me,” “Thank you, but you can't be in the same room with me.” (...) I've never been treated like this in my life! It was the first time being treated in such a manner. Why do you hate me so much? Why do they look at me with contempt?

[G]

Reflecting on the hurt and ostracism that was influenced by media reports and undue fear, participants desired a more balanced public awareness through responsible media reports. Also, along with hoping for public expectation of responsible health professionals, they strongly noted the need for better protective policy and proactive supports for health professionals for future emergency crises, for example tangible supports for family should hospitalised isolation be required, and knowledgeable support from the leadership.

4.2.3 | Anxiety induced by the enclosed environment

The hospitalised isolation setting varied from private rooms to multi-bed patient rooms that were used only by the participants until eligibility for clearance was confirmed. The rooms were humid and hot because the air-conditioning system was cut-off to control viral spread, and minimum contact with other personnel was allowed. Many dreaded night-time and the closed, claustrophobic space, with some expressing lasting repercussions that affected them even now. The following excerpts illustrate their psychological constrictions:

After spending the day and the night alone with nothing, I felt that this was truly a prison without bars. So, I started to really dislike single and double patient rooms. I remember this the most. (...) They took all the curtains down from the hospital room. The nights were very scary. At night, all alone, I was in a place no one knew. If something happened to me, I couldn't tell anyone in my family, so will there be someone to ask for help? (...) This isolation room got really darker after sunset and this was terrifying. I forgot where I was, what floor I was trapped in. It was just like the fear of the dark night. This two-patient room was not a small space, but I still felt scared and lonely. I still remember this dark room.

[H]

I wondered if I'm doing the right thing. It was kind of stuffy. I didn't realize that a 6-patient room was so scary. It was scary (laughs nervously). There was no one, no sound, and even if you wanted to ask a question, there was no one. I felt bad when I was quarantined.

[A]

For some participants, the desolation while being confined and isolated changed the meaning of spaces and gave them a new priority for open spaces, which extended beyond the workplace. A participant said that:

At that time, the biggest change in my life was getting out of my house as soon as the (MERS) incident was over. I wanted to forget about it, being locked in that (hospital) room. (...) Now (I wanted) a place, bigger than a one-room, where I can see the sky. This is how (my perspective) changed, so I really didn't want to live on the lower floors, and I started to dislike places without a view of the outside. Hmm, this is kind of my standard now, it's changed. Before this, I could go in and out (...) home was just a place to sleep. But now I realize that's not all.

[D]

Many participants suddenly found themselves being secluded in unexpected isolation, without preparation and with no time limit in sight, which was very constrictive. As such, hospital isolation not only affected intense anxiety but also left psychological scars about working and living in limited spaces.

4.2.4 | Dread of this uncertain and critical disease, fear of death

Along with anxiety related to the enclosed environment, the uncertainty and treacherous nature of MERS also generated a sense of dread. Medical professionals who were confirmed to be infected with MERS, also expressed fear of death because medication and treatment were yet to be established and the disease was also closely related to the high mortality rate. In such cases, participants said that:

At first, since I work in the hospital and have my colleagues, my initial thoughts were that even if my condition becomes bad, they'll give me good medical care. But as I saw more and more bad cases on the TV news, I thought that I might die. At first, I just had a fever, but signs of pneumonia started to appear and later on I had to take some immune-depressants. And that was when things got more serious. I started to feel a sense of fear after hearing I had pneumonia. I thought that I could die. So, I felt, you know, more afraid. I had a genuine fear of death.

[E, Confirmed MERS-CoV case]

I was feeling sick for about three days and taking just water and Tylenol without any other treatments. And I knew that there is no cure for MERS. I started to feel afraid because I had a fever for more than three days and I knew that this can lead to a septic condition.

[B, Confirmed MERS-CoV case]

Because of the intense dread and fear of death related to this acute situation, lingering traumatic effects were triggered just by hearing the word “isolation.” For one participant, “isolation” was later imprinted as a word that automatically induces anxiety and fear:

Hospitalized isolation. My heart starts pounding when I hear this, even now. Because I still remember the horror of those nights.

[H]

4.2.5 | Grateful to family and colleagues who were a buttress

Despite the difficulties and hurt experienced in the aftermath of MERS, participants expressed gratitude for the immense support from immediate family members who rallied around them throughout the difficult times. A strong sense of unity was also shared with colleagues who had personally experienced the MERS outbreak, expressed as “comrade-in-arms.” This support and unity were like a buttress, sustaining them to weather the suffering and make decisions that led them to where they are today:

My son saw me go into isolation and that I wasn't able to come home, so he was really worried that I would lose my health. It led to a situation where instead of me taking care of my son, he had to care for me. And my husband had to take care of the children, for which I'm grateful. (...) I think the whole staff including the nursing team and the disinfection team are fellow soldiers fighting a battle against MERS. And no matter what people on the outside said about us and regardless of winning or losing, we became comrades in arms.

[A]

Many participants empathised with fellow physicians and nurses who provided care under difficult circumstances during their hospitalised isolation. Figure 2 illustrates the intense hospital situation surrounding MERS patient care at the time, with health providers struggling to provide adequate care while wearing personal protective equipment (PPE). Thus, participants tried to be self-sufficient, despite wishing for company and support. For some participants, their sense of responsibility and empathy were expressed as feeling guilt towards their colleagues:

There was only one nurse on duty. And every time she entered the room, she had to put on and take off the PPE. As a fellow health professional, I felt sorry (that she had to come care for me). (...) She had to take vital signs and repeat this process over and over again. So, I told her to just hang up the IV bag and go and I'll control the drip. But she wasn't even able to get the IV. She was one of the newer nurses and was under a lot of pressure working alone and I know how difficult it is to get an IV while wearing PPE.

[B, Confirmed MERS-CoV case]

I was also infected with MERS. I felt guilty that instead of being of assistance I became a burden to my team. As I was being taken to the isolation ward, I felt guilty and worried about my co-workers.

[E, Confirmed MERS-CoV case]

In summary, the support of family and colleagues sustained them beyond the chaos, hurtful societal blame, anxiety-inducing constrictions, and fearful contemplations of whether they would recover. The empathy and sense of responsibility they felt for colleagues also added to their appreciation.



FIGURE 2 Illustration courtesy of MI Park, 2019. Health professionals in personal protective equipment caring for a patient during the Middle East respiratory syndrome epidemic

4.2.6 | Reflection at this turning point, expanding self-understanding, and seeking a balance

There appeared to be a time factor for the intensity of participants' experience and how it framed their self-image. Participants who cared for patients in the early MERS stage (from mid-May–mid-June 2015) noted much confusion and frustration with the initially ambiguous and changing work protocols and felt that both their hospital and personal lives were being destroyed. By contrast, with some guidelines in place after mid-June, participants in the later stage noted being briefed and prepared for PPE work.

Nevertheless, the hospitalised isolation experience prompted all participants to reflect on the kind of care they had provided for patients, with a general sense of pride for having been a constant presence to patients. They also expressed feeling genuine and greater empathy as they experienced first-hand what patients go through. A participant noted this expansion of consciousness as follows:

I heard on the news that even healthy people could die by contracting MERS. At the time I was suffering from symptoms. (...) I regretted not having done all the things I'd wanted to do. (...) In the past, I was always kind to my patients, but I wasn't able to fully understand them. I focused more on my work than my patients' situation. After being admitted and treated (for MERS), I realized that a simple kind word can change the day for a patient, and that nurses make a very important part of their emotional wellbeing. After this, I tried to understand my patients more. And outside of work, I now try to enjoy life and live my life to the fullest.

[L, Confirmed MERS-CoV case]

The hospitalised isolation experience also led to reflection and re-examining one's competency as a health professional. Regret was expressed on whether they took enough care of themselves, with self-protection being an essential aspect for health providers. Regret involved misjudgements about consistently practising protective measures, but was ultimately helpful for adhering to protective protocols:

As a member of the medical staff, I felt guilty about wearing a mask (because patients in the ER were not issued masks). So, I took off my mask. I realize now that this was a big mistake on my part. (...) I spent the whole night without a mask with a patient who was diagnosed with MERS the following day. (...) As a health professional, I should have actively been more aware of infection control. (...) I was able to grow and mature thanks to this experience.

[E, Confirmed MERS-CoV case]

Some participants expressed a drastic change in their outlook on life, with the MERS experience becoming a turning point for seeking a new balance in personal/family values with work. This ranged from realising the risks entailed in work and seeking "safer" roles and work places, to re-assessing work-life balance and putting family above social success or promotion. The following are excerpts from the interviews:

While dealing with the MERS outbreak, there were many positive aspects and it was a rewarding experience. But I realized that I was in a very dangerous and risky field. And I decided that I would no longer engage in such risky and dangerous kind of work. So, I remained a nurse but chose a field which had less potential risks. (...) I believe nurses were the only ones who could have done this (serving at the frontline during MERS) and this gave me self-confidence and pride. But I still believe that from now on, I should not be engaged in such dangerous kind of work. In conclusion, my major change in life is a new career path to avoid dangerous situations.

[J]

Before the MERS outbreak, my view in life was that social status was very important. But while being treated for MERS in isolation for 3 to 4 days, I had time to reflect on myself and my family. And I came to the realization that family is more important than social status or success. I am happy with my life now (moving to the countryside) and I believe it was due to the life-changing experience of struggling with MERS.

[B, Confirmed MERS-CoV case]

For one participant who was blamed and criticised in her workplace, the experience left bitterness from a sense of being abandoned. This made her regret becoming a nurse and ultimately led to leaving the profession, as seen in her following comment:

After experiencing the MERS outbreak, I felt like I was an expendable individual, like a bullet barrel. So, I started to regret that I became a nurse. (...) My standards of life changed dramatically. (...) The moment I felt like someone expendable, I realized everything I was doing was in vain.

[H, Participant who eventually left nursing]

Depending on the amount of support participants perceived, the experience of hospitalised isolation appeared to develop into a sense of growth and pride, or in contrast, when societal and organisation-level blame effaced, negative self-perceptions and withdrawing. These various manifestations during their reflection were a "turning point" that appeared to significantly alter their sense of identity, as well as direction in their professional and personal lives.

5 | DISCUSSION

During the MERS outbreak in South Korea, health professionals immediately reported any fever or related symptoms while working, which resulted in hospitalised isolation until diagnostic test results were released. The 11 participants interviewed present a clearer picture of what hospitalised isolation meant to them, as their status suddenly changed from health professionals to suspected MERS patients and they abruptly had to undergo hospitalised isolation.

A main issue was the stigma and rejection that ensued from caring for MERS patients and having suspected MERS. Health professionals experienced exhaustion, physical and emotional pain, and fear because of their disease-related symptoms. Reports from nurses who cared for MERS patients reflect the demanding and exhausting duties of having to wear PPE, double gloving, and constant disinfecting activities (Kim, 2017, 2018), which was also found in our study. Participants, however, were taken aback by the social stigma, not only against patients but also against themselves as health professionals. This is consistent with a prior study on the 2003 SARS epidemic in Canada (Maunder et al., 2003), where health professionals not only felt uncertainty and fear of contagion, but some also felt stigmatised within their communities and avoided identifying themselves as hospital workers. Reports of isolation, avoidance, rejection and refusal in their workplace and society were also noted in the more recent Ebola outbreak among health professionals (Smith, Smith, Kratochvil, & Schwedhelm, 2017; Sow, Desclaux, & Taverne, 2016). Both uncertainty and stigma were reported by patients and health professionals as prominent themes, consistent with our findings. Recent publications on nurses caring for MERS patients also report feelings of social isolation, such as loneliness and finding themselves avoiding social contacts (Kim, 2017), and stigmatisation (Kim, 2018). For our participants, the hurt from outright rejection towards them intensified as a result of skewed media reports adding to public hysteria and fear, which has also been a cause for concern more recently in relation to the novel coronavirus (2019-nCoV) epidemic (Ippolito, Hui, Ntoumi, Maeurer, & Zumla, 2020). Our participants also felt cascade effects of rejection and subtle blame affecting their families, especially children, which caused distress because they could not be there for them while in hospital isolation.

The danger of family-oriented care collapsing in healthcare settings faced with infectious outbreaks was cautioned in prior studies (Koller, Nicholas, Goldie, Gearing, & Selkirk, 2006). Many of our participants were married with children, but were essentially separated from their children while struggling with grave concern about consequences of the disease. In addition, practical difficulties arose, such as supplying daily necessities, monitoring symptoms and worrying about potential family infections, as reported in a study of hospital staffs' home isolation experience during MERS (An et al., 2018). Our participants also experienced and continued to worry about such issues and how their family would function in their absence. Thus, they voiced concerns that greater attention should be given to supporting health workers' families during infectious outbreaks, especially with tangible support when hospitalised isolation is required.

Our participants also expressed distress from lack of direction in infection control and subsequent chaos, that was exacerbated by isolation. While this is consistent with the suffering expressed by citizens in home quarantine during the MERS epidemic (Ha & Ban, 2017), our participants noted lingering effects of the enclosed physical environment during their hospital isolation. The confined, hot, humid space and empty darkness appeared to compound uncertainty and fear as tangible and unavoidable threats. For some participants, it even changed their outlook on housing and the need for residential space to embody a sense of security. Such findings suggest that psychological services and counselling are needed for health professionals who experience hospitalised isolation, and specific probes may be needed to inquire about subtle changes in seemingly ordinary domains of life. In the literature review and narrative synthesis study of nurses' preparedness in epidemics (Lam, Kwong, Hung, Pang, & Chiang, 2018), three important themes included personal resources, workplace resources and situational influences between individual nurses, healthcare institutions and governments. The authors recommended providing nurses with education and training for various infectious diseases, promoting support and revising government policies. Since the MERS outbreak in Korea, the Infection Disease Control and Prevention Act was revised in September 2016, and many infection control nurses were trained (Choi, 2019). Also, guidelines for prevention and control of medical-related infections were disseminated in hospitals (Korea Centers for Disease Control & Prevention, 2017). Nursing education has aligned with these measures and infection control has been reinforced as part of the Core Basic Nursing Skill Education by the Korean Accreditation Board of Nursing Education (Lee & Kim, 2019).

Findings from a qualitative study of Chinese nurses who worked in Singapore during both the SARS and H1N1 flu epidemics (Koh, Hegney, & Drury, 2012) reported that "living at risk with SARS" was somewhat acknowledged and nurses appeared to "accept the risk of infection" as an unavoidable occupational hazard. However, the low mortality rate of SARS (9.6%) compared to MERS (34.4%) must be considered as we begin to comprehend how MERS health professionals often experienced post-traumatic stress, which depended on the type of work, position and experience of isolation (Kim & Park, 2017). Recent research on lay survivors of MERS-CoV reported post-traumatic stress and sleep problems in the aftermath, with more than a quarter experiencing anxiety, depression, suicidal thoughts, somatic symptoms and phobias (Shin et al., 2019). These negative health issues are certainly potential concerns for hospital isolated health professionals as well.

Nevertheless, participants in this study noted that support from colleagues and family was of great help and sustained them like a buttress during their hospital isolation and that the feeling of camaraderie in such a war-like situation helped them to endure. Although a limitation of the study includes the lack of physicians and male participants, married participants expressed gratitude to their spouses, because their hospitalization affected their spouses' working life, but they endured the difficult situation and took over caring for the children. Participants with young children

who experienced symptoms felt guilty, while those with adolescents were concerned about causing them extra stress, affecting school attendance and worried that their hospitalised isolation might disrupt children's studies. Yet, teenage children often offered verbal support for their mothers. In the case of unmarried participants, even if they lived independently, they expressed a great deal of regret for worrying their parents. Colleagues were referred to as "comrades-in-arms," which was also expressed in a previous study (Kim, 2018).

Regarding self-image, the MERS event was described as a "turning point" that appeared to change participants' professional sense of identity and direction. Recognising the importance of practicing self-protection measures indicated expansion and growth as a health professional. Participants also reported a sense of pride on having gone through the difficulties and knowing first-hand what patients feel, which helped them better connect with and understand their patients. Prior studies of Ebola health workers have reported health workers' joy in seeing their patients recover and satisfaction in having overcome challenges (Smith et al., 2017). Studies on nurses caring for MERS patients also reported participants' pride in their profession in terms of fulfilling responsibility and being there at a historic moment (Kim, 2017), or in relation to the praise and late recognition that followed (Kim, 2018). However, our results differed in that participants experienced being a suspected patient themselves, and the positive changes in their professional self-image were noted more in terms of experiencing a genuine understanding and empathy for patients, as well as empathy for their colleagues who cared for them in such difficult circumstances.

Their evolved self-image also led to re-prioritising life-work balance, which was expressed in diverse directions, ranging from increased family priority and seeking fulfilment in life, to questioning whether they could handle the dangers inherent in their work and seeking a new career path. One participant in our study expressed feeling abandoned and undervalued, which is parallel to prior reports of health workers involved in MERS patient care that also reported participants' feeling undervalued and as "forgotten soldiers" (Jun et al., 2018). This underscores the importance of clear communication channels (The Lancet, 2020), supportive protection and conveying appreciation to health personnel for affirming their professional identity in the aftermath of infectious epidemics.

Participants in this study emphasised the need to develop policies for protecting the health workforce, going beyond the focus on duty to care. During the MERS outbreak, many healthcare experts pointed out that cooperation was lacking among national health-related agencies, local autonomous bodies and medical institutions. Protecting health workers was essentially the responsibility of the respective medical sites, but developing guidelines and sharing information was slow. The need for hospital leadership during times of crisis, clear communication of directives and disease information at the national level, and high collaboration between disciplines are similar messages arising from both MERS (Cho et al., 2016) and SARS (Maunder et al., 2003).

6 | CONCLUSION

In addition to structural and policy level protection and support for health workers, our study further illustrates that self-image in health professionals is affected by hospitalised isolation required in the course of caring for patients. These subtle changes include positive aspects of feeling pride and growth in the profession and expanding one's self-understanding, but also include doubts about feeling sufficiently protected and/or valued in the dangerous work they commit to do for the well-being of their patients. In this light, "preparedness for emerging infectious diseases" not only means vigilant healthcare systems and instilling proper public precautions, but should also include careful awareness of health workers' psychological needs and the spectrum of how professional self-image can be affected, as well as advocating for supporting health professionals on the frontline. Such long-term care policies are relevant to the recent novel coronavirus (COVID-19) pandemic, as well as future infectious disease outbreaks.

7 | RELEVANCE TO CLINICAL PRACTICE

Nurses are the frontline defence for patients and the backbone of infectious epidemic. Health professionals, especially nurses, are in constant response to the recent emergence and ongoing crisis of the COVID-19 pandemic (WHO, 2020). Considering the current magnitude of COVID-19 worldwide, this study offers insights into what health professionals experience in infectious epidemics and how to support them during and after such upheaval. While preparedness for infectious epidemics have emphasised country-level structural dimensions and international partnering efforts (Lee et al., 2020), preparedness in the frontline should ensure not only tangible assistance, protection and clear communication for health professionals in all processes, but also careful awareness of their psychological needs and affirmation of their professional self-image in the aftermath.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR'S CONTRIBUTIONS

All authors designed the study. SJK and SK contributed to analysis and interpretation of data and drafting the manuscript. HAS contributed to analysis and interpretation of data. SJK, HAS, KH and SK revised the article for important intellectual content and approved the final version of the article to be submitted. All authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are investigated and resolved.

ORCID

Sujin Kim  <https://orcid.org/0000-0001-9355-8377>

Hyun A. Shin  <https://orcid.org/0000-0002-8142-8281>

Kieun Hong  <https://orcid.org/0000-0003-1145-4983>

Sue Kim  <https://orcid.org/0000-0003-3785-2445>

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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