Nurses' Perceptions and Experiences of Rotating-Shift Work in Acute Hospitals: A Qualitative Study

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Abstract

Background: An 8-hour shift system with faster rotation (e.g., shift changes every 2 to 5 days) is common for nurses at acute hospitals in Korea. However, there is a lack of information regarding nurses' perceptions and experiences of rotating shift schedules, as well as the ways in which rotating-shift work affects patient outcomes. This study aimed to identify and describe emergent themes and offer new insights into nurses' perceptions and experiences of rotating-shift work in Korea. Moreover, it explored the relationship between rotating-shift work and nurse and patient outcomes.

Methods: A qualitative descriptive design was employed. Focus group interviews were conducted with 24 rotating-shift nurses at Korean acute care hospitals. Qualitative data were collected between January and February 2019, and conventional content analysis was employed.

Results: Three themes and eight subthemes emerged. Major themes were unsatisfactory work schedules, the impact of shift work on nurses' lives, and the impact of schedule-related fatigue on overall work performance.

Conclusion: Study findings highlight the importance of optimal scheduling, to reduce fatigue among rotating-shift nurses. Managers and administrators may improve nurse performance and patient safety by reviewing scheduling practices, considering the potential impact of shift schedules on nurse and patient outcomes, and addressing nurse's scheduling issues. Furthermore, hospital authorities should consider revising schedules to include sufficient breaks between shifts. This study addressed issues that stem from rotating shift work, affecting both nurses and patients. Nurse interviews clarified these issues, which were classified according to theme. This study aimed to find practical solutions for shift planning problems, particularly in Korea, and to inform the development of scheduling guidelines for rotating-shift work in the future.

Background

Shift work makes it possible for nurses to provide 24-hour care to hospital patients [1, 2]. Thus, it is unsurprising that most of South Korea's 350,000 nurses work rotating shifts [3]. Shift work involves labor outside the standard daytime hours of 9:00 am to 5:00 pm, from Monday to Friday [4, 5]. Globally, various shift work arrangements are employed to cover the unending demands of patient care [6]. Indeed, such arrangements differ in terms of shift duration (e.g., 8 versus 12 hours), schedule (fixed or rotating), and duration of rotation [7]. As previously stated, 8-hour shifts with fast rotation (e.g., changing every 2 to 5 days) are common for nurses in Korea's acute care hospitals. In European countries, however, approximately half of nurses worked 8-hour shifts and 15% worked 12-hour shifts [8].

Shifts and long working hours can prevent nurses from getting the seven or more hours of sleep recommended per day [9, 10]. Moreover, irregular sleep patterns and sleep disturbances are more prevalent among rotating-shift nurses than those with fixed day shifts. Indeed, rotating between shifts disrupts circadian adaptation. Thus, nurses on such schedules often experience increased sleepiness,

fatigue, and decreased alertness [2]. Furthermore, quick returns (fewer than 11 hours off work) are common with rotating-shift schedules. Notably, they are hazardous to the shift workers' health, as it may take several days to re-adapt from nighttime to daytime [11]. Existing literature reports that shift work – particularly night shift work – can impact nurses' psychological and physical health [12]. This takes the form of increased anxiety, mood disorders, shift work disorder [13, 14], gastrointestinal problems [15, 16], and hormonal imbalances [17, 18]. Moreover, studies demonstrate that medical error rates may increase among nurses whose shift work results in longer reaction times, reduced alertness, judgement problems and impaired concentration, memory and information processing [19, 20]. Significantly, this can also undermine nurse and patient safety. Clearly, appropriate work scheduling is crucial to the reduction of rotating-shift nurses' exhaustion and fatigue. Notably, the European Union's working time directive recommends at least 11 consecutive hours of daily rest and 24 hours of uninterrupted weekly rest every seven days [21]. Similarly, Korea's Labor Standards Act [22] guarantees shift nurses a rest period of 11 consecutive hours between shifts, to allow for sufficient recovery.

Although studies have examined shift work's impact on nurses, information regarding nurses' perceptions of, and experiences with, this scheduling pattern (and its effects on nurse and patient outcomes) is insufficient. Moreover, prior research has overwhelmingly employed quantitative designs. Beyond this, the few qualitative studies that explore nurses' rotating shift experiences only address one issue each: occupational stress [23], work-life balance [24, 25], familial demands [26, 27], quality of life [28], and, finally, eating and physical activity [29].

Thus, the present study aimed to exhaustively identify and describe emergent themes that offer new insight into nurses' perceptions and experiences of rotating-shift work. Furthermore, the study sought to explore the relationship between rotating-shift work and nurse and patient outcomes. Detailed information regarding the experience of rotating-shift work, and the associated dynamics, may be of value to researchers, nursing managers, and policy makers. Indeed, such data can help develop and implement efficient management strategies and policies, to reduce challenges experienced by nurses who work rotating shifts. Finally, the study considers strategy and policy-related solutions. By addressing rotating-shift nurses' needs, such approaches may better capacitate them to provide high-quality care, thereby enhancing patient safety.

Methods

Study design

The study employed a qualitative, descriptive design that uses focus group interviews. This design is commonly utilized in healthcare research; it also serves this study well as it enriches research by facilitating participant discussion [30].

Participants

The researchers recruited nurses who worked rotating shifts and provided direct care in acute care hospitals in Seoul, Korea. Recruitment was undertaken using, (1) a popular mobile application that manages work schedules for shift nurses, and (2) snowball sampling. Potential participants were required to have worked night shifts in the past month to be eligible. Prior research identified differences in fatigue levels based on nurses' work experience [31]. There was no exclusion criterion based on the number of working years, but participants were divided into discussion groups according to the length of their work experience (i.e., less than 1 year, 1–8 years, and over 8 years) to encourage further dialogue. Researchers anticipated that group members would relate to each other and have detailed conversations based on their shared experiences. Notably, nurses who are married and/or have a child may have a unique perspective on shift work. Therefore, we recruited both unmarried nurses and those who were married – with or without a child. Finally, the 24 participating nurses were divided into four groups of 5 to 7, based on the above criteria.

Data collection

Qualitative interview data were collected from four focus group interviews, which took place in January and February, 2019. A semi-structured interview guide was developed based on a literature review. The first author, who has a PhD in nursing and five years of experience as an acute care hospital nurse, conducted the focus group interviews. The interviews were held in a private university meeting room. The first author used open-ended questions to guide participants, allowing them to speak freely about their perceptions and experiences of rotating-shift work and its outcomes. As the interview process developed, we removed redundant probes and added new questions, based on emerging themes in the initial interviews. Each interview lasted 120 minutes on average, was digitally recorded, and subsequently transcribed verbatim by a research assistant. The first author reviewed the transcripts against the recorded audio files to ensure accuracy.

Data analysis

Conventional content analysis was used to analyze interview transcripts and find themes. Data were coded and categorized using NVIVO software, version 12 (QSR International, UK). The first author and two research team members individually read the transcripts and field notes (several times, and line-by-line) to familiarize themselves with the data. The first author also extracted and coded significant words and phrases. Codes were then examined to identify commonalities and grouped together as subthemes. The subthemes were further scrutinized to determine overarching themes and key concepts related to nurses' perceptions and experiences. Subsequently, the codes were reexamined and discussed multiple times, to verify emerging themes and subthemes. The team members then finalized them. The words used by nurses were reported verbatim, to retain their original meanings throughout the analysis. Quotes used in this manuscript were selected by consensus during meetings.

Ethical considerations

This study was approved by the institutional review board of a university in Seoul, Korea (no. Y-2018-0137). Before the focus group interviews, researchers informed participants about the study objectives,

interview procedures, personal information protection measures, interview recording, and their right to withdraw. All participants provided written, informed consent.

Rigor

The Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist was applied and used to guide this study [32]. Data were separately analyzed by each researcher to ensure reliability and validity; researchers took part in several meetings to discuss emerging themes and subthemes. To maintain reflexivity, researchers engaged in continuous contemplation throughout the data collection, analysis, and interpretation stages, to limit the impact of bias on the study results [33]. Furthermore, the Lincoln and Guba [34] criteria were used to improve the study's trustworthiness. To verify our interpretation, and the integrity of the results, findings were reviewed by three nurses who participated in the focus group interviews and three who met the inclusion criteria but ultimately did not participate. The participants generally agreed with the categories, reporting that they echoed their experiences. Finally, the findings were reviewed for veracity by two experts in nursing and qualitative research, to address potential biases that may have influenced the results.

Results

Most participants were unmarried (79.2%) women (83.3%) with a Bachelor's degree in nursing (70.8%). Their mean age was 29.0 years (SD = 3.7; range = 24–36 years). Participants had an average of 4.8 years of experience (SD = 3.4; range = 10 months to 14 years) as registered nurses and typically worked 8-hour shifts (91.7%). The working units included a medical and surgical unit, an intensive care unit, a neonatal intensive care unit, an emergency room, and a psychiatric unit. Participants reported working for a mean of 47.3 ± 5.7 hours per week (range = 40–60 hours).

Three main themes were identified: (1) Unsatisfactory work schedules, (2) impact of shift work on nurses' lives, and (3) impact of schedule-related fatigue on nurse's performance. Themes and subthemes are presented in Table 1.

Table 1
Major themes and subthemes

Major themes	Subthemes
1. Unsatisfactory work schedules among rotating-shift nurses	1.1 Unfavorable work schedules
	1.2 Work schedules that do not allow relief from fatigue
2. Impact of shift work on nurses' lives	2.1 Negative physical effects
	2.2 Impaired psychological well-being
	2.3 Impaired work-life balance
	2.4 Decreased job satisfaction and increased intention to leave
3. Impact of nurse fatigue on work performance due to shift work	3.1 Failure to provide high-quality nursing care when fatigued
	3.2 Failure to engage in therapeutic communication when fatigued

Theme 1: Unsatisfactory work schedules among rotating-shift nurses

All participants experienced dissatisfaction with their work schedules. While experiences varied, most nurse reported that their work schedules and shift patterns were unfavorable. They also frequently noted that this was closely related to nurse staffing shortages. Furthermore, the absence of clear hospital scheduling practice regulations led to high variability, depending on the working unit and nurse managers. This resulted in unequal work schedules. Participants also indicated that their monthly work schedules were usually generated and received with just a few days' notice, and often changed during the month. The main causes of unsatisfactory shift work were unpredictability, instability, and the inability to request a specific schedule. Participants are referred to by group (G) and participant number (P).

"When the work schedule needs to be changed in my unit, the notice is posted in the group chat to inform the employees of the change. The employee's personal commitments are not taken into consideration. Even if an employee already has plans or commitments, or really wants that time off, the nursing manager will cancel their time off and change the shift without consulting them. The employees have no choice but to follow through" (G2, P4).

Significantly, most nurses asserted that they could not recover from fatigue with the current work schedule. In fact, due to the high number of consecutive working days and insufficient days off, their fatigue was progressive. One participant commented that he worked six consecutive days once every two months and was extremely tired during and after his shifts. Due to the inadequate downtime between shifts, and overtime hours, nurses did not feel sufficiently rested and experienced greater fatigue.

Although overtime hours varied (depending on the number of years worked and the unit type), most participants expressed that working overtime was both common and unavoidable under the current conditions.

Nurses described these extended work hours as physically and emotionally overwhelming. Furthermore, staffing shortages and organizational culture were said to make it difficult to take sick leave. Indeed, more than half of the nurses had worked when they were extremely sick, and some expressed guilt about taking time off.

"I think the worst part of our job is that somebody has to work in my place if I take time off. Other office workers or employees can just use their annual leave and take a day off when they are sick [P1, P4, and P6 nod] – but I know that if I take time off, someone else who was supposed to be off would have to cover for me. So, I just choose to go to work, unless I am unbearably sick" (G4, P5).

"I had to go to the emergency room during my shift, because of enteritis. Even at that time, I could not stop thinking about the patients that I had left behind. The doctors at the ER told me to wait until the blood reports were in to ensure that everything was fine, but I insisted on going back to work. It was very tough to work in such a condition, but I had to endure it because I could not dare to ask for time off" (G3, P6).

Theme 2: Impact of shift work on nurses' lives

Nurses expressed that they were often extremely tired after work; when they worked overtime (or worked on a particularly busy day), they felt exhausted. Many recounted falling asleep on the bus or subway and missing their stop, or falling asleep while driving home after work. They also noted the development of health issues, including digestive problems, body aches, headaches, and reproductive problems (e.g., polycystic ovary syndrome) following the commencement of their careers as rotating-shift nurses. Most commonly, participants reported sleep impairment and circadian rhythm disruption. To manage these issues, some adopted a "no-sleep strategy" before working night shifts, while others were prescribed sleep aid medications to adjust to shift changes.

"I was pretty healthy in general, but I started taking zolpidem two years ago as I was having a hard time sleeping. I feel skeptical about taking sleeping pills for work as I have to do rotating-shift work [P1 nods], and I wonder, 'when am I going to need these pills to fall [a]sleep?' " (G4, P3).

In addition to physical symptoms, most nurses experienced psychological problems, like depression and low energy. It is noteworthy that nurses attributed this impaired psychological well-being to physical fatigue. In fact, one participant described fatigue as a physical, mental and emotional condition. Nurses also expressed that states of high stress and fatigue hindered their concentration and their professional performance suffered.

“You definitely lose your focus at work when you are tired. In fact, I also tend to feel depressed when I leave work, especially if I finish late. Sometimes I can only manage to finish work after staying at the hospital for 12 hours or even longer. It is emotionally very stressful” (G2, P3).

Along with the physical and psychological effects of shift work, the subtheme of work-life balance emerged. All participants indicated that the monthly work schedule controlled their everyday patterns and destabilized their lives. Nurses frequently faced challenges in managing their shift work and their social lives. Irregular, frequently changing work schedules undermined their ability to make plans with family, enjoy recreational activities, and devote time to personal development. One nurse even observed that it was difficult to engage in religious activities due to the shift work schedule. Another added that the quality of her engagement with family and friends decreased because she was too tired to engage in activities with them. Other nurses similarly reported conflicting demands between work and family roles. Approximately 20% of participants were married, and three were mothers. The participants found that maintaining the balance between parenthood and nursing was made more difficult by extended hours or unexpected schedule changes.

“When you have kids, you have to prepare breakfast and watch the kids after you finish your night shift, and that is very exhausting. It disrupts both the work and the ability to take care of kids” (G1, P1).

Participants also identified rotating shift work as a factor prohibiting the sustainability of their current position. Similarly, many of their colleagues left their units because of the negative consequences of shift work. In particular, older nurses indicated that adjusting to shift work and night shifts became harder as they aged, and expressed their intention to leave.

Theme 3: Impact of fatigue (due to shift work) on nurses’ performance

Nurses also discussed the challenge of providing high-quality care while fatigued. Most recounted falling asleep on duty due to inadequate rest time; this was more frequent during night shifts. Participants agreed that when they were physically and emotionally exhausted (due to insufficient sleep and circadian rhythm disruption), they were unable to complete their professional tasks.

Furthermore, when fatigued, they often lost their concentration and experienced compromised assessment and problem-solving abilities. This jeopardized patient safety in relation to medication errors, falls with injury, patient identification errors, and omitted nursing care. One participant stated that she made a dosing error when mixing liquid medications while extremely exhausted. Another added that she often experienced near misses on the final day of five consecutive day shifts or during night shifts.

“At one time, while I was taking a blood sample during the night shift, I thought that I had clearly checked the patient and taken a blood sample from Patient A. When I looked at it again, after an additional blood test was prescribed for Patient A, I found out that I had taken Patient A’s blood sample for Patient B’s blood test. Luckily, I realized my mistake in time and it did not lead to a medical accident, but the patient

had to undergo another invasive test. Looking back, I think I was in a trance and was not completely aware of what I was doing. My performance was not up to the mark that night” (G2, P4).

Nurses also described several examples of regrettable professional communication with patients and other healthcare professionals while fatigued. One participant, who worked in a psychiatric unit, said she failed to carefully listen, or promptly respond, to patients’ requests when she was sleepy. Other nurses regretted their irritability when they were working while sick. Participants agreed that when they were not fully rested, they tended not to assist colleagues and to snap at others.

“If I am fatigued...I start talking bluntly, not just with the patients but also with my coworkers and newly graduated nurses, when I could have talked politely [P4 and P6 nod], and my manner becomes gruff when I tell things to the doctors. This can hurt their feelings and create problems by having a negative effect on their emotional state. I try not to behave in this manner, but I am sure a lot of people can relate to this” (G4, P5).

Discussion

Nurses agreed that shift work is unavoidable in their field, but felt their schedules were too unpredictable and irregular, which led to poor work-life balance. This information echoes the finding of prior studies [24, 25, 35]. One such study reported that nurses’ irregular work schedules are a major factor in reduced job satisfaction [36]. The present study’s results, along with existing literature, described the need for “arranging all life around shift work” [37] rather than integrating work into one’s life. Beyond this, shift irregularity may cause job dissatisfaction because nurses value work-life balance and a planned personal life [38]. Studies have reported that working rotating shifts can cause social isolation [39]. Still, nurses with counterclockwise rotating schedules (which rotate from night to evening to morning shifts) experience more difficulty balancing work and social/family life than those who work clockwise schedules (which rotate from morning to evening to night shifts) [39, 40]. Furthermore, nurses with children experience various challenges when working rotating shifts, including feeling guilty [27, 37], unsafe, stressed, and exhausted [26]. The lack of clear hospital scheduling procedures is one potential cause of unfavorable work schedules among rotating-shift nurses. Thus, further studies are needed to develop policies and strategies to reduce the unpredictability and instability of shift work schedules, thereby improving nurses’ work-life balance.

Participating nurses also disclosed that shift work affects their physical and psychological well-being. Several studies have reported that shift work is associated with an increased risk of disease (e.g., rectal cancer, coronary heart disease, and cardiovascular symptoms) and mental health problems (e.g., burnout, depressive symptoms, and job dissatisfaction) [23, 41–44]. Notably, most participants experienced excessive fatigue, sleep disturbances and reproductive health issues, due to circadian rhythm disruptions. Studies have found that negative consequences of this nature may lower nurses’ job satisfaction and bolster their intention to leave [45–47]. Indeed, fixed-shift nurses are more likely to remain in their jobs [48] and report greater job satisfaction [49] than rotating-shift nurses. Our findings regarding the latter

revealed that those intending to leave their positions were motivated by concern over their quality of life. Thus, administrators and nurse managers need to address rotating-shift nurses' physical and psychological well-being and develop interventions to reduce high turnover in hospitals.

All participants expressed that they experienced excessive fatigue and returned to work without feeling rested. Similarly, previous research has reported a high prevalence of fatigue among hospital nurses [31, 50]. Moreover, nurses working rotating shifts report higher levels of acute fatigue than those working fixed shifts [51]. Approximately 50–75% of shift nurses experience insufficient sleep and cumulative sleep deprivation [11, 52, 53]. Our findings support the notion that nurses' fatigue is related to poorly designed shift patterns that do not provide sufficient recovery between shifts. Scheduling patterns should be revised to implement adequate breaks between shifts.

Nurses in this study noted that they experienced difficulty providing high-quality care while sleep deprived. Several other studies have found that sleep deficiency adversely affects nurses' performance [1, 6, 53]. Fatigued nurses have decreased vigilance, alertness, reaction speed, and decision-making ability [5, 54] – all of which contribute to an increased risk to patient safety [2], including the possibility of error and injury [5, 31, 55]. Significantly, injury prevalence among nurses working rotating shifts is 15–53% higher than among those working fixed shifts [56]. In the current study, nurses noted that lapses in concentration were directly related to patient safety; the risk of misidentifying patients and making medication administration errors was higher during the final day of working consecutive shifts or night shifts. Nurses also struggled to stay awake during night shifts. Similarly, Ranjaratnam and Arendt [57] reported decreased task performance from 4–6 a.m. among nurses and found that patient safety was impaired when nurses had difficulty staying awake during the second half of a shift, especially at night. Future work is needed to determine and review innovative work scheduling practices and strategies that may reduce fatigue among rotating-shift nurses.

Participants also indicated that fatigue compromised their communication with patients and other healthcare professionals. As noted by Wolf et al. [58], fatigued nurses self-reported an impact on their interpersonal interactions, as well as more frequent irritability, backbiting, and complaining. Effective communication is vital to accurately assess patients' conditions and provide appropriate and timely nursing care. However, repeated episodes of ineffective communication with other nurses, physicians, and other staff members can adversely affect collaboration, teamwork, quality of care and, thus, patient safety [59]. Consequently, poor communication (due to fatigue) should be addressed and complemented with fatigue management strategies, to improve patient safety.

It is important to acknowledge this study's limitations. Our participants were a self-selected convenience sample. Although they were a diverse group in terms of demographics and worked at different hospitals, their experiences may not be representative of all nurses in Korea who work rotating shifts. Furthermore, qualitative data were collected via self-reports (focus group interviews), during which nurses may have been reluctant to report negative outcomes related to patient safety and care quality. Therefore, further research that uses in-depth interviews is recommended.

Conclusions

To the best of our knowledge, this is the first study to examine the perceptions and experiences of rotating-shift work among Korean nurses, along with the impact of shift work on their quality of life and job performance. The findings may illuminate potential solutions for nurse managers and administrators. Study findings also highlight the importance of optimal scheduling to reduce fatigue among rotating-shift nurses, and potentially improve nurse performance and patient safety.

List Of Abbreviations

Not applicable.

Declarations

Ethics approval and consent to participate

This study was approved by the institutional review board of Yonsei University Health System in Seoul, Korea (no. Y-2018-0137). Written informed consent was obtained from each participant before a focus group discussion was conducted.

Consent for publication

Not applicable.

Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available due to containing information that could compromise research participant privacy and consent.

Competing interests

The authors declare that they have no competing interests.

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Authors contributions

AM and YY designed and implemented the study, analysed the data, and wrote the manuscript. WL provided critical input to the interpretation of the data and reviewed the manuscript. All authors read and approved the final manuscript.

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