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# Navigating night shifts: a qualitative study of exploring sleep experiences and coping strategies among nurses

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## Abstract

**Background** Understanding the experiences and coping strategies employed by nurses working night shifts is essential for developing effective interventions to mitigate sleep disturbances. However, actionable and reliable strategies for improving sleep quality remain elusive. This study aimed to explore the sleep experiences and coping strategies of nurses working rotating night shifts.

**Methods** This qualitative descriptive study utilized semi-structured individual interviews with 15 nurses working rotating night shifts at three hospitals in South Korea. Data were collected between October 2022 and February 2023 and analyzed using qualitative content analysis.

**Results** Four key themes emerged, including difficulty sleeping due to night shifts, distress due to difficulty sleeping, strategies to improve sleep quality, and desire for organizational change. Participants reported a range of coping strategies to enhance sleep quality while managing the challenges of shift work. These strategies included creating behaviors and environments to promote sleep, finding a balance between sleep and activity time, embracing irregular sleep patterns, and asking others for help.

**Conclusions** Despite employing various coping strategies, nurses working night shifts continued to face persistent sleep difficulties. While they recognized night shifts as an inherent aspect of their profession and demonstrated adaptability, they still sought to overcome their sleep challenges. These findings highlight the urgent need for organizational and institutional measures to address sleep-related issues among night shift nurses.

**Keywords** Coping, Adaptation, Experience, Night-shift work, Qualitative study

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## Background

Shift work is a crucial aspect of nursing practice, enabling continuous 24-hour patient care in healthcare institutions. A substantial portion of nurses worldwide works within a shift system, which often includes overnight rotations that disrupt natural sleep patterns. In the United States, approximately 27% of healthcare practitioners engage in night shifts [1]. Similarly, a study across 12 European countries reported that nearly 50% of nurses work within a three 8-hour shift system, while 15% adhere to a two 12-hour shift schedule [2]. In South Korea, the Hospital Nursing Association reported that as of 2023, 71% of hospitals employ a three 8-hour shift model, highlighting the prevalence of this work structure [3].

Night shifts impose significant physiological and psychological burdens on nurses by disrupting circadian rhythms and standard sleep cycles. The negative effects of night shifts on sleep are well-documented, leading to sleep disturbances, sleep deprivation, and poor sleep quality [4, 5]. Additionally, night shifts increase the risk of serious health issues, such as cardiovascular disease, diabetes, hypertension, breast cancer, and gastrointestinal disorders [6]. Chronic sleep inefficiency further exacerbates fatigue, depression, anxiety, and stress [7, 8], negatively impacting nurses' mental health and well-being. The cumulative effects of sleep deprivation also reduce job satisfaction and engagement while impairing neurocognitive functioning [9]. This situation compromises the health and safety of both patient and nurse by raising the likelihood of medication errors, needlestick injuries, and near misses [10].

Despite the extensive research highlighting the detrimental effects of night shifts on sleep and health, there is a lack of studies examining nurses' lived sleep experiences and their coping strategies in response to sleep disturbances caused by shift work [11]. A phenomenological study on sleep disorders among shift-working nurses found that persistent sleep deprivation led to significant physical and psychological deterioration, disrupting both professional and personal life domains [12]. Although these nurses tried various sleep-enhancing strategies—such as burning incense, reading, and consuming sleep-inducing beverages—these methods were largely ineffective [12]. Other studies have identified strategies to improve sleep quality among night shift workers, including dietary modifications, exercise, pharmacological interventions, strategic napping, and adjustments to shift schedules [11, 13]. However, these studies have not adequately addressed the inherently irregular nature of nursing shifts [12] or fully explored how nurses experience and implement their coping mechanisms [11].

A recent systematic review and meta-analysis of sleep-promoting interventions for night shift workers

found that cognitive-behavioral approaches significantly improved sleep outcomes, while pharmacological interventions—despite being widely used—failed to show substantial benefits [14]. Cognitive-behavioral strategies can enhance sleep health by promoting lifestyle changes that align with circadian rhythms while equipping individuals with coping skills to adapt to shift work [15]. Given the unique nature of nursing night shifts [16] and the differences in coping strategies between good and poor sleepers [11], it is essential to investigate the sleep experiences and adaptive strategies specific to night-shift nurses. Such insights can inform educational and training programs that equip nurses with effective strategies to manage the challenges of irregular night shifts. This study aims to explore the sleep experiences and coping strategies of nurses working rotating night shifts in hospital settings. By identifying practical approaches to enhancing sleep quality and mitigating associated health risks, this study seeks to provide empirical evidence to inform interventions that support nurses' well-being and optimize patient care outcomes.

## Methods

### Aim and study design

This study employed a descriptive qualitative research design to explore the experiences of nurses coping with rotating night shifts. This design facilitated a detailed understanding of the participants' daily experiences [17]. The study adhered to the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines to ensure methodological rigor [18].

### Study participants

Participants were purposively sampled from those who involved in the “Sleep Study of Shift Work Nurses” project conducted in 2022 at two university hospitals in Daegu and one general hospital in Andong City, South Korea. Each hospital has an approximate capacity of 1,000 beds, with one nurse responsible for 2.5 beds on average. The two university hospitals in Daegu implement an irregular three-shift system with 8-hour rotations, while the general hospital in Andong follows an irregular two-shift system with 12-hour rotations. Nurses in these institutions typically work an average of four to ten night shifts per month.

Inclusion criteria for this study were: (1) registered nurses, (2) literate and able to communicate, (3) currently working night shifts in a hospital, and (4) well-adjusted to night shifts, as indicated by an average sleep score of 80 or higher (classified as “good” sleep quality) on a Fitbit Charge Tracker [19]. Sleep scores were calculated based on sleep duration, quality, and recovery components. In this study, nurses with high sleep scores were selected, as they were assumed to offer valuable insights and adaptive

strategies for achieving quality sleep. Eligible participants from prior studies were contacted individually via text message and provided informed consent before participation. A total of 15 nurses participated in the study, with no dropouts. Table 1 provides a detailed summary of the participants' demographic and professional characteristics.

#### Data collection

Data for this study were collected through one-on-one, in-depth, semi-structured interviews conducted between October 20, 2022, and February 17, 2023. The first author, a nurse employed at the hospital during the data collection period, conducted all interviews. She had received formal training in qualitative research methodology through a master's program and specialized workshops. All interviews were conducted in Korean and took place in locations selected by the participants, typically quiet, low-traffic, private areas such as cafes near their workplaces. This approach ensured confidentiality and participant comfort.

Before the interviews, participants were given a detailed explanation of the study and signed a written informed consent form. The interviews lasted 30 to 60 min, averaging 42 min. A semi-structured interview guide (Supplementary 1), informed by national and international literature and reviewed by a nurse sleep research expert, was pilot-tested with two nurses experienced in night shift work. Since no revisions were necessary after the pilot test, the initial version was used for all interviews. Key questions included:

- “Please tell me about your sleep experiences while working night shifts.”
- “What have you done to improve your sleep?”

- “What effective sleep enhancement strategies have worked for you?”

All interviews were audio-recorded with participant consent, and detailed notes captured non-verbal cues and the overall interview atmosphere. Data collection continued until saturation was reached, with no new themes emerging. Follow-up phone interviews lasting 5 to 10 min were conducted with two participants for clarification and additional insights. All recorded interviews were transcribed verbatim and supplemented with field notes for contextual understanding.

#### Data analysis

Data were analyzed using White and Marsh's [20] content analysis method, following a systematic four-step process. First, the core research question focused on understanding the sleep experiences and coping strategies of nurses working night shifts. Second, our sampling involved interviews with participants who could provide relevant insights into night shift sleep experiences. Third, transcripts were reviewed multiple times to identify and code meaningful statements, with codes being compared and refined iteratively. Two researchers independently coded the first two transcripts to ensure consistency; subsequently, one researcher coded the remaining transcripts, while the co-researcher verified the results. Fourth, for the analysis, 29 semantic units, 10 subcategories, and 4 categories were derived from 171 codes, reflecting participants' sleep experiences and coping strategies. The qualitative data analysis software ATLAS.ti (ver. 23) was used to facilitate the analysis process.

**Table 1** Participant characteristics

Age	Sex	Working unit	Duration of shift work (years)	Marital status	Have children	Number of people living together	Pets
26	Female	Medical-surgical	3.6	No	No	None	None
33	Female	Intensive care unit	6.7	Yes	No	1	None
27	Female	Medical-surgical	4.6	No	No	2	None
29	Female	Medical-surgical	6.8	No	No	None	None
26	Female	Intensive care unit	3.7	No	No	None	None
27	Female	Medical-surgical	3.5	No	No	1	None
26	Female	Medical-surgical	4	No	No	None	None
31	Female	Intensive care unit	6.8	No	No	1	None
28	Female	Emergency Department	5.6	No	No	2	Puppy
33	Female	Medical-surgical	7.2	No	No	3	Puppy
27	Female	Intensive care unit	4.2	No	No	None	None
28	Female	Operation/recovery room	5	No	No	3	Puppy
28	Female	Medical-surgical	5.8	No	No	None	None
28	Female	Medical-surgical	5.11	No	No	3	None
30	Female	Medical-surgical	8	Yes	No	1	Puppy

Trustworthiness and integrity

To enhance the trustworthiness of the findings, we adhered to Lincoln and Guba’s criteria [21] for qualitative research, which include credibility, transferability, dependability, and confirmability. Several methodological strategies were employed to maintain rigor throughout the data collection and analysis processes. To ensure credibility, interviews were conducted in an open-ended manner, and recordings were reviewed multiple times before being meticulously transcribed. Data collection continued until saturation was reached, ensuring that no significant experiences were overlooked. During the analysis phase, we engaged in ongoing discussions with a qualitative research expert to refine our interpretations and minimize potential biases. We also shared our findings with study participants and invited them to review key findings and interpretations to confirm that they accurately reflected their experiences. Transferability was strengthened through triangulation, as we cross-verified our findings with night shift nurses who did not participate in the study. These nurses validated the findings and provided additional perspectives on whether the themes and conclusions resonated with their own experiences, further enhancing the applicability of the findings.

For confirmability, we followed the analysis process suggested by White and Marsh [20], cross-validating the recorded interviews with a co-researcher experienced in qualitative research. The English translations of the Korean interviews were reviewed by an expert and double-checked by the researcher to ensure accuracy and consistency. To maintain neutrality, we made efforts to exclude the researcher’s preconceived notions from the data analysis whenever feasible, preventing their influence on the study results.

Ethical considerations

The study received approval from the Institutional Review Board (IRB) of Kyungpook National University Hospital (IRB FILE No: 2022-07-020). All procedures involving human participants followed relevant guidelines and regulations, including the Declaration of Helsinki. Written informed consent was obtained from all participants prior to the interviews. The purpose and procedures of the study were explained to the participants, including that participation was voluntary and that they had the right to withdraw at any time. Participants also consented to the use of their data in publications. To ensure anonymity, participants were assigned identification numbers, and all data were securely stored on a password-protected computer.

**Table 2** Sleep experiences of nurses working the night shift in a hospital

Theme	Sub-theme	Meaning unit
Difficulty sleeping due to night shifts	1. Changed sleep patterns result in poor sleep quality	No amount of sleep is enough. Sleep patterns don't align with work patterns. Sleep is more challenging for those with job seniority.
	2. Difficulty sleeping due to interruptions	Psychological work pressures disrupt sleep. Thoughts about work disrupts sleep. Mindless, repetitive habits disrupt sleep. Surroundings disrupt sleep.
Distress due to difficulty sleeping	1. Skepticism regarding irregular work routines	Lack of personal time. Deteriorating health Feeling apologetic to loved ones
	2. Concerns regarding job security	Work disruptions Considering a new job or career.
Strategies to improve sleep quality	1. Engaging in behaviors and creating environments to promote sleep	Controlling food intake before sleep. Exercising to stay healthy. Eliminating sleep distractions. Personalizing sleeping space.
	2. Balancing sleep and activity time	Finding a sleep routine amidst work or shift changes. Struggling to get enough sleep
	3. Embracing irregular sleep patterns	Letting go of sleep compulsions and pressures. Adjusting to poor sleep quality. Embracing shift work.
	4. Asking others for help	Being taken care of by family. Understanding among fellow nurses.
Desire for organizational change	1. Desire for a better work environment	Supporting staff's sleep needs. Allowing for breaks during the night shifts. Getting enough rest after a night shift.
	2. Desire for a more varied work system	Having a work schedule that reflects your personal preferences. Expanding dedicated night shift programs. Introducing flexible work arrangements.

Results

The analysis identified 171 codes, 29 semantic units, 10 subcategories, and 4 overarching themes reflecting the sleep experiences and coping strategies of nurses working night shifts (Table 2).

Theme 1: Difficulty sleeping due to night shifts

This theme highlights the multifaceted challenges participants faced in maintaining adequate sleep while adapting to the demands of rotating night shifts. Their experiences are categorized into two sub-themes: *changed sleep*

*patterns resulting in poor sleep quality and difficulty sleeping due to interruptions.*

#### **Changed sleep patterns result in poor sleep quality**

Participants expressed profound dissatisfaction with their sleep quality, even when their total sleep duration appeared adequate. The rotational nature of shift work, which required transitioning from night to day shifts and managing subsequent off-days, disrupted their circadian rhythms and caused ongoing fatigue. These challenges became more pronounced with increased work experience, leading to a growing sense of sleep dissatisfaction.

One participant shared their attempt to rationalize fragmented sleep:

*I split my sleep often, and I'm satisfied with myself saying, 'I'm okay because I have enough total sleep time in 24 hours anyway,' but it's hard; I feel very tired.* (Participant 2)

Another highlighted the difficulty of abruptly adjusting sleep schedules:

*It's very hard to suddenly switch my sleep pattern from night shift to morning shift... Too many times I go to work with no sleep at all.* (Participant 14)

Over time, some participants noted a decline in their ability to adapt to these sleep disruptions:

*I'm getting more and more dissatisfied... When I was new, I thought I was getting enough sleep, so I thought, 'Oh, three shifts is okay, it's worth it,' but I think I'm getting less and less satisfied with my sleep.* (Participant 4)

#### **Difficulty sleeping due to interruptions**

Participants reported significant barriers to achieving restful sleep due to psychological and environmental interruptions. Anticipation of work-related responsibilities, including anxiety about punctuality and pending tasks, was compounded by habits such as smartphone use and caffeine consumption, further disrupting nurses' rest. Additionally, attempting to sleep during the day introduced environmental challenges, such as exposure to sunlight, which hindered restorative sleep.

One participant described the anticipatory stress that undermined their sleep:

*I'm already stressed, thinking about tomorrow... I lose a little bit more sleep because I have to get up at the crack of dawn.* (Participant 3)

Others noted the impact of work-related communication on their mental state:

*I've been getting texts on my phone and stuff like that, and I can't sleep when I see that... Even if it's not related to me, it's stressful just by being there...* (Participant 9).

Participants also acknowledged the role of personal habits, such as caffeine consumption, in exacerbating their sleep difficulties:

*Coffee, because I'm tired at night when I work nights, gives me too much palpitation (heart palpitations) in the morning. I like it, but it's not good for me to have it at night.* (Participant 6)

The physical environment posed yet another hurdle, as one participant highlighted the effect of sunlight on day-time sleep:

*I don't have blackout curtains in my room at home, so I think the sunlight is keeping me awake...* (Participant 3).

These findings reveal the impact of night shift work on participants' sleep quality, emphasizing the interplay between altered sleep patterns, psychological stressors, and environmental factors in creating significant barriers to restorative rest.

#### **Theme 2: Distress due to difficulty sleeping**

This theme highlights the profound challenges participants face in maintaining their well-being and functionality due to sleep disturbances caused by night shifts. Their experiences are categorized into two sub-themes: *skepticism regarding irregular routines* and *concerns regarding job security*.

##### ***Skepticism regarding irregular routines***

Participants described significant disruptions to their personal and family lives as they prioritized sleep during off-hours. The irregular sleep patterns created by night shifts eroded their daily routines, leading to feelings of detachment from loved ones and concerns about deteriorating health. Despite their best efforts to maintain relationships, many nurses felt guilty about the disruptions caused by their work schedules.

One participant remarked on the blurred boundaries between day and night in her life:

*I think not having a day is the same as not having an evening and the same as having a day.* (Participant 4)

Others shared the toll night shifts had taken on their health and well-being, with one participant reflecting on her attempts to adapt as she aged:

*I used to be a night person; I used to prefer it. But then I got to this point in my early thirties, and my body started to take a toll on me, and my health began to give me signals, so now I try to change the pattern.* (Participant 15)

The delicate balance between nurses' personal lives and work was further complicated by household dynamics. One participant recounted a moment of tension with a family member:

*I'm trying to be more careful and quieter because he's sleeping when I go to work during the day. One time, I was going to work during the day and I slammed the door, and he told me to be careful because it's not just about me; it's about his sleep...* (Participant 2).

### **Concerns regarding job security**

Participants expressed a strong obligation to get adequate sleep for their health and the safety of their patients. However, inadequate rest often left them feeling groggy, unfocused, and prone to making mistakes during their shifts. The effects of sleep deprivation heightened their anxiety about their professional competence and led some nurses to consider leaving the nursing profession.

One participant emphasized the critical importance of sleep for maintaining patient safety:

*When I can't sleep, my hands shake because we have to hold IV lines and see patients, which could lead to an accident. Even when I can't sleep, I just keep my eyes closed. It's a compulsion. I actually try to sleep as much as I can because if I can't sleep, I don't have to go, but it affects my work.* (Participant 13)

Another participant reflected on the mental fog and guilt experienced after a sleepless night:

*When I've worked all night without sleep (night shift), I feel like I'm doing something wrong in the morning because I'm groggy. I don't know what I'm saying; I feel like I'm making a lot of silent mistakes in the morning.* (Participant 3)

For some, the cumulative impact of sleepless nights led them to reconsider their careers:

*I didn't think about quitting until the last two or three years, but as I've gotten older, the nights have*

*become harder and the quality of my sleep has worsened. Now I'm thinking, 'I should have changed jobs a long time ago.'* (Participant 4)

These findings underscore the profound personal and professional strain that shift work places on nurses as they balance their health, family, and patient care.

### **Theme 3: Strategies to improve sleep quality**

Participants described various strategies for enhancing their sleep quality while managing the challenges posed by shift work. These strategies are categorized into four sub-themes: *creating behaviors and environments to promote sleep, finding a balance between sleep and activity time, embracing irregular sleep patterns, and asking others for help.*

#### **Engaging in behaviors and creating environments to promote sleep**

Participants adopted specific habits and adjusted their environments to improve their sleep. Many nurses controlled their food intake, opting for lighter meals or beverages like warm milk to promote restfulness, while others exercised to induce sleep. Some participants relied on blackout curtains or other techniques to mitigate sleep disruptions caused by bright light. Music was another popular tool that some nurses used to cultivate a calming pre-sleep environment.

One participant shared their dietary adjustment:

*I feel really bad when I eat and sleep, and when I don't eat and sleep, I wake up hungry. Recently, I've been drinking warm milk, and I've been sleeping well. Actually, I can't sleep after eating either because I feel really bad and can't eat anything, so I thought I'd try liquids. I tried something warm, and it was fine.* (Participant 6)

The role of exercise in promoting sleep was noted by another participant:

*I do it because I like to exercise, and I think that helps me sleep.* (Participant 15)

Creating a conducive sleep environment also proved essential:

*I block out all the light. I have blackout curtains at home, and I have a clock that lights up, and I just sleep with all that stuff on.* (Participant 11)

Listening to music was another effective method that some nurses utilized to promote sleep:

*I sleep with music on all the time. I set a timer for it. I think it helps me fall asleep.* (Participant 11)

*another full-time job or outpatient setting, but I can't help but sleep (irregularly).* (Participant 15)

### **Balancing sleep and activity time**

Participants adjusted their sleep schedules to meet work demands while trying to minimize disruptions to their personal lives. Some intentionally shortened or delayed their sleep to prepare for upcoming shifts. They established consistent bedtime routines to reduce variability in their sleep patterns and sometimes prioritized rest by canceling social plans.

One participant described how they managed their schedule after night shifts:

*For example, at the end of the night, when I get home, I intentionally sleep a little, set my alarm early, and wake up early... I think it's a process of finding your own pattern as a nurse.* (Participant 3)

Others emphasized the importance of consistency:

*Whatever shift I'm on the next day, I usually go to bed between 12 and 1. I go to bed at a certain time and wake up at a different time depending on the shift.* (Participant 8)

Some participants avoided scheduling activities after night shifts to maximize rest:

*I don't usually have appointments on my nights off, and if I do, it's okay because it's in the evening, and I can just have a quick bite to eat or a cup of tea before then. I try not to have appointments after the day.* (Participant 2)

### **Embracing irregular sleep patterns**

Some participants accepted their irregular sleep patterns as an inevitable part of being shift workers. Some nurses let go of the pressure to sleep and became more comfortable with their schedules. They recognized that they could make up for lost sleep during work breaks or days off.

One participant expressed this change in perspective:

*I used to get stressed about not sleeping and waking up before work, but now I don't. I think I'll sleep someday. Even if I don't sleep enough, I'll catch up on my day off. I'll sleep when I'm done.* (Participant 5)

Another acknowledged the reality of irregular sleep:

*Well, I'm a nurse, so I have to work shifts... I don't know if it would have been the same if I was in*

### **Asking others for help**

Participants often relied on family members and colleagues to accommodate their sleep schedules. Some nurses asked household members to be quiet while they slept, while others collaborated to adjust demanding shift patterns when necessary.

One participant described how mutual understanding with family members helped maintain their sleep routine:

*My sister also works night shifts... We put our shifts on the calendar, and we know what's coming up, so we keep the noise down or delay it a little bit to wash.* (Participant 12)

Another shared how they advocated for changes in their shift schedules:

*I used to work six days in a row with one off in between, but that was actually a 10-day stretch, so I changed that once. Other than that one time, I think we just kind of accept it and work through it, considering others.* (Participant 4)

These strategies highlight the proactive measures shift workers employ to navigate the complexities of disrupted sleep patterns, underscoring the importance of personal habits, environmental adjustments, emotional resilience, and collaborative support in improving sleep quality.

### **Theme 4: Desire for organizational change**

Participants identified organizational changes they believed would alleviate the sleep-related challenges of shift work. Their suggestions centered on two key areas: *the desire for a better work environment* and *the desire for a more varied work system*.

#### ***Desire for a better work environment***

Participants expressed the need for organizational reforms to enhance their sleep quality. Many nurses emphasized the importance of hiring additional staff to ensure a more equitable workload distribution and providing opportunities for rest during night shifts. They also advocated for the establishment of designated rest areas and longer recovery periods after night shifts to improve their overall well-being.

One participant stressed the need for more personnel to facilitate rest during shifts:

*I wish they would give us more manpower so we can take turns dividing the time and resting at night...* (Participant 9)

Another highlighted the importance of having a proper rest area:

*I think it should be mandatory for night nurses to have a rest area, because they don't always make it. So, you either have an empty room or have to sit at your desk. (Participant 10)*

Participants also expressed the need for dedicated breaks:

*We're just in a position where we have to see patients 24 hours a day, so breaks aren't really possible. But I wish we could have breaks. I wish we could have one hour where we could really just relax and not worry about anything, and have that member off duty for an hour so we could sleep. (Participant 13)*

Many nurses mentioned the need for extended rest time after night shifts:

*I need at least two days of rest and recovery after working the night shift. (Participant 1)*

#### **Desire for a more varied work system**

Participants recommended more flexible work schedules to accommodate individual preferences and reduce dissatisfaction with the three-shift system. They suggested that organizations survey staff members about their scheduling preferences and use these insights to design tailored schedules. Additionally, they supported programs that promote more predictable routines and consistent sleep patterns, such as the night-duty nurse system in integrated nursing care wards.

One participant proposed aligning work arrangements with individual needs:

*Mothers with children want more days, and there are nurses who prefer to work nights only. I think it would be nice if we could combine those preferences or allow individuals to choose their shifts when we're hiring, so we don't have to stick to three shifts. (Participant 5)*

Others suggested rethinking shift sequences to facilitate smoother transitions:

*I think there's also something to be said for having the nights at the beginning and letting everyone else do their normal shifts. I'm kind of okay with that... (Participant 6)*

These perspectives underscore the importance of organizational commitment to improving work conditions and flexibility. By addressing these needs, healthcare

institutions could enhance staff satisfaction and performance, ultimately benefiting both employees and patients.

#### **Discussion**

This study examined the sleep experiences of nurses working night shifts and their ongoing efforts to achieve restorative sleep, highlighting the multifaceted challenges they face in both their professional and personal lives. The lived experiences of these nurses, captured through qualitative interviews, provide empirical evidence of adaptive coping strategies for managing the demands of night shifts. These findings reflect the inherent complexities of shift work in nursing and offer valuable insights into strategies that facilitate sleep optimization.

Although participants achieved sufficient sleep duration as recorded by Fitbit trackers, they continued to struggle with developing individualized strategies to improve sleep quality. Many expressed a strong desire for organizational reforms to foster a more supportive work environment and a better-structured shift system conducive to healthier sleep patterns. Despite participants' dissatisfaction with their sleep quality, objective measurements from Fitbit trackers revealed no significant abnormalities, suggesting a disconnect between perceived and actual sleep quality. These findings align with previous research utilizing the Pittsburgh Sleep Quality Index (PSQI), which similarly found that many clinical nurses reported poor subjective sleep quality despite meeting objective sleep duration thresholds [22]. This discrepancy underscores the importance of a comprehensive assessment that integrates both objective sleep metrics, such as wearable trackers, and subjective evaluations through validated sleep questionnaires.

Participants struggled with irregular sleep patterns dictated by their shift schedules, a finding consistent with previous studies linking shift work to irregular sleep patterns and exacerbated sleep disorders [12]. Such disruptions highlight the need for organizational-level changes, such as ensuring adequate rest periods and minimizing the frequency of consecutive night shifts [23]. Notably, the study revealed that experienced nurses often faced more significant sleep difficulties than their less-experienced counterparts, consistent with prior findings that sleep problems persist and even worsen with seniority [24]. These results suggest that ongoing, targeted interventions for experienced nurses are crucial.

Participants frequently cited interruptions, psychological stress, and unhealthy habits as key contributors to their sleep difficulties. The psychological burden of work-related stress, coupled with concerns about upcoming assignments or departmental transitions, mirrored findings in earlier studies [12]. Organizational strategies to support transitions and reduce work-related stress

may alleviate these pressures. Additionally, participants reported that behaviors such as excessive screen time and caffeine consumption disrupted their sleep, perpetuating a cycle of sleep disturbance and fatigue. Prior research underscores the detrimental effects of these behaviors on sleep quality [25, 26]. Interventions should focus on educating nurses about sleep-disruptive habits and equipping them with practical, evidence-based strategies for behavior modification.

Furthermore, participants reported physical and mental health challenges, including chronic pain, circulatory issues, and gastrointestinal disorders, resulting from sleep deprivation, which is consistent with prior research [27]. They expressed fears of long-term health consequences, emphasizing the urgent need for comprehensive health management programs tailored to night shift nurses. Social relationships also suffered due to sleep disturbances, as participants reported feelings of guilt and estrangement from family and friends. This finding aligns with studies highlighting the negative impact of shift work on family life and interpersonal relationships [12, 26]. Strengthening social support systems—within families and among colleagues—can improve nurses' overall well-being and sleep quality [28].

The sleep difficulties experienced by night shift nurses had tangible implications for their professional performance. Participants described morning grogginess, reduced alertness, and an increased likelihood of errors, posing risks to patient safety. These findings echo studies linking sleep deprivation to impaired job performance and higher turnover intentions among shift nurses [7, 29, 30]. Interventions that support nurses' sleep could enhance nurse retention and ensure patient safety. Participants emphasized the need for better staffing, designated rest areas, and sufficient recovery time after night shifts. While short rest periods during shifts can mitigate the effects of sleep deprivation [31], work environments often fail to provide such accommodations. Policy changes are warranted to address systemic issues, such as understaffing and irregular rostering, which hinder nurses' ability to maintain healthy sleep patterns [32].

To counteract sleep disturbances, participants reported seeking adaptive strategies, such as engaging in regular exercise, optimizing their sleep environment, and balancing sleep with other activities. These efforts align with previous research highlighting the benefits of tailored exercise regimens and good sleep hygiene practices [33, 34]. However, despite these efforts, many participants acknowledged the limitations of their strategies and expressed a resigned acceptance of their irregular sleep schedules, viewing adaptation as a necessity rather than an ideal solution. This pragmatic approach reflects existing sleep guidelines, which advocate for flexibility and

relaxation techniques for individuals struggling with sleep disturbances [35].

Participants also expressed a strong preference for more flexible and individualized work schedules that better align with their personal circumstances. This finding resonates with previous studies advocating for customized shift arrangements to improve job satisfaction and sleep quality [36]. Innovative scheduling models, such as dedicated night shift teams or flexible rosters, hold promise in reducing sleep disturbances and mitigating burnout among shift nurses [37]. Expanding these programs and tailoring them to individual nurses' needs could substantially enhance sleep outcomes and overall well-being.

This study has certain limitations. All participants were female nurses without children, which may limit the generalizability of the findings to male nurses or those with caregiving responsibilities. Additionally, this study primarily focused on individual coping strategies without extensively examining institutional policies or workplace interventions that could alleviate sleep-related challenges for night-shift nurses. Future research should focus on developing and evaluating interventions to support night-shift nurses at both the individual and organizational levels. Investigating the experiences of diverse nurse populations, including male nurses and those with family caregiving responsibilities, will further elucidate this issue.

The findings of this study have significant implications for nursing practice and workforce policies aimed at mitigating the adverse effects of night-shift work on nurses' sleep health and overall well-being. From a clinical perspective, integrating evidence-based sleep education into nurse training programs—such as promoting behaviors and creating environments conducive to sleep, balancing sleep and activity time, embracing irregular sleep patterns, and asking others for help—may empower them to adopt effective coping strategies [16]. Healthcare organizations should also prioritize structured interventions, such as cognitive behavioral therapy for insomnia and fatigue management programs [14]. From a policy standpoint, hospital administrators and policymakers must recognize the need for systemic reforms to optimize shift scheduling and staffing practices [16]. Implementing innovative scheduling models, such as dedicated night shifts, self-scheduling options, and longer recovery periods after night shifts, can help reduce the physiological strain of irregular work hours. Additionally, workplace modifications—such as providing designated rest areas and access to napping opportunities during long shifts—can support the well-being of night-shift nurses [16]. Policies addressing workload distribution, mandatory rest breaks, and nurse-to-patient ratios may alleviate the stressors contributing to sleep disruption.

## Conclusion

Night shift nurses face significant challenges in achieving quality sleep, which profoundly impacts both their personal and professional lives. Despite employing various coping strategies, participants reported ongoing sleep difficulties. Most nurses understand that night shifts are an inherent part of their profession and demonstrate resilience and adaptability in tackling their sleep challenges. These findings highlight the urgent need for organizational and institutional measures to address the sleep-related issues faced by night shift nurses. Future initiatives should focus on implementing flexible work schedules, providing adequate rest breaks, and promoting education on sleep hygiene and behavior modification. By prioritizing the sleep health of night shift nurses, healthcare institutions can enhance staff well-being, improve patient safety, and elevate the overall quality of care.

## Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12912-025-03001-3>.

Supplementary Material 1

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## Author contributions

Study design: HL, SK; data collection and analysis: HL, SK manuscript writing: HL, SK.

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## Data availability

Data supporting this study cannot be made available due to ethical restrictions.

## Declarations

### Ethics approval and consent to participate

The study received approval from the Institutional Review Board (IRB) of Kyungpook National University Hospital (IRB FILE No: 2022-07-020). Written informed consent for study participation was obtained from all participants. All procedures involving human participants were conducted in compliance with relevant guidelines and regulations, including the Declaration of Helsinki.

### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

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