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THE NEGATIVE HEALTH IMPACT OF NIGHT SHIFTS ON NURSES

Examining coping mechanism for mitigation

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Abstract

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The adverse health impacts of night shift work on nurses are fast becoming a public health issue, considering many individuals are affected worldwide. Limited information exists on how night shift rotations directly impact nurses' physiological health, social lives, and overall well-being, including coping strategies to manage these challenges.

The purpose of this thesis was to raise awareness by providing credible information about the negative health effects of working night shifts on nurses and health care professionals in general. This study aimed to evaluate the effects of night shift work on nurses' physical health, social well-being, and job performance. Additionally, it seeks to explore nurses' awareness of and use of coping strategies to manage the health challenges associated with night shifts.

A questionnaire was used to collect data from respondents, which was analysed using a quantitative descriptive method. The thesis was done in cooperation with Attendo Aurinkopuisto, Attendo Mannisto Sydän & Attendo Saaristo. A total of N=50 surveys were distributed to participant, of which n=36 responses were received, resulting in 72% response rate.

The study's analysis revealed that the effect of the night shift varied according to demographic characteristics. The results also revealed that most nurses (83%) reported that night shift work had impacted on their health. Out of the selected coping strategies, adequate sleep and rest were the most used, as reported by 40% of the respondents.

The study has shown that to improve nurses' well-being and patient care quality, supportive organizational policies and encouraging personal coping strategies are crucial in promoting health and well-being tailored to night-time workers. More research and investment are necessary to develop countermeasures to these health challenges faced by nurses working night shift schedules.

Keywords
Nurses, night shift, negative health impact & coping mechanism

CONTENTS

1 INTRODUCTION

Shift work is a standard nursing practice essential for ensuring round-the-clock patient care. Due to the need for continuous care, it is typical for nurses to work an occasional or regularly scheduled night shift lasting eight to twelve hours, typically between 7 p.m. and 7 a.m. A common misconception is that night shift nurses work less than day shifts due to the quieter atmosphere during the overnight shift. However, night shift nurses are still responsible for providing continuous care to their patients and may even have an enormous patient load to manage. (American Nurses Association 2023.)

However, the night shift has challenges mainly because the human body naturally follows sleep patterns dictated by circadian rhythms. The conflict arises when nurses have to work at night when they should be sleeping and sleep during the day when they should be active, leading to sleep deprivation and disruption of their natural body rhythms. Consequently, this clash with human physiology exposes nurses who work night shifts to various health challenges. (Boivin, Boudreau & Kosmadopoulos 2021.) These challenges often lead to a higher risk for cardiovascular disease, diabetes, and all-cause mortality compared to those working during the daytime. (Jorgensen, Karlsen, Stayner Andersen & Andersen 2017.) Also, nurses working night shifts are prone to cancer-related chronic depletion in melatonin levels, reduced performance, and high injury rates due to burnout. (Geiger-Brown et al. 2012; Thompson, Stock & Banuelas 2017; Leung et al. 2016.)

This study was conducted in three nursing home facilities that provide personalized care and support for elderly individuals. These home facilities cater to the specific needs of seniors, offering services such as medical care, assistance with daily activities, social engagement, and support to enhance the overall well-being of residents. Thus, they need interventions that improve sleep, job performance, and general health of staff members.

It assists these facilities in gaining a better understanding of factors contributing to sleep disturbances among health care workers and developing effective strategies to address these issues amongst their staff. Furthermore, it provides the authors with the necessary information to manage the health challenges associated with night shift work, ensuring good health and the right state of mind to carry out duties effectively. (Ruggiero & Redeker 2014.)

Therefore, this study fulfills the purpose of raising awareness and providing evidence-based information on the negative health impact of the night shift to not only Nurses but health care workers in general and aims to explore the effects of night shift work rotations on nurses, focusing on their physiological well-being, social lives, and overall health. As an objective, it examines the coping strategies nurses employ to mitigate this negative impact. A quantitative research approach was used in this study, utilizing a questionnaire both in Finnish and English with carefully crafted questions and explicit answer choices for the respondents.

2 NIGHT SHIFT IN THE NURSING PROFESSION

Shift work is the arrangement of daily working hours where different teams take turns to cover 24 hours. According to the Sixth European Working Conditions Telephone Survey of the EU-28 in 2021, 11% of workers often engage in night work, 14% rarely do, 10% engage in the night shift sometimes, 3% do the night shift always, and 38% participate in shift work. (Eurofound 2023.) Nevertheless, the literature highlights shift work and night work as particularly detrimental schedules for workers, with negative repercussions in three main areas: health, family and social life, and the organizational context (Caruso 2014).

In family and social dynamics, engaging in shift work involves being active during times highly cherished for family and social activities, such as evenings, nights, and weekends. This misalignment with conventional social and family schedules can lead to conflicts between an individual's work and personal life. (Handy 2010 & Li, et al. 2014.) In the organizational context, existing literature has identified a connection between shift work, particularly night shifts, and various factors, including safety, productivity, and employee absenteeism. Concerning safety studies by Alali et al. 2017 & Härma et al. 2020 suggest an increased risk of occupational accidents during shift work, especially at night or during extended shifts (e.g., 12-hour shifts). (Dall'Ora, Ball, Recio-Saucedo & Griffiths 2016.)

Night shift nurses perform the same responsibilities as their counterparts on day and evening shifts. These nurses work in various health care settings, such as long-term care facilities, hospitals, and nursing homes that provide overnight patient care. Night shift nurses conduct comprehensive assessments of their patients before bedtime. Throughout their shift, they fulfill outstanding orders from the day shift, respond to call lights, administer necessary medications, and coordinate required intravenous drips. (Morris 2023.) Creating an effective shift schedule is crucial for nurses due to the unique demands of their profession, where they often work in 24-hour shifts. This scheduling is essential for maximizing resource allocation and enhancing the quality of patient care. (James et al. 2020.)

Many people prefer working night shifts due to reduced disruptions from management, fewer meetings, shorter commutes due to less traffic, and the opportunity for higher pay (Morelock 2017). Continuous patient care necessitates the presence of nurses throughout the day and night. Previous studies have shown that shift work and the resulting asynchrony of circadian rhythms adversely affect nurses' health and quality of care, particularly among night shift nurses. (Webster, Mcleod, O'Sullivan & Bird 2019).

The natural sleep-wake cycle is balanced by a need for sleep that accumulates throughout the day, termed homeostatic pressure. These two mechanisms typically work together during daytime hours, aligning with the light/dark cycle to maintain wakefulness and promote consolidated sleep at night. However, working night or early morning shifts disrupts this harmony. Individuals must be awake when the body naturally desires sleep and vice versa, leading to fragmented and reduced sleep quality. This sleep disruption can result in heightened sleepiness during waking hours. (Åkerstedt

2003.) As a result, this leads to more mistakes in work settings, heightened chances of accidents and injuries, and a decline in overall health (Simon, David & Philip 2005).

Health issues often arise when workers are exposed to disruptions in their circadian rhythms, especially when they engage in night shift work that requires them to invert their usual sleep-wake cycle (Åkerstedt 2003) which can lead to diverse health problems linked to night shift work; these include sleep difficulties (Dubessy & Arnulf 2023; Abbaszadeh et al. 2020), cardiovascular and diabetes risks (Smith, Mcdonald & Farzan 2020; Ahmadi 2022), psychological challenges (Ferri et al. 2016), oncological concerns (Berge et al. 2023), issues with the female reproductive system (Wang et al. 2016), and higher obesity rates among night shift nurses compared to their day counterparts. (Suter et al. 2020.)

Comprehending the experiences and perspectives of nurses working the night shift is crucial. These ideas will enable the formulation of strategies to mitigate potential negative impacts. By investigating these experiences and perceptions, there is an opportunity to enhance the practice environment and job satisfaction of night shift nurses, ultimately leading to improved outcomes for nurses and patients. (Weaver, Cordova, Vitale, Hargwood & Salmond 2023.)

3 THE IMPACT OF NIGHT SHIFTS ON NURSES

3.1 Negative impacts of nights shift on nurses' well-being

Extended periods of nighttime work, overwhelming workloads, and changes in the natural circadian rhythm can lead to psychological and physiological problems. These challenges pose obstacles for nurses in their regular nighttime duties and elevate the risk of occupational accidents and injuries. Consequently, these disruptions can adversely affect the physical and psychological well-being of individuals and detrimentally impact job performance. (Palhares, Corrente & Bojikian 2014.)

Stress and night shift work are considered the main factors negatively affecting an individual's quality of life, most frequently health care providers. Stress appears with a stressor signal and induces a response in the brain to perceive stress. Thereafter, physiological systems, such as the immune, endocrine, and nervous systems, produce these stress responses. (Niu et al. 2015.)

Disrupted circadian rhythms, which regulate the body's natural sleep-wake cycle, can lead to sleep disturbances influenced by a range of factors (Di Muzio et al. 2019; Dubessy & Arnulf 2023). Sleep is essential for individuals and a fundamental aspect of daily life that encompasses physiological, psychological, and social factors (Gatchel, Baum & Singer 2021). Notably, cyclical nature of sleep, alternating with periods of wakefulness, is governed by the circadian rhythm, often called the body's biological clock. Nursing, a crucial component of health care, operates around the clock in shifts, making those in the profession susceptible to circadian rhythm sleep disorders. (Di Muzio et al. 2019; Dubessy & Arnulf 2023.)

Working during nighttime necessitates being active when the body's natural alertness is typically low and resting when it is naturally high, thus disrupting the normal circadian rhythm. Consequently, this often results in reduced and disturbed sleep patterns, leading to heightened drowsiness during waking hours (Åkerstedt 2003; Van Dongen & Dinges 2005.), yielding increased workplace errors, greater risk of accidents and injuries, and degraded health (Simon, David & Philip 2005; Van Dongen, Balkin & Hursh 2016).

Oncological problems like prostrate cancer are significantly higher in developed countries compared to developing ones (Sung 2020). Various factors contribute to this, such as differences in life expectancy and diagnostic methods and potential risks like occupational or environmental exposures. These risks include night shift work, which can disrupt circadian rhythms, lead to sleep deprivation, increase stress levels, cause vitamin D deficiency, and result in prolonged exposure to artificial light at night. (IARC 2021.) In a study conducted in 2023 on the impact of night shift work on aggressive prostate cancer risk among Norwegian Offshore Petroleum Workers, Berge et al. (2023) found that those exposed to 19.5 years or more of rotating shift work had a higher risk of aggressive prostate cancer compared to those with daytime work only (Berge 2023).

The most common cancer affecting women around the world is breast cancer, impacting one in every eight women throughout her life (Arnold 2022). Specific genes such as BRCA1 and BRCA2 were markedly raising the risk of breast cancer, with carriers of mutations in these genes facing a 70% lifetime risk of developing the disease (American Cancer Society 2022). In 2019, the World

Health Organization and the International Agency for Research on Cancer reviewed the potential carcinogenicity of night shift work. Both evaluations classified it as a likely (Group 2A) carcinogen, highlighting the call for additional evidence from human studies in the latest assessment. (IARC 2019.)

Additionally, a study was conducted to investigate the link between working night shifts and the risk of breast cancer in female twins from the Finnish Twin Cohort study. This study enables the prospective examination of these connections within twin pairs, thereby accounting for possible familial factors such as genetics and shared early environments. (Schernhammer et al. 2023.) The study conducted identified a significant association between night shift work and a higher risk of breast cancer. This association appeared more pronounced in women who slept longer, although further research is needed to confirm this. The study also investigated genetic and environmental factors by analyzing twin pairs with differing experiences of night work and breast cancer risk. The findings suggest that night work could have a carcinogenic impact beyond familial predispositions. (Schernhammer et al. 2023.)

Problems with the female reproductive system, including conditions such as endometriosis, irregular menstrual cycles, miscarriage, infertility, pre-term delivery, and challenges with breastfeeding, have been associated with shift work and night rotations. Circadian oscillators within the hypothalamic-pituitary–gonadal (HPG) axis is pivotal in regulating female reproductive rhythms. Experimental studies in rats have shown that complete lesions of the suprachiasmatic nucleus (SCN) eliminate the luteinizing hormone (LH) surge and halt ovulation, highlighting the vital role of the circadian clock in managing reproductive hormones. However, the exact nature of this connection remains less well understood in humans. (Micheal et al. 2011; Simonneaux & Bahougne 2015.)

Through the help of the circadian clock, organisms anticipate and react appropriately to daily events that happen at consistent times. This internal clock is situated in the suprachiasmatic nucleus (SCN) of the hypothalamus and regulates 24-hour physiological rhythms. It coordinates with other central circadian oscillators, in the pituitary gland and hypothalamus, which regulate rhythms in peripheral tissues. (Dibner, Schibler & Albrecht 2010.) These peripheral tissues encompass endocrine organs such as the adrenal gland, thyroid gland, adipocytes, pancreas, and gonads, which help coordinate physiological and behavioural responses throughout the day (Micheal et al. 2011).

A study involving Japanese nurses revealed that 24.8% of those not working night shifts experienced irregular menstrual cycles, compared to 37.4% in the group with two rotating shifts and 35.9% in the group with three rotating shifts. A clear correlation was observed in the two rotating shifts group, where an increased number of night shifts was associated with a higher likelihood of irregular cycles. However, this correlation must be evident in the three rotating shifts group. The three rotating shifts group had a higher risk of work interference due to dysmenorrhea or premenstrual symptoms. (Mayama et al. 2020.)

Psychological problems can arise from working non-traditional hours, particularly night shifts, as these shifts disrupt the natural sleep-wake cycles. These disruptions can significantly impact both

physical and mental health, leading to negative effects on work performance. (Costa 2013.) We must highlight that the rapid and counterclockwise rotation of shifts in our hospital, whether in the afternoon, morning, or night, does not promote adequate rest and sleep between shifts. This is because of the swift and backward sequence of shifts. Research suggests a different, clockwise rotation (morning, afternoon, night) might be more beneficial. Additionally, avoiding rapid sequential rotations is recommended since nurses typically need at least four days to adjust their circadian rhythms and cortisol secretion patterns after working a night shift. (Niu et al. 2015.)

Health care professionals working night shifts experience higher rates of psychological and mental health challenges than those working during the day. These challenges encompass increased irritability, somatization, obsessive-compulsive tendencies, interpersonal sensitivity, anxiety, mood swings, and paranoid thoughts. (Ferri et al. 2016.) Additionally, shift work is linked to depressive symptoms and can worsen symptoms for individuals with a history of depression and mood disorders. (Morrissette 2013).

Disrupted digestive system function can occur when the circadian rhythm is misaligned, as the gastrointestinal system typically follows a pattern of reduced activity at night, increased activity upon waking, and heightened activity throughout the day, in response to the body's anticipation of feeding stimuli (Konturek 2011). The internal clock regulates this rhythm, which helps prepare for daily events (Johnston 2014). Disruptions to this rhythm are associated with gastrointestinal disorders like constipation and irritable bowel syndrome (Wells 2014). For instance, constipated individuals exhibit variations in colonic pressure and timing of bowel movements compared to healthy individuals, depending on the time of day (Spencer, Dinning, Brookes & Marcello 2016). Similarly, irritable bowel syndrome patients with constipation show differences in bowel contraction frequency and rectal mechanoreceptor (Mercado-perez & Beyder 2022), and sensitivity between morning and evening hours compared to healthy individuals (Duboc, Coffin & Siproudhis 2020).

A study at Washington State University revealed that separate biological clocks, called peripheral oscillators, function independently in organs like the liver, gut, and pancreas. This finding helps explain why people who work night shifts or non-traditional schedules are more susceptible to obesity, diabetes, and other metabolic disorders. (Skene, Henikoff J. & Henikoff S. 2018.)

3.2 Coping strategies

Maintaining good sleep hygiene, such as creating a calming bedroom environment, engaging in relaxing pre-bedtime rituals like meditation or taking a hot bath, and avoiding alcohol, caffeine, and heavy meals before sleep, plays a crucial role in enhancing sleep quality and duration. Consistency in sleep-wake schedules, even on days off, is another vital aspect of maintaining healthy sleep hygiene. Night shift workers should schedule sleep time to align with the beginning of their next shift rather than immediately upon returning home. Alternatively, adopting a "split nap" schedule, involving a few hours of sleep upon returning home followed by a longer nap close to the commencement of the next shift, has proven effective. (Gifkins, Johnston & Loudoun 2018 & Lammers-van der Holst, Murphy, Wise & Duffy 2020.)

The short nap strategy during night shifts helps nurses reduce their sleep requirements by 40% the following morning and results in fewer health complaints compared to nurses working permanent night shifts or rotating day shifts (Burdelak, Bukowska, Krysicka & Pepłońska 2012; Silva-Costa, Griep & Rotenberg 2015). Incorporating napping during the night shift helps maintain circadian rhythms and compensates for sleep deprivation, thereby mitigating the negative consequences associated with night work, such as shift work disorders (Ruggiero & Redeker 2014).

Maintaining a relaxing atmosphere in the bedroom is key to ensuring uninterrupted sleep. This includes ensuring the room is sufficiently dark, keeping the temperature comfortably cool, and reducing noise disturbances. Communicating with family members, roommates, or cohabitants about the importance of undisturbed sleep during designated hours is crucial. It is also advisable to dim the lights and employ mechanisms like eye masks or blackout curtains to block out external light sources. Moreover, individuals in areas with heightened daytime noise levels can use earplugs or white noise machines to reduce disruptive sounds. (Lammers-van der Holst, Murphy, Wise & Duffy 2020.)

Sufficient recovery refers to the restoration of the body's normal functions after consecutive night shifts. For instance, when it comes to sustaining wakefulness, perceptual-motor abilities, and information processing, a single day off is typically inadequate (Chang, Wu, Chen & Hsu 2017). Nurses working night shifts initially experience low levels of social satisfaction, mood, and alertness on their first day of rest, which improve on subsequent rest days. Therefore, a duration exceeding two days of rest is necessary to recuperate fully from occupational fatigue. (Blasche, Bauböck & Haluza 2017.)

Keeping a healthy diet primarily involves maintaining regular food intake, which includes eating scheduled meals and snacks consistently. This regular nourishment enables the body to process nutrients more efficiently, rather than storing them as fat reserves for future use, a process known as adiposity (Mahan & Raymond 2012). This concept is valid irrespective of one's work schedule, be it during the day or night; thus, routine meals and snacks should be eaten during the awake time as if the nurse were working the day shift (Reed, 2014).

Planning meals ahead of time for nurses working long twelve-hour shifts can be incredibly beneficial. The most effective strategy involves packing most of the day's food. This approach allows nurses to manage the ingredients in their meals, ensure a diverse diet, and avoid unhealthy food options. Bringing water to drink is crucial because many calories can be unwittingly ingested through sugary beverages like sodas, cappuccinos, or energy drinks. (Reed, 2014.)

4 PURPOSE, AIM AND RESEARCH QUESTIONS

The purpose of this study is to raise awareness and provide credible information on the negative health impacts of night shift work to not only nurses but health care workers in general. The aim is to assess how night shift work affects nurses' physical and social life and job performance. Also, to examine nurses' awareness and use of coping strategies for managing the health impacts of night shifts.

The study seeks to answer the following questions:

- What negative impacts do nurses experience when working night shifts?'
- What strategies do nurses employ to mitigate these adverse effects?

5 IMPLEMENTATION OF THE RESEARCH

5.1 Quantitative research and questionnaire

The quantitative research method gathers and analyzes numerical data to hypotheses and answers research questions. In quantitative research, research questions inquire about the relationships among variables investigated and are framed at the beginning of the study. These are linked precisely to research design, dependency, subject population, and independent variables. (Berger 2015; Bouchrika 2021.) Some research questions aim to describe how a population behaves about one or more variables or to detail the characteristics of the variables being measured (descriptive research questions). Additionally, questions may focus on identifying differences between groups in the context of an outcome variable (comparative research questions) or examine trends and interactions among variables (relationship research questions) (Ratan, Anand & Ratan 2019; Bouchrika 2021). This research usually entails a substantial sample size and employs statistical analysis to conclude a population based on the collected data. It often consists of surveys, experiments, or other structured data collection methods to gather quantitative data. (Patel, 2019.)

In quantitative research, the questionnaire is a commonly employed tool that effectively gathers survey data, offering structured, often numerical information. It can be administered without the researcher's presence and is typically relatively simple to analyze. Various issues and stages involved in questionnaire design are considered, such as the intended population/ sample, method of data analysis, the type of questionnaire, question or response type, wordings of the questions, and the opportunity to pilot and revise the questionnaire. (Cohen, Manion & Morrison 2018.) The data collection of this thesis was selected to be performed with a questionnaire due to the extensive size of the target group, the need to examine the relationship between variables and identify patterns and averages, and since the target group were nurses working in a nursing home but engaged in night shift work. The sampling method employed was based on non-random sampling, specifically purposive sampling. (Palinkas et al. 2015.)

A questionnaire must be both valid and reliable. Validity refers to how accurately the questionnaire measures what it is designed to assess, considering the inherent limitations associated with studies that utilize questionnaires. Reliability means that the questionnaire provides consistent results when administered multiple times, even by different researchers, and that any differences in responses reflect genuine variations between participants rather than issues with how the questions are interpreted or answered. Hence, any newly developed questionnaire should be pilot tested with a small group of respondents representing the larger population. Beyond assessing validity and reliability, pilot testing provides insight into the time required to complete the questionnaire. It helps identify any confusing or misleading questions that need to be revised. (Ranganathan & Caduff 2023.)

This small-scale test evaluates all study procedures, including selecting and enrolling eligible participants, data recording, specimen collection (if applicable), supervision systems, quality control, and data processing (Smith, Morrow & Ross 2015). Before distributing the questionnaire, 2% of the

sample was pre-tested to identify potential issues, such as unclear questions or vague response options. This process aided in refining the survey tool before its full-scale implementation.

Furthermore, a crucial aspect of designing a quantitative questionnaire is clearly defining from the beginning what it intends to measure, why it is measuring it, and whether the design will produce the data required. Different questions are suited to various data scales (such as rating scales for ordinal data), so it is essential to consider the analysis during the design phase. Similarly, if a pre- and post-study design is appropriate, critical principles of experimental design must be incorporated into developing and administering the questionnaires. (Imperial 2024.)

5.2 Research environment and target group

The research survey was conducted in three nursing home facilities (Attendo Aurunkopuisto, Attendo Mannisto Sydän and Attendo Saaristo) in Kuopio. These homes provide round-the-clock care to residents by assisting them with daily living activities, rehabilitation, medication administration, and monitoring. It houses over sixty residents at full capacity and an approximate total of 66 nurses in each home; both full and part-time, the workforce comprises of registered nurses, licensed practical nurses, nursing assistants, therapists (such as physical, occupational, and speech therapists), administrative staff, and support staff for cleaning and maintenance.

The nursing staff typically work five continuous weekdays, 8hrs shifts each, followed by two off-days. Nurses on shift rotations (specifically with medical licenses) are expected to complete the night duty plan, which ranges from 5 to 10 days per month. However, some staff only engage in night shifts. A given workday across each of these facilities operates with a nursing staff strength of 25 workers, of which four exclusively work night shifts, making them ideal collaborators for this study.

5.3 Data collection

A total of N=50 questionnaires were distributed to the target population and the inclusion criteria for participation were nurses who performed shift work, specifically those engaged in night shifts. Out of the N=50 distributed, n=36 questionnaires were completed and returned. Therefore, the analysis included only the responses from these n=36 participants, resulting in 72% response rate.

The questionnaire was adapted from similar studies (Books Coody, Kauffman, & Abraham 2020) and validated by the supervisor, who provided feedback on the necessary information, question content, wording, and the logical arrangement and format of the questions. The questionnaires were designed using closed-ended questions, offering clear response options, and were prepared in Finnish and English to reach a broader target audience. The questionnaire was organized into four sections: demographic information, which covered gender, age group, work experience, marital status, and the frequency of night shifts. It also includes details about social life limitations, effect of quality of performance and characteristics of night work, such as nurses' feelings about night shifts, health issues experienced during night shifts, and their coping mechanisms.

The questionnaire was distributed to the nurses in printed form after obtaining permission from the nursing administrative office. These printed copies were available for nurses to access in these nursing homes. A privacy notice and consent form were also attached to the first page, which nurses signed before completing the survey. After completing the questionnaire, they returned it to an envelope provided for collection. (GDPR 2016.) It also contains a 5-point Likert scale in some questions to accommodate instances where participants were unsure of an answer, chose not to respond, or had difficulty understanding. Nurses completed and returned the survey at their convenience and no personal identifying information was collected.

5.4 Data analysis

There are two ways that numeric data gathered in a research project can be evaluated quantitatively using statistical tools; descriptive analysis refers to using visual or graphical representations of data or calculating an index or numerical value. It summarizes a specific characteristic of a variable or measurement, and inferential analysis refers to the statistical testing of hypotheses (theory testing). The initial step in statistical analysis is to summarize the characteristics of the data, such as calculating the average of a single variable or examining the relationship between two variables, and the next step involves inferential statistics, which assist in determining whether the data supports or contradicts the hypothesis and if the findings can be generalized to a broader population. (Alan & Edward 2019.)

A quantitative descriptive study was employed to analyze the data, which characterizes the phenomenon by identifying patterns to answer questions like who, what, where, when, and to what extent (emphasizing data simplicity). Descriptive analysis can function as an independent research outcome, particularly when it uncovers previously unnoticed patterns in the data. (Loeb et al. 2017.) The data analysis aims to comprehend and explain the phenomena studied. It seeks to synthesize the data coherently, allowing for descriptive interpretation and conclusions about the study's phenomena. (Puusa 2020, 143-147.) In addition, a descriptive cross-sectional study performed in inspecting the distribution of the health outcome based on their demographic profile. (Xiaofeng & Zhenshum 2020.) The data analysis stage is the concluding phase of the research process, where the theoretical concepts developed at the study's outset relate to the data gathered during the research. (Ferri et al. 2016.)

The descriptive analytic process consisted of several steps to draw meaningful insights from the data. The first step employed by the group in this regard was to gather relevant information/data using manual questionnaires. The distribution was conducted in June, and the data collection was between July and August. The data collection sets the stage, followed by data cleansing and preparation to ensure accurate and reliable analysis. This step involves identifying missing values and duplicates to guarantee reliability and readiness for further study; the data collected were checked frequently to achieve this goal. Then, the information cleaned and prepared was electronically entered on Webropol for exploratory data analysis to find trends, patterns, and relationships. Finally, the data was summarized using percentages, measures of central tendencies, and graphical visualiza-

tion. Each step in Table 1 represents a critical step in achieving the analytic results with step 1 playing a crucial role in defining the metrics that need to be measured, and these represent the main aim of the work. (Table 1.)

TABLE 1. Steps involved in generating a descriptive analytic.

STEPS	CONTENT OF THE STEPS
Step 1	Defining and understanding the problem
Step 2	Collection of data
Step 3	Data cleaning and preparation
Step 4	Exploratory data analysis
Step 5	Data presentation

6 RESULTS

6.1 Characteristics of the respondents

The characteristics of the respondents are reported below. The mean age of our sample is 34.2 years (SD=1.58), and most respondents aged between 20 to 30 (n=14, or 38.9% of nurses) and 31 to 40 (n=15, or 41.6% of nurses), with a predominance of female participants of (28% or 77.8). A notable percentage (47%) of the nurses had 2 to 5 years of work experience, and more than half (77.8%) reported working night shifts every month. (Table 2.)

TABLE 2. Demographic profile of nurses (n=36).

Variable	**Categories**	**Frequency (n)**	**Percentage %**
Age group	20-30	14	38.9%
	31-40	15	41.6%
	41-50	5	13.9%
	51-60	1	2.8%
	>60	1	2.8%
Gender	Male	8	22.2%
	Female	28	77.8%
Marital Status	Single	21	58.3%
	Married	15	41.7%
Work Experience	<1 year	7	19.4%
	2-5 years	17	47.2%
	5-10 years	7	19.4%
	10-15 years	3	8.4%
	>15 years	2	5.6%
How often do you do night shift	Daily	2	5.5%
	Weekly	2	5.6%
	Bi-monthly	4	11.1%
	Monthly	28	77.8%

6.2 Participant's response in relation to social life, quality of performance and physiological health perception

According to nurses' responses (Figure 1) regarding the impact of night shift work on their social lives, the perception that night shifts reduce family time ranked highest (Mean=2.9; Median=2.0). This result suggests a considerable portion of the sample disagrees, as over half of the nurses do not believe night shifts significantly limit family time. However, about one-third feel it does affect them. In contrast, the lowest-ranked statement was that night shifts lead to family conflicts (Mean=2.3; Median=2.0), indicating that two-thirds of nurses disagree with this view. Regarding the effects on quality of performance, more than two-thirds of the nurses reported experiencing sleep disturbances, ranking this concern highest (Mean=3.6; Median=4.0). In comparison, the statement about having sufficient time to rest during night shifts ranked lowest (Mean=2.9; Median=3.0). Over one-third of the nurses disagreed with this statement, while a substantial portion remained undecided.

Additionally, the data highlights the physiological impact of night shifts on nurses. The statement, "I feel tired after working the midnight shift with patients at night," received the highest ranking (Mean=3.8; Median=4.0), indicating that over two-thirds of the nurses' experience fatigue following night shifts. Conversely, the lowest-ranked statement was, "My body's cycle rhythm has adapted to

the night shift," (Mean=2.7; Median=2.5), showing that about half of the nurses' experience disruptions to their circadian rhythm. (Figure 1.)

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Total	Average	Median
Night shift work causes me to spend less time with my family	2	17	4	10	3	36	2.9	2.0
	5.6%	47.2%	11.1%	27.8%	8.3%			
Night shift has a negative impact in the relationship with my children	7	7	15	2	3	34	2.6	3.0
	20.6%	20.6%	44.1%	5.9%	8.8%			
Night shift causes conflict with my family	9	12	10	4	1	36	2.3	2.0
	25.0%	33.3%	27.8%	11.1%	2.8%			
I experience sleeping problems when working during night shift	1	8	3	18	6	36	3.6	4.0
	2.8%	22.2%	8.3%	50.0%	16.7%			
I remain active and alert during night shift	0	12	11	13	0	36	3.0	3.0
	0.0%	33.3%	30.6%	36.1%	0.0%			
There is time for rest during night shift work	3	8	16	9	0	36	2.9	3.0
	8.3%	22.2%	44.5%	25.0%	0.0%			
I feel tired after midnight shift working with patients at night	0	4	3	26	3	36	3.8	4.0
	0.0%	11.1%	8.4%	72.2%	8.3%			
I experience more health issues working during night shift	1	6	11	15	3	36	3.4	3.5
	2.8%	16.7%	30.5%	41.7%	8.3%			
I have healthy lifestyle when working night shift	3	12	7	14	0	36	2.9	3.0
	8.3%	33.3%	19.5%	38.9%	0.0%			
My body´s cycle rhythm has adapted to night shift	8	10	3	14	1	36	2.7	2.5
	22.2%	27.8%	8.3%	38.9%	2.8%			
Total	**34**	**96**	**83**	**125**	**20**	**358**	**3.0**	**3.0**

FIGURE 1. How the participant responded to questions asked regarding their social, quality of performance and physiological life.

The median score of social effect, quality of performance and physiological effect of night shift on nurses based on the participant's demographic characteristics are presented below (Table 3). The median score for social effect from night shift were higher among the nurses between the age group of 20-30 years (Median=2.67; SD=1.07), higher in female (Median=2.66; SD=1.18), also in single (Median=2.50; SD=1.13). The median score reports to be higher among nurses who has >15 years of work experience (Median=3.33; SD=1.45) and in those nurses that engage in night shift bi-monthly (Median=3.66; SD=1.31).

The median score for quality of performance shows to be higher among the age group of 31-40 years (Median=3.33; SD=0.47), higher in male (Median=3.50; SD=0.91), and can be found to be relatively the same among the single and married (Median= 3.33 SD=1.03) & (Median=3.33; SD=0.99) respectively, it is also higher shows to be higher among nurses who has 10-15years work experience (Median=4.00; SD=0.94) and higher in nurses who engage in night shift bi-monthly.

Furthermore, the median score for physiological effect reports to be higher among the age group of 31-40years (Median=3.75; SD=0.00), higher in male (Median=2.50; SD=0.91) but shows to be the same between the single and married (Median=3.25; SD=0.35) and (Median=3.25; SD=1.00). The median score for the physiological effect also indicates to be higher among nurses who has 5-10

years' work experience (Median=4.00; SD=1.83) and for both nurses who do work shifts (Median=3.62; SD=1.05) & (Median=3.62; SD=0.99) respectively. (Table 3.)

TABLE 3. Overall scores of the social effect, quality of performance and physiological effect of night shift on nurses.

Variable	Social life effects		Quality of performance effect		Physiological effect	
	Mean	**Median (SD)**	**Mean**	**Median (SD)**	**Mean**	**Median (SD)**
Age group (Years)						
20-30	2.7	2.67 (1.07)	2.7	2.33 (0.97)	3.1	3.13 (1.05)
31-40	2.7	2.30 (0.95)	3.0	3.33 (0.47)	3.5	3.75 (0.00)
41-50	2.6	2.66 (1.20)	2.4	2.30 (0.87)	2.6	2.50 (1.28)
51-60	1	1.00 (0.00)	3.3	3.30 (1.70)	3.3	3.25 (1.79)
>60	1.3	1.33 (0.39)	2.3	2.66 (1.29)	3.0	3.50 (1.00)
Gender						
Male	2.4	2.50 (0.91)	3.0	3.50 (0.91)	3.4	3.87 (0.93)
Female	2.6	2.66 (1.18)	3.1	3.33 (1.07)	3.0	2.87 (1.14)
Marital Status						
Single	2.5	2.50 (1.13)	3.1	3.33 (1.03)	3.1	3.25 (0.35)
Married	2.5	2.33 (1.11)	3.1	3.33 (0.99)	3.3	3.25 (1.00)
Work Experience						
<1 year	2.7	2.33 (1.00)	3.0	3.66 (0.70)	2.8	2.75 (0.60)
2-5 years	2.7	2.66 (1.08)	3.2	3.33 (0.83)	3.1	3.75 (1.12)
5-10 years	2.4	2.66 (1.26)	3.0	3.66 (1.09)	3.3	4.00 (1.83)
10-15 years	2.2	2.33 (0.82)	3.33	4.00 (0.94)	3.5	3.75 (0.76)
>15 years	3.3	3.33 (1.45)	3.3	3.33 (1.11)	3.3	3.25 (0.97)
How often do you do night shift						
Daily	2.7	2.66 (0.75)	3.2	3.16 (0.90)	3.6	3.62 (0.99)
Weekly	2.5	2.50 (0.76)	2.8	2.83 (1.07)	2.9	2.87 (1.05)
Bi-monthly	3.3	3.66 (1.31)	3.5	3.66 (0.96)	2.8	2.50 (1.38)
Monthly	2.4	2.00 (1.07)	3.0	3.33 (1.02)	3.3	3.62 (1.05)

SD=Standard Deviation

6.3 The adverse health effects of the night shift on nurses

Out of 36 participants, 30 nurses (83%) reported that night shift work had negatively affected their health, with a mean score of 5.2 based on their responses. Among these nurses, a higher proportion of 13 (36%) indicated experiencing changes in appetite, while 11 (31%) reported muscle weakness, 8 (22%) experienced weight fluctuations, 6 (17%) reported feelings of anxiety, and 3 (8%) noted hypertension. Additionally, six nurses (17%) reported no health effects related to night shift work. (Figure 2.)

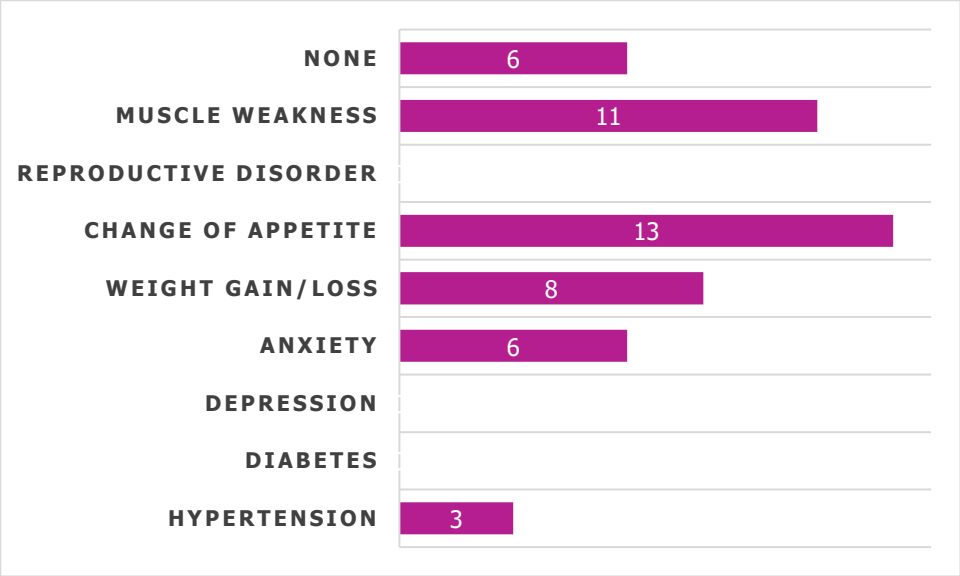

Figure 2. Graphical representation of the health effect of night shift on nurses.

The analysis of the health effects of night shifts on nurses, categorized by demographic characteristics, reveals notable findings across different age groups. Among participants aged 20-30, the highest percentages were observed, with 67% reporting anxiety and 57% experiencing changes in appetite. In the 31-40 age group, 46% of participants reported muscle weakness. Furthermore, both the 20-30 and 31-40 age groups exhibited similar rates of hypertension (33.3% and 37.5%, respectively) and weight changes. (Table 4.)

A more significant percentage of female participants (84.6%) reported challenges with appetite changes, with more than two-thirds (83.3%) experiencing anxiety, 75% reporting weight gain or loss, and 72.7% experiencing muscle weakness. Among married participants, 81.8% reported muscle weakness, while those with 2-5 years of experience had a high proportion affected by hypertension (66.7%) and muscle weakness (81.8%). Additionally, more single nurses reported weight gain (75%) and appetite changes (69.2%). Anxiety was reported equally by both single and married nurses.

In terms of work experience, 67% of those with 2-5 years of experience reported anxiety, 54% noted appetite changes, and 50% experienced weight fluctuations. Nurses with over one year of experience showed a high rate of muscle weakness (45.5%). Those working monthly night shifts showed the highest proportions: 100% had hypertension, 83.3% experienced anxiety, 75% had weight fluctuations, 76% had appetite changes, and 81.9% had muscle weakness.

Additionally, among the six participants who selected "none," half were in the 31-40 age group. Most were female and married (66.7%), and equally divided (33.3%) were those with >1, 2-5, and 5-10 years of experience. Over half (75%) worked night shifts monthly. (Table 4.)

TABLE 4. Overall score of the health impact of night shift on nurses.

Variable	H	DI	DE	A	WG/L	CA	R	MW	N
Age group									
20-30	33.3%			67%	37.5%	61.5%		18%	33.3%
31-40	33.3%			16.5%	37.5%	15.3%		46%	50%
41-50	33.3%				25%	15.3%		27%	
51-60				16.5%		7.6%		9%	
>60									16.7%
Gender									
Male	67%			16.7%	25%	15.4%		27.3%	33.3%
Female	33%			83.3%	75%	84.6%		72.7%	66.7%
Marital Status									
Single	33.3%			50%	75%	69.2%		18.2%	33.3%
Married	66.7%			50%	25%	30.8%		81.8%	66.7%
Work Experience									
<1 year						23%		45.5%	33.3%
2-5 years	33.3%			67%	50%	54%		18.2%	33.3%
5-10 years	33.3%			33%		8%		27.2%	33.3%
10-15 years	33.3%				37.5%	15%		9.1%	
>15 years					12.5%				
How often do you do night shift									
Daily					12.5%	15.4%			
Weekly				16.7%	12.5%			9.1%	
Bi-weekly						7.69%			25%
Monthly	100%			83.3%	75%	76.9%		81.9%	75%

H=Hypertension, **DI**=Diabetes, **DE**=Depression, **AN**=Anxiety, **WG/L**=Weight gain/loss, **CA**=Change in Appetite, **RD**=Reproductive Disorder, **MW**=Muscle Weakness, **N**=None

6.4 Coping mechanisms applied

The nurses' coping mechanisms were evaluated, with the results showing that the most used strategy was getting enough sleep/rest, reported by (26) 40%. Limiting caffeine intake was used by (14) 22%, time management by (12) 18%, and both maintaining a healthy diet and exercising were used by (6) 9% each. (1) 2% of the nurses who selected "other" shared their coping strategies. Overall, the responses were about outdoor recreation and quitting night shifts. (Figure 3.)

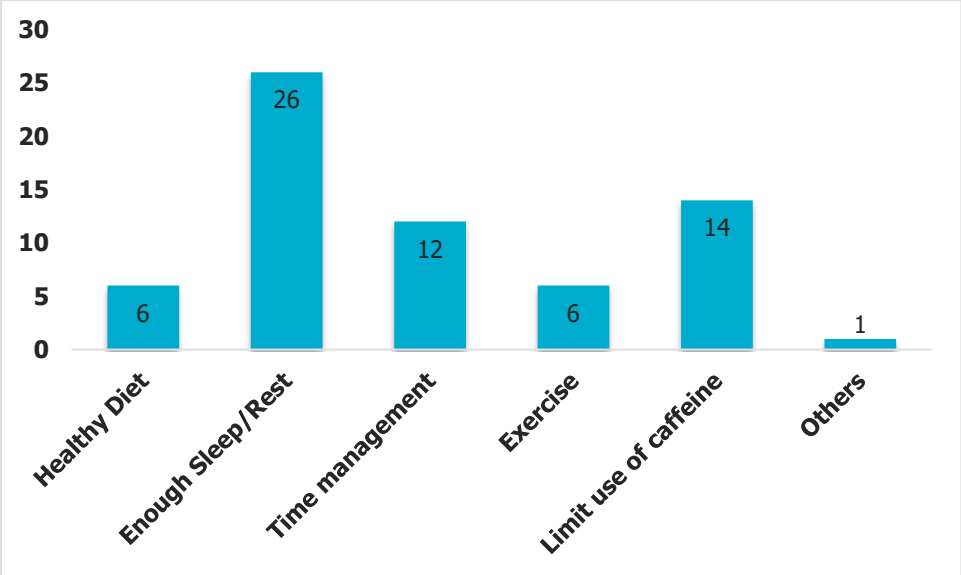

Figure 3. Result representing the coping mechanism respondents use.

7 DISCUSSION

7.1 Review of the results

The purpose of this thesis is to raise awareness and provide credible information on the negative health impacts of night shift work on nurses and healthcare workers in general. The aim is to evaluate the effects of night shift work on nurses' physical health, social well-being, and job performance. Additionally, it seeks to explore nurses' awareness of and use of coping strategies to manage the health challenges associated with night shifts.

The findings on how night shift work affects nurses' social lives, job performance, and physical well-being reveal clear patterns linked to demographic factors, work experience, and the frequency of night shifts. These results suggest that, while night shifts are challenging, their impact may vary significantly among nurses.

The result showed that night shifts have a moderate impact on family time, with most nurses disagreeing that they lead to substantial family conflicts. Younger nurses (ages 20–30) and female nurses report a more significant social impact, possibly due to active social lives or daytime family obligations. Notably, nurses with more than 15 years of experience and those working only twice a month on night shifts also reported more significant social disruptions, suggesting that infrequent night shifts may cause more noticeable interference for individuals less accustomed to night work. This finding correlates with a study by Ruggiero & Redeker (2014) which provides insight into the physical and social toll of irregular shift work. It underscores the heightened strain experienced by workers less accustomed to night shifts. (Ruggiero & Redeker 2014.)

Overall, only about one-third of nurses felt that night shifts significantly affected family interactions, indicating that while social disruptions exist, they do not necessarily cause high dissatisfaction. These findings align with findings from Japanese nurses, who reported that night shifts did not affect family conflicts or relationships; instead, shift flexibility and access to childcare were critical factors in sustaining healthy family relationships. (Fujimoto, Kotani & Suzuki 2008.) Conversely, other studies indicated that the misalignment of night shift schedules with typical social and family routines can lead to conflicts between work and personal life (Handy 2010; Li et al. 2014).

Night shifts significantly impact sleep quality and, consequently, nurse performance, with two-thirds of nurses reporting sleep difficulties. Many nurses feel that night shifts limit their opportunity for rest, hinting at possible break schedules or work environment inadequacies. Additionally, one-third of nurses' report difficulty staying active and alert during night shifts, which may compromise safety and care quality. (Simon, David & Philip, 2005.) Overall, over half of the nurses in this study reported performance issues, aligning with other research suggesting that night shift rotations may contribute to nursing errors in hospitals (Simon, David & Philip, 2005; Niu et al. 2015; Van Dongen, Balkin & Hursh, 2016). The demographic analysis reveals that performance impact scores varied,

being most pronounced among nurses aged 31–40, male nurses, and those with 10–15 years of experience, mirroring findings from a study that also observed variations based on demographic factors (Gieger-Brown et al. 2012).

The physiological effects of night shifts were evident, as many nurses reported experiencing fatigue after night shifts. This fatigue may be attributed to disrupted circadian rhythms, reflected in low responses regarding ease of adjustment to night work. Nurses aged 31-40 reported the most significant physiological impact, likely due to balancing career and personal responsibilities. Male nurses exhibited slightly higher scores for physiological effects, suggesting possible gender-related differences in coping strategies or physiological responses to shift work. Additionally, nurses with 5-10 years of experience reported the highest levels of physiological strain, potentially due to prolonged exposure without complete adaptation to night shifts. This finding aligns with other studies suggesting circadian disruption can increase physical and psychological symptoms. (Gieger-Brown et al. 2012; Ferri et al. 2016.)

The results also reveal that participants' most common health issues included disrupted eating habits, muscle fatigue, and weight fluctuations, likely due to irregular schedules and shifts in circadian rhythms, aligning with findings from previous research (Gieger-Brown et al. 2012). Although hypertension is less commonly reported, it remains a severe symptom potentially aggravated by stress, poor nutrition, and disrupted sleep patterns. However, as most participants were young and generally healthy, there was a lower incidence of cardiovascular, metabolic, gastrointestinal issues, and other comorbidities. These findings align with the study conducted by Qanash et al. (2021), which also observed a low prevalence of chronic adverse effects, noting that these outcomes are influenced by factors such as age, exposure duration, and certain lifestyle behaviours (Qanash et al., 2021).

Additionally, the findings reveal demographic-based variations, with younger nurses (ages 20-30) reporting higher levels of anxiety and changes in appetite, likely reflecting the stress associated with adjusting to night shift demands early in their careers. Nurses in the 31-40 age group reported muscle weakness, indicating a potential cumulative physical strain from extended night shift work. The finding is consistent with the prior study by Di Muzio et al. (2019) found that prolonged night shift work contributes to cumulative physical fatigue, including muscle weakness, particularly in older age groups or those with longer exposure to shift work. Hulsegge et al. (2021) observed that age-related differences in shift work impacts might be due to both physiological adaptation and accumulated strain, with younger workers experiencing more psychological stress and older workers reporting more physical consequences. (Hulsegge et al. 2021.) However, 17% of nurses reported no health issues, suggesting individual differences that may be attributed to health resilience or successful coping mechanisms.

The data on coping mechanisms highlights how nurses attempt to manage the health impacts of night shift work through various strategies. Nurses in this study reported using sleep and rest to cope with night shift. Consistent with past literature, the most widely used strategy among nurses is

prioritizing sleep and rest. (Gifkins, Johnston & Loudoun 2018 & Lammers-van der Holst, Murphy, Wise & Duffy 2020.) Most of the nurses in this study indicateed this as their primary coping mechanism and it was expected, given that night shifts disrupt natural circadian rhythms and often lead to sleep deficits. Consistent with prior research, sleep, and relaxation emerged as some of the most adopted and prioritized approaches for managing the fatigue associated with shift work. (Michael et al. 2019.)

A significant portion of nurses actively limit caffeine consumption, recognizing its potential to disrupt sleep quality if consumed too close to their rest periods. Caffeine is often used to counteract drowsiness during night shifts, but over-reliance can backfire, contributing to poor sleep and even heightened anxiety. These findings are consistent with prior study conducted by Qanash et al. (2021), this insight highlights that nurses are aware of the drawbacks of using stimulants for energy. In other studies, nurses frequently used caffeine to stay alert during shifts, it proved not to be the most effective coping method. While moderate caffeine intake can enhance alertness and cognitive function, higher doses tend to interfere with sleep quality. (Centofenti et al. 2018.)

Effective time management was reported by 18% of nurses as a coping mechanism, underscoring that organization and planning are critical strategies for managing both work and personal life demands while on night shifts. Nurses likely use time management to ensure sufficient downtime for self-care practices, exercise, or family activities, which may be challenging to balance with irregular hours. (Jensen, Larsen & Thomsen 2018.) Additionally, some nurses identified maintaining a healthy diet and engaging in physical exercise as coping methods. Although these strategies were mentioned less frequently, they are crucial for sustaining energy, enhancing sleep quality, and reducing stress especially given the physical demands of nursing. These lower percentages may indicate that time constraints or limited access to healthy food make it difficult for nurses to prioritize diet and exercise consistently. (Reed 2014; Gifkins, Johnston & Loudoun 2018.)

The "other" responses (2%) highlighted alternative approaches, such as engaging in outdoor activities and opting out of night shifts entirely, suggesting that coping strategies alone are insufficient to counterbalance the adverse effects for some. Outdoor activities may offer mental and physical benefits, as natural settings alleviate stress and boost mood. Bratman et al. (2015) found that spending time in green spaces improves emotional well-being and decreases negative thoughts, reinforcing the value of outdoor engagement as a coping mechanism. At the same time, social interactions are consistently linked to greater well-being and satisfaction with shift work. (Bratman 2015.)

The mention of leaving night shifts indicates that, for sure, nurses' demands for night work surpass the benefits of coping mechanisms, prompting considerations of career or shift adjustments. This decision could signal to management that, while coping strategies are beneficial, there may still be a need to reevaluate night shift structures or provide options for nurses to reduce night shift frequency without impacting their career progression.

7.2 Ethics and reliability

During the research process and data collection, we considered crucial research ethics throughout the thesis to ensure that the research was conducted in a manner that respected the rights and well-being of participants, maintained integrity, and upheld scientific standards, including informed consent, confidentiality and anonymity, privacy, cultural sensitivity, data management, and risk management. A key focus was to uphold ethical principles, which served not only as a moral obligation but also as a foundation for preserving credibility and trustworthiness of the scientific community. (Hesse-Biber & Leavy 2011.) According to TENK (2019), they obtained research permission through a questionnaire, given that it involves human participation in obtaining results and views from the participants (TENK 2019).

Given the collection of personal information from participants, a privacy notice was included. This privacy notice was attached to the first page of the printed questionnaire, which consenting nurses signed before completing the survey. Additionally, the authors enhanced the reliability of the thesis by ensuring consistency and dependability in the research findings. (GDPR 2016.)

Reputable databases such as PubMed, CINAHL, ScienceDirect, and Google Scholar were utilized to ensure the research's reliability; sources were chosen based on their credibility, prioritizing works authored by at least two experts. Special care was taken to select up-to-date sources to confirm claims and cross-verify information from different perspectives to reduce potential biases. The selection criteria focused on factors such as publication date, peer-reviewed status, and relevance to the topic. Each source was evaluated against these criteria. The authors collaborated and cross-checked to validate the findings, ensuring the outcomes accurately reflected their perspectives.

The authors of this thesis created a detailed plan. They carefully adhered to the timeline for each phase of the thesis, actively consulting with the supervisor to address practical, ethical, and plagiarism-related concerns. (Arene, 2019.) The thesis plan was then implemented, and the authors carried out the research honestly and honestly. They ensured accurate reporting of the methods used, the results obtained, and the conclusions drawn. All sources were referenced correctly according to the criteria set by Savonia UAS, adhering to a standardized referencing style to prevent plagiarism. This approach ensured proper credit was given to the original authors for their ideas, words, and contributions.

This thesis was supported by providing thorough descriptions of the research context and methodologies, enabling others to assess the relevance of the findings to different settings. The research offered extensive information on the adverse health effects of night shifts on nurses, aiming to aid future researchers and healthcare managers in evaluating the applicability of these findings within their specific contexts.

7.3 Professional growth

Completing this thesis represented a pivotal milestone in the author's academic journey, providing a valuable opportunity to deeply research the adverse health effects of night shifts on nurses and their coping mechanisms. Understanding and organizing the necessary steps required considerable effort

and time. Writing this thesis enabled the authors to strengthen their critical thinking abilities, improve their academic writing skills, and gain comprehensive expertise in developing a thesis from start to finish. Research for the theoretical framework began in February and was completed in November.

The content analysis was carried out efficiently, with well-defined stages, promoting a logical and systematic approach to data collection and analysis. The authors have developed competencies in evidence-based practice and decision-making, including retrieving information from health sciences databases. Furthermore, reading and evaluating scientific literature is essential, as is an in-depth understanding of evidence-based practice and its importance in the health care sector.

Throughout the thesis, the authors gained experience integrating the supervisor's feedback and reflecting it in their work. Conducting research for the thesis allowed the author to access data from health sciences databases and critically evaluate and utilize scholarly papers. Additionally, the author deepened their understanding of research, development, innovation processes, and various research methodologies. Throughout the thesis, the authors gained a deeper understanding of night and work shifts overall. The insights from this work will undoubtedly aid them in managing work shifts more effectively, with a particular focus on night shifts.

The thesis-writing process has dramatically advanced the author’s professional and personal growth. It has sharpened their critical thinking, strengthened their research skills, and enriched their understanding of the topic. The knowledge and abilities gained through this effort will be crucial in shaping the author’s future career success.

8 CONCLUSION AND SUGGESTION FOR FURTHER RESEARCH

In conclusion, our findings showed that night shift work tends to disrupt sleep patterns and quality, significantly impacting the psychological health and overall well-being of night shift workers. This study underscores that nursing work, at any level, can be a considerable stressor affecting health and well-being, especially in areas such as job satisfaction, sleep quality and duration, and mental and cardiovascular health. Night shifts frequently lead to chronic fatigue, with nurses working these hours experiencing a notably higher increase in fatigue.

The study also highlighted a lack of understanding regarding nurses' coping strategies to manage the stress and adverse effects of shift work schedules, pointing to a need for greater nurse awareness about these coping mechanisms. This research provides valuable insights into the various personal coping strategies used by night shift-working nurses, emphasizing opportunities to encourage positive coping methods that enhance well-being, like promoting the benefits of social support, exercise, hobbies, mindfulness, diet, time management, and sleep practices. The findings also indicate that, beyond enhancing nurses' skills in using effective coping strategies, workplaces could play an essential role in supporting nurses' well-being, such as implementing supportive organizational policies that would make a significant improvement like ensuring designated naps are encouraged during night shifts, and suitable napping spaces are made available.

Health promotion specific to night-time working well-being, offering dietary advice, education on optimal caffeine use, or providing alternatives like hydrating and healthy snacks could further help nurses manage alertness without compromising their sleep schedules, and good sleep hygiene are areas of focus. Since night shift work is crucial to health care services and central to nurses' work schedules, nurses need to develop effective coping strategies to manage the high demands of their roles and mitigate the adverse effects of shift work (such as excessive fatigue and potential psychological distress). This approach promotes well-being and supports long-term sustainability within the profession.

A substantial proportion of the nurses surveyed reported negative effects from night shift work, highlighting the need for further research to identify effective strategies that aid individual adaptation to night shifts. Future studies should focus on conducting evidence-based evaluations of proposed solutions in practical settings, developing counseling programs for those at higher risk, and offering continuous support to nurses who frequently work night shifts.

In conclusion, the study's primary limitations lie in its reliance solely on demographic profiles for comparative analysis cause focusing only on those for comparisons overlook other critical variables. Future research should aim to include a more diverse sample and incorporate multidimensional data for more robust and nuanced findings.

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APPENDIX 1: CONTENT OF THE QUESTIONNAIRE

THE NEGATIVE IMPACT OF NIGHT SHIFT ON NURSES: EXAMINING COPING MECHANISM FOR MITIGATION

SECTION 1: PERSONAL DETAILS

Age group

☐20-30 ☐31-40 ☐41-50 ☐51-60

Gender

☐Male ☐Female

Marital Status

☐Single ☐Married

Work Experience

☐>1yr ☐2-5yrs ☐5-10yrs ☐10-15yrs ☐>15yrs

How often do you do night shift?

☐Daily ☐Weekly ☐Biweekly ☐Monthly

SECTION 2: SOCIAL LIFE, PHYSIOLOGICAL & HEALTH EFFECT

	5 Strongly Disagree	4 Disagree	3 Undecided	2 Agree	1 Strongly Agree
Night shift work causes me to spend less time with my family	☐	☐	☐	☐	☐
Night shift has a negative impact in the relationship with my children	☐	☐	☐	☐	☐
Night shift causes conflict with my family	☐	☐	☐	☐	☐
I experience sleeping problems when working during night shift	☐	☐	☐	☐	☐
I remain active and alert during night shift	☐	☐	☐	☐	☐
There is time for rest during night shift work	☐	☐	☐	☐	☐
I feel tired after midnight shift working with patients at night	☐	☐	☐	☐	☐
I experience more health issues working during night shift	☐	☐	☐	☐	☐
I have healthy lifestyle when working night shift	☐	☐	☐	☐	☐
My body's cycle rhythm has adapted to night shift	☐	☐	☐	☐	☐

SECTION 3: HEALTH EFFECT

From the list below choose the negative impact of night shift on you

Hypertension	Diabetes	Depression	Anxiety	Weight Gain/loss	Change in appetite	Reproductive Disorder	Muscle weakness
☐	☐	☐	☐	☐	☐	☐	☐

SECTION 4: COPING MECHANISM

From the options below which of the following coping mechanism have you used?

Healthy Diet	Enough rest/sleep	Time Management	Exercise	Limit use of caffeine	Others
☐	☐	☐	☐	☐	☐

If **others**, can you state it/them in the box provided:

Does the above mentioned mechanism work for you? ☐Yes or ☐No

Thank You!!!

APPENDIX 2: CONSENT FORM

CONSENT FORM

Dear Participant,

You are invited to participate in a thesis study titled The negative impact of night shift on nurses: Examining the coping mechanism for mitigation. This study is being conducted by Nnadozie Ogechi, Onome Erhijiapkor, Akunede Victor from Savonia University of Applied Sciences.

Your participation in this study is entirely voluntary. Before you decide whether to participate, it is important for you to understand why the research is being conducted, what your participation will involve, and any potential risks or benefits associated with participating.

Purpose of the Study:
The purpose of this study is to aid nurses in identifying adverse effects stemming from night shift work rotations and to offer coping strategies to alleviate these impacts by surveying nurses to gauge their use of coping mechanisms.

Procedures:
If you agree to participate, you will fill out a questionnaire and this will take approximately 5 minutes to complete.

Risks and Benefits:
There are no known risks associated with participating in this study. The benefits of participating in this study include to encourage nurses to use coping mechanisms to improve their performance in both personal and professional contexts, and to give nurses useful information to improve their understanding of the negative health implications of working night shifts.

Confidentiality:
Your responses will be kept confidential and anonymous. No personally identifiable information will be collected, and your responses will only be used for study purposes.

Consent:
By completing and submitting the questionnaire, you are indicating that you have read this consent form, understand the nature of the study, and voluntarily agree to participate.

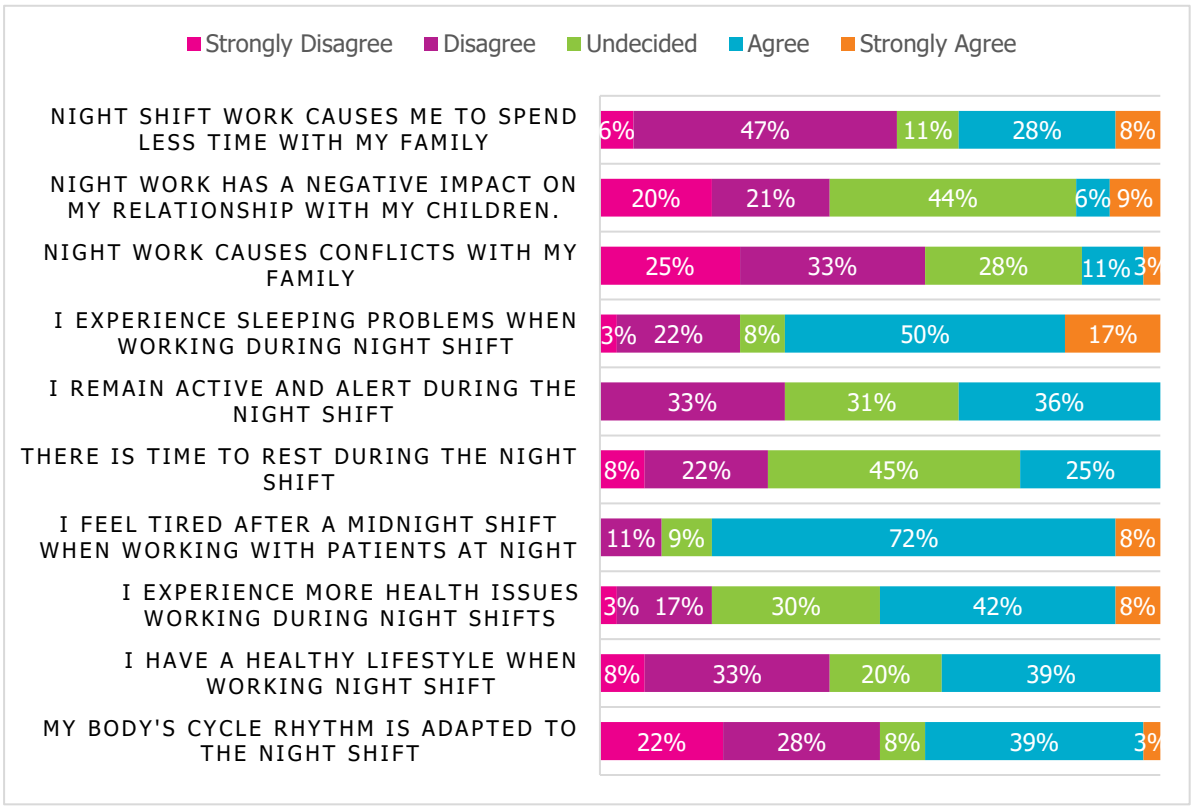
Thank you for considering participation in this study.

Sincerely,
Ogechi Nnadozie, Onome Erhijiakpor & Victor Akunede

Please sign below if you acknowledge that you have read and understood the information provided above and consent to participate in the study.

_____
Signature

APPENDIX 3: PERCENTAGE SCORE RESULT OF SECTION TWO OF THE QUESTIONNAIRE



APPENDIX 4: RESULT OF HEALTH EFFECT BY DEMOGRAPHIC PROFILE

Variable	H	DI	DE	A	WG	CA	R	MW	N
Age group									
20-30	1			4	3	8		2	2
31-40	1			1	3	2		5	3
41-50	1				2	2		3	
51-60				1		1		1	
>60									1
Gender									
Male	2			1	2	2		3	1
Female	1			5	6	11		8	2
Marital Status									
Single	1			3	6	9		2	1
Married	2			3	2	4		9	2
Work Experience									
<1 year						3		5	
2-5 years	1			4	4	7		2	1
5-10 years	1			2		1		3	1
10-15 years	1				2	2		1	1
>15 years					1				
How often do you do night shift									
Daily					1	2			
Weekly				1	1			2	
Bi-weekly						1			1
Monthly	3			4	6	10		9	4