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RESEARCH ARTICLE

Insomnia among Intensive Care Unit Nurses in the United Arab Emirates and its Association to Work Productivity and Quality of Life

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Abstract:

Background:

A healthy workforce is essential for sustainable healthcare systems, disease control, and the provision of quality and safe healthcare services. Insomnia is a common problem among critical care nurses attributed to the hard nature of their work, long and irregular shifts, high levels of stress and tension, and exposure to traumatic situations associated with critical care environments. These issues compromise their professional and personal lives, have financial consequences for health organizations, and may reduce the quality of care provided to patients.

Aim:

To assess the prevalence of insomnia among ICU nurses and determine its impact on their Quality of Life (QoL) and work productivity.

Methods:

This cross-sectional study involved 430 ICU nurses working in three major governmental hospitals in the United Arab Emirates. Nurses were selected *via* convenient sampling. Data collected included nurses' demographic characteristics, insomnia levels using the Athens Insomnia Scale, work productivity using the workability index, and QoL using the World Health Organization Quality of Life Scale-Brief questionnaire

Results:

Approximately 237 (55%) of participants reported moderate to severe levels of insomnia, and 195 (45.3%) had moderate productivity levels. However, the majority of participants reported low QoL levels in physical, psychological, social, and environmental QoL domains (61.4%, 60.2%, 47.2%, and 70.5%), respectively. Bivariate correlations demonstrated a significant negative relationship; correlation coefficient of -0.517, between participants' insomnia levels and work productivity levels. Additionally, significant negative relationships were found between insomnia levels and the QoL domains, with correlation coefficients of -0.629, -0.568, -0.469, and -0.485, respectively.

Conclusion:

This study found that insomnia has a negative relationship with ICU nurses' work productivity and QoL. This may impact care delivery patient care and safety. Regular counseling sessions, better working hours, less overtime, and a better work-life balance may contribute to increased productivity and improved QoL among ICU nurses in the UAE.

Keywords: Insomnia, Work productivity, Quality of life: ICU nurse, Workforce, Nurses.

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1. INTRODUCTION

Healthcare services are a critical part of society and provide necessary care for ill and vulnerable people, especially in intensive care units (ICUs) [1 - 4]. ICU nurses play a vital role in providing care and treatment for ill and vulnerable

patients. ICU nurses are also expected to work around the clock and must often work consecutive 12 to 13-hour shifts, including night shifts [5, 6]. This workload can contribute to sleep disorders, job dissatisfaction, burnout, intention to leave, social alienation, poor quality of life (QoL), and reduced work productivity [7 - 14]. On the other side, failing to provide adequate support might increase the undesired side effects and negative consequences for nurses and the services they render to their patients [15 - 17].

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A major issue facing ICU nurses is insomnia, which is a sleep disorder characterized by difficulty initiating or maintaining sleep, resulting in distress or impairment in daily functioning. Insomnia can lead to fatigue, sleepiness, cognitive impairment, emotional changes, and other issues that can impact nurses' well-being and work productivity [18]. At the individual level, numerous studies have reported the long-term health impacts of insomnia, including musculoskeletal disorders [19], gastrointestinal disorders [20], diabetes mellitus [21], cardiovascular disease [22], mental health disorders [23], stroke [24], and various types of cancer [25].

Furthermore, QoL, which is a broad concept encompassing all elements that impact a person's life has been reported to be affected by insomnia. In turn, this can affect nurses' safety and well-being [26 - 28]. At the organizational level, nursing productivity is a major issue affected by insomnia that has financial consequences and impacts patient care outcomes. In general terms, productivity refers to the relationships between outputs and the various inputs used to create these outputs [29]. Nursing productivity is defined as providing appropriate, cost-effective, and acceptable nursing care to patients [2, 30].

It is crucial to assess and address factors influencing nurses' productivity and performance to ensure the delivery of effective and efficient nursing care [31]. Insomnia has been associated with higher rates of absenteeism, increased use of hospital facilities, occupational injuries [32], chronic fatigue, burnout [33, 34], eating disorders, mood disorders, low self-esteem, inadequate stress management [35], negative quality of care ratings, increased medical errors, compromised patient safety [36], and reduced work productivity [37, 38].

Reviewing the literature, a recent survey conducted in the USA found that 40% of nurses slept less than 7 hours per day, indicating that they were among the most sleep-deprived professionals [39]. This chronic sleep deprivation can have significant implications for their health and well-being and increase their risk for work-related injuries. Previous studies estimated that approximately half of healthcare professionals, including nurses, may suffer from some form of chronic illness as a result of sleep deprivation supporting the need to investigate shift work patterns professionals to improve well-being and productivity while also ensuring workplace safety [39, 40].

However, few studies in the UAE have focused on the working conditions for nurses, particularly those in ICUs who provide critical services under high-pressure conditions [41,42]. The healthcare sector in the UAE continues to evolve, with a growing emphasis on attracting and retaining skilled healthcare professionals from around the world. The nursing workforce in the UAE is primarily dependent on overseas nurses with less than 3% of the nursing staff being Emirati. Those immigrants from diverse cultural backgrounds make up the majority of them, particularly the ICU nurses [41].

UAE's healthcare system's multicultural makeup and the presence of expatriate nurses have helped the nation offer its diverse population high-quality medical care. However, these expatriates are seeking better lives and financial incomes to support themselves and their families back home [41]. They

often work overtime or extended hours for greater financial stability. These country-specific factors underscore the importance and relevance of studies exploring the working conditions for nurses and potential areas for improvement. Given that insomnia is among the main issues affecting ICU nurses, this study aimed to explore the impact of insomnia on nurses' QoL and productivity within their unit and organization.

2. MATERIALS AND METHODS

2.1. Design, Sample, and Settings

This study used a descriptive, cross-sectional correlational design and was conducted in three major Emirates Health Services hospitals across the UAE. These hospitals offer a variety of clinical services, including outpatient care, inpatient care, accident and emergency, ICU, cardiac catheterization laboratories, dialysis, and daycare surgery. Nurses from the ICUs in the participating hospitals who were aged 25 – 50 years, actively working at the bedside, had at least 6 months of work experience in night shifts, and were under a permanent contract were recruited for this study. Participants who had known and diagnosed sleeping disorders or were on medication were excluded.

Sample size calculation using the Raosoft sample size calculator revealed that 370 participants would be sufficient to achieve a confidence level of 95% with a 5% margin of error, given an estimated population of 6,000 ICU nurses working in the UAE. However, we invited 450 nurses to participate in this study to compensate for any missed data, among which 430 participants completed the questionnaires ending with a 95.6% response rate.

2.2. Measurement of Variables

2.2.1. Sociodemographic Data

The sociodemographic information that was collected in this study included age, gender, educational level, years of experience, number of night shifts worked in the last month, and the number of working hours per week.

2.2.2. Insomnia

Participants' insomnia levels were measured with the Athens Insomnia Scale (AIS), which was introduced in 2000 by a group of researchers from Athens, Greece [43]. The AIS is a self-assessed psychometric tool that previously showed high consistency and reliability with a Cronbach's alpha of 0.90, mean item-total correlation coefficient of 0.70, and external validity for the evaluation of the intensity of sleep difficulty. Moreover, the AIS is considered a reliable tool for diagnosing insomnia; correlations between the AIS-8 and the Sleep Problems Scale reported in previous studies in many European and Asian countries were 0.90 and 0.85 [43, 44].

The AIS records participants' assessment of any sleep difficulty that they had experienced based on eight questions. Each question is scored from zero ("no problem") to 3 ("significant issue in sleep quality") and adds to it a self-evaluation for the physical and mental function of the next day. The total score of the AIS ranges from 0-24, with higher scores indicating higher levels of insomnia. Additionally, the AIS cut-off points used to categorize insomnia severity as the

following: absence of insomnia (0 – 5), mild insomnia (6 – 9), moderate insomnia (10 – 15), and severe insomnia (16 – 24) [45].

2.2.3. Work Productivity

Work productivity was evaluated using the Work Ability Index (WAI), which was developed by the Finnish Institute of Occupational Health in 1989 [46]. The WAI has been widely implemented in various populations, including healthcare professionals such as nurses and physicians [31, 47, 48]. The WAI has established validity and reliability, with Cronbach's alpha coefficients of 0.85 and 0.78 reported in studies by Heyam *et al.* (2018) and Adel *et al.* (2019), respectively [37, 49].

The WAI is divided into seven sections covering participants' general workability, current workability, health status, current illness or injury that hinders workability, reported sick notes during the last 12 months, self-estimation of workability for the coming 2 years (according to their present state), and mental capacities during the last 3 months. The highest possible rating on the WAI is 49 points and the lowest is 7 points. The total score is obtained by summing the points for each item, except for items 2, 3, and 7 which have specific scoring rules. Scores of 7 – 27 indicate poor workability, 28 – 69 indicate moderate workability, 37 – 43 indicate good workability, and 44 – 49 indicate excellent workability.

2.2.4. Quality of Life

Quality of life was measured using The WHO Quality of Life Scale-Brief (WHOQOL-BREF) which is a self-administered questionnaire comprising 26 questions that evaluate individual's perceptions of their health and well-being over the previous 2 weeks. This tool covers four domains: physical, psychological, social relationships, and environments. Two additional questions cover the individual's perception of their overall health and overall QoL. Responses to the questions are on a Likert scale from 1 ("disagree" or "not at all") to 5 ("completely agree" or "extremely"). The scores for each domain range from 0 to 100, and scores over 60 represent good QoL [50]. Overall, lower scores indicate a low QoL and higher scores indicate a high QoL.

2.3. Data Collection

The researchers communicated *via* mail with the nursing directors of the selected hospitals and provided a full explanation of this study. Next, clinical resource nurses shared a link to the online survey *via* email with nurses who met the study inclusion criteria and agreed to participate in this study.

2.4. Data Analysis

Data were analyzed using SPSS version 26. Descriptive statistics (frequency, mean, standard deviation [SD], and percentage) were used to evaluate participants' insomnia, work productivity, and QoL. Shapiro-Wilk Test was used to test normality in this study ($p < .05$); therefore, we used the nonparametric tests (Mann Whitney and Kruskal Wallis) to explore the relationships between the study variables. For all

statistical tests, a P-value ≤ 0.05 was considered statistically significant.

2.5. Ethical Considerations

This study was approved by the University of Sharjah (Reference no: REC-22-12-24-S), and the Ministry of Health and Prevention Research Ethics Committee (MOHAP/DXB-REC/J.F.M/No.10/2023). Participation in this study was voluntary and anonymous. Informed consent was obtained from each participant before data collection after they received a detailed explanation of the study's purpose. Confidentiality was maintained throughout the study using a coding system. Moreover, all data were kept on a private password-protected computer belonging to the principal researcher. Aggregate data were used for publication purposes without any participant identifiers.

3. RESULTS

3.1. Participants' Demographic Characteristics

In total, 430 ICU nurses participated in this study. Participants' mean age was 35 years (SD=6.35 years). The gender distribution showed that 150 (34.9%) participants were male and 280 (65.1%) were female. The majority of participants ($n=321$, 74.7%) had a bachelor's degree, 65 (15.1%) had a master's degree, and 44 (10.2%) had a diploma. Participants' mean length of experience was 12.11 years (SD=6.22 years); they worked an average of 7.5 (SD=4.4) night shifts each month and an average of 44.33 hours (SD=11.55 hours) per week.

3.2. Insomnia Levels among ICU Nurses

Participants reported various signs and symptoms of sleep difficulties. Specifically, 65.4% reported issues with sleeping induction, 79.1% reported issues with awakening during the night, 75.7% reported issues with final awakening earlier than desired, 85.6% were not satisfied with their sleep duration, and 85% experienced overall low sleep quality. Furthermore, 75.1% had a decreased sense of well-being during the day, 70.7% reported decreased physical and mental functioning during the day, and 80% reported sleepiness during the day. Approximately 55% of participants were classified as having moderate to severe insomnia, 20.7% had mild insomnia, and 24.2% did not experience insomnia (Table 1).

3.3. Work Productivity Levels among ICU Nurses

Based on the WAI interpretation criteria, the majority of participants perceived their work productivity level on a scale from 0 – 10, with a mean score of 7.2/10 (SD=1.7). However, the work productivity level for the performance of physical and mental job demands was 6.9/10 (SD=1.56). Many participants reported current diseases diagnosed by physicians, including work-related injuries (20%), musculoskeletal diseases (40.2%), cardiovascular and respiratory diseases (35.4%), and mental health problems (12.8%). In terms of work productivity impairments due to the above-mentioned illnesses, 68.4% of participants perceived a hindrance to their work capacity that

Table 1. Participants' self-reported sleep status (N=430).

-	-	n (%)
Sleeping induction issues	No problem	149 (34.7)
	Slightly delayed	131 (30.5)
	Markedly delayed	119 (27.7)
	Very delayed or did not sleep at all	31 (7.2)
Awakenings during the night	No problem	90 (20.9)
	Minor problem	177 (41.2)
	Considerable problem	126 (29.3)
	Serious problem or did not sleep at all	37 (8.6)
Final awakening earlier than desired	Not earlier	104 (24.2)
	A little earlier	152 (35.3)
	Markedly earlier	130 (30.2)
	Much earlier or did not sleep at all	44 (10.2)
Total sleep duration	Sufficient	62 (14.4)
	Slightly insufficient	166 (38.6)
	Markedly insufficient	163 (37.9)
	Very insufficient or did not sleep at all	39 (9.1)
Overall sleep quality	Satisfactory	65 (15.0)
	Slightly unsatisfactory	168 (39.1)
	Markedly unsatisfactory	137 (31.9)
	Very insufficient or did not sleep at all	60 (14.0)
Sense of well-being during the day	Normal	107 (24.9)
	Slightly decreased	151 (35.1)
	Markedly decreased	124 (28.8)
	Very decreased	48 (11.2)
Functioning physically/mentally during the day	Normal	126 (29.3)
	Slightly decreased	153 (35.6)
	Markedly decreased	109 (25.3)
	Very decreased	42 (9.8)
Sleepiness during day	None	86 (20.0)
	Mild	170 (39.5)
	Considerable	123 (28.6)
	Intense	51 (11.9)

affected their work productivity. In addition, 71.8% of participants reported sick leave, 92.1% experienced difficulty enjoying daily activities, 77% had difficulty remaining active and alert, and 94.2% expressed uncertainty about their future. Furthermore, 71.8% of participants expressed uncertainty regarding their readiness to remain in their current employment for the next 2 years. The findings also suggested that job productivity levels differed considerably depending on work-related injuries ($P=0.00$), although there were no significant differences by age or gender.

In terms of participants' overall work productivity levels, 45.3% of participants ($n=195$) reported moderate work productivity, 28.2% ($n=121$) reported good work productivity, and 17.2% ($n=74$) reported poor work productivity. Only 40 participants (9.3%) reported excellent work productivity (Table 2).

3.4. QoL Levels among ICU Nurses

Participants rated their subjective experiences and perceptions about their QoL in four domains using a scale of 0 – 100 for each domain. The mean QoL scores were 53.4

($SD=17.7$) for the physical domain, 56.2 ($SD=16.3$) for the psychological domain, 59 ($SD=22.6$) for the social domain, and 51.7 ($SD=16.3$) for the environmental domain.

We calculated the frequency distribution of participants' QoL scores across the four domains. The majority (61.4%) of participants reported low QoL in the physical domain, indicating low perceived physical well-being. Similarly, 60.2% of participants reported low QoL in the psychological domain, indicating poor psychological well-being. However, 52.6% of participants reported high perceived QoL in the social relationship domain, suggesting a moderate level of satisfaction and social engagement. Finally, the majority of participants (70.5%) reported low QoL in the environmental domain, indicating a low level of satisfaction with the impact of their physical environment on their QoL (Table 3).

3.5. Correlations between Insomnia Levels and Participants' Demographic Characteristics, Work Productivity, and QoL

Nonparametric tests showed there were no significant relationships between insomnia levels and gender ($P=0.462$) or

educational level (P=0.071). However, a weak significant positive relationship was found between insomnia levels and

the number of night shifts per month (correlation coefficient of 0.133). There were no significant relationships between insomnia levels and other demographic variables.

Table 2. Participants' self-reported work productivity (N=430).

Work Productivity Sections	-	Mean±SD n (%)
Section 1: Current workability	-	7.29±1.7
Section 2: Workability related to work demands	-	6.94±1.5
Section 3: Current diseases diagnosed by a physician	Work-related injuries	86 (20)
	Musculoskeletal diseases	173 (40.2)
	Cardiovascular diseases	67 (15.6)
	Respiratory diseases	85 (19.8)
	Mental disorders	55 (12.8)
	Neurological diseases	87 (20.2)
	Digestive diseases	58 (13.5)
	Genitourinary diseases	33 (7.7)
	Skin diseases	43 (10)
	Tumor/cancer	13 (3)
	Endocrine diseases	82 (19.1)
	Blood diseases	73 (17)
	Birth defects	11 (2.6)
	Other diseases	37 (8.6)
Section 4: Estimation of work impairment	Obvious hindrance to work capacity	113 (26.3)
	Causes some symptoms	181 (42.1)
	No hindrance/no diseases	136 (31.6)
Section 5: Absence due to illness, days	None	121 (28.1)
	≤9	156 (36.3)
	10 – 24	133 (30.9)
	25 – 99	7 (1.6)
	100 – 354	13 (3)
Section 6: Ability to perform the current job for the next 2 years	unlikely	124 (28.8)
	Not certain	185 (43)
	Relatively certain	121 (28.1)
Section 7: Mental Capacity	-	-
Ability to enjoy regular daily activities	Often	42 (9.8)
	Rather often	96 (22.3)
	Sometimes	193 (44.9)
	Rather seldom	65 (15.1)
	Never	34 (7.9)
Been active and alert	Often	68 (15.8)
	Rather often	37 (8.6)
	sometimes	189 (44)
	Rather seldom	37 (8.6)
	Never	11 (2.6)
Self-hope about the future	Often	60 (14)
	Rather often	102 (23.7)
	sometimes	184 (42.8)
	Rather seldom	59 (13.7)
	Never	25 (5.8)
Total work productivity levels	Poor	74 (17.2)
	Good	121 (28.2)
	Moderate	195 (45.3)
	Excellent	40 (9.3)

Abbreviations: SD: standard deviation; WAI: Work Ability Index.

Table 3. Participants' QoL (N=430).

QoL Domains	n (%)
Domain 1. Physical QoL	-
Low	264 (61.4)
High	166 (38.6)
Domain 2. Psychological QoL	-
Low	259 (60.2)
High	171 (39.8)
Domain 3. Social QoL	-
Low	203 (47.2)
High	226 (52.6)
Domain 4. Environmental QoL	-
Low	303 (70.5)
High	127 (29.5)

Abbreviation: QoL: quality of life.

There was a significant negative relationship between participants' insomnia levels and work productivity levels (correlation coefficient of -0.517). In addition, significant negative relationships were found between insomnia levels and the QoL domains, with correlation coefficients of -0.629 , -0.568 , -0.469 , and -0.485 for physical, psychological, social, and environmental QoL, respectively.

4. DISCUSSION

The nursing workforce is expected to face increasing challenges over the next 10 years. To achieve health equity for all, it is necessary to have an adequate number of skilled, educated, regulated and supported nurses who are appropriately compensated and acknowledged for the quality of care they provide [51]. The present study examined the levels of insomnia among ICU nurses in the UAE and assessed the impact of insomnia on their work productivity and QoL. The findings revealed a high prevalence of insomnia among ICU nurses, which significantly affected their work productivity and QoL.

4.1. Insomnia

In this study, 76% of ICU nurses reported experiencing a high level of insomnia. Participating nurses reported various sleep-related issues, including difficulty falling asleep, frequent awakenings during the night, insufficient sleep duration, a reduced sense of well-being during daytime functioning, decreased physical and mental capacity, and excessive sleepiness during the day. These findings supported previous research linking shift work, such as that of ICU nurses, to insomnia, daytime sleepiness, and impaired work productivity [10, 11].

Clinical observations suggest ICU nurses must exert significant effort throughout a 12-hour shift with no breaks. The lack of policies that encourage nap or rest periods combined with the difficulty of maintaining a good work-life balance, the fast pace of life, and managing home and work commitments, creates numerous challenges for ICU nurses [27, 36]. These variables can mean ICU nurses are more susceptible to sleep disruptions, which can have a major influence on their work productivity, QoL, and overall physical and

psychological well-being. The findings of this study highlighted the importance of managerial oversight in identifying early warning indications of sleep problems among ICU nurses to prevent work-related mishaps [6]. Furthermore, it is important to consider the well-being of nurses working night shifts by ensuring stable schedules and strict adherence to rest days. Measures, such as establishing a pool of replacement staff specifically for night shifts, implementing adequate break and nap opportunities, improving handover procedures, reducing the length of shifts, and implementing safe scheduling procedures may be beneficial [52].

It is recommended that nurses' working hours should not exceed three consecutive 12-hour night shifts with a maximum of 12 scheduled hours in a single day. Sufficient "off-duty" time should also be provided between blocks of shifts to allow for recovery [6]. Furthermore, addressing sleep deprivation and managing insomnia are crucial in maintaining the work productivity and QoL of ICU nurses, especially as they are potentially modifiable factors.

4.2. Work Productivity

Work productivity is a crucial part of ICU nurses' professional performance and the quality of care they provide. This study used the WAI to assess nurses' work productivity, which demonstrated that ICU nurses' physical and mental competence were below acceptable standards. This study found a significant negative correlation between insomnia and work productivity, with 45.3% of participants reporting moderate work productivity. This highlighted the need for managerial efforts to address insomnia and its impact on nurses' performance, including their work productivity levels. Although demographic factors, such as age did not show significant relationships with work productivity in this study, other factors, such as long-term health issues (e.g., musculoskeletal, cardiovascular, pulmonary, and mental diseases) were found to have a negative impact on productivity. To enhance work productivity, it is important to consider factors such as assigning duties fairly, workload management, collaboration, reward balance, and opportunities for professional progress [53].

Previous research showed that the number of working

hours and night shifts can impact work productivity [54]. In particular, night shift nurses demonstrated decreased levels of productivity, and their sleep was further compromised toward the end of a 12-hour shift. Furthermore, secondary traumatic stress and a lack of managerial motivation were identified as factors influencing work productivity [10, 55]. Work productivity has also been connected to mobbing, corporate culture, and organizational fairness [56].

To address insomnia and its impact on nurses' lives, it is critical to empower nurses to participate in decisions about working hours and flexible schedules, provide equal motivation and rewards for excellent work productivity, and ensure regular medical follow-ups for aging nurses. A holistic approach that considers nurses' well-being and expertise can contribute to their sense of value and enhance the quality of care provided to patients. To enhance working conditions for ICU nurses, it is necessary to address insomnia, establish positive organizational cultures, prevent workplace difficulties (e.g., mobbing), and provide support for nurses' physical and emotional well-being. These efforts will benefit nurses and improve patient care outcomes and the overall healthcare system [57].

4.3. QoL

This study showed that ICU nurses experienced poor QoL in the physical, psychological, social, and environmental domains. The varying degrees of QoL experienced by participants highlighted the need for interventions and support to improve their overall well-being. Insomnia had a strong negative connection with QoL across all QoL domains. This could partly be attributed to the composition of the nursing workforce in the UAE where the majority are overseas nurses, which may contribute to the challenges faced by ICU nurses [41].

Being immigrants from diverse cultural backgrounds means these nurses experience separation from their families, have multiple social roles, and may face financial difficulties. These factors frequently lead to extended work hours, fatigue, and sleep disorders such as insomnia, which adversely affect their physical, mental, and emotional well-being [41, 42]. Furthermore, in response to the identified need for improvement, the UAE Ministry of Health and Prevention (MOHAP) released the "National Strategy for Nursing and Midwifery - Roadmap for 2025." This strategy aims to encourage more citizens to pursue nursing careers in an effort to stabilize the workforce and increase the percentage of homegrown and resident nurses.

ICU nurses face the delicate task of balancing their work and personal lives. Shiftwork nursing adds to the social burden as they may be away from their families during critical moments. This can lead to feelings of guilt and being socially missed, which impact their well-being. To support ICU nurses, policymakers should consider implementing nursery care units in healthcare organizations to provide dedicated childcare facilities and alleviate the burden on nurses, allowing them to focus on their work. Support from managers and supervisors is also crucial, as they can offer guidance, advice, and support based on their expertise or seek input from senior nurses who have faced similar challenges. Such support systems can

reduce stress and boost morale among ICU nurses [58, 59].

4.4. Study Strengths and Limitations

The study focused on the connection between insomnia symptoms and productivity at work among ICU nurses and emphasized the need for early prevention of insomnia. It is noteworthy that this study may be the first in the region to consider the influence of insomnia on work productivity and QoL, specifically among ICU nurses. The present findings provide useful insights regarding the prevalence, severity, and factors associated with insomnia among ICU nurses, which have implications for patient care and nurse well-being. These insights can be used by policymakers and organizational management to make informed choices.

This study used a cross-sectional survey approach to explore the associations between insomnia, work productivity, and QoL. However, it is important to note that this design could not establish causation but rather explore associations. In addition, the study relied on self-reported measures, which might have introduced some bias. It is also crucial to consider that not all aspects of the work environment can be adjusted, and there may be confounding variables influencing ICU nurses' work productivity and QoL in the UAE.

CONCLUSION

In this study, various signs and symptoms of sleep difficulties were observed among ICU nurses, and the prevalence of insomnia was notably high. This study also revealed a moderate level of work productivity and low QoL among ICU nurses. Furthermore, significant negative relationships were found between insomnia and both work productivity and QoL levels. To address these concerns, healthcare management should consider implementing evidence-based scheduling approaches, limit overtime hours, and provide professional development opportunities while emphasizing the importance of sleep quality.

RECOMMENDATIONS

Targeted interventions for ICU nurses aimed at ensuring regular counseling sessions, better working hours, less overtime, and a better work-life balance may contribute to increased productivity and improved QoL among ICU nurses in the UAE. Encouraging ICU nurses through the provision of tools, resources, and support, as well as ensuring the general nurses' well-being, should be a top priority for healthcare organizations in the UAE. It is important that nurses' performance evaluations go beyond skill and procedural monitoring and consider their physical, emotional, and social well-being to enrich the level of work productivity. Further objective observational research is needed to identify nurses who are susceptible to short sleep duration, fatigue, and performance decline. This knowledge will enable the implementation of targeted interventions aimed at ensuring patient safety as well as overall nurses' well-being.

ABBREVIATION

QoL = Quality of Life

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Institutional Review Board (IRB) approval was obtained from the Ethical Committee (REC), the University of Sharjah, and from the Ministry of Health and Prevention & Research Ethics Committee.

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committees and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Each participant signed an informed consent before participating in this study.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article is available with the corresponding author [H.S.M] upon request.

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CONFLICT OF INTEREST

There is no conflict of interest or personal relationship between the authors that could have appeared to influence the work reported in this paper.

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