Perceived Sleep Insufficiency, Performance and Productivity Among Night-Shift Nurses in Kebbi State, Nigeria: A Cross-Sectional Study

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Abstract

Background: Night-shift duty disrupts circadian rhythms and recovery sleep, increasing fatigue and compromising healthcare quality. This study evaluated perceived pre-shift sleep requirements, work performance, productivity, and associated factors among night-shift nurses in public hospitals in Kebbi State, Nigeria.

Methods: A cross-sectional survey was conducted among 421 registered nurses working night shifts across public secondary and tertiary hospitals in Kebbi State. Perceived pre-shift sleep requirement, work performance and productivity were assessed using a pretested questionnaire. Performance and productivity scores were dichotomised into normal and poor categories using mean-score thresholds. Data were analysed using frequencies, percentages and chi-square tests of independence.

Results: Participants were predominantly female (362/421, 86.0%), younger than 40 years (372/421, 88.4%) and had 1–10 years of service (369/421, 87.6%). Before night duty, 144 (34.2%) reported needing less than six hours of sleep, 227 (53.9%) six to eight hours and 50 (11.9%) more than eight hours. Shorter service duration (1–10 years) was associated with poor performance (76.7% vs 48.1%; $\chi^2(1) = 19.008$, $p < 0.001$) and poor productivity (75.1% vs 59.6%; $\chi^2(1) = 5.542$, $p = 0.019$). Perceived sleep requirement was not associated with performance ($\chi^2(2) = 4.931$, $p = 0.085$) but was associated with productivity ($\chi^2(2) = 49.265$, $p < 0.001$).

Conclusion: Perceived performance and productivity difficulties were prevalent among night-shift nurses in Kebbi State and disproportionately affected early-career staff. Healthcare institutions should implement proactive fatigue-risk management systems, including roster optimisation, protected shift rest and non-punitive safety reporting.

Keywords: Night Shift, Nurses, Sleep Insufficiency, Fatigue, Performance, Nigeria

Introduction

Sleep supports attention, memory, emotional regulation and psychomotor performance. Night-shift work challenges these functions by requiring wakefulness during the biological night and sleep during daytime conditions that are often less favourable. Circadian misalignment, restricted sleep opportunities and individual vulnerability can therefore produce shorter, fragmented or poorer-quality sleep among healthcare workers [1–4].

For nurses, fatigue is both an occupational-health and patient-safety concern. Studies have associated sleep deprivation, night shifts and extended work hours with self-reported patient-care errors, poorer vigilance, reduced psychomotor performance, lower perceived care quality and increased safety risks [5–11]. Systematic reviews similarly identify fatigue, workload, night work and staffing conditions as contributors to medication errors and patient-safety incidents, although associations vary according to shift schedule, clinical setting and measurement method [12].

Evidence from Nigeria is limited but consistent with these concerns. Studies conducted among nurses in Benin City and another Nigerian teaching hospital reported concentration difficulties, reduced productivity, physical health complaints and shift

work sleep disorder among nurses undertaking night or rotating shifts [13,14].

Local data are needed because staffing, transport, family responsibilities, rest facilities and shift schedules differ across settings. This study assessed perceived sleep needs, work performance, productivity and institutional support among nurses undertaking night duty in public hospitals in Kebbi State. Because the study used a cross-sectional questionnaire rather than objective sleep measurement, the term sleep insufficiency is used cautiously and causal language is avoided.

Methods

Design, Setting and Participants

A descriptive cross-sectional study was conducted among registered nurses working night shifts in public secondary and tertiary hospitals in Kebbi State, north-western Nigeria. Eligible departments included medicine, surgery, obstetrics and gynaecology, and paediatrics. Participants were required to have worked in a government-owned hospital for at least two years and to have undertaken night duty during the previous six months. Nurses exclusively on day duty, working part-time in private clinics, or enrolled in part-time university programmes were excluded.

Sample Size and Sampling

The source manuscript used Cochran's single-proportion formula with an assumed prevalence of 53%, a 95% confidence level and 5% precision. The calculated sample of 383 was increased by 10% for non-response, producing a target of 421 participants. Proportionate allocation was used across hospitals and departments, followed by simple random sampling from eligible staff lists.

Instrument and Variables

Data were collected using a pretested, self-administered questionnaire adapted from previous literature on nurses' sleep, fatigue, night-shift performance and occupational productivity [5,6,13,14,19]. Expert review was used to assess content validity, and the source manuscript reported a Cronbach alpha coefficient of 0.80.

Although a Cronbach alpha value of 0.80 indicates acceptable internal consistency, alpha alone does not establish the construct validity, dimensionality or clinical interpretability of an instrument [15]. Items covered demographic characteristics, awareness of sleep-related risks, perceived performance, perceived productivity and institutional support.

Performance and productivity items were scored on five-point response scales and dichotomised using mean-score thresholds of 1.00–2.49 for normal and 2.50–5.00 for poor. Because dichotomising continuous or ordinal scores can reduce information, statistical power and precision, these thresholds should be supported by the original instrument, scoring key or validation evidence [16].

The variable labelled "needed pre-shift sleep" captured participants' perceived sleep requirement. It did not measure actual sleep duration, sleep efficiency, sleep quality, circadian timing or a clinical diagnosis of sleep deprivation.

Analysis

Data were analysed using SPSS version 20. Categorical variables were reported as frequencies and percentages, while age was reported using the mean and standard deviation. Chi-square tests examined associations between selected demographic or sleep-related variables and dichotomised performance or productivity outcomes. Statistical significance was set at $p < 0.05$. Effect sizes and confidence intervals were not supplied.

Results

Sociodemographic Characteristics of Participants

A total of 421 participants were included in this study. The sociodemographic characteristics are presented in Table 1. The majority of participants were aged 21–30 years (54.2%, n = 228), followed by those aged 31–40 years (34.2%, n = 144), 41–50 years (10.5%, n = 44), and 51–60 years (1.2%, n = 5). The sample was predominantly female (86.0%, n = 362), with males comprising only 14.0% (n = 59). Regarding professional cadre, 57.0% (n = 240) were in the lower cadre, while 43.0% (n = 181) were in the upper cadre. In terms of years of service, the majority had 1–10 years of experience (87.6%, n = 369), while only 12.4% (n = 52) had served for more than 10 years.

Perceived Sleep Requirement Before Night Duty

Table 2 presents participants' perceived sleep requirements prior to night duty. More than half of the participants (53.9%, n = 227) reported needing 6–8 hours of sleep, while 34.2% (n = 144) required less than 6 hours. Only 11.9% (n = 50) perceived a need for more than 8 hours of sleep before night duty.

Perceived Impact of Sleep Deprivation across Cadres

Analysis of the operational and cognitive consequences of sleep deprivation showed substantial perceived impairment across both professional cadres (Figures 1 and 2). The most frequently reported adverse outcome was increased medication error, reported by 91 participants (21.6%), followed by reduced focus and attention by 90 (21.4%), impaired decision-making by 87 (20.7%), poor memory by 64 (15.2%), slow reaction time by 52 (12.4%) and increased accident risk by 37 (8.8%). Multiple responses were permitted.

Associations with Perceived Performance

Age was significantly associated with perceived performance ($\chi^2 = 16.478$, df = 3, $p = 0.001$). Poor performance was reported by 79.8% of participants aged 21–30 years, 68.8% of those aged 31–40 years, 52.3% of those aged 41–50 years and 80.0% of those aged 51–60 years. The finding in the oldest age group should be interpreted cautiously because it contained only five participants.

Table 3 displays the provisional associations between various factors and perceived performance. A statistically significant association was observed between professional cadre and perceived performance ($\chi^2 = 8.886$, $p = 0.003$).

Among lower cadre participants, 189 (78.8%) reported poor performance compared to 51 (21.3%) with normal performance, while among upper cadre participants, 119 (65.7%) reported poor performance and 62 (34.3%) reported normal performance.

Age was also significantly associated with perceived performance ($\chi^2 = 15.785$, $p = 0.001$). The proportion of participants reporting poor performance was highest among those aged 21–30 years (80.4%, n = 164) and lowest among those aged 41–50 years (52.4%, n = 22).

Years of service demonstrated a strong significant association with perceived performance ($\chi^2 = 19.008$, $p < 0.001$). Participants with 1–10 years of service reported poor performance in 76.7% (n = 283) of cases, compared to 48.1% (n = 25) among those with more than 10 years of service. Conversely, normal performance was reported by 51.9% (n = 27) of participants with over 10 years of service, compared to only 23.3% (n = 86) of those with fewer years of service.

Perceived sleep requirement before night duty showed no statistically significant association with perceived performance ($\chi^2 = 4.931$, $p = 0.085$), although a trend was observed.

Associations with Perceived Productivity

Table 4 presents the provisional associations with perceived productivity. Years of service was significantly associated with perceived productivity ($\chi^2 = 5.542$, $p = 0.019$). Participants with 1–10 years of service reported poor productivity in 75.1% (n = 277) of cases, compared to 59.6% (n = 31) among those with more than 10 years of service.

Perceived sleep requirement before night duty demonstrated a highly significant association with perceived productivity ($\chi^2 = 49.265$, $p < 0.001$). Among participants who needed less than 6 hours of sleep, 77.1% (n = 111) reported poor productivity, while only 22.9% (n = 33) reported normal productivity. Conversely, among those who needed more than 8 hours of sleep, 68.0% (n = 34) reported normal productivity, compared to 32.0% (n = 16) reporting poor productivity.

Professional cadre ($\chi^2 = 1.036$, $p = 0.309$) and age ($\chi^2 = 1.420$, $p = 0.701$) were not significantly associated with perceived productivity.

Assessment of Institutional Support

Evaluations of institutional measures to mitigate sleep deprivation showed widespread dissatisfaction (Figure 3). A total of 223 participants (53.0%) rated hospital support as bad and 74 (17.6%) as very bad, giving a combined negative assessment of 70.5%. In contrast, 88 (20.9%) rated support as good, 29 (6.9%) as very good and 7 (1.7%) as excellent.

Recommended Strategies to Reduce Night Shift Sleep Deprivation

When asked to identify strategies for reducing sleep deprivation during night shifts, participants predominantly favoured structural and facility-level interventions (Figure 4). Increasing manpower was endorsed by 215 participants (51.1%), followed by

provision of a dedicated nap room by 135 (32.1%), reducing the number of night shifts by 42 (10.0%) and staff training by 29 (6.9%).

Table 1. Sociodemographic characteristics of participants (N = 421).

Variable	Frequency	Percentage
Age 21 to 30 years	228	54.2
Age 31 to 40 years	144	34.2
Age 41 to 50 years	44	10.5
Age 51 to 60 years	5	1.2
Male	59	14.0
Female	362	86.0
Lower cadre	240	57.0
Upper cadre	181	43.0
Years of service 1 to 10	369	87.6
Years of service above 10	52	12.4

Table 2. Perceived sleep requirement before night duty (N = 421).

Variable	n	%
Needed sleep less than six hours	144	34.2
Needed sleep six to eight hours	227	53.9
Needed sleep above eight hours	50	11.9

Discussion

This study found a substantial burden of self-reported occupational impairment among nurses undertaking night duties in public tertiary hospitals in Kebbi State. Of the 421 participants, 308 (73.2%) reported poor performance, while the same number reported poor productivity. These findings are consistent with evidence linking night-shift work, sleep disruption and fatigue with reduced alertness, impaired cognition, poorer psychomotor functioning and diminished occupational performance among healthcare workers [1–6]. However, the outcomes assessed in this study represent participants' perceptions rather than objectively measured clinical performance or productivity. The findings should therefore be interpreted as perceived occupational difficulties rather than direct evidence of clinical errors, reduced work output or adverse patient outcomes. The pattern of reported effects further illustrates the possible occupational consequences of sleep deprivation during night duty. As shown in Figure 1, increased medication error was the most frequently reported effect, involving 91 participants (21.6%). This was followed by reduced focus and attention among 90 participants (21.4%) and reduced decision-making ability among 87 participants (20.7%). Poor memory was reported by 64 participants (15.2%), slow reaction time by 52 (12.4%) and increased risk of an accident by 37 (8.8%). These findings suggest that participants principally perceived sleep deprivation as affecting cognitive accuracy, attention and clinical judgement. Previous studies have similarly associated nurses' fatigue, inadequate sleep and prolonged or consecutive shifts with impaired cognition, reduced psychomotor performance,

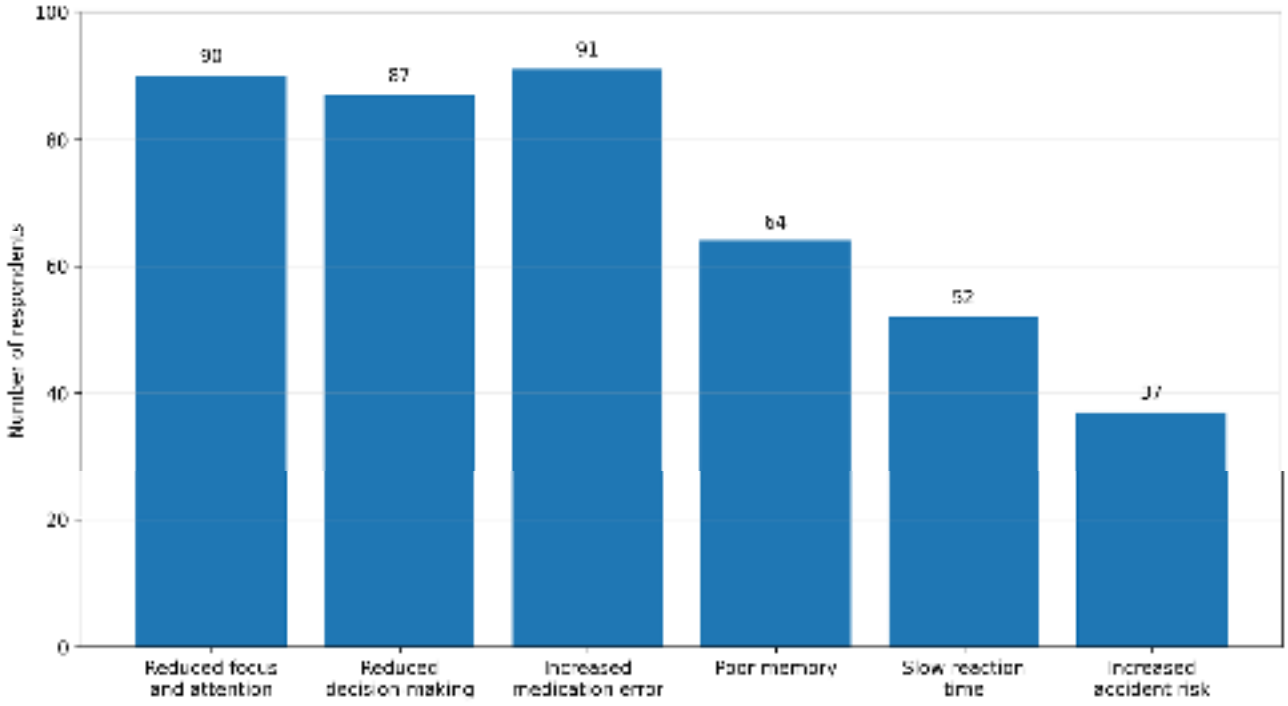

Fig 1. Main reported effects of sleep deprivation on the ability to provide quality care during night shifts.

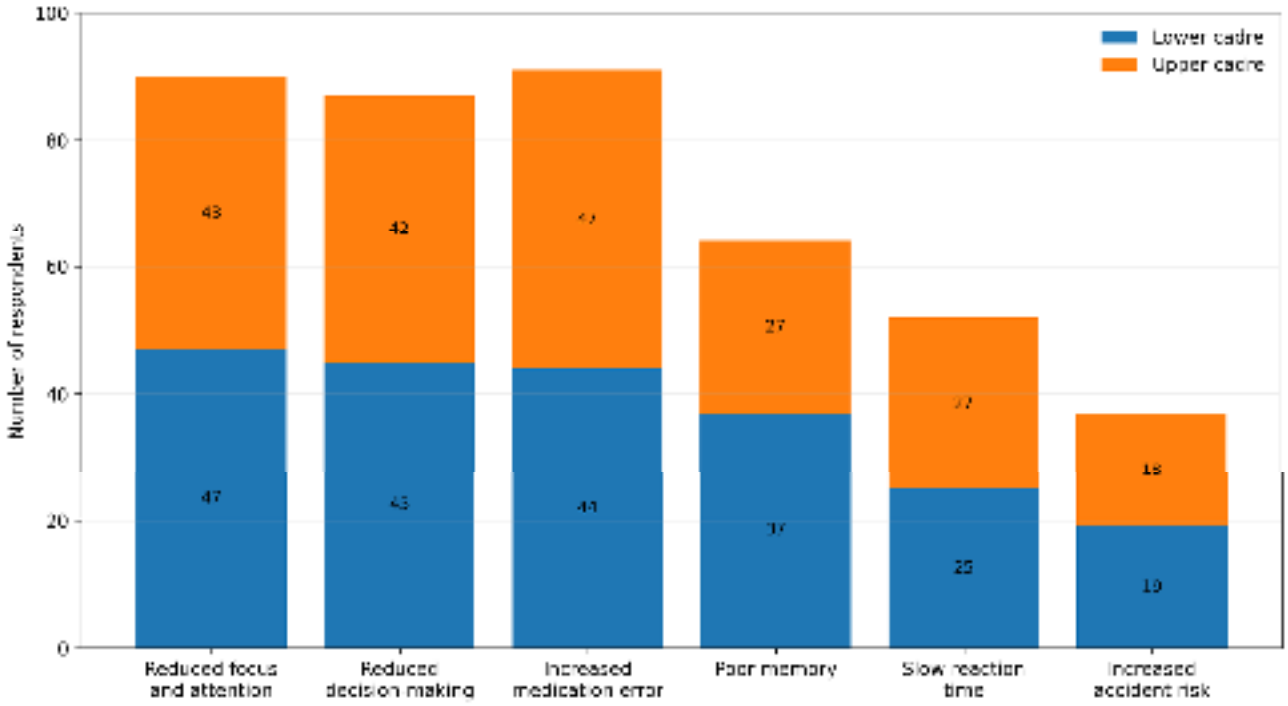

Fig 2. Reported effects of sleep deprivation during night duty by professional cadre.

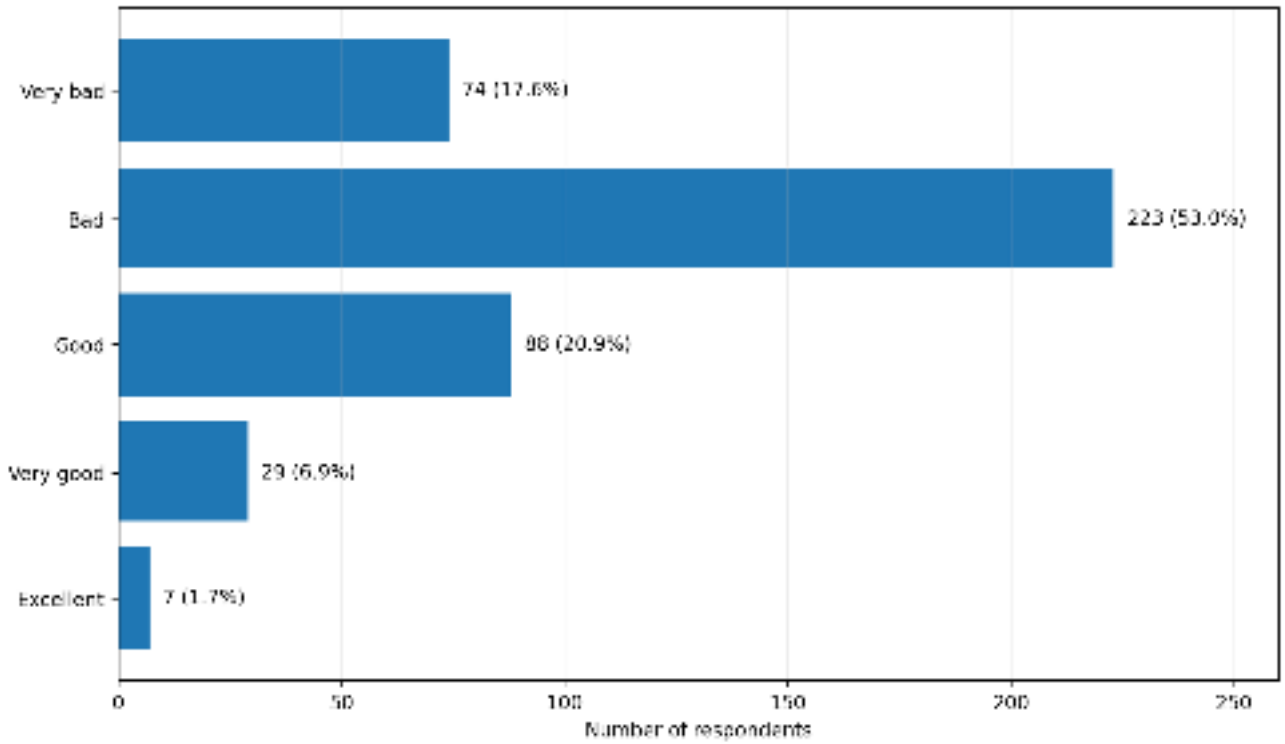

Fig 3. Perceived hospital support for curbing sleep deprivation.

Table 3. Associations between participant characteristics and perceived performance (N = 421)

Variable	Poor performance, n (%)	Normal performance, n (%)	Test statistic and p-value
Professional cadre			$\chi^2(1) = 8.886$, $p = 0.003$
Lower cadre	189 (78.8)	51 (21.3)	
Upper cadre	119 (65.7)	62 (34.3)	
Age group			$\chi^2(2) = 14.720$, $p = 0.001$
21–30 years	182 (79.8)	46 (20.2)	
31–40 years	99 (68.8)	45 (31.3)	
41–60 years	27 (55.1)	22 (44.9)	
Years of service			$\chi^2(1) = 19.008$, $p < 0.001$
1–10 years	283 (76.7)	86 (23.3)	
Above 10 years	25 (48.1)	27 (51.9)	
Perceived sleep requirement			$\chi^2(2) = 4.931$, $p = 0.085$
Less than six hours	97 (67.4)	47 (32.6)	
Six to eight hours	176 (77.5)	51 (22.5)	
Above eight hours	35 (70.0)	15 (30.0)	

Table 4. Associations between participant characteristics and perceived productivity (N = 421)

Variable	Poor productivity, n (%)	Normal productivity, n (%)	Test statistic and p-value

Professional cadre			$\chi^2(1) = 1.036$, $p = 0.309$
Lower cadre	171 (71.3)	69 (28.8)	
Upper cadre	137 (75.7)	44 (24.3)	
Age group			$\chi^2(2) = 0.966$, $p = 0.617$
21–30 years	169 (74.1)	59 (25.9)	
31–40 years	106 (73.6)	38 (26.4)	
41–60 years	33 (67.3)	16 (32.7)	
Years of service			$\chi^2(1) = 5.542$, $p = 0.019$
1–10 years	277 (75.1)	92 (24.9)	
Above 10 years	31 (59.6)	21 (40.4)	
Perceived sleep requirement			$\chi^2(2) = 49.265$, $p < 0.001$
Less than six hours	111 (77.1)	33 (22.9)	
Six to eight hours	181 (79.7)	46 (20.3)	
Above eight hours	16 (32.0)	34 (68.0)	

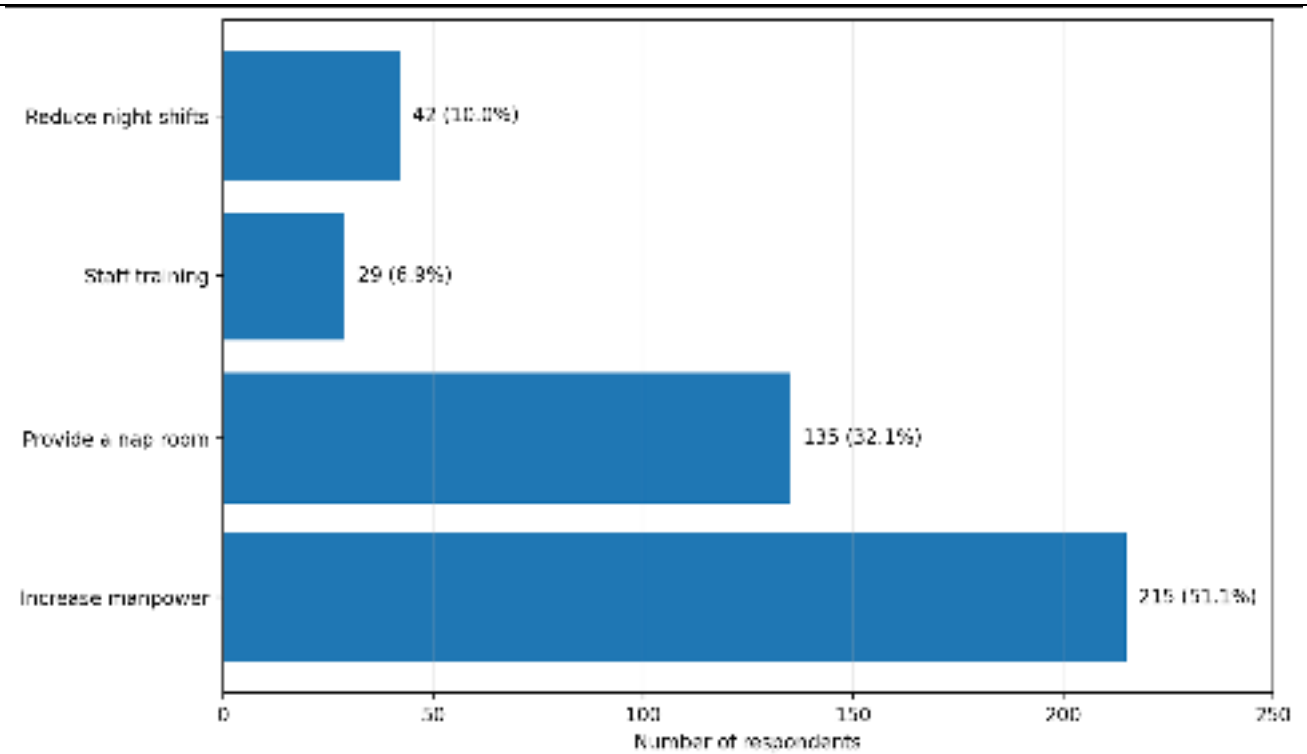

Fig 4. Recommended strategies to reduce sleep deprivation during night shifts.

medication-administration errors and threats to patient safety [5,6,11,12,17–19]. Nevertheless, the medication errors and accident risks reported in the present study were based on participants' perceptions and were not verified through incident

reports, clinical records or direct workplace observation.

The study population was predominantly young, female and relatively early in professional service. More than half of the participants were aged 21–30 years, 86.0% were female, and 87.6% had worked for between 1 and 10 years. This distribution may partly reflect the demographic composition of the nursing workforce within the participating hospitals. It also means that the findings principally describe the experiences of younger and early-career nurses and may not fully represent older or more experienced nursing personnel. Age, individual sleep vulnerability, shift pattern and personal susceptibility to excessive sleepiness may influence how healthcare workers respond to night duty [2,3].

Professional cadre was significantly associated with perceived performance but not with perceived productivity. Poor performance was reported by 78.8% of lower-cadre nurses, compared with 65.7% of upper-cadre nurses. Lower-cadre nurses may undertake more continuous bedside care, routine monitoring and physically demanding duties during night shifts. They may also have less control over duty allocation, rest periods and workload organisation. Figure 2 shows that lower-cadre nurses contributed slightly more absolute reports of reduced focus and attention, reduced decision-making, poor memory and increased accident risk. In contrast, upper-cadre nurses reported slightly more medication errors and slow reaction time. Because the lower cadre comprised a larger proportion of the study population, these descriptive counts should not be interpreted as cadre-specific rates without appropriate comparative analysis. Workload, shift duration, task intensity and staffing arrangements have previously been associated with perceived care quality, nursing performance and patient-safety outcomes [7–10,19]. Nevertheless, these possible explanations were not directly assessed in the present study and should not be regarded as established mechanisms.

Age was also significantly associated with perceived performance. Participants aged 21–30 years reported the highest proportion of poor performance among the age groups with adequate representation. In contrast, age was not significantly associated with productivity. This difference suggests that perceived performance and perceived productivity may represent related but distinct occupational experiences. Performance may reflect alertness, concentration, accuracy, memory and confidence in completing clinical duties, whereas productivity may be more strongly influenced by workload, staffing levels, task allocation and available institutional support. Previous research indicates that age, shift rotation, sleep quality and individual vulnerability may interact in determining nurses' responses to night work [2,3].

The association between age and performance should nevertheless be interpreted cautiously. The oldest age category contained only five participants, which may have produced unstable

estimates and small expected cell counts. Younger age may also overlap considerably with professional cadre and years of service. The observed age association may therefore partly reflect professional experience, role allocation or occupational responsibility rather than an independent age effect.

Years of service demonstrated the most consistent sociodemographic relationship with the study outcomes. Nurses with 1–10 years of service were significantly more likely to report both poor performance and poor productivity than those with more than 10 years of service. Poor performance was reported by 76.7% of participants with 1–10 years of service, compared with 48.1% of those with longer service. Similarly, poor productivity was reported by 75.1% and 59.6%, respectively.

Greater occupational experience may be accompanied by better task prioritisation, improved familiarity with night-duty routines, stronger coping strategies and greater confidence in responding to clinical demands. Senior nurses may also have more supervisory responsibilities and less continuous involvement in physically demanding bedside care. Conversely, early-career nurses may experience heavier direct-care responsibilities, limited roster flexibility and greater difficulty balancing night duties with family or social obligations. Studies of shift-working nurses have identified workload, consecutive long shifts, recovery opportunities and sleep-related fatigue as potentially important determinants of performance [17–19]. These explanations remain provisional because the present study did not assess workload, role allocation, ward type or schedule autonomy.

Perceived sleep requirement before night duty was not significantly associated with perceived performance, although some variation was observed across the sleep-requirement categories. Poor performance was reported by 67.4% of participants who perceived that they needed less than six hours of sleep, 77.5% of those who needed six to eight hours, and 70.0% of those who needed more than eight hours. The absence of a statistically significant association suggests that perceived sleep requirement alone may not adequately explain differences in work performance. This is consistent with evidence that vulnerability to shift-work-related insomnia, excessive sleepiness and impaired performance varies considerably between individuals and cannot be explained solely by stated sleep need [1,2].

In contrast, perceived sleep requirement was strongly associated with perceived productivity. Poor productivity was reported by 77.1% of participants who perceived that they needed less than six hours of sleep and 79.7% of those who needed six to eight hours. Among participants who reported needing more than eight hours, only 32.0% reported poor productivity, while 68.0% reported normal productivity.

This finding requires careful interpretation. The study measured how much sleep participants believed they needed before night duty, rather than how much sleep they actually obtained. It is therefore inappropriate to conclude that sleeping for

more than eight hours directly improved productivity. The association may reflect differences in sleep awareness, recovery practices, duty schedules, health status or other unmeasured characteristics. It may also be influenced by the relatively small number of participants in the more-than-eight-hours category. Objective and quasi-experimental studies indicate that actual sleep duration, sleepiness, fatigue and consecutive long shifts may influence cognitive and nursing performance, but these variables were not measured directly in the present study [6,17,18].

Participants' assessments of hospital support provide additional context for the high prevalence of perceived occupational impairment. As presented in Figure 3, 223 participants (53.0%) rated hospital support for curbing sleep deprivation as bad, while 74 (17.6%) rated it as very bad. Taken together, 297 participants (70.5%) perceived the available institutional support as inadequate. In comparison, 88 participants (20.9%) rated the support as good, while only 29 (6.9%) and 7 (1.7%) rated it as very good and excellent, respectively. This distribution suggests that sleep deprivation was perceived not only as an individual difficulty but also as a workplace and organisational problem. Fatigue-risk management literature similarly emphasises that sleep-related impairment among healthcare workers is shaped by staffing levels, shift duration, roster design, recovery opportunities, workplace culture and institutional responses [7–10,20,24,25].

Despite these uncertainties, the findings reinforce the importance of addressing fatigue within healthcare organisations. Individual sleep-hygiene education may be beneficial, but it cannot compensate for chronic understaffing, poorly designed rosters, insufficient recovery time or inadequate rest facilities [20–22]. Participants' recommendations in Figure 4 strongly reflected this organisational perspective. Increasing manpower was the most frequently recommended strategy, reported by 215 participants (51.1%), followed by the provision of a nap room for 135 participants (32.1%). Reducing the number of night shifts was recommended by 42 participants (10.0%), while staff training was selected by 29 (6.9%). The prioritisation of increased staffing and rest facilities suggests that participants regarded structural working conditions as more important than educational interventions alone. Adequate nurse staffing has been associated with better patient outcomes and lower nurse burnout, while planned night-shift napping may provide a practical fatigue-management strategy when appropriately governed and supported [23,25]. Organisational measures, including fatigue-sensitive roster design, protected rest periods, appropriate nurse-to-patient ratios, suitable rest facilities and supportive reporting systems, should therefore complement interventions directed at individual nurses [20–24].

The findings also demonstrate the importance of distinguishing between performance and productivity. Professional cadre and age were associated with perceived performance but not

productivity, while perceived sleep requirement was associated with productivity but not performance. Years of service was the only factor significantly associated with both outcomes. The patterns presented in Figures 1–4 further indicate that cognitive difficulties, perceived institutional support and preferred organisational responses represent related but distinguishable dimensions of night-duty experience. Future studies should therefore assess these constructs separately and use validated instruments that clearly define the cognitive, behavioural and operational components of each outcome. Measures should also demonstrate acceptable reliability and should avoid unnecessary dichotomisation of continuous scores, which can reduce information and statistical power [15,16].

Limitations

This study has several limitations. First, its cross-sectional design does not establish the temporal direction or causality of the reported associations. It cannot determine whether night-duty conditions contributed to poor performance and productivity or whether participants with existing occupational, psychological or sleep-related difficulties were more likely to report impairment.

Second, sleep requirement, performance, productivity and the occupational effects shown in Figure 1 were assessed through self-report. The study did not objectively measure actual sleep duration, sleep quality, daytime sleepiness, psychomotor vigilance, clinical errors, absenteeism or completed workload. Perceived sleep requirement should not therefore be interpreted as sleep obtained or as evidence of adequate pre-shift recovery. Similarly, reported medication errors and accident risks should not be interpreted as objectively documented safety events. Studies that incorporate actigraphy, sleep diaries, psychomotor-vigilance testing and objective nursing-performance indicators may provide more robust evidence [1,6,17,18].

Third, the procedures and thresholds used to classify performance and productivity as poor or normal were not described as validated measures. This limits comparison with other studies and may have introduced classification error or subjective response bias. Where multi-item instruments are used, their internal consistency and construct validity should be adequately established [15]. Dichotomising continuous performance or productivity scores may also lead to loss of information, reduced statistical power and possible misclassification [16].

Fourth, the analyses were bivariate and did not adjust for possible confounding or interaction. Relevant factors such as frequency of night duties, number of consecutive night shifts, shift duration, recovery time between shifts, ward acuity, staffing levels, secondary employment, caregiving responsibilities, caffeine or stimulant use, chronic illness, medication use, sleep disorders, anxiety and depressive symptoms were not included. These factors have been implicated in sleep disruption, fatigue, performance difficulties and patient-safety

outcomes among shift-working healthcare personnel [1–4,7–10,17–19].

Fifth, some categories contained very small numbers, particularly the 51–60-year age group. Small expected cell counts may weaken the reliability of conventional chi-square tests. The age associations should therefore be verified using an exact or Monte Carlo procedure or through the combination of clinically appropriate age categories.

Sixth, the ratings of hospital support and recommended strategies presented in Figures 3 and 4 reflect participants' perceptions and preferences. The study did not independently assess staffing ratios, availability of rest facilities, roster quality, management policies or the feasibility and effectiveness of the proposed interventions. Although staffing improvement, fatigue-sensitive scheduling, education and night-shift napping are supported by previous literature, their acceptability, implementation requirements and effects may vary across institutions [20–25].

Finally, participants were drawn from selected public tertiary hospitals in Kebbi State. The findings may not be generalisable to nurses working in private hospitals, primary healthcare centres, non-tertiary facilities or other geopolitical regions of Nigeria. The predominance of female, younger and early-career participants further limits extrapolation to nursing populations with different demographic and occupational profiles. Nevertheless, previous Nigerian studies have also documented adverse health and sleep-related consequences of night-shift work among nurses, suggesting that the problem is relevant within the wider national health system [13,14].

Conclusion

In conclusion, this study reveals that night-duty nurses in public tertiary hospitals experience substantial self-reported impairments in performance and productivity, with early-career nurses (1–10 years of service) and lower-cadre staff emerging as particularly vulnerable groups. The predominant adverse effects, encompassing medication accuracy, attention, decision-making, memory, and reaction time, align with established evidence linking sleep deprivation to compromised nursing performance and patient safety. Critically, the vast majority of participants rated institutional support as inadequate, while staffing increases and nap rooms were overwhelmingly preferred over educational or scheduling modifications, underscoring a systemic perception that sleep-related impairment is both an individual occupational hazard and an organisational failure. Although the cross-sectional design and reliance on perceived sleep need rather than objective sleep metrics preclude causal inferences, these findings robustly identify modifiable targets for intervention. Hospital administrators and nursing leaders should therefore prioritize comprehensive fatigue-risk management strategies, including safer roster design, sufficient recovery periods, protected rest breaks, dedicated rest facilities, appropriate staffing levels, and non-punitive incident reporting systems. Future longitudinal investigations

employing validated sleep and performance assessments will be essential to disentangle the independent contributions of night-shift schedules, sleep adequacy, and workplace conditions to nurse well-being and patient outcomes.

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