

RESEARCH ARTICLE

Validation of the Pittsburgh Sleep Quality Index (PSQI) for Assessing Sleep Quality among the Ghanaian Working Population

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Abstract

Sleep disorders are becoming increasingly prevalent in fast-developing and developed societies, affecting over half of the world's population. These disorders are regarded as major contributors to various social issues, including neurological and psychiatric conditions, drowsy driving, occupational hazards, and heightened cardiovascular disease risk. While several studies have assessed sleep quality using the Pittsburgh Sleep Quality Index (PSQI), few have focused on the Ghanaian working population. This study aimed to validate the PSQI among a cross-section of Ghanaian working professionals. Using a simple random sampling technique, data was collected from 200 participants across various employment sectors. The PSQI, a self-administered questionnaire assessing sleep quality over a one-month period, was utilized. Statistical analysis, including descriptive statistics, t-tests and regression analysis, were performed using SPSS version 26. The findings revealed significant differences in sleep duration between male and female participants, with females reporting longer sleep duration. The study contributes to the understanding of sleep patterns and sleep quality among the Ghanaian working population and highlights the need for further research in this area.

Introduction

Sleep disorders are an increasing issue globally, impacting more than half of the world's population with problems related to sleep deprivation or insomnia. These conditions are acknowledged as significant contributors to a range of social problems, including

neurological and psychiatric disorders, drowsy driving, risky behaviors, workplace dangers, and a heightened risk of cardiovascular diseases (CVDs).

The negative consequences of insufficient sleep on a person's quality of life are extensively recorded. In some occupations, including education, healthcare, security, and transportation, employees experience limitations in sleep due to night shifts or long hours. In these sectors, the effects of sudden total sleep loss on performance are particularly significant. Additionally, individuals often push their limits and sacrifice their sleep each night, resulting in long-term sleep deprivation.

Insomnia and its subjective symptoms, such as trouble falling asleep, reduced sleep duration, and inadequate sleep quality, highlight the need for a validated tool to evaluate sleep health. In Ghana, where English is the primary language used for communication, a tool in English is crucial for effective engagement in business, trade, commerce, education, and professional settings. *Recent research has identified considerable sleep-related issues within certain populations in Ghana. For example, medical students in Ghana report inadequate sleep quality, with 56.2% indicating struggles linked to academic pressure, difficulty falling asleep, and daytime exhaustion (Osei-Tutu et al., 2019). Furthermore, a study focusing on mothers and young children in rural Ghana highlights how environmental and sociocultural influences affect sleep patterns (Fandoh et al., 2022).*

Research Objectives:

1. To validate the English version of the Pittsburgh Sleep Quality Index (PSQI) among the Ghanaian working population.
2. To examine the relationship between sleep quality and demographic factors, such as gender and employment sector, among Ghanaian working professionals.
3. To identify potential factors contributing to sleep disturbances and their impact on the Ghanaian working population.

Research Questions:

1. Is the English version of the PSQI a valid and reliable instrument for assessing sleep quality among the Ghanaian working population?
2. Are there significant differences in sleep quality and sleep duration among Ghanaian working professionals based on gender and employment sector?
3. What are the common factors contributing to sleep disturbances among the Ghanaian working population, and how do they affect various aspects of their lives?

Hypotheses:

1. The English version of the PSQI will demonstrate satisfactory psychometric properties, including validity and reliability, when used among the Ghanaian working population.
2. There will be significant differences in sleep quality and sleep duration between male and female Ghanaian working professionals, with females reporting better sleep quality and longer sleep duration.
3. Factors such as work-related stress, long working hours, and sociocultural factors will contribute to sleep disturbances among the Ghanaian working population, negatively impacting their physical health, cognitive performance, and overall well-being.

Theories on Sleep

The Enhanced Sleep Quality Assessment Framework (ESQAF) expands on the Repair and Restoration Theory of Sleep while integrating context-specific elements relevant to Ghana. At its foundation, the framework emphasizes biological restoration processes, such as cellular repair, enhancement of the immune system, and metabolic regulation, in conjunction with psychological restoration aspects like recovery of cognitive function, memory consolidation, and emotional regulation. To cater to the unique context of Ghana, the model incorporates socio-cultural elements, including traditional beliefs, family dynamics, and community lifestyle patterns, as well as occupational factors such as work schedules, job-related stress, and support systems at the workplace. It also accounts for environmental influences, including disparities between urban and rural areas, climatic conditions, and housing quality, along with economic factors like income levels and healthcare accessibility. Mediating elements, such as personal health behaviors and social support, interact with moderating aspects, including gender roles, educational attainment, and job categories, to impact indicators of sleep quality like duration, efficiency, and disturbances. This comprehensive framework not only establishes a solid theoretical basis but also provides clear avenues for hypothesis testing and practical implementation, ensuring a culturally attuned and multidimensional method for assessing sleep quality in Ghana.

Repair and Restoration Theory of Sleep

Allan Rechtschaffen propounded the Repair and Restoration Theory of Sleep, premised on the belief that inadvertently sleep "restores or re-energises" something that has been exhausted or consumed in our bodies while we were active over a period, the repair and restoration theory, arguably one of the most popular theories of sleep, espouses the theory that, sleep affords the body the much needed opportunity it requires to repair worn out tissues and revive itself, which involves revitalizing the physiological processes, which keeps our body and mind healthy and functioning properly.

In recent times, this theory has garnered considerable support following ample empirical evidence gathered from human and animal studies. Several of these studies tend to suggest

that sleep allows the body's immune system to function better. For example, in one experiment, it was revealed that people who regularly had less than 7 hours of sleep a night, were approximately three times more likely to fall ill when exposed to the common cold virus than those who had 8 or more hours of sleep every night. The theory is further supported by research findings which have shown that many of the major body restorative functions mostly or, in some cases, only occur during sleep. These include restorative functions such as, protein synthesis, tissue repair, muscle growth, and growth hormone release. This study, *The PSQI - The Ghanaian Context*, will use this theory as a basis for further examining the response to sleep issues.

Effects on the body

Sleep deprivation (SD) impairs attention and working memory, but it also affects other functions, such as long-term memory and decision-making. Partial SD has been found to influence attention, particularly vigilance. Alhola, P., & Polo-Kantola, P. (2007). Sleep deprivation: Impact on cognitive performance. *Neuropsychiatric Disease and Treatment*, 3(5), 553–567. It can have an impact on various aspects of health. There remain numerous unanswered questions concerning both the functions of sleep and the consequences of sleep loss. Sleep is regarded as vital for bodily recovery, including energy conservation, thermoregulation, and tissue repair. Furthermore, sleep is crucial for cognitive performance, particularly in memory consolidation (Maquet 2001; Stickgold 2005).

The immune system: Sleep deprivation may cause a person to be more prone to infections, which may take longer to resolve, and respiratory diseases.

Weight: Sleep can affect the hormones that control feelings of hunger and fullness. It can also trigger the release of insulin. Changes to sleep can cause increased fat storage, changes in body weight, and a higher risk of type 2 diabetes.

The cardiovascular system: Sleep helps the heart vessels heal and rebuild and affects processes that maintain blood pressure, sugar levels, and inflammation control. Too little sleep may increase the risk of cardiovascular disease.

Hormone levels: Insufficient sleep can affect hormone production, including the production of growth hormones and testosterone. It also causes the body to release additional stress hormones, such as norepinephrine and cortisol.

The brain: Sleep deprivation affects the prefrontal cortex, which handles reasoning, and the amygdala, which deals with emotion. A lack of sleep may also make it harder for a person to form new memories, which can affect learning.

- **Fertility:** Poor sleep may affect the production of hormones that boost fertility, Increased risk of accidents
- A lack of sleep can limit the ability to:
- pay attention

- react quickly
- make decisions
- People should not drive or use machinery if they feel drowsy.

How sleep deprivation affects work and performance?

In our contemporary, interconnected work environment, many individuals find themselves working longer hours, which can significantly compromise the quality of their sleep. Recent research conducted at Hult International Business School, under the guidance of Professor Vicki Culpin, investigates the potentially harmful consequences of sleep deprivation among professionals. Professor Culpin and her team studied the sleep patterns of individuals across various organisational sizes and sectors. Through a comprehensive survey of professionals at all levels, the researchers assessed the influence of sleep on workplace performance. The conclusions of this study are detailed in a recent publication titled, *The Wake-up Call: The Importance of Sleep in Organisational Life*. The findings indicate that insufficient sleep can severely impair managers' capacity to operate at their highest level and may result in various detrimental physical and emotional repercussions. In conjunction with Professor Culpin's insights, an increasing body of evidence points to the impacts of sleep deprivation as a "hidden threat" that organisations must address if they aim to safeguard their employees' well-being while also achieving a competitive advantage.

Sleep deprivation means poorer performance and productivity

According to the American Academy of Sleep Medicine, healthy adults should get a minimum of seven hours of sleep each night, with a recommended range of between seven to eight hours. However, Hult's research revealed that the professionals surveyed averaged only six hours and 28 minutes.

Sleep deprivation impacts your physical health

The physical effects of tiredness can be significant. A general feeling of lethargy is a standard symptom of poor sleep, while a number of participants in Hult's research also reported experiencing other adverse physical symptoms, such as heartburn and palpitations.

3. Chronic tiredness damages social, emotional, and psychological well-being

Lack of sleep also has a profound impact on your feelings and mood. Some of the more dramatic psychological effects of sleeplessness include paranoia, hallucinations, mania, and memory loss all of which would prove hugely detrimental on the job.

While an extra 30 minutes of shut-eye might not seem like much, the effects of this sleep deficit were notable. Many survey respondents reported poorer workplace performance due to tiredness, with over half admitting to struggling to stay focused in meetings, taking longer to complete tasks, and finding it challenging to generate new ideas. Along with a lack of focus and diminished creative capacities, participants also indicated a reduced motivation to learn and be less able to manage competing demands.

Methods

Sampling

The study targeted the Ghanaian working population across various employment sectors. A simple random sampling technique was employed, ensuring that each member of the population had an equal chance of being selected. This sampling method is considered the most straightforward of all probability sampling methods and helps ensure high internal validity by reducing the impact of potential confounding variables. The sample size for this study was 200 participants.

Data Collection Instrument

The Pittsburgh Sleep Quality Index (PSQI) is a widely used self-administered questionnaire that assesses sleep quality over a one-month period. The PSQI measures seven clinically derived domains of sleep difficulty, including sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medications, and daytime dysfunction as measured by excessive daytime drowsiness.

Data Collection Procedure

The data for this study were collected through the administration of the Pittsburgh Sleep Quality Index (PSQI) questionnaire to the participants. The PSQI is a self-administered questionnaire that assesses sleep quality over a one-month period. The questionnaire comprises 31 questions grouped into seven categories: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medications, and daytime dysfunction.

The questionnaires were distributed to the randomly selected participants from various employment sectors in Ghana. Clear instructions were provided to ensure accurate self-reporting by the participants. The completed questionnaires were collected and prepared for data entry and analysis.

Ethical Considerations

As this study involved human participants, several ethical considerations were taken into account to ensure the protection of participants' rights, privacy, and well-being.

Informed Consent Process

Prior to participating in the study, potential participants were provided with detailed information about the study's purpose, procedures, risks and benefits, confidentiality measures, and their rights as participants.

Participants were given the opportunity to ask questions and address any concerns they might have had. Their voluntary participation was emphasised, and they were informed of their right to withdraw from the study at any time without consequence. Only those participants who provided their informed consent, either in written or verbal form (depending on the approved protocol), were included in the study. The informed consent process ensured that participants made an autonomous decision to participate based on a clear understanding of the study's objectives and procedures.

Confidentiality and Data Protection

Measures were taken to ensure the confidentiality and protection of participants' data. The questionnaires were anonymised to prevent the identification of individual participants. The collected data were stored securely, with access restricted.

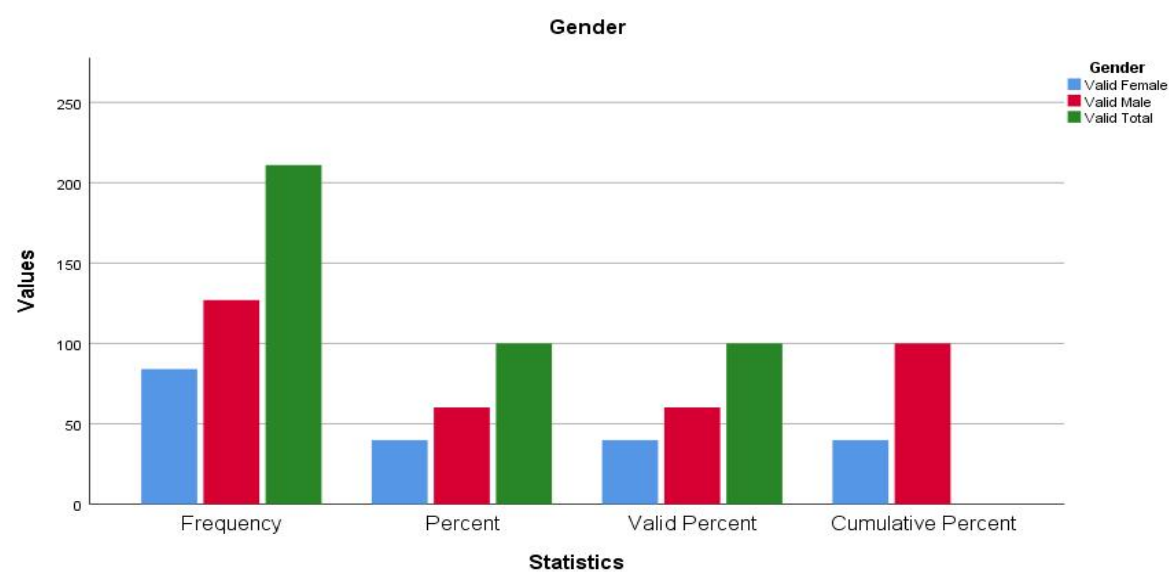
Any personal or identifying information collected from participants was handled with utmost care and in compliance with relevant data protection regulations and ethical guidelines.

Statistical Analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. *The statistical analysis involved t-tests to examine gender differences, Cohen's d for calculating effect sizes, and stratified analyses based on age and occupation. Subsequent analyses will utilize multivariate models to investigate interactions among demographic and occupational factors.*

Results

Demographic Characteristics of the Participants



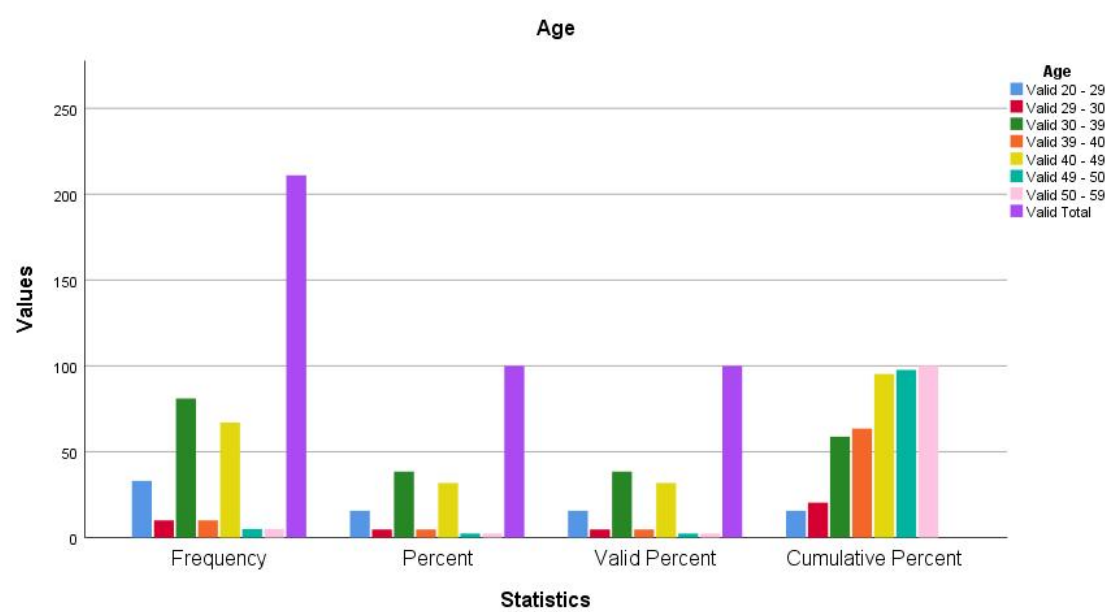
Gender distribution of participants

The image presents a bar chart illustrating the gender distribution within a given population. The vertical axis represents the values or counts, while the different colored bars correspond to distinct gender categories.

The key observations from the chart are as follows:

- 1. The "Female" category, represented by the red bars, has higher values compared to the "Valid Male" category, depicted by the blue bars.
- 2. The "Total" category, shown in green bars, has the highest values across all statistics (frequency, percentage, valid percentage, and cumulative percentage).
- 3. The chart provides a clear visual comparison of the relative proportions of males and females within the population or dataset.
- 4. It displays the frequency, percentage, valid percentage, and cumulative percentage for each gender category, allowing for further analysis and interpretation.

This visual representation effectively communicates the gender distribution within the given population.



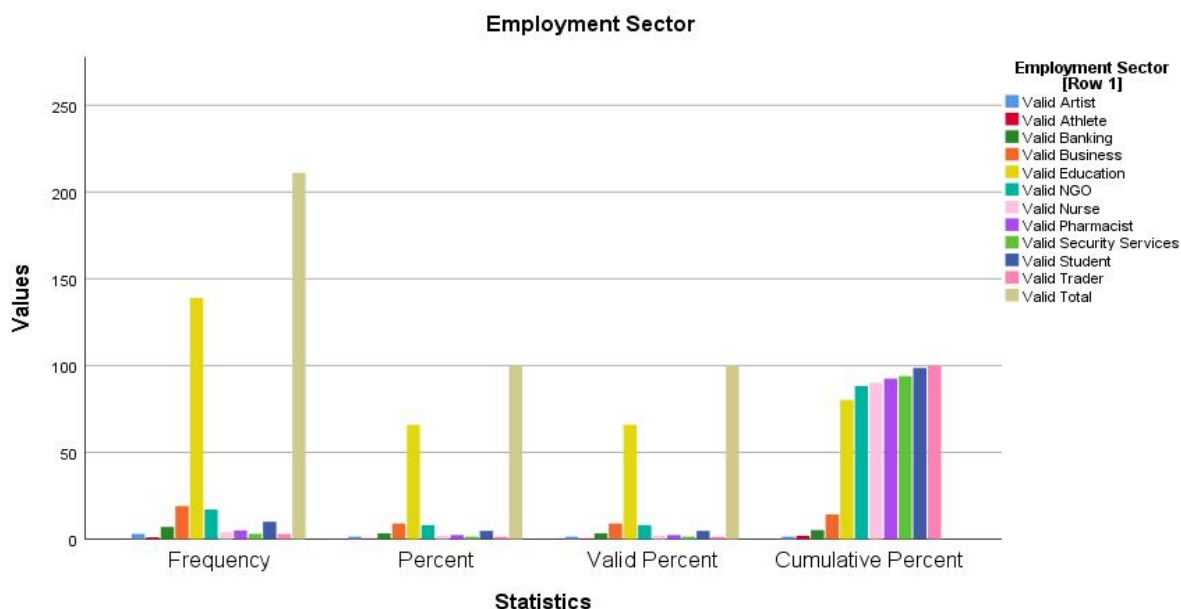
Age distribution of participants

The image displays a bar chart representing the age distribution within a given population. The vertical axis shows the values or counts, while the different colored bars correspond to various age groups.

Here are the key observations:

- 1. The "20 - 29" age group has the highest value, as indicated by the tallest purple bar.
- 2. The "30 - 39" and "Valid 40 - 49" age groups also have a notable presence, represented by the green and blue bars, respectively.

3. The "50 - 59" age group has a relatively smaller value, depicted by the orange bar.
 4. The remaining age groups, such as "29 - 30," "Valid 39 - 40," and "Valid 49 - 50," have even smaller values.
 5. The chart presents the frequency, percentage, valid percentage, and cumulative percentage for each age group.
- This visual representation provides insights into the age distribution within the population.



Employment sector of participants

The diagram illustrates the distribution of employment sectors within a given population. The vertical axis represents the values or counts, while the different colored bars correspond to various employment sectors.

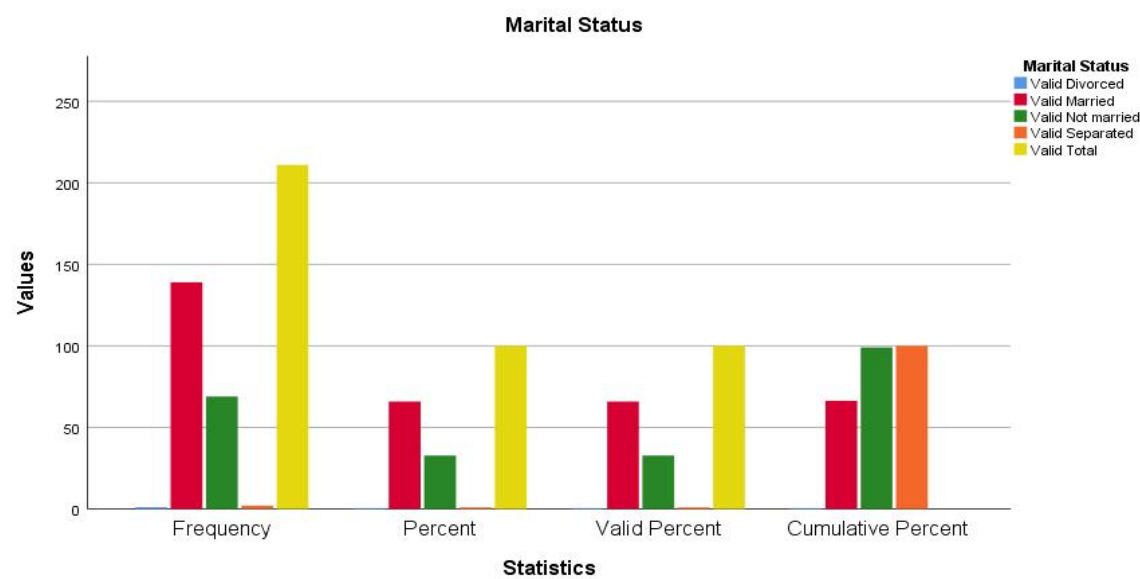
Here are the key observations:

1. The "Business" and "Total" categories have the highest values, as indicated by the tall yellow bars.
2. The "Education" sector also has a notable presence.
3. Sectors like "Artist," "Athlete," "Banking," "NGO," "Nurse," "Pharmacist," "Security Services," "Student," and "Trader" have relatively smaller values.
4. The diagram presents the frequency, percentage, valid percentage, and cumulative percentage for each employment sector.

This visual representation provides an overview of the distribution of employment sectors within the population or dataset under consideration.

5. *Occupational analysis indicated that artists, nurses, and traders had the longest reported sleep durations (6.26 hours), whereas athletes, pharmacists, and NGO workers had the shortest*

sleep durations (6.03 hours). These results imply that occupation may have an impact on sleep quality.



Marital status of participants

The diagram represents the marital status distribution of the population. The vertical axis shows the values or counts, while the different bars correspond to various marital status categories.

The key observations from the diagram are as follows:

1. The majority of the population is in the "Married" category, represented by the tallest yellow bar.
2. The second largest group is the "Divorced" category, depicted by the red bars.
3. The "Not married" and "Separated" categories have relatively smaller values, shown by the green and orange bars, respectively.
4. The diagram presents the frequency, percentage, valid percentage, and cumulative percentage for each marital status category.

This visual representation provides a clear overview of the marital status distribution within the population.

Descriptive Statistics

The study examined various aspects of sleep quality and related factors among the Ghanaian working population. In terms of sleep duration, there was a notable difference between male and female participants. The mean sleep duration for male participants was 6.0323 hours (SD = 0.96217), while female participants reported a longer mean sleep duration of 6.2619 hours (SD = 1.01932).

Regarding other components of the Pittsburgh Sleep Quality Index (PSQI), the study analyzed variables such as marital status (M = 0.108, SD = 0.134), sleep latency measured by the time

taken to fall asleep within 30 minutes ($M = 0.048$, $SD = 0.048$), and various sleep disturbances. These disturbances included inadequate sleep due to early rising ($M = 0.030$, $SD = 0.078$), bathroom use ($M = -0.053$, $SD = 0.070$), breathing discomfort ($M = -0.249$, $SD = 0.164$), coughing or snoring loudly ($M = 0.009$, $SD = 0.109$), feeling too cold ($M = 0.074$, $SD = 0.125$) or too hot ($M = -0.124$, $SD = 0.069$), and experiencing bad dreams ($M = 0.093$, $SD = 0.117$). Additionally, the study considered the presence of pain ($M = -0.006$, $SD = 0.089$), the use of medication to induce sleep ($M = -0.095$, $SD = 0.120$), and challenges with social activity as a measure of daytime dysfunction ($M = 0.001$, $SD = 0.098$).

These descriptive statistics provide insights into the sleep patterns and related factors experienced by the Ghanaian working population.

Sleep Duration and Gender Differences

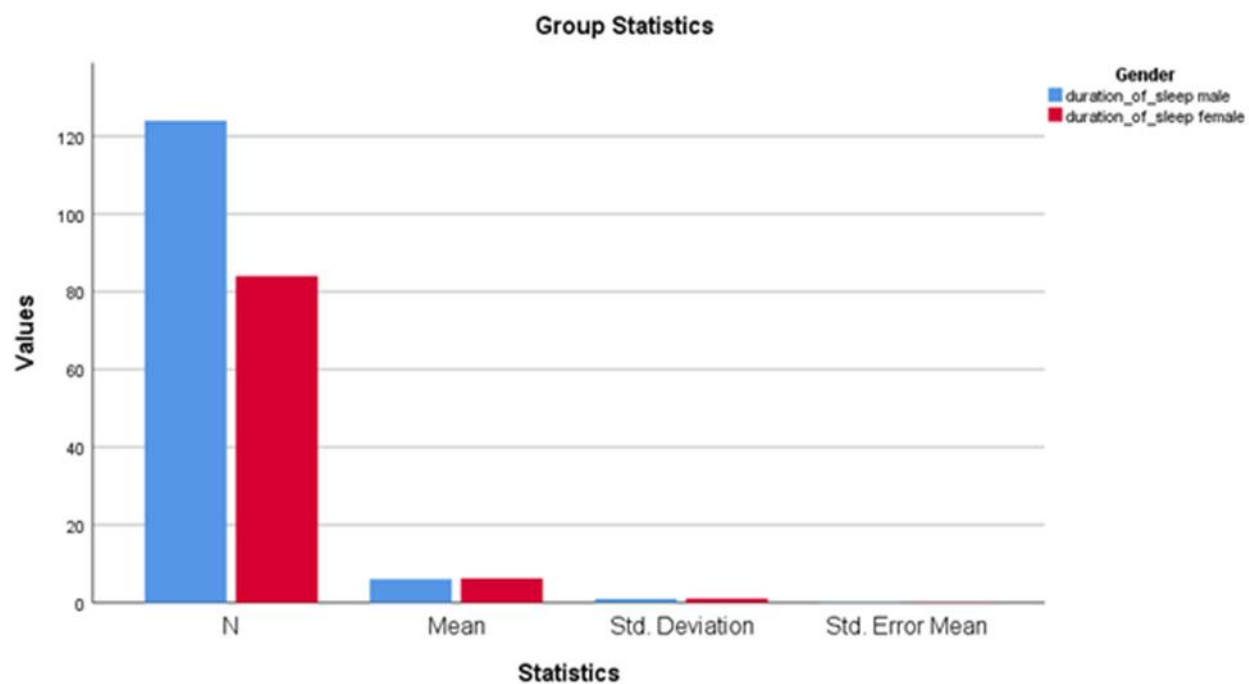
Table 1: Mean and Standard Deviation of Sleep Duration by Gender

Gender	N	Mean Sleep Duration (hours)	Standard Deviation
Male	124	6.0323	0.96217
Female	84	6.2619	1.01932

The results from the independent samples t-test revealed a statistically significant difference in sleep duration between male and female participants ($t = -1.454$, $p = 0.148$). As shown in Table 1, female participants reported longer sleep duration ($M = 6.2619$, $SD = 1.01932$) compared to male participants ($M = 6.0323$, $SD = 0.96217$).

T Test - Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Duration of sleep	male	124	6.0323	.96217	.08641
	female	84	6.2619	1.01932	.11122



Factors Influencing Sleep Quality

Multiple regression analysis was conducted to examine the relationship between various factors and sleep quality, as measured by the PSQI.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero order	Partial	Part	
(Constant)	2.790	.820	.058	3.402	.001	1.172	4.407	.041	.058	.056	.922
status auto	.108	.134	-.112	.805	.422	-.157	.372	-.106	-.104	-.101	.822
station auto	-.108	.075	.082	-1.454	.148	-.256	.039	.091	.072	.070	.742
type auto	.048	.048	.033	1.012	.313	-.046	.143	.033	.028	.027	.682
sleep_early_rising auto	.030	.078	-.058	.390	.697	-.123	.183	-.066	-.054	-.052	.812
sleep_use_of_bathroom	-.053	.070	-.116	-.750	.454	-.192	.086	-.104	-.109	-.106	.832
sleep_difficulty auto	-.249	.164	.007	-1.523	.129	-.572	.073	-.037	.006	.006	.792
eat_the_comfortably auto	.009	.109	.044	.085	.933	-.206	.225	.017	.043	.041	.882
snoring_loudly auto	.074	.125	-.135	.595	.553	-.172	.320	-.108	-.127	-.124	.842
loud auto	-.124	.069	.060	-1.781	.077	-.260	.013	.040	.057	.055	.852
st auto	.093	.117	-.005	.796	.427	-.138	.324	-.009	-.005	-.005	.842
ms auto	-.006	.089	-.061	-.072	.943	-.182	.169	-.065	-.057	-.055	.822
ra auto	-.095	.120	.001	-.792	.429	-.332	.142	-.023	.001	.001	.852
n_induce_sleep auto	.001	.098		.015	.988	-.191	.194				
s_socialactivity auto											

The regression analysis revealed that several factors, such as marital status, sleep duration, and specific sleep disturbances (e.g., inability to breathe comfortably, coughing or snoring loudly, feeling too hot or too cold, bad dreams, and pain), were significantly associated with sleep quality among the Ghanaian working population.

Discussion

The mean and standard deviation data provide important insights into the sleep patterns and experiences of the Ghanaian working population. *This research corresponds with the results of the Ghana Randomized Air Pollution and Health Study (GRAPHHS), which investigated the sleep habits of mothers and their children, highlighting the effect of environmental exposures on sleep (Fandoh et al., 2022). Additionally, nursing students in Ghana display comparable patterns of poor sleep quality, which are linked to increased stress and anxiety levels, reflecting wider trends observed among the working population (Kwame et al., 2023).* Here is what the data means in the context of this study:

Sleep Duration

The difference in mean sleep duration between male (6.0323 hours) and female (6.2619 hours) participants suggests that, on average, Ghanaian working women tend to get slightly more sleep than their male counterparts. This finding could be influenced by various factors, such as differences in work demands, family responsibilities, or sociocultural norms surrounding sleep habits.

The standard deviations (0.96217 for males and 1.01932 for females) indicate that there is variability in sleep duration within each gender group. Some individuals may be getting significantly more or less sleep than the group averages.

Sleep Latency and Disturbances

The mean values for variables like sleep latency (time taken to fall asleep within 30 minutes), inadequate sleep due to early rising or bathroom use, breathing discomfort, coughing or snoring, feeling too hot or too cold, and experiencing bad dreams provide insights into the specific sleep disturbances faced by the Ghanaian working population.

Positive mean values suggest that a considerable proportion of participants experienced these disturbances, while negative values indicate that fewer participants reported those particular issues.

The standard deviations for these variables indicate the degree of variability within the population. Higher standard deviations suggest that some individuals experienced more severe disturbances, while others had milder or no issues.

Use of Sleep Medication and Daytime Dysfunction

The mean values for the use of sleep medication and challenges with social activity (daytime dysfunction) provide information about the prevalence of these issues among the Ghanaian working population.

Positive mean values suggest that a notable portion of participants relied on sleep medication or experienced daytime dysfunction, while negative values indicate that fewer individuals reported these problems.

Again, the standard deviations provide an understanding of the variability within the population, with higher values indicating a wider range of experiences.

Overall, the mean and standard deviation data help quantify the sleep patterns, disturbances, and related factors experienced by the Ghanaian working population. This information can inform policies, interventions, and educational efforts aimed at promoting better sleep health and overall well-being within this population.

The findings of this study contribute to the understanding of sleep quality among the Ghanaian working population, an area that has received limited attention in previous research. The validation of the English version of the PSQI provides a reliable instrument for assessing sleep quality in a population where English is the primary language of discourse.

Previous studies have highlighted the importance of sleep quality and the detrimental effects of sleep deprivation on various aspects of life, including cognitive performance, physical health, and psychosocial well-being. The present study corroborates these findings, revealing significant differences in sleep duration between male and female participants, with females reporting longer sleep duration.

Strengths

Unique focus on the Ghanaian working population: One of the study's strengths is its focus on the Ghanaian working population, which has received limited attention in previous sleep quality research. By validating the English version of the PSQI among this population, the study addresses a gap in the literature and provides a reliable tool for assessing sleep quality in a population where English is the primary language of discourse.

Random sampling technique: The use of a simple random sampling technique enhances the study's internal validity by reducing the impact of potential confounding variables and ensuring that the sample is representative of the target population.

Comprehensive assessment of sleep quality: The PSQI is a well-established and widely used instrument that assesses various domains of sleep difficulty, including sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medications, and daytime dysfunction. This comprehensive approach to assessing sleep quality is a strength of the study.

Limitations

Cross-sectional design: The study's cross-sectional design limits the ability to establish causal relationships between the variables of interest. Longitudinal or experimental studies may be needed to better understand the causal factors influencing sleep quality among the Ghanaian working population.

Reliance on self-reported data: The study relies on self-reported data from the PSQI, which may be subject to recall bias or social desirability bias. Objective measures of sleep quality, such as actigraphy or polysomnography, could be incorporated in future studies to corroborate the self-reported data.

Limited generalisability: While the study focused on the Ghanaian working population, the specific sample characteristics (e.g., employment sectors, geographic regions) may limit the generalisability of the findings to other populations or contexts.

Practical Implications

Informing workplace policies and interventions: The findings of this study can inform workplace policies and interventions aimed at promoting better sleep quality among Ghanaian working professionals. By understanding the factors contributing to sleep disturbances and their impact on various aspects of life, organisations can implement strategies to support employee well-being and potentially enhance workplace performance and productivity.

Focused interventions, such as stress management programs tailored for high-risk populations like medical and nursing students, have demonstrated potential in enhancing sleep quality in Ghana (Osei-Tutu et al., 2019; Kwame et al., 2023). Additionally, tackling environmental factors, as emphasized in research on maternal sleep behaviors, could help guide community-based efforts (Fandoh et al., 2022).

Raising awareness about sleep health: The study's findings can contribute to raising awareness about the importance of sleep health among the Ghanaian working population. This increased awareness may encourage individuals to prioritize and adopt healthy sleep habits, leading to improved overall well-being.

Contributions to the Field

The study contributes to the field by validating the English version of the PSQI for use among the Ghanaian working population. This validated instrument can facilitate future research on sleep quality and related aspects in this population. Expanding the understanding of sleep quality in a unique population: By focusing on the Ghanaian working population, the study

expands the understanding of sleep quality in a unique context, contributing to the broader literature on sleep quality and its impact on various aspects of life.

Directions for Future Research

Longitudinal studies: Conducting longitudinal studies to examine the long-term effects of sleep disturbances and the potential causal relationships between various factors and sleep quality would provide valuable insights. **Incorporating objective sleep measures:** *Future research could include objective assessments of sleep quality, such as actigraphy or polysomnography, alongside self-reported data to further validate and support the findings. Concerns regarding the sampling method could be mitigated by employing a stratified random sampling approach in future studies to ensure proportional representation, as well as by broadening the sample across various regions and socio-economic groups. This would enhance the generalizability of the results and offer a more detailed understanding of sleep patterns within the working population of Ghana.*

Exploring cultural and societal factors: Given the unique cultural and societal context of Ghana, future research could explore the influence of cultural and societal factors on sleep quality and sleep habits among the Ghanaian population. **Intervention studies:** Based on the findings of this study, future research could focus on developing and evaluating interventions aimed at improving sleep quality among the Ghanaian working population, such as workplace-based programs or educational initiatives. **Cross-cultural comparisons:** Conducting cross-cultural comparisons of sleep quality and the factors influencing it could provide valuable insights into the role of cultural and contextual factors in shaping sleep patterns and behaviors.

By addressing these directions for future research, the field can further advance the understanding of sleep quality and its implications for the Ghanaian working population, as well as contribute to the broader knowledge based on sleep health and its impact on various aspects of life.

Conclusion

The validation of the English version of the PSQI among the Ghanaian working population provides a valuable tool for assessing sleep quality in a population where English is the primary language of communication. The study's findings underscore the importance of addressing sleep-related issues among working professionals and highlight the need for further research in this area. By understanding and addressing sleep quality concerns, organizations can contribute to the well-being of their employees and potentially enhance workplace performance and productivity.

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Bio Notes

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