



Relationship Between Energy Drink/Alcoholic Beverage Use, Anxiety and Sleep Quality among Nigeria Police Academy Cadets.

Onyinye C. Igboanusi¹
Abu, Salawu Hassan²

ABSTRACT

Sleep quality has been implicated in research to play a fundamental role in immunity, learning, and memory. Poor sleep quality is associated with psychological distress and physical and psychological health problems among police cadets. Consequently, using the anxiety dimension of the Depression, Anxiety, Stress Scale, the Pittsburgh Sleep Quality Index scale and the Energy drink use scale, this research assessed the relationship between energy drink/alcoholic beverage use, anxiety and sleep quality among 306 purposively sampled Nigeria police cadets. The theory of reasoned action, the cognitive model of anxiety and the social learning theory of substance use guided this study. The cross-sectional survey adopted an ex-post facto design. Results revealed that 9.6 cadets use energy drink/alcoholic beverages, also, energy drink/alcoholic beverage use and anxiety had a significant joint prediction on sleep quality among the police cadets. Both alcoholic beverage use and anxiety independently predicted sleep quality. It was concluded that there exists a relationship between alcoholic beverage use, energy drink use, anxiety and sleep quality among Nigeria police cadets. There is an obvious need for the assessment of cadets on energy drink/alcoholic beverage use and sleep quality; this will aid in policy-making for effective policing in Nigeria and in turn improve cadets' training/academic accomplishments.

Article History

Received: 29th October, 2023
Revised: 10th November, 2023
Accepted: 15th November, 2023

Authors' Affiliation

¹Department of Psychology,
Nigeria Police Academy,
Kano State.
onyinyeigboanusi@gmail.com

²Department of Psychology,
Nigeria Police Academy,
Kano State.
ustahassan@gmail.com

Keywords: *Alcoholic beverage use, Anxiety, Energy drink use, Nigeria Police cadets, Sleep quality,*

INTRODUCTION

Sleep is one component linked to an individual's health, with 7-8 hours of sleep each night being recommended for adults (Watson et al., 2015). Humans have an innate biological clock called the circadian rhythm, which "cues" the body to go to sleep at appropriate times (Block, 2014). Research has demonstrated that immunity, learning, and memory are all significantly impacted by sleep quality, making it essential for overall health (Cellini, 2017). Sleep quality is the capacity to get the recommended amount of sleep each night—roughly 7-9 hours for adults. Sleep is an essential need because it is a crucial physiological function that is both important and complex with social, cultural, and environmental factors influences demonstrated in this process (Nunes da Silva, et al., 2012). The causes of sleep disturbance are multifactorial. The prevalence of poor sleep quality among police officers is 51% which has negative consequences for officers' health (Garbarino et al., 2019).

Energy drinks (EDs) are advertised as both mental and physical stimulants. Examples of EDs include Red Bull, Power Horse, Vault, Red Alert, Burn, Venom, Burn, and Adrenaline Rush (Yunisa et al., 2017). EDs contain caffeine, ginseng, taurine, guarana, sugar, and B vitamins; among these, caffeine is the major ingredient (Larson et al., 2014). Caffeine, a methylxanthine is a well-known central nervous system (CNS) stimulant which causes increased alertness and deferred fatigue (Katzung, 2012). When sleep-deprived and in combat, police officers rely on caffeinated items like coffee or energy drinks (ED) to retain the highest level of alertness and effectiveness (Rasmussen, 2011). Stimulants have been widely used by police communities worldwide as a preventative measure against fatigue in specific operating scenarios (Rasmussen, 2011). Inadequate sleep can be spurred by alcohol intake, energy drinks, sleep difficulties, using electronics right before bed, and use of stimulants. Furthermore, the intake of energy drinks causes a delay in falling asleep, and the effects of energy drinks can endure for a maximum of eight hours and may induce sleeplessness. It can be just as detrimental to a cadet's academic performance as sporadic sleep. Patterns have been demonstrated to negatively affect memory and learning (Hershner, 2014).

Alcoholic beverages like some caffeinated energy drinks are combined with ethanol, caffeine and other substances. Alcoholic beverages are drinks that include ethanol, also known as alcohol, grain alcohol, ethyl alcohol, or drinking alcohol, is one of the first recreational drugs and a psychoactive substance. It is most well-known for being the kind of alcohol used in thermometers and alcoholic beverages. It is frequently referred to as just alcohol or spirit in everyday speech (Sluik et al., 2015). Beer, malt liquor, wine, wine coolers, distilled spirits, mixed drinks, and cocktails are among the popular alcoholic beverages in Nigeria. Alcoholic beverages are grouped into three general classes: beer, wine, and spirits. The Police Academy in addition to its demanding police training faces new difficult problems such as a reduced sense of independence, more self-reliance, a structured lifestyle, frequent deadlines, dormitory living, mustard parades, night tattoos, and social and academic duties. To handle these problems, cadets consciously change their sleeping patterns. Part of the duties of law enforcement agents includes physically taxing jobs. As a result, police cadets must be physically fit enough to carry out these tasks safely and successfully, which leads many to turning to alcohol and energy drinks to increase their stamina, fight fatigue and weariness, and keep themselves awake and aware.

Anxiety is an emotion characterized by feelings of tension, worried thoughts, and physical changes like increased blood pressure (American Psychological Association, 2022). Anxiety is a typical stress response, and it manifests as a recurring pattern that impairs sleep. People who are trying to fall asleep may find that their bodies are awakened by anxious thoughts and feelings. As a result, it becomes difficult to unwind and naturally fall asleep due to physiological signs and physical sensations. An increase in the generation of worried thoughts and emotions may be possible when sleeplessness persists. This pattern may occasionally be interchangeable and can also be used when people awaken from sleep but are unable to go back to sleep. People with ongoing anxiety may experience poor sleep quality.

STATEMENT OF PROBLEM

Poor sleep is linked to poor health outcomes, decreased well-being, and declines in performance, productivity, and workplace safety. Police officers may experience sleep issues because they are exposed to several risk factors, such as long work hours, shift work, occupational stress, and risky or traumatic situations. Compared to the general population, police personnel report shorter sleep durations and poorer

sleep quality (Hartley et al., 2011). Furthermore, more than a third of police officers fit the bill for one or more sleep problems (e.g., sleep apnea, insomnia, shift work disorder (Rajaratnam et al., 2011). Police officers' sleep problems, such as shorter sleep durations and poorer sleep quality, have been linked to more severe mental disorder symptoms (Angehrn et al., 2020).

Over the years police cadets have been observed with dismay, dozing off and sleeping during lectures in their lecture halls. This was one of the rationales that informed the idea for this research. The focused group discussion revealed the cause of the sleepiness during official work and academic hours to be the rigorous police training and short hours of sleep. This was more evident in the first-year cadets who were just getting acquainted and adjusting to the new environment. To cope with the stress in the academy, cadets tend to consume energy drinks and alcoholic beverages to stay alert for the day's activity. This is obviously a problem, hence, this research.

Police officers are more likely to suffer from long-term health and quality of life e.g., increased risk for cardiovascular, gastrointestinal, and metabolic diseases (James S.M. et al., 2017; Berent et al., 2022), than other workers (Tuttle et al., 2019), impaired domestic relationships and reduced quality of life (James et al., 2022). psychological disorders, such as post-traumatic stress disorder (Kposowa, 1999), substance abuse disorder (Violanti et al., 2013), and increased risk for suicide (Tuttle et al., 2019). Poor sleep among police cadets and consequent poor sleep quality can have many mental, as well as physiological consequences. Police cadets who spend their night getting one to two hours of less sleep tend to accumulate a "sleep debt" which leads to excessive daytime sleepiness (Chopko et al., 2018). Immune system depression and memory impairment are linked to sleep disorders and deprivation, especially in a chronic form. This could be concerning for police recruits who are aspiring police officers with the primary duty of working to protect the lives and property of Nigerians. A meta-analysis of data from 13 research on police officers found that 51 per cent of cops have sleep problems (Garbarino et al., 2019). Police officer performance and health outcomes are all impacted by poor sleep quality (Fekedulegn et al. 2018). Police officers report poor sleep quality, excessive daytime sleepiness, and anxiety symptoms during the COVID-19 pandemic (James et al., 2023).

Young adults' sleep duration has been found to predict anxiety disorders, but it's unclear whether sleep quality plays a role (Roberts & Duong, 2017). Chest pain, agitation, and muscle tightness are common side effects of chronic worry. Any one of these symptoms can make it difficult for someone to fall asleep. Nervous people are ready to fight a threat even while they are asleep. They are hence frequently more perceptive and may have poor sleep quality. While there is a moderate association between the consumption of energy drinks (EDs) and several psychiatric problems, the relationships do not appear to be causal, and some studies have found positive benefits, such as the ability of low doses of EDs to improve mood. However, evidence indicates that these consequences most likely depend on the dosage taken; (Kaplan et al., 2011).

There is a dearth of research on police cadets on EDs and sleep quality compared to conventional students, who have been the subject of numerous studies on sleep quality. The impact of sleep problems on the health, safety, and performance of police cadets has not yet been thoroughly studied. Hence, this research intends to fill this gap.

AIMS AND OBJECTIVES

The main aim of this research is to ascertain the relationship between energy drink (ED)/alcoholic beverage use, anxiety and sleep quality among cadets in the Nigeria Police Academy. To achieve this, the following objectives were considered:

1. To determine the relationship between energy drink (ED)/alcoholic beverage use, anxiety and sleep quality among the police cadets.
2. To ascertain if male cadets who use energy drinks (Eds) will report poor sleep quality than their female counterparts.
3. To examine the role of age in predicting energy drink/alcoholic beverage use among police cadets.

RELEVANCE OF THE STUDY

This study will be relevant in discovering the factors that may be associated with sleep quality among police cadets. With the proliferation of energy drinks (EDs)/alcoholic beverage drinks in Nigerian markets and streets, this study will enhance the knowledge of the adverse effects on the sleep patterns and psychological well-being of police cadets and young adults. It will also be used to further the knowledge of researchers, psychologists, health practitioners, and consumers by expanding our understanding of the relationship between these variables. The study will also be relevant to the family, society, law enforcement agencies and the government in working together to curtail the activities and the excessive consumption of energy drinks (EDs)/alcoholic beverages drinks among the police cadets and the general population. The study will also be beneficial to police cadets who use energy drinks/alcoholic beverages drinks in devising other methods of coping with stress which may affect their sleep quality.

THEORETICAL FRAMEWORK

THEORY OF REASONED ACTION (TRA) AND THE THEORY OF PLANNED BEHAVIOR (TPB).

The Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB) posit that an individual's behavioural intention is based on the individual's motivation (DiClemente et al., 2013). TPB still follows the same ideals of TRA but adds that behaviour can be planned and deliberate if the individual decides that this is the healthy behaviour that they choose. These two health behaviour theory models were chosen because they both can be used to help understand the choice an individual makes to consume energy drinks. TPB is an extension of the TRA and can answer the question of why an individual will consume energy drinks even if it is found that they contain negative health effects or to make the choice to not consume them. Police cadets' intake of energy drinks/alcoholic beverages may be minimized if the health costs outweigh the benefits of personal beliefs. Currently, society supports the intake of caffeinated beverages as evident in the adverts on various media. As long as it is socially acceptable, an individual will not stop taking energy drinks until the health costs are known. Given our current society, this may linger on.

COGNITIVE MODEL OF ANXIETY

Clark and Beck (2010) propose a schema-based cognitive model of anxiety that emphasizes a heightened state of vulnerability in activating attentional biases to threats in anxious individuals. Vulnerability is "a person's view of himself as exposed to internal or external threats over which his control is weak or is insufficient to provide him a sense of safety". According to this model, during the orienting mode, attention to incoming threats is automatic and pre-conscious; and results in the automatic activation of the schema-driven primal threat mode. The primal threat mode is a rapid and efficient primary appraisal of threat threats by interrelated schemas essential for the survival and adaptation of organisms by minimizing danger and maximizing safety. In summary, Clark and Beck's (2010) cognitive model suggests that anxious individuals are characterized by automatic selective attention toward the threat and that this threat is automatic in that it is involuntary, occurs outside of conscious awareness and is impenetrable to conscious influence.

SOCIAL LEARNING THEORY OF DRUG USE

Social learning theory by Bandura (1977) suggests that drug use may be viewed as a socially acquired behaviour that is initiated and reinforced by drug-using friends. Principles for this theory include (1) the relationship between positive and negative reinforcement influencing behaviour, (2) the importance of repeating behaviours through imitation and modelling, and (3) the importance of norms, attitudes, and orientations of socially significant groups such as peers, family, and schools. Akers (1979) using the social learning theory of drug use by Albert Bandura to explain energy drink use by adolescence collected data from 3,065 students using a self-report questionnaire. Results indicate that "friends provide social reinforcement or punishment for abstinence or use, provide normative definitions of use and abstinence, and, to a lesser extent, serve as admired models to imitate" This study suggests that adolescent drinking behaviour may be modified by non-drinking, as well as, drinking peers.

HYPOTHESES

1. Energy drink/alcoholic beverage use and anxiety will independently and jointly predict sleep quality among police cadets.

2. Male police cadets who use energy drinks/alcoholic beverages will report poor sleep quality than their female counterparts.
3. Age will significantly predict energy drink use among police cadets

METHOD

Design:

The study is a cross-sectional survey and adopted an ex-post facto design which aimed at finding the relationship between variables; no variable was actively manipulated. The independent variables are energy drink use and anxiety; also include gender, and age, while the dependent variable is sleep quality.

Participants:

The sample was drawn from a total population of 2,091 cadets across the various courses/levels of the Nigeria Police Academy, Wudil-Kano. 306 cadets participated using purposive sampling. The average age was 22.29 years with a standard deviation of 2.321; the minimum age was 17 years while the maximum age was 29 years. 213 (69.6%) were males while 93 (30.4%) were females. 45 (14.7%) were 100-level cadets; 52 (17%) were 200-level cadets; 108 (35.3%) were 300-level cadets; 82 (26.8%) were 400-level cadets; and 19 (6.2%) were 500-level cadets. 217 (70.9%) were Christians; 86 (28.1%) were Muslims; while 3 (1%) indicated other religions.

Setting:

The research was carried out in the Nigeria police academy, Wudil, Kano state located in the north-western region of Nigeria. It is a degree-awarding institution set up by the federal government to train and commission Assistant Superintendent of Police (ASP).

Instruments:

Questionnaires were used for data collection. It was divided into four sections.

Section A: Demographic variables

This section measured the demographic information of participants which included age, gender, religion, and Regular Courses level.

Section B: Pittsburgh Sleep Quality Index (PSQI)

This scale measured the sleep quality of the participants. The PSQI (Buysse et. al.1988) is designed to measure and gather consistent information about the subjective nature of people's sleep habits. It is rated a 3-point Likert format (e.g., 'During the past month, how often have you had trouble sleeping because you...') The PSQI has internal consistency and a reliability coefficient (Cronbach's alpha) of 0.83 for its seven components. In the present study, Cronbach's alpha is .704.

Section C: Energy drink/alcoholic beverage use scale

This scale measured the Energy drink/alcoholic beverage use (Casuccio et. al., 2015). It was used to evaluate knowledge, attitudes and consumption practices regarding Energy drink use. It is a semi-structured questionnaire which contains 20 items. It is rated in a 'yes' or 'no' format (e.g., "How often do you drink energy drinks?" and "How many cans do you usually drink?"),

Section D: Depression, Anxiety, Stress, Scale (DASS 42)

This section consists of the anxiety dimension of the Depression, Anxiety, Stress, Scale (DASS 42) developed by Lovibond & Lovibond (1995) which contains 14 items rated on a four-point Likert scale (e.g., 'I found myself getting upset by quite trivial things'). The reliability scores of the scales in terms of Cronbach's alpha scores rate the anxiety scale at 0.84 and in the normative sample. In this study, Cronbach's alpha is .914.

Procedure:

Permission to conduct this study was sought from POLAC management. The participants were informed of the ethical concerns and were assured of confidentiality. Consent was sought from the participants before administering the questionnaires. A total of 350 questionnaires were administered to the police cadets in their various lecture halls, school libraries, churches and the cadets' hostel. The researcher also solicited the class representatives, hostel representatives, and squad leaders in various squads during parade hours for the administration of the questionnaires. The average time for each participant to complete the questionnaires was 15 minutes, it took some 20 minutes to fill, some took days while others filled theirs at the given time. 306 questionnaires were completed and retrieved for data analysis.

Data Analysis

The Statistical Package for Social Sciences (SPSS Version 21) was used for data analyses. Multiple regression was used for hypothesis one, T-test Independence was used for hypothesis two, and simple linear regression was used to test hypothesis three.

RESULTS

Table 1: Showing the descriptive Statistics of the Study's Continuous Variables

Variables	N	Mean	Standard Deviation	Minimum	Maximum
Sleep Quality	306	7.932	4.753	.000	23
Anxiety Symptoms	306	8.285	8.076	.000	35

Table 2: A Cross Tabulation of Cadets who use Energy Drinks or not and their Gender

		Currently, do you drink energy drinks regularly?		Total
		No	Yes	
Sex of	Male	170	37	207
Cadet	Female	82	9	91
Total		252	46	298

Hypothesis one: States that energy drink/alcoholic beverage use and anxiety will independently and jointly predict sleep quality among police cadets.

Table 3: Showing statistical indices obtained from the multiple regression of sleep quality on energy drink/alcoholic beverage use and anxiety

Predictors	<i>b</i> & <i>95% CI</i>	Standard Error	B	<i>P</i>		<i>R</i> ²	<i>F</i> - <i>ratio</i>	<i>p</i>
Constant	5.807 [4.990,6.624]	.415		.000		.173	16.566	.000
Energy Drink Use	-.496 [-2.235, 1.243]	.883	-.035	.575				
Alcoholic Beverages Use	1.784 [.423,3.144]	.691	.164	.010				
Anxiety	.221 [.145, .297]	.039	.350	.000				

From Table 3 above, it can be seen that alcoholic beverage use independently predicted sleep quality among cadets ($\beta = .164, p = .010$); energy drink use did not significantly predict sleep quality among cadets ($\beta = -.035, p = .575$); while anxiety significantly independently predicted sleep quality among cadets ($\beta = .350, p = .000$). This result suggests that cadets' use of alcoholic beverages predicted poor sleep quality (Note, that higher score on the sleep quality scale reflects poor quality sleep) and cadets with high anxiety also reported poor sleep quality (since there is a positive relationship between anxiety and sleep quality). In addition, alcoholic beverage use, energy drink use and anxiety jointly predicted sleep quality ($F(3, 238) = 16.566, R^2 = .173, p = .000$). They significantly accounted for 17.3% (they explain a significant amount) of the variation in sleep quality among cadets. Given these indices, hypothesis two is partially supported by the result obtained.

Hypothesis two: States that male cadets who use energy drinks will report poor sleep quality than their female counterparts. To test this hypothesis, first, cadets who use energy drinks were separated from those who do not use them; 46 cadets fall into this category (see Table 2). Second, this group of cadets was sorted based on their gender. Male cadets were 37 and female cadets were 9. Third, the mean values of sleep quality for these two unequal groups were compared for significant differences. Table six presents the result obtained from the hypothesis testing

Table 4: Showing the result of the Independent T-test comparing the sleep quality of male and female cadets who use energy drinks

Sex of Cadet	<i>N</i>	(\bar{X})	<i>SD</i>	<i>Mean Difference</i>	<i>T</i>	<i>Df</i>	<i>p</i>
Male	37	9.219	4.63	2.505	1.193	44	.241
Female	9	6.714	6.73				

Table four above shows that though the sleep quality of male cadets who use energy drink ($\bar{X} = 9.219$) differ from that of their female counterpart ($\bar{X} = 6.714$), the difference (2.505) was not significant ($t(44) = 1.193, p = .241$). Therefore, hypothesis three is not supported by the result.

Hypothesis three: States that age will significantly predict energy drink use among police cadets. To test this hypothesis, energy drink use regressed on cadets' age.

Table 5: Showing the result of the simple linear regression of energy drink use on police cadets' age.

<i>R</i>	<i>R</i> ²	<i>B</i> ₀	<i>B</i> ₁	<i>B</i>	<i>SEE</i>	<i>SE</i>	<i>F</i>	<i>P</i>
.125	.016	-.269	.019	.125	.360	.009	4.693	.030

B – Unstandardized Coefficients; SE- Standard Error; SEE- Standard Error of the Estimate

From table five above, it was shown that cadets' age significantly predicted energy drink use ($R^2 = .016$, $\beta = .125$, $F(1, 296) = 4.693$, $p = .031$, 95% CI [.002, .037]). This result suggests that the older a cadet is, the higher the tendency of the cadet to use energy drinks. Therefore, hypothesis three is supported by the data obtained.

DISCUSSION

The main aim of this research was to ascertain the relationship between energy drinks/alcoholic beverages use and anxiety on sleep quality among Nigerian police cadets. The result of hypothesis one revealed that alcoholic beverage use independently predicted sleep quality among cadets. That is cadets who consumed alcoholic beverages reported a higher score on the sleep quality scale which reflects poor quality sleep and cadets with high anxiety also reported poor sleep quality (since there is a positive relationship between anxiety and sleep quality). Findings from the analyses also showed that cadets' energy drink use did not show a significant prediction of sleep quality. In addition, alcoholic beverage use, energy drink use and anxiety among cadets jointly predicted sleep quality. Thus, alcoholic beverage use, energy drink use and anxiety together significantly account for 17.3% (they explain a significant amount) of the variation in sleep quality among cadets.

These results are in line with several findings which found a link between ED usage and reduced sleep quality. For example, ED users were more than twice as likely to report poor sleep quality compared with non-users in a recent study including 919 college students from the United Arab Emirates (Faris et al., 2017). Sarpong et. al., (2023) in their research, found that 70.8% of consumers experienced a change in sleep patterns which was closely linked to energy drink consumption. Mwape & Mulenga (2019) found a statistically significant association between energy drink consumption and poor sleep quality. Additionally, a study that looked at the directionality of the relationship between sleep issues and anxiety discovered that while the direct relationship was not established, sleep issues were significantly linked to anxiety and predicted future anxiety (Narmandakh et al., 2020). Sleep issues may be a risk factor or predictor for anxiety disorder, according to results of more longitudinal research (Jackson et al., 2014).

The result of hypothesis two revealed that the sleep quality of male cadets who use energy drinks does differ from that of their female counterparts. However, the mean difference was not significant. This discovery was supported by the findings of Trapp et al., (2021) which discovered evidence of sex differences in the association between ED usage and sleep problems. youthful adult females (but not males). It is unknown why there is no correlation between ED usage and sleep disorders in young adult males. It might be connected to possible changes in how men and women process caffeine, such as sex hormone impacts or variations in body fat and weight. Results of Hypothesis Three revealed that cadets' age did not significantly predict energy drink use. This result suggests that the older a cadet, the higher the tendency of the cadet to use energy drinks. The results of this study concur with those of Rath (2012). He found that energy drink consumption and popularity are on the rise, particularly among teenagers and young people.

CONCLUSION & RECOMMENDATION

Findings from the research revealed that there exists a relationship between alcoholic beverage use, energy drink use, anxiety and sleep quality among Nigeria Police Cadets. Alcoholic beverages and anxiety predicted sleep quality among police cadets. Also, the older age of cadets predicted the amount of energy drinks consumed. In summary, it was concluded that the variables of interest significantly predicted sleep quality among police cadets.

RECOMMENDATIONS

In light of the findings of this present study, it is recommended that there should be a multi-disciplinary approach to explore further alcoholic beverage use, energy drink use, anxiety and sleep quality among Nigeria police cadets. Also, psychological assessment should be a topmost priority during the assessment and recruitment of prospective police cadets by psychologists and police academy stakeholders. There should be policies in place for continuous psychological assessment of police cadets to ascertain their level of ED/alcoholic beverage use. There should be a thorough sensitization for cadets on alcoholic beverage/energy drink use to and the effect on their sleep quality. Further research is needed to establish causality and the possible mechanisms behind poor sleep quality as well as intervention strategies for ED/alcoholic beverage use among police cadets. The present findings have important implications for policymakers, psychologists, health professionals and the general public regarding intervention strategies to curb EDs use and also promote sleep and health programmes among police cadets and officers.

REFERENCES

- Angehrn, A., Teale, M., Ricciardelli, R., MacPhee, R., Anderson, G., & Carleton, R. (2020). Sleep quality and mental disorder symptoms among Canadian public safety personnel. *International Journal of Environmental Research and Public Health*, 17(8), 2708. <https://doi.org/10.3390/ijerph1708270>
- Akers, K., Lanza-Kaduce, B. & Radosevich, S. (1979). Social learning and deviant behaviour: A specific test of a general theory. *American Sociological Review* vol.44, No 4, pp.636-655.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, N.J.: Prentice-Hall.
- Berent, D., Skoneczny, M., Macander, M., & Wojnar, M. (2022). The association among health behaviours, shift work and chronic morbidity: a cross-sectional study on nurses working in full-time positions. *J. Public Health Res.* 11:2099. doi: 10.4081/jphr.2021.2099
- Block, G. (2014). "Our Internal Sleep Clocks Are Out of Sync," *Te Wall Street Journal*. <http://www.wsj.com/articles/ourinternal-sleep-clocks-are-out-of-sync-1408036238>.
- Buysse, D., Reynolds, C., Monk, T., Berman, S. & Kupfer, D. (1989). The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Res.* May;28(2):193-213. doi: 10.1016/0165-1781(89)90047-4. PMID: 2748771.
- Clark, D. & Beck, A. (2010). Cognitive theory and therapy of anxiety and depression: Convergence with neurobiological findings. *Trends in cognitive sciences.* 14. 418-24. 10.1016/j.tics.2010.06.007.
- Cellini, N. (2017). "Memory consolidation in sleep disorders," *Sleep Medicine Reviews*, vol. 35, pp. 101–112.
- DiClemente, R., Salazar, L., & Crosby, R. (2013). *Health Behavior Theory for Public Health*. Burlington, MA: Jones & Bartlett Learning.
- Fekedulegn, D., Violanti, J., Hartley, T., Charles, L., Andrew, M., Ma, C., & Burchfiel, C. (2018). Highly rated and most frequent stressors among police officers: Gender differences. *American Journal of Criminal Justice*, 41(4), 645–662.

Garbarino, S., Guglielmi, O., Puntoni, M., Bragazzi, N. L., & Magnavita, N. (2019). Sleep

Quality among police officers: Implications and insights from a systematic review and meta-analysis of the literature. *International Journal of Environmental Research and Public Health*, 16(5), 885. <https://doi.org/10.3390/ijerph16050885>.

- Hartley, T., Burchfiel, C., Fekedulegn, D., Andrew, M., & Violanti, J. (2011). Health disparities in police officers: Comparisons to the US general population. *International Journal of Emergency Mental Health*, 13(4), 211–220. <https://www.ncbi.nlm.nih.gov/pmc/articles/>
- Hershner, S. & Chervin, R. (2014). “Causes and consequences of sleepiness among college students,” *Nature and Science of Sleep*, vol. 6, pp. 73–84.
- Jackson, M., Sztendur, E., Diamond, N., Byles, J., & Bruck, D. (2014). Sleep difficulties and the development of depression and anxiety: a longitudinal study of young Australian women. *Arch Women’s Ment Health*;17(3):189-198.
- James, L., James, S., & Atherley, L. (2023). The effects of shift-work schedules on the sleep, health, safety, and quality of life of police employees during the COVID-19 pandemic. *Frontiers in Psychology*, 14, 1128629. <https://doi.org/10.3389/fpsyg.2023.1128629>
- James, L., James, S., and Hesketh, I. (2022). Evaluating the effectiveness of the fatigue and shift working risk management strategy for UK home office police forces: a pilot study. *Int. J. Emerg. Serv.* 11, 292–299. doi: 10.1108/IJES-05-2021
- James, L., James, S. M., Wilson, M., Brown, N., Dotson, E. J., Edwards, C. D., et al. (2020). Sleep health and predicted cognitive effectiveness of nurses working 12-hour shifts: an observational study. *Int. J. Nurs. Stud.* 112:103667. doi: 10.1016/j.ijnurstu.2020.103667
- James, L., Todak, N., & Best, S. (2017). The negative impact of prison work on sleep health. *Am. J. Ind. Med.* 60, 449–456. doi: 10.1002/ajim.22714
- Kposowa, A. J. (1999). Suicide mortality in the United States: differentials by industrial and occupational groups. *Am. J. Ind. Med.* 36, 645–652. doi: 10.1002/(SICI)1097-0274
- Larson, N., DeWolfe, Story, J., & Neumark-Sztainer, D. (2014). “Adolescent Consumption of Sports and Energy Drinks: Linkages to Higher Physical Activity, Unhealthy Beverage Patterns, Cigarette Smoking, and Screen Media Use,” *Journal of Nutrition Education and Behavior*, vol. 46, no. 3, pp. 181–187.
- Lovibond, S. & Lovibond, P. (1995). *Manual for the Depression Anxiety Stress Scales*. (2nd Ed) Sydney: Psychology Foundation.
- Mwape, R. & Mulenga, D. (2019). Consumption of Energy Drinks and Their Effects on Sleep Quality among Students at the Copperbelt University School of Medicine in Zambia. *Sleep Disorders.* 1-7. 10.1155/2019/3434507.
- Narmandakh, A., Roest, A., Jonge, P., & Oldehinkel, A. (2020). The bidirectional association between sleep problems and anxiety symptoms in adolescents: a TRAILS report. *Sleep Med*; 67: 39- 46.
- Nunes da Silva, J., Martins Costa, A., Waquim Machado, W., & Lopes Xavier, C. (2012). Avaliação da qualidade de sono em idosos não institucionalizados. *ConScientiaeSaúde*, 11(1), 29-36. doi:10.5585/ conssaude. v11n1.2940.
- Rajaratnam, S., Barger, L., Lockley, S., Shea, S., Wang, W., Landrigan, C., O’Brien, C., Qadri, S., Sullivan, J., Cade, B., Epstein, L., White, D., & Czeisler, C. (2011). Sleep disorders, health, and safety in police officers. *JAMA*, 306(23), 2567–2578. <https://doi.org/10.1001/jama.2011.1851>

- Rasmussen, N., (2011). Medical science and the military: the Allies' use of amphetamine during World War II. *J. Interdiscip. Hist.* 42 (2), 205–233.
- Roberts, R., & Duong, H. (2017). Is there an association between short sleep duration and adolescent anxiety disorders? *Sleep Med*; 30: 82-87.
- Sarpong, C., Bayor, M., Johnson, R., Yakubu, M., Boakye-Gyasi, M., Gbedema, S. & Owusu, F. (2023). The Consumption of Energy Drink and Its Potential Effect on Sleep Patterns: A Case Study in the Kumasi Metropolis. *Journal of Pharmaceutical Care*. DOI <https://doi.org/10.18502/jpc.v11i2.13364>
- Sluik, D., Bezemer, R., Sierksma, A., & Feskens, E. (2015). Alcoholic Beverage Preference and Dietary Habits: A Systematic Literature Review. *Critical reviews in food science and nutrition*. DOI: 10.1080/10408398.2013.841118 pmid:25674684.
- Tuttle, B., Blumberg, D., & Papazoglou, K. (2019). “Critical challenges to police officer wellness” in *Oxford Research Encyclopedia of Criminology and Criminal Justice* (Oxford: Oxford University Press).
- Watson, N., Badr, M., & Belenky, G. (2015). Recommended amount of sleep for a healthy adult: A joint consensus statement of the American Academy of Sleep Medicine and Sleep Research Society. *Journal of Clinical Sleep Medicine*, vol. 11, no. 6, pp. 591- 592.
- Violanti, J., Fekedulegn, D., Hartley, T., Andrew, M., Gu, J., & Burchfiel, C. (2013). Life expectancy in police officers: a comparison with the U.S. General Population. *Int. J. Emer. Mental Health Human Resil.* 15, 217–228.
- Yunisa, I, Gumel, M., & Ahmad, I. (2019). Energy drink consumption among adolescents and young adults from two universities in Kano, Nigeria energy-drinks consumption among adolescents and young adults from two universities in Kano, Nigeria. *Best J*; 9:34-8.