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Relationship Between Body Mass Index and Occurrence of Low Back Pain Among Nurses in Ekiti State

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Abstract:

This study investigated the relationship between body mass index (BMI) and the occurrence of low back pain among nurses in a teaching hospital in Ekiti state. The study is a descriptive survey among 196 nursing officers randomly selected in Ekiti State University Teaching Hospital, Ado-Ekiti. Data were collected with a self-developed questionnaire subjected to face and content validity. The reliability of the instrument was determined using the test-retest reliability method which yielded a coefficient of 0.84. collected data were analyzed using the binary logistic method and the finding revealed that 70(35.7%) males and 126(54.3%) females participated in the study. The mean BMI was 26.6, with7(3.6%) underweight, 108(55.1%) having normal weight, 74(37.8%) were overweight and 7(3.6 %) were obese. Low back pain occurred in 48.5% of nurses and over 66% of sufferers were either overweight or obese (<0.001). The study concluded that there was a significant relationship between BMI and the occurrence of low back pain among nurses in Ekiti State. Nurses may need to imbibe lifestyle modification to reduce the incidence of low back pain.

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Introduction

Obesity is a disease characterized by the accumulation of excessive body fat to a degree that may adversely impact health. Obesity can affect physical health, overall well-being, and quality of life, while also heightening the risk of health issues and early mortality (World Health Organization WHO, 2022). Individuals are considered overweight or obese when their calculated body mass index (BMI) falls between 25 and 30kg/m^2 or more than 30kg/m^2 respectively (Purnell, 2023). Obesity is regarded as a disease and a risk factor to many chronic diseases because it has become a key factor in the global rise of chronic diseases such as type 2 Diabetes, hypertension, osteoarthritis, infertility and some kinds of cancer (Chiolero, 2018). Obesity contributes to increasing risk of premature mortality (Global BMI Mortality Collaboration, 2016). Although overweight and obesity is a growing global issue, World Health Organization (WHO), (2021) opined that its prevalence remains very low in Africa countries.

Overweight and obesity among nurses is becoming a matter of great interest to researchers in recent times, and it is becoming evident that more nurses are becoming overweight globally, even in African countries where the prevalence of obesity seems low. Obesity among nurses could be due to the nature of nursing job frequently associated with stress and workplace burnout, sleep disturbance as a result of night duty (Sullivan, et al 2022). All these could facilitate unhealthy lifestyles, binge eating, sugar craving and a host of others.

Nurses account for fifty percent of the global healthcare workforce, they play vital roles in hospitals, spend more time with patients than any other healthcare staff, and play a crucial role in ensuring quality care and patients' safety (Alsadaan, et al., 2023). The prominent position of nurses in healthcare system should make them to be role models in promoting prevention of obesity. Unfortunately, in recent times, the issue of overweight and obesity is becoming common among nurses (Lee & Carpenter, 2023).

Low back pain (LBP) is a kind of osteoarthritis and it's a prevalent occupational-related hazard among nurses, owing to the physical demands of their job (Serra, et al., 2019). Globally, lack of sufficient nurses has led to a heavier workload for those currently employed, coupled with the nature of nursing work, which often involves lifting heavy loads,(Liu, et al., 2023), transferring patients from one place to the other within the hospital settings and frequent prolonged standing. All these have increased the risk of low back pain among nurses (Jegnie& Afework, 2021). Acute or chronic low back pain is commonly associated with many disabilities and reduction in work performance. Nigeria is currently experiencing severe shortage of nursing manpower due to the increasing rate at which nurses are eloping in search of greener pastures abroad. The limited available nurses are not sufficient to handle increasing work demands. While studies have highlighted the prevalence of LBP among nurses, there is paucity of research on preventive solutions. Understanding ergonomic principles and implementing safe patient handling programs is crucial to addressing this issue. However, research that investigates and relates ergonomic practices to preventing low back pain is not common, making the index study pertinent. Thus, this study examines the relationship between BMI and incidents of LBP among nurses.

Statement of the Problem

The prevalence of obesity was estimated to be low in African countries due to poor socio-economic level and problems of food insecurity (WHO, 2021). However, the incidence seems to be increasing in recent years as indicated by some researchers, especially among health workers, especially nurses despite their awareness level and duty to discourageunhealthy lifestyles among people. Furthermore, due to high demanding nature of nursing job, low back pain is a common complaint. Several studies have associated overweight and obesity to prevalence of low back pain. However, such study is very rare among nurses. Therefore, this index study focused on investigating the relationship between body mass index (BMI) and low back pain among nurses in a teaching hospital in Ekiti state

Research Method

This descriptive survey was carried out in Ekiti State University Teaching Hospital (EKSUTH), Ado-Ekiti. EKSUTH is the only tertiary health institution owned by the State Government in the State. The hospital has various departments covering various fields of Nursing practices. There were three hundred (300) nurses working in the hospital as at the time of the study. Taro Yamane was used to calculate the sample size and after adding ten percent to fill in for attrition, 196 nurses were selected randomly across various departments in the hospital. Ethical Approval for the study was obtained from the institution and verbal informed consent was obtained from the nurses after adequate information regarding the study has been provided. The instrument used for data collection was a self-structured questionnaire that was validated through expert review and literature review. Also test retest reliability test done to ensure the stability of the instrument over time by administering the instrument twice on the same subject in a period of two-week interval correlation coefficient of 0.78 was gotten using Product Moment Correlation coefficient. The questionnaire contained three Sections; the first section was designed to collect demographic information of the respondents, such as age, sex, years of working as a nurse, including present weight and height. Section B consisted questions to ascertain the prevalence of low back pain. The questionnaire was given to the respondents and collected back as soon as they were completed. Collected data were coded and analyzed using SPSS version 23.

Results

Socio-Demographicprofile of the respondents

A total of 196 nurses participated in the study,almost half of the respondents fall between the age range of 16-25 years, 70(35.7%) males and 126(54.3%) females. Majority 123 (62.8%) were married, more than three quarter were Christians and senior Nursing Officer cadre appear as the mode with 37.2%. This finding is presented in table 1 below

Table 1: Socio-Demographic Profile of the Respondents

Items	F	%
Age range		
20-29	84	42.9
30-39	69	35.2
40-49	23	11.7
50-59	13	6.6
60 and above	7	3.6
Sex		
Male	70	35.7
Female	126	64.3
Marital Status		
Single	69	35.2
Married	123	62.8
Divorced	2	1.0
Widowed	2	1.0
Religion		
Christianity	165	84.2
Islam	27	13.8
Others	4	2.0
Cadre		
Nursing officer 11	73	37.2
Nursing officer 1	36	18.4
Senior nursing officer	48	24.5
Assistant chief nursing officer	25	12.7
Chief nursing officer	9	4.6
Assistant Director	5	2.6

Body mass index and prevalence of low back pain

The mean BMI was 26.6, with 7(3.6%) underweight, 108(55.1%) having normal weight, 74 (37.7%) were overweight and 7(3.6%) were obese. Low back pain occurred in 95(48.5%); of which 2(2.1%) were underweight, 30(31.6%) were of normal weight, 57(60%) were overweight and the remaining 6(6.3%) were obese. This implies that over 66% of nurses suffering from low back pain were either overweight or obese.

Table 2: cross tabulation of nurses BMI and prevalence of low back pain

BMI Categories of Nurses	F	%	Nurses with low back pain	%
Underweight	7	3.6	2	2.1
Normal weight	108	55.1	30	31.6

Over weight	74	37.7	57	60
Obese	7	3.6	6	6.3
Total	196	100	95	100

Relationship between BMI and Low Back Pain among Nurses

To ascertain the relationship between body mass index and the occurrence of low back pain among nurses in Ekiti state, Pearson Product Moment Correlation was used to measure the strength of the relationship and a statistically significant relationship was found; *r- .496, p-.000.* This implies that there is a relationship between BMI and occurrence of Low back pain among nurses. Nurses with higher BMI were more likely to develop low back pain compared to nurses with lower BMI. This is further explained with the table 3 below:

Table 3: Relationship between BMI and Low Back Pain among Nurses

Variables	Mean	SD	Sum of Square	Co-variance	*r*	*P*
BMI	25.33	4.77	4430.061	22.718	.496	.000*
Low back pain	27.77	4.58	231.113	1.115		

***p < 0.01**

Discussion of Findings

The study was designed to examine the relationship between body mass index and low back pain among nurses in a teaching hospital in Ekiti state with the aim of providing insight to the prevalence of overweight and obesity among nurses in the region and to investigate if increased BMI is directly related to prevalence of low back pain among nurses. Low back pain is common among nurses and the issue related to high BMI among nurses is becoming a serious concern for researchers in recent time. Studies have reported increasing rates of overweight and obesity among nurses but there is scarcity of data on such in Nigeria and especially, Ekiti state, thus the index study is pertinent. One hundred and ninety-six nurses took part in the study. The mean age of 29.9 ± 1.0 years with majority between the age of 20-29 years. This implies that nurses in this study were young and active in the prime of their age. They are still young in the profession and still have more years ahead to labour.

BMI profile of the Nurses

The survey found that 3.7%of the nurses were underweight, while 55.1% were of normal weight. The remaining 41.3% were either overweight or obese. The finding was slightly higher than the estimated global average of 37.1% (Sadali, et al, 2023). This finding is also contrary to WHO, 2021) which indicated that overweight in Africa is lower than the global

average. This finding indicated that the overweight and obesity among nurses is becoming a phenomenon in low-income countries. It is a known fact that nurses have multiple challenges in adopting healthy lifestyles due to the physical demand of nursing profession (Kelly & Wills, 2018). Being on shift duty alone could contribute a significant hindrance to healthy eating and in most workplaces, junk foods are mostly available and many nurses will prefer to eat food with high glycemic index to stay awake (Samhat & Sacre, 2020). Also, nurses commonly engage in binge eating and they consume a lot of junk foods especially when on duty (Banwat, et al., 2018). Overweight and obesity is a cause for concern among nurses because of the effects it could have on their health (Powell-Wiley, et al 2021), especially in Nigeria where retention of nurses is poor due to the present economic challenge in the country forcing more people to look for opportunity in more developed countries. Obesity alone is associated with a number of metabolic diseases, hypertension. type 2 diabetes, stroke and some types of cancer. This finding showed that as obesity is increasing among younger population in the general population, so it is among nurses who are health workers and are supposed to know the health implication of obesity. This also implies that more works need be done to further educate nurses on the importance of self-care.

Low back pain among Nurses

This study also found a high prevalence of low back pain among nurses with over 48 percent of the respondents suffering from low back pain. This finding corroborates the finding of many scholars (Kasa, et al., 2020; Jegnie & Afework, 2021; Liu, et al., 2023) and indicates that low back pain is very common among Nurses. The effects of low back pain extend beyond physical discomfort, Low back pain impairs nurses' ability to perform daily activities and job responsibilities (Abolfotouh et al., 2015). Moreover, low back pain is a major cause of work-related absenteeism among nurses (Serra et al., 2019). This negatively impacts the individual nurse and adds pressure on their colleagues and the healthcare system. Low back pain can hinder nurses from performing physically demanding tasks like lifting or moving patients, thereby compromising patient care. The associated stress and physical demands can drive some nurses to consider leaving the profession, which will further exacerbate the shortage of nurses. This is particularly critical in Nigeria, where the healthcare sector, especially nursing, has experienced a significant loss of skilled and experienced personnel due to emigration, affecting quality healthcare delivery, job performance, and availability on duty post (Liu et al., 2023).

Relationship between BMI and Low Back Pain

Furthermore, this study identified positive relationship between high BMI and prevalence of low back pain. This finding is in consonance with several studies which have reported significant association. The prevalence of low back pain was found to be significantly higher in patients with high BMI compared to those with normal or underweight BMI and demonstrated a stepwise increase with each BMI category (Shiri, et al. 2014; Su, et al 2018; Lucha-López,et al., 2020). This showed that being health workers appeared not to have influenced the relationship between body mass index and occurrence of low back pain. Even if the nurses are good at ergonomics, increase body mass index could still predispose them to

low back pain. It is therefore imperative for nurses to understand and deliberately keep their body weight under control especially in a cultural environment where being fat is associated with affluence and obesity is not given too much attention which contrast the practice in the more developed countries.

Conclusion and Recommendations

Based on the findings of this study, it was concluded that overweight is becoming common among nurses in Ekiti state as well as low back pain. This finding indicated that the knowledge of nurses of health-related matters seemed not to impact positively on their lifestyle to mitigate becoming overweight or obese. It will therefore be necessary to find ways of re-orienting them to self-care especially proper weight management. The managements of various health-facilities should provide facilities for physical activity and other health promotion programs for nurses and other health workers for enhancement of their health.

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Conflict of Interest

We declare that this study was financed by the authors and that there is no conflict of interest whatsoever in the design and execution of this project.

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