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Original article

Assessing the Relationship Between Body Mass Index, Blood Pressure, and Stress Levels Among Nurses in Zawia City, Libya

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A B S T R A C T

The study aimed to identify the impact of stress on nurses and its effect on usage and HbA1c. The samples of our study were obtained from nurses at the Al-Zawiya Educational Centre and the combined clinic (Library Aresai). Blood pressure, weight, and height measures were taken for taking a sample & body mass index (BMI) = weight(kg)/Ht. We observed a working hours nm (7.75 hours/day) for nurses' tube. We revealed the ties between stress (mean work hours on average within 7.75 hours/day) and average body mass were (28.08). There was a negative relation at Pearson's correlation (-0.196) and P> 0.22, suggesting no association (B), longer working hours are associated with a lower body mass index.

Introduction

As advanced healthcare professionals, nurses operate in highly demanding environments characterized by substantial workloads, extended working hours, and significant emotional and mental stress. This demanding context can elevate occupational stress levels, potentially impacting their physical and mental well-being, health outcomes, and overall quality of life. Key health indicators such as Body Mass Index (BMI), blood pressure, and other markers of health and chronic disease risk are notably influenced by these stressors. Stress is known to be a key determinant of physical and mental health. The relationship among BMI, blood pressure, and stress is complicated and has been investigated in diverse populations [1]. Both high BMI and hypertension are commonly been related to stress, but stress could be a cause of negative behaviors leading to weight gain and elevated blood pressure. The nursing profession needs to learn about these interactions, as a nurse's workload may make these health problems worse.

The World Health Organization claims that nursing professionals are the mainstay of healthcare delivery systems, and they face long working days, high emotional intensity, shift work, and staff shortages. Long-term work-related stressors may affect the physical and physiologic health of nurses and may result in changes in blood pressure and BMI [2]. It is well known from previous studies that chronic stress is capable of activating the sympathetic neural system and the hypothalamic-pituitary-adrenal (HPA) axis, resulting in subsequent hormonal alterations and hypertension [3]. Stress may further affect eating habits and levels of physical activity, and contribute to the gain in body weight and BMI [4].

Findings from the present study are anticipated to at least partially address the knowledge gap of the health status of nurses in Libya and specifically in Zawiya City, and shed some light on the association between major health indicators. This knowledge may be used to tailor interventions and policies to improve the well-being of nurses and the quality of care in the region. This study aims to analyze the relationship between BMI, blood pressure, and stress levels among nurses in Zawiya City, Libya. Zawiya City presents a unique context due to its specific healthcare environment and occupational services. Investigating these relationships in this particular region will provide insights into the specific health challenges and risk factors affecting nurses there.

Methods

Study design

This was a descriptive cross-sectional study conducted to assess body mass index, blood pressure, and stress levels among the population of nurses in Zawiya City. The distribution and levels of these variables were ascertained through data collection. Data was collected on 40 days from October 2023 to November 2023.

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Sample size
The sample consists of 40 nurses working in daily shifts for 8-14 hours in health care facilities (hospitals, health centers, and clinics) in Zawiya City, Libya.

Data collection instruments
A questionnaire was used to collect the data, including nurses' age, gender, marital status, educational attainment, duration of nursing practice, and the specific department in which the nurse works. The Perceived Stress Scale Questionnaire (PSQ) was used to measure stress reliably.
The calibrated medical scale, as well as a stadiometer, was used to weigh and measure the height of participants. BMI calculated by the formula below: BMI = Weight (kg) / (Height (m))2. Systolic and diastolic blood pressure were measured using a calibrated mercury or automated sphygmomanometer. Recumbent in a seated position with a minimum of two readings and a brief rest between measures, the average is used to get the true Blood pressure Value.

Data analysis
The data was analyzed through a statistical software package (SPSS) and presented as descriptive statistics. Pearson correlation coefficient was applied to measure the strength and direction of the relationship between continuous variables (BMI, systolic blood pressure, diastolic blood pressure, and stress levels

Ethical Considerations
Informed consent of all participants was collected before the study started. Confidentiality of participants' data and anonymity were maintained.

Results
A sample of 40 nurses from Al-Zawiya Medical Centre. Between 23 and 45 years old (mean age: 32.05). On average, the workers worked 5 to 14 hours a day, with a mean of 7.75 hours. The mean body mass index was 28.08, systolic blood pressure had a mean of 131.57, and diastolic blood pressure had a mean of 83.75.

Table 1. Describes a simple comparison of body mass index, systolic and diastolic blood pressure with Pearson correlation.

	No	Mean	Std .D	Min	Max	Person Correlation(r)
Age	40	32.050	5.73	23	45	------
BMI	40	28.08	0.88	15.78	39.04	-0.196
Systolic	40	131.57	17.41	100	160	0.119
Diastolic	40	83.75	10.19	60	100	0.049

Figure 1 shows the association of systolic BP and mean pressure (131.57±17.41), Pearson correlation r = 0.119; p =0.03, the relationship is positive and direct. Thus, working hours can be associated with slightly elevated systolic blood pressure, but the relation is not strong. The data is telling that work-related stress or long working hours seem to have a very mild impact on elevating systolic blood pressure, but at this moment, we cannot draw a strong conclusion.

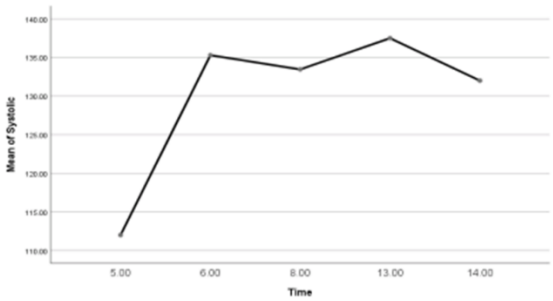

Figure 1. Line chart relationship between time, work, and systolic blood pressure.

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According to Pearson correlation (r =0.419), the figure shows a direct and positive relationship between diastolic pressure and mean stress (83.75±10.19). It's nearly zero: there is hardly any correlation between diastolic blood pressure and working hours. Although the chart suggests that diastolic pressure may rise with longer workdays, the correlation was so weak that it might not be significant. When it comes to diastolic blood pressure, there may be other factors that are more significant than working hours.

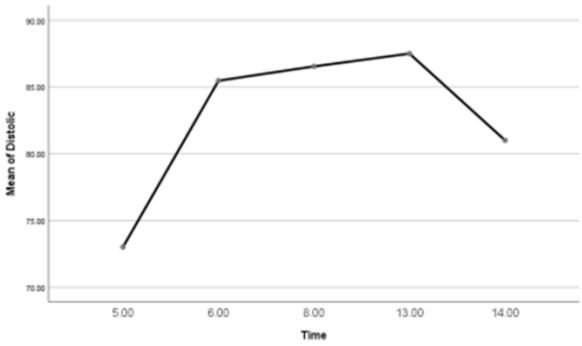

Figure 2. Line chart relationship between time, work, and diastolic blood pressure.

In Figure 3, the correlation was inversely negative, Pearson (R=-0.196). So, we read a firm down-momentum effect from here as working hours go up, BMI goes slightly down. The inverse association could indicate that longer work time results in lower BMI (work may be due to more physical activity at work or eating less time). Nevertheless, this association is fairly insignificant, and other mediators such as diet or behavior, among others, seem to favor the determination of BMI

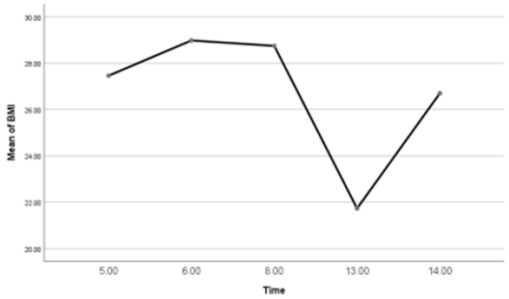

Figure 3. Line chart relationship between time, work, and body mass index

Discussion

Based on this method, we analyzed 40 nurses working at Al-Zawiya Medical Center in the region with a working experience ranging from 23 % to 45 % and an average working time of 7.75 % (5-7 hours). Body Mass Index (BMI) The mean BMI of our population was 28. 08, which is classified as overweight (BMI > 25.9) according to WHO recommendations [1]. Previous investigations in the past have suggested that chronic stress may play a role in increased malnutrition and sedentary lifestyle, associated with an increased risk of weight gain and/or higher BMI [5-7]. We demonstrated a weak negative correlation between working hours and BMI (-0- 196), suggesting that BMI may increase slightly as working hours increase.

On average, systolic blood pressure was 131.57 mmHg, placing it in the prehypertension range (120-139 mmHg). Our research showed a slight positive link between how many hours people worked and their systolic blood pressure (r = 0.119). This hints that systolic blood pressure might go up a little bit as work hours get longer [8]. The average diastolic blood pressure was 83.75 mmHg, which is in the normal to prehypertension range (80-89 mmHg). We discovered a very, very weak connection between work hours and diastolic blood pressure (r = 0.049), basically meaning there's almost no relationship between the two. Comparison with prior research, when we looked at what others have done before, we saw a real mix of results. Some studies found a clear link between stress and both Body Mass Index (BMI) and blood pressure [9]. But other studies painted a more complicated picture, suggesting less direct connections [10]. In our study in Zawiya, we saw pretty weak links, which probably says something about how different work environments, culture, or other things can be.

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Conclusion

Our research starts to shed some light on what we know about the health of nurses in Libya, especially those in Zawiya City. What we found shows that we need to do more digging to understand the tangled relationship between stress at work, BMI, and blood pressure for these nurses. Our study's findings offer a crucial foundation for comprehending the connection between blood pressure, BMI, and working hours among Zawiya nurses. The averages point to possible health issues that need more consideration and research, even though the direct correlations were not very strong.

Conflicts of Interest. Nil

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الملخص

هدفت الدراسة إلى تحديد تأثير الإجهاد على الممرضات وتأثيره على الاستخدام ومستوى الهيموغلوبين السكري التراكمي .(HbA1c) تم الحصول على عينات دراستنا من الممرضات في مركز الزاوية التعليمي والعيادة المشتركة (مكتبة العريساي). تم أخذ قياسات ضغط الدم والوزن والطول لأخذ العينة ومؤشر كتلة الجسم = (BMI) الوزن (كجم) .Ht / لاحظنا ساعات عمل نانومتر (7.75 ساعة / يوم) لأنبوب الممرضات. كشفنا عن وجود علاقة بين الإجهاد (متوسط ساعات العمل في المتوسط ضمن 7.75 ساعة / يوم) ومتوسط كتلة الجسم (28.08). كانت هناك علاقة سلبية عند ارتباط بيرسون (-0.196) وقيمة P> 0.22 ، مما يشير إلى عدم وجود ارتباط(B) ، ترتبط ساعات العمل الطويلة بانخفاض مؤشر كتلة الجسم.

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