

PREVALENCE OF OBESITY RELATED TO STRESS IN POLICE WORKERS- A CROSS-SECTIONAL STUDY

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Abstract

Background: Despite the prevalence of obesity and its increases in associated diseases such as diabetes and cardiovascular disease, no studies have addressed the spread of obesity among police officers working in stressful environment. Therefore, the present study conducted to access the prevalence of work related stress in police personnel.

Aims and Objective: To access the prevalence of obesity and stress burden among police workers and to see association of stress burden of police workers with their obesity.

Material and Method: This cross-sectional observational study done on 245 police workers in PAC, Sitapur, India. Subjects having more than ten years of working experience were included in study. Anthropometric measurements of subject recorded by following standard protocol. Standardized stress scale was used to access the degree of stress in police workers. Available data analyze and expressed in percentage, mean with SD and chi square test to see the significance of association.

Results: According to result of body mass index 77.14% of subjects were obese and 9.8% of subject was overweight. According to waist circumference 82.04% of subjects were obese. Result of stress score showed that 31.84% of subjects having mild stress and 16.73% of subjects having moderate stress. 30.35% of subjects having abdominal obesity were suffered from mild stress and there association was highly significant ($p=0.02$).

Conclusion: The study recommends health education programs to combat obesity and overweight. Regular counseling should be conducted to alleviate work related stress.

Keywords: Police personnel, obesity, stress, shift work

Introduction

Obesity is caused by an imbalance between energy intake and energy expenditure.^{1, 2, 3} It has been defined by the World Health Organization (WHO) as abnormal or excessive fat accumulation that may impair health.¹⁻³ There is scarcity of knowledge regarding prevalence of overweight or obesity in police worker in India. Despite of sufficient physical activity most police worker is suffering from overweight or obesity. Police work generally recognized as a most stressful and dangerous occupation. They frequently exposed to physical, mental and social stressors while doing their job. In an Indian study conducted on urban police of Puducherry⁴. most police officers (68%) ranged in age from 25 to 39 years and having abdominal obesity was associated with a higher prevalence of hypertension. Epidemiological reports of Reichard A et al.⁵ (2010) demonstrated a higher prevalence of obesity among police officers, compared to non-police workers because police work is recognized as a dangerous occupation. Life of Police personnel is also different from other occupation. They usually face prolonged stay in field

and psychological exhaustion which leads to irregular sleep and poor dietary habits.⁶ Working throughout the day in such an atmosphere produces adverse psychological effects. Moreover long working hours, irregular eating habits, sleepless nights, shift duties and disturbed personal life produces stress in the police officer's life and they become vulnerable to obesity and other metabolic disorders.⁷ Increased demands of work impinging upon home life, lack of consultation and communication with the higher authorities in the organization, lack of control over workload and inadequate support have been identified as the potential factors responsible for the stress in the policemen.^{8,9}

With this background we performed this study to estimate prevalence of stress and obesity among police personnel and to identify association between obesity and other factors with perceived stress.

Aims and Objectives

1. To estimate the prevalence of overweight and obesity in police personnel.

2. To estimate the level of stress in police personnel.
3. To see the association of stress with obesity of subjects.

Material and Methods

This cross-sectional observational study conducted on 245 police personnel working at provincial armed constabulary, Sitapur, Uttar Pradesh from October 2016 to April 2017. This study was approved by institutional ethical committee. After getting written informed permission from higher authority to conduct the study, selection of the subjects done after getting their verbal consent to participate in study and only those subjects included who have completed 10 years of services. Subjects were explained in detail the nature of study and assure the confidentiality of recorded data. Demographic data of subjects such as age, duration of service, nature of duty were recorded. Anthropometric parameters of subject was measured using standardized techniques.^{10,11} Height (in centimeters) of subject measured using a measuring scale and weight (in kilograms) was measured with a calibrated electronic weighing scale that was kept on a firm and flat surface. Body mass index (BMI) was calculated using the formula weight (kg)/height² (m). Waist circumference (WC) (in centimeters) was measured by non stretchable measuring tape at the smallest horizontal girth between the costal margins and the iliac crest at the end of expiration. Standardized perceived stress scale in questionnaire form was used to assess the level of stress in police workers. Questions are related to their administrative and professional pressure, attitude of individuals to handle the pressure and about their personal life. Each subject was asked to rate how stressful each item has been for him and how they handle the situation, on a seven-point Likert scale ranging from “not at all stressful” (Score: 1-3), “moderately stressful” (Score: 4-6), and “very stressful” (Score: 7).²⁴ Stress of police personnel classified into categories namely mild, moderate and severe.

Statistical Analysis

Available data secured in widespread excel data sheet and analyzed using SPSS software 16.0 version. Result was expressed as percentage and mean with standard deviation. Chi-square test was used to see the association between different variables. Association was considered statistically significant at $P < 0.005$.

Result

In this study, the mean age of individual was 40.34 ± 8.23 and mean duration of service was 23.29 ± 8.49 and mean of stress score was 18.56 ± 4.51 (Table 1). Classification of individual according to nature of work showed that majority (95.92%) of police personnel were involved in field or shift duty and only 4.08% of individual involved in office work. Classification of individual according to BMI

which is indicator of generalized obesity showed that 77.14% of individuals were obese and 9.8% of individual were overweight (Table 1, Figure 1) and according to WC majority (82.04%) of individuals were having abdominal. Stress score of police personnel showed that majority (31.84%) of the individuals was having mild stress and 16.73% of individuals were having moderate stress and only 0.41% of individuals were suffering from severe stress (Table 1, Figure 2). Association of obesity with duration of service showed that 89.66% of individuals were obese who have completed 21-30 years of service and 81.05% of individuals were obese who have completed 11-20 years of service there association was highly significant ($p=0.004$). (Table 2) Association of stress level of individuals with BMI showed that 82.93% of obese individuals were suffering from moderate level of stress and 80.77% of obese individuals were suffering from mild stress and there association was not significant ($p= 0.10$) (Table 3). Association of stress level of individuals with WC showed that 97.56% of obese individuals were suffering from moderate level of stress and 78.21% of obese individuals were suffering from mild stress and there association was significant ($p= 0.02$) (Table 4).

Table 1: Socio-demographic characteristic of subjects

Classification of Variables		Frequency (Percentage)	Mean (SD)
Age of subject	30-40 years	135 (55.1)	40.34 (8.23)
	41-50 years	72 (29.390)	
	51-60 years	38 (15.51)	
Duration of service	≤10 years	154 (62.85)	40.34 (8.34)
	11-20 years	63 (25.72)	
	21-30 years	28 (11.43)	
Nature of job	Office	10 (4.84)	
	Field	235 (95.92)	
Body Mass Index	Normal	32 (13.060)	27.65 (3.99)
	Pre obese	24 (9.8)	
	Obese	189 (77.14)	
Waist Circumference	Normal (85-90 cm)	44 (17.96)	99.31 (9.11)
	Obese (> 90 cm)	201 (82.04)	
Level of Stress	Normal	125 (51.02)	18.56 (4.51)
	Mild	78 (31.84)	
	Moderate	41 (16.73)	
	Severe	1 (0.41)	

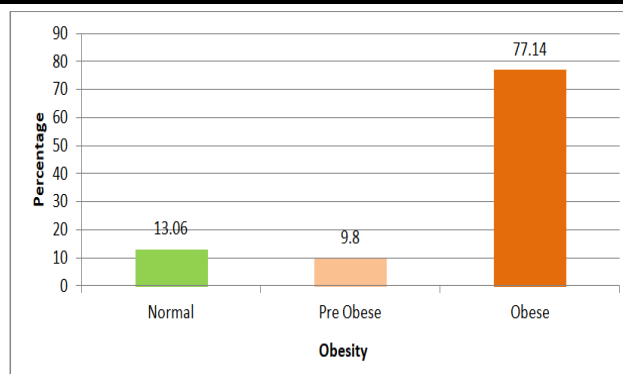


Figure 1: Distribution of subjects according to body mass index

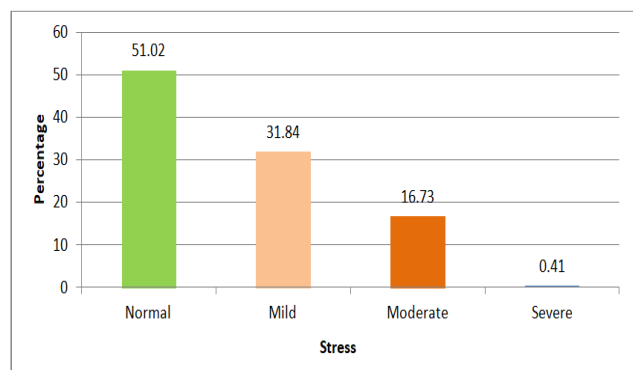


Figure 2: Distribution of subjects according to level of stress

Table 2: Association of body mass index of subjects with duration of service

Duration	Normal	Overweight	Obese	Total	Chi square value / p value
≤10 years	16(17.39%)	16(17.39%)	60(65.22%)	92(100%)	15.06/0.004 HS
11-20 years	11(11.58%)	7(7.37%)	77(81.05%)	95(100%)	
21-30 years	5(8.62%)	1(1.72%)	52(89.66%)	58(100%)	
Total	32(13.06%)	24(9.8%)	189(77.14%)	245(100%)	

Table 3: Association of body mass index of subject with level of stress

Stress	Normal	Overweight	Obese	Total	Chi square value / p value
Normal	18(14.4%)	16(12.8%)	91(72.8%)	125(100%)	7.77/0.10 NS
Mild	7(8.97%)	8(10.26%)	63(80.77%)	78(100%)	
Moderate	7(17.07%)	0(0%)	34(82.93%)	41(100%)	
Severe	0(0%)	0(0%)	1(100%)	1(100%)	
Total	32(13.06%)	24(9.8%)	189(77.14%)	245(100%)	

Table 4: Association of waist circumference of subjects with level of stress

Stress	Normal (85-90 cm)	Obese (> 90 cm)	Total	Chi square value / p value
Normal	26(20.8%)	99(79.2%)	125(100%)	8.38/0.02 SIGNI
Mild	17(21.79%)	61(78.21%)	78(100%)	
Moderate	1(2.44%)	40(97.56%)	41(100%)	
Severe	0(0%)	1(100%)	1(100%)	
Total	44(17.96%)	201(82.04%)	245(100%)	

Discussion

In this study, prevalence of both generalized and abdominal obesity was very high. Both type of obesity showed highly significant association with duration of service but no association with nature of duty. Our finding agreement with the finding of Saha A. et al.¹² (2019) who conducted a questionnaire study on 105 police officers working in different police stations of Hoogly district, West Bengal revealed that 56% police officers were suffering from generalized obesity. In another cross-sectional study Jahnvi G et al.¹³ (2012) also found that 58% of police personal were suffered from generalized obesity. This high prevalence of obesity among police personnel in our study may be attributable to poor levels of nutritional awareness, increased intake of fatty foods, and a low level

of physical activity.²² Most of the police personnel reside in battalion premises and frequently use vehicle for travel which curtails their physical activity. Most of the non officer police personnel perform rotation duty. This rotation duty of police worker affects their sleep pattern which leads to irritability, agitation and stress.²² Our study result showed that 31.84% of subjects having mild stress and 16.73% of subject were suffering from moderate level of stress. This high level of perceived stress among police personnel need for certain strategies to reduce their stress level. Other Indian studies also showed high stress level among police personnel.^{14, 15} Occupational stress among police personnel can lead to impaired psychological well-being and physical health.¹⁶ Police personnel in India can be broadly categorized into constables, inspectors, and officers. Belonging to the lowest strata, the constables obey commands of inspectors/sub inspectors and impart assigned duties as part of police work.¹⁷ Police officers have more duty on their head quarter and perform mostly office work but non officers have various field duties like bandobast duty, traffic control, VIP duties, flood duty etc.¹⁸ This high stress level in our study subjects may be because of the fact that our subject belongs to constable. Among constables, various factors such as inadequate housing/security of the family, irregular working hours, inadequate provision for children's education, insufficient personal time, lack of recognition for good work, working overtime, inadequate salary, lack of holidays, lack of opportunity for advancement, and delayed promotion were contributing to significant levels of psychological stress.^{16, 19} Those constables who were performing shift duty regularly facing more stress and having depressive tendency. "There also is the problem of physiological disruption of circadian rhythms. Being awake all night while one should be sleeping can affect judgment and decision making." Vivek S et al.²⁰ (2019) stated in his study that police officers working afternoon and night shifts reported a higher number of work-related stressors compared to those working on day shift.¹⁸ More than 80 percent of police worker who have completed 20 years of service were obese and showed significant association between duration of service and obesity but no association with stress. Our study result were consistent with finding of Vivek S et al. (2019) who also did not find any statistically significant association between years of experience and stress.¹⁸ As police worker progress in their carriers, their physical activity at work decrease over time, contributing to anthropometric changes.²³ Although policemen join the police department in good health, they retire with some stress related or other metabolic disorders.²¹ It may be because most of them unaware about their health condition and having neglected behavior, so regular health screening should be made mandatory.

Our study finding emphasizes the importance of working culture. Professional pressure and financial or family insecurity can lead to stress and other metabolic disorder in future. Study could be more effective if conducted on large group of subject and include different cadres of police personnel

Conclusion

Stress level is high among police personnel which needs stress management program to reduce their stress. Different associated factor related to stress like faulty food habits and shift work need implementation of regular counseling regarding healthy food habits to combat obesity and to release stress.

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