

**Title:** Effect of COVID-19 Lockdown on Health of Police Personnel in Eluru, Andhra Pradesh

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**Author Names:**

1. Dr. Anjali Mediboina
2. Dr. Meghana Bhupathi

**Degrees and Affiliations:**

1. Intern, Alluri Sita Ramaraju Academy of Medical Sciences, Eluru, India
2. Intern, Alluri Sita Ramaraju Academy of Medical Sciences, Eluru, India

**ORCID:**

<https://orcid.org/0000-0002-4280-0693>

<https://orcid.org/0000-0002-1070-1033>

**About the authors:** Dr. Anjali Mediboina is currently in her internship year at Alluri Sita Ramaraju Academy of Medical Sciences, Eluru, India. She is also a recipient of the Dr. NTRUHS UG-Student Research Scholarship.

Dr. Meghana Bhupathi is currently in her internship year at Alluri Sita Ramaraju Academy of Medical Sciences, Eluru, India and is an aspiring internal medicine practitioner.

**Corresponding author email:** anjalimediboina@gmail.com

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**Personal, Professional, and Institutional Social Network accounts.**

1. Anjali Mediboina:
  - a. Instagram: @dr\_anjaleee\_812
  - b. LinkedIn: <https://www.linkedin.com/in/dr-anjali-mediboina-a771131a6/>
2. Meghana Bhupathi
  - a. Instagram: @megh\_007
  - b. LinkedIn: <https://www.linkedin.com/in/meghana-bhupathi-57a657213/>

**Discussion Points:** Police personnel were one of the overlooked sector of frontline workers during the COVID-19 pandemic. This study aims to know more about the health effects the lockdown duties had on police personnel in the city of Eluru, Andhra Pradesh, India.

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## **ABSTRACT**

### **Background**

COVID-19 has had an impact on all sectors of society, however, the impacts on police personnel has not been discussed enough. Thus, the present study aims to identify the effects COVID-19 lockdown duties had on the police personnel of Eluru, India.

### **Methods**

Data was collected from the available personnel in the substations of Eluru (n=82). After taking informed consent, a questionnaire was administered with three parts: A (socio-demographic details, co-morbidities information and vitals) B (DASS-21 questionnaire), and C (sleep schedule and habits)

### **Results**

Among the total respondents, 30.4% of the total respondents have significant levels of stress and 17.07% have significant levels of anxiety. Psychological impact had a positive correlation with gender, marital status and age group. Females, married officers and officers in older age groups were found to have higher levels of anxiety. Majority of the respondents got 7 hours/more sleep. The police regularly use stimulants with tea

being the most common (84.1%), and drink avg. 2 cups per day. This study found no correlation between BMI, presence of comorbidity (Hypertension, Diabetes Mellitus), and the sleeping habits with psychological impact; however, there was a notable increase in the blood pressure and blood sugar levels post-lockdown.

## **Conclusion**

Due to the retrospective nature of the study, the police personnel of Eluru have grown accustomed to the lockdown duties and appear to have developed coping mechanisms. Regardless, it is recommended to encourage further studies regarding the health of police officers and the COVID-19 impacts on the health of police personnel.

## **Key Words**

*COVID-19, police personnel, mental health, lockdown duties*

## **INTRODUCTION**

COVID-19 is caused by the novel coronavirus, SARS-CoV-2. WHO first learned of this new virus on 31 December 2019, following a report of a cluster of cases of 'viral pneumonia' in Wuhan, People's Republic of China.<sup>1</sup> The lockdown due to COVID-19 has affected individuals from all walks of life, both in terms of mental and physical health. Increased levels of stress, depression and anxiety were observed during the pandemic.<sup>2</sup>

Stress is associated with chronic musculoskeletal pain, hypertension, heart attacks, and peptic ulcers and thus, this negative impact on mental health can cause subsequent effects on the physical and physiological health.<sup>3</sup> Sleep disorders due to the pandemic are also being observed, as shown by Ignegnoli et. al., which in turn, are both cause and complications of various health disorders.<sup>4</sup> The effects of the pandemic can especially be seen in the frontline workers, who were more exposed to the virus. While there is much literature regarding the health effects on healthcare workers, not much information is available regarding the impacts on police personnel and law enforcement officials, who were also placed at the frontline during the pandemic. These officers are already exposed to a number of occupational stressors such as long working hours, violence, confrontation, etc. on a daily basis, which are the causative factors for a number of mental health issues such as stress, anxiety, depression and sleep disorders. Police officers also suffer

from a number of physical and physiological problems such as cardiovascular disease, gastric ulcers, musculoskeletal problems, etc. Due to COVID-19, police personnel faced the additional stress of maintaining law and order while being exposed to the virus, thus causing and further exacerbating their mental and physical health issues.

In India, the training of police personnel includes dealing with natural and man-made disasters; however, there was not much emphasis on pandemic control. As a result, the onset of the COVID-19 pandemic has required the police to assume a number of unconventional responsibilities, such as creating social awareness, checking on public mask usage, monitoring check posts and COVID-19 infection hotspots, ensuring lockdown and containment, and other essential services.<sup>5</sup> More importantly, the police force has been working under life-threatening conditions, since many of them do not have access to personal protection equipment (PPE). They risk catching the infection, taking it home and exposing their family. These duties, along with demanding work conditions and the added fear of contracting the virus can be considered as additional sources of occupational stress among the Indian police personnel.<sup>6,7</sup> Moreover, there have been an increasing number of aggravated assaults by the public, with about 260 policemen being injured in various incidents since the onset of the pandemic<sup>8</sup>. In many instances the police personnel have been attacked by dangerous weapons, hurled abuse and stoned at a number of places. Such incidents are causing concerns over the protection at work, and can lead to increased psychological distress. Aside from psychological effects, there are negative physical effects as well; for example, it has been reported that the sleep cycle and sleep quality of the police personnel has been negatively impacted due to the lockdown duties<sup>9</sup>.

There are limited studies on the effects of the pandemic on police personnel of India, especially in a rural setting. Thus, the rationale of this study is to identify the various effects of the COVID-19 lockdown on the police personnel of the Eluru City of West Godavari District in Andhra Pradesh State, India. The observations and results of this study can be further used to formulate interventions and awareness programs such as training, counseling, and environmental workplace changes as needed for the police personnel to ensure optimum well-being in all aspects of their health.

### **Aims and Objectives**

- This study aims to identify the effects of the lockdown duties on the mental health and physical health of the police personnel in Eluru, Andhra Pradesh.
- To evaluate the health conditions of the police personnel, and if any health problems were aggravated due to the lockdown duties.
- The study also aims to identify any correlation between socio-demographic factors with the psychological impact and between the physical factors and the psychological impact.

## **MATERIALS AND METHODS**

### **Study Design**

This study is an Analytical Cross-Sectional Study, and meets the STROBE guidelines.

### **Study Setting and Population**

All the police personnel available in the substations of Eluru, Andhra Pradesh were approached to be a part of the study. A total of 82 personnel were available and willing to give consent during the period of data collection.

### **Study Period**

The data collection took place for duration of 2 months, starting from mid-August and was completed mid-October, 2021.

### **Inclusion and Exclusion Criteria**

All Police Personnel who were willing to participate and give consent were included in the study, while police personnel who were on leave during the period of data collection were excluded.

### **Study Tools**

A pre-designed and pre-validated questionnaire was administered to collect data regarding their socio-demographic profile, blood pressure and blood sugar levels, sleep schedule and any existing comorbidities. The blood pressure and sugar levels were checked using BP apparatus and Glucometer, respectively.

The Depression, Anxiety, Stress Scale-21 (DASS-21) is a validated questionnaire containing a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content, to assess depression, anxiety and stress. Overall score is calculated by summing the scores for the relevant items.<sup>10</sup>

### **Data Entry and Analysis**

The data was entered in Microsoft Excel 2010 and processed in SPSS version 20. All the quantitative variables are expressed as means and frequencies as percentages. The scores of DASS-21 subscales were expressed as mean and standard deviation (SD). Association analysis using the Chi-square test was performed. *P* value < 0.05 was considered statistically significant.

### **Ethical Issues**

- The study was conducted after taking necessary permissions from the following authorities:
  1. Superintendent of Police, West Godavari District, Andhra Pradesh.
  2. The Institutional Ethics Committee of Alluri Sita Ramaraju Academy of Medical Sciences, Eluru

- This study did not involve any invasive procedures.
- No participant was forced to take part in the study against his/her wish.
- The individual data obtained was kept confidential.
- The names of the participants were not used for identification during data entry. A study ID was assigned to each participant and the same was used thereafter.

## **OBSERVATIONS AND RESULTS**

During the survey period, a total of 82 responses were collected during the survey period, i.e., from mid-August to mid-October. The mean age of the participants was 37 years. The majority of the participants (n=68) were males, and married (n=53).

<b>VARIABLES</b>	<b>FREQUENCY/MEAN</b>
<b>Age</b>	37.43
<b>Gender</b>	
Male	68
Female	14
<b>Marital Status</b>	
Unmarried	29
Married and without children	1
Married and with children	52

*Table 1: Socio-Demographic Profile*

### **Prevalence of Stress, Anxiety, Depression among the Police Personnel on Lockdown Duty during COVID-19 Pandemic**

Respondents' depression, anxiety and stress levels were measured using DASS-21 scale and revealed a sample mean score of 4.10 (SD =3.74).

For the stress subscale, 57 (69.5%) reported normal scores (score <10); 23 (28%) reported mild stress signals (scores 11-18), 2 (2.4%) reported moderate stress signals (scores 19-26), and none reported severe to extremely severe stress signals (scores 27-42).

For the anxiety subscale, 68 (82.9%) reported normal scores (score: 0-6); 2 (2.4%) reported mild anxiety symptoms (score: 7-9); 11 (13.4%) reported moderate anxiety symptoms (score: 10-14); and 1 (1.2%) reported severe to extremely severe anxiety symptoms (scores 15-42).

For the depression subscale, all respondents were considered to have a normal score (0-9).

**Socio-demographic factors and association with psychological impact**

VARIABLE	n (%)	Normal (%)	Stress (%)	p-value*	Normal (%)	Anxiety (%)	p-value*
<b>Gender</b>				0.08			<b>0.0003</b>
Male	68 (82.9)	50 (73.5)	18 (26.4)		61 (89.7)	7 (10.3)	
Female	14 (17)	7 (50)	7 (50)		7 (50)	7 (50)	
<b>Marital Status</b>				<b>0.00059</b>			<b>0.015</b>
Married	53 (64.6)	30 (56.6)	23 (43.3)		40 (75.4)	13 (24.5)	
Unmarried	29 (32.9)	27 (93.1)	2 (6.9)		28 (96.5)	1 (3.5)	
<b>Age</b>				0.05943			<b>0.00667</b>
25-30	21 (25.6)	16 (76.2)	5 (23.8)		19 (90.4)	2 (9.6)	
30-35	18 (21.9)	16 (88.8)	2 (11.2)		17 (94.4)	1 (5.6)	
35-40	14 (17)	8 (57.1)	6 (42.9)		10 (71.4)	4 (28.6)	
40-45	5 (6)	2 (40)	3 (60)		4 (80)	1 (20)	
45-50	12 (14.6)	9 (75)	3 (25)		10 (83.3)	2 (16.7)	
50-55	9 (2.3)	3 (33.3)	6 (66.7)		3 (33.3)	6 (66.7)	
60-65	3 (3.6)	2 (66.7)	1 (33.3)		3 (100)	0 (0)	

\*The Chi-square statistic is significant at  $p < 0.05$  level.

Table 2: Association of Socio-Demographic Factors with Psychological Impact



Table 2 shows that male respondents had significantly lower scores for anxiety ( $p=0.0003$ ). Unmarried respondents had significantly low stress ( $p=0.00059$ ) and anxiety ( $p=0.00667$ ) scores. 40-45 and 50-55 age groups showed significantly higher anxiety scores, while the other age groups showed lower anxiety scores. There is no significant correlation between gender and stress, and age groups and stress.

### Physical health and association with psychological impact

VARIABLE	n (%)	Normal (%)	Stress (%)	p-value*	Normal (%)	Anxiety (%)	p-value*
<b>BMI</b>				0.65			0.14
Normal Weight	70 (85.3)	49 (70)	21 (30)		60 (85.7)	10 (14.3)	
Overweight	8 (9.7)	6 (75)	2 (25)		6 (75)	2 (25)	
Obese	4 (4.8)	2 (50)	2 (50)		2 (50)	2 (50)	
<b>Comorbidity</b>				0.949			0.727
Hypertension	25 (30.4)	19 (76)	6 (24)		20 (80)	5 (20)	
Diabetes	13 (15.8)	10 (76.9)	3 (23.1)		11 (84.6)	2 (15.4)	
<b>Time taken to fall asleep</b>				0.429			0.1
Immediately	26 (31.7)	19 (73)	7 (27)		23 (88.4)	3 (11.6)	
5-10 minutes	3 (3.6)	1 (33.3)	2 (66.7)		2 (66.7)	1 (33.3)	
10 minutes	5 (6)	2 (40)	3 (60)		2 (40)	3 (60)	
30 minutes	28 (34.1)	19 (67.8)	9 (32.2)		23 (82.1)	5 (17.9)	
30 minutes-1 hour	12	9	3		9	3	

	(14.6)	(75)	(25)		(75)	(25)	
1 hour	8 (9.7)	4 (50)	4 (50)		8 (100)	0 (0)	

\*The Chi-square statistic is significant at  $p < 0.05$  level.

Table 3: Association of Physical Health Factors with Psychological Impact

Table 3 tabulates the data collected regarding physical health. As observed, there is no significant relationship between the physical factors and psychological impact.

### Effects of Lockdown Duty on Physical Health of Police Personnel

Common comorbidities diagnosed among the police personnel of Eluru prior to lockdown duties include Hypertension (n=10), Diabetes Mellitus (Type 2) (n=7), Hypotension (n=4) and Hyperthyroidism (n=2), the latter two which are seen among the female officers.

At the time of collecting data, BP and post-prandial blood sugar levels were checked, with which several officers exhibiting Hypertension (n=25) and Diabetes Mellitus (Type 2) (n=13) were identified.

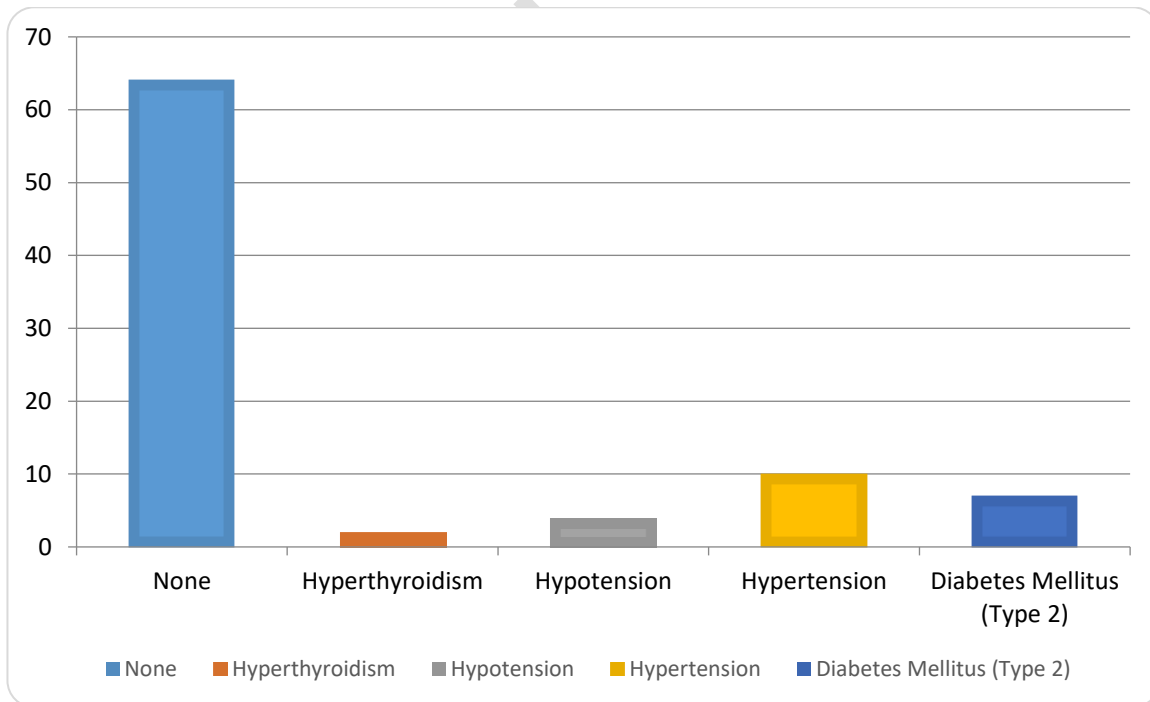


Image 1: Bar Graph Depicting Comorbidities Diagnosed Prior to Lockdown Duties

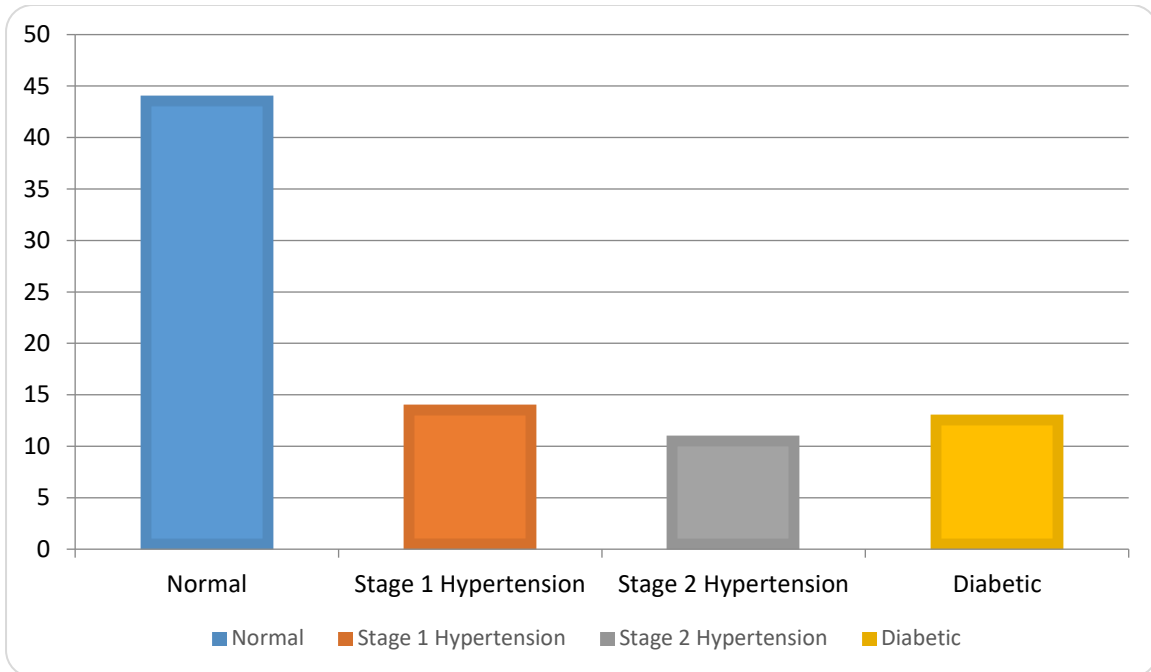


Image 2: Bar Graph Depicting Hypertensive and Diabetic Levels among the Police Officers

Height and Weight were also checked, with which BMI of the officers was calculated. The stress, anxiety and depression scores were then tabulated in comparison to their BMI levels.

BMI Levels	Frequency of Stress	Frequency of Anxiety	Frequency of Depression
Normal Weight (n=70)	n=21	n=10	n=0
Overweight (n=8)	n=2	n=2	n=0
Obese (n=4)	n=2	n=2	n=0

Table 4: BMI levels compared to frequency of stress, anxiety and depression levels among the police personnel

Data regarding the sleeping habits of the police personnel was collected. Image 4 depicts the amount of time taken to fall asleep, ranging from a few minutes to 1 hour with 31.7% being able to fall asleep immediately.

On average, police personnel got an average of 7 hours of sleep at night during lockdown duties, with 64.6% of personnel reporting 7 hours or more of sleep at night, as depicted in Image 5.

Lastly, data regarding the stimulants used by the police personnel during lockdown duties was collected (Table 3), where “n” is the no. of people. Tea is the most common stimulant used, followed by cigarettes and coffee.

STIMULANT	FREQUENCY (n)
Coffee	16
Tea	69
Cigarettes	17
None	4

Table 5: Stimulants commonly used

Number of cups of tea/coffee taken per day were also noted, as shown in Image 5. On average, the respondents drink 2 cups per day. Those who take cigarettes reported smoking 1-2 cigarettes per day.

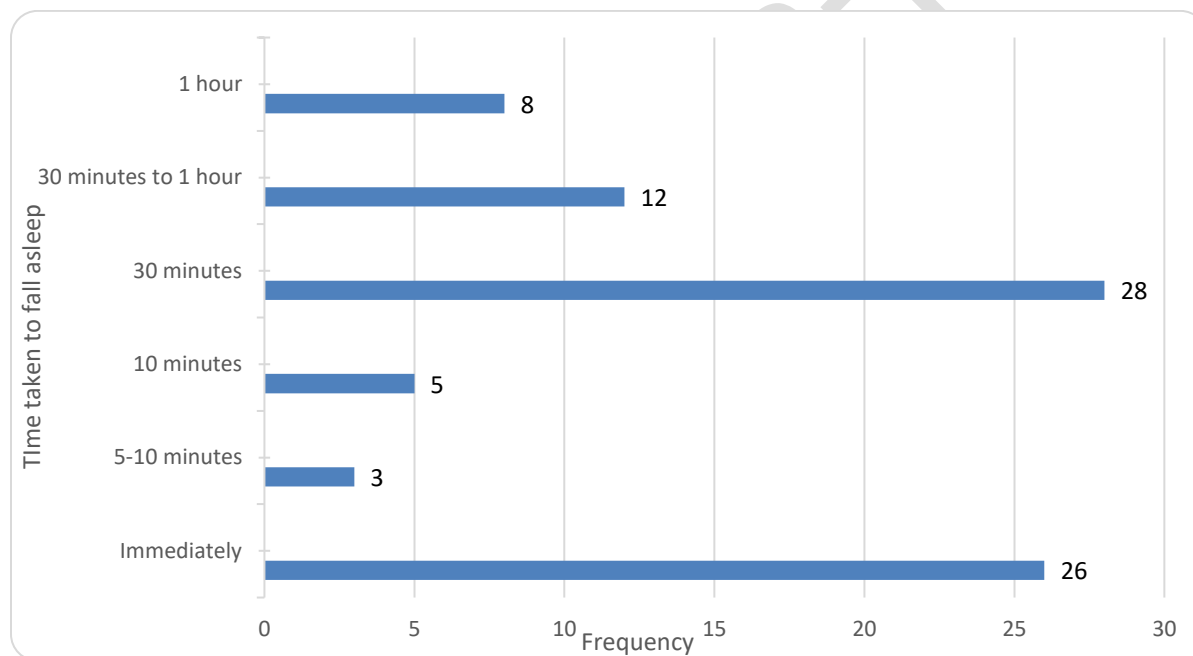


Image 3: Bar Graph Depicting Time Taken to Fall Asleep during Lockdown Duties

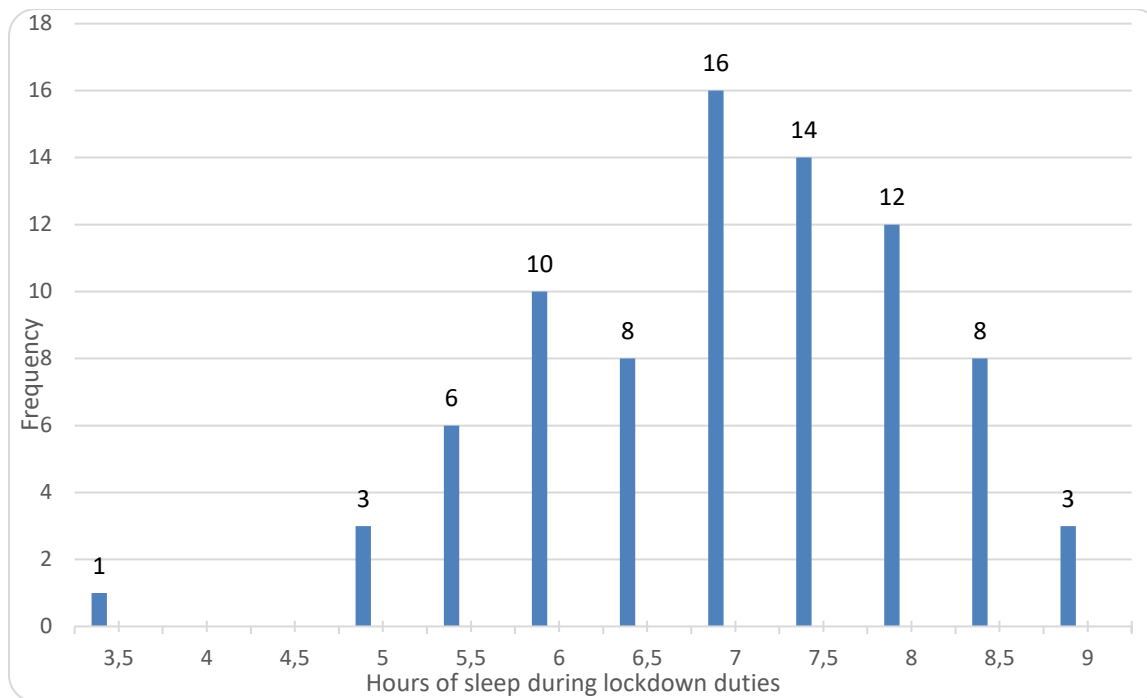


Image 4: Bar Graph Depicting Hours Slept at Night during Lockdown Duties

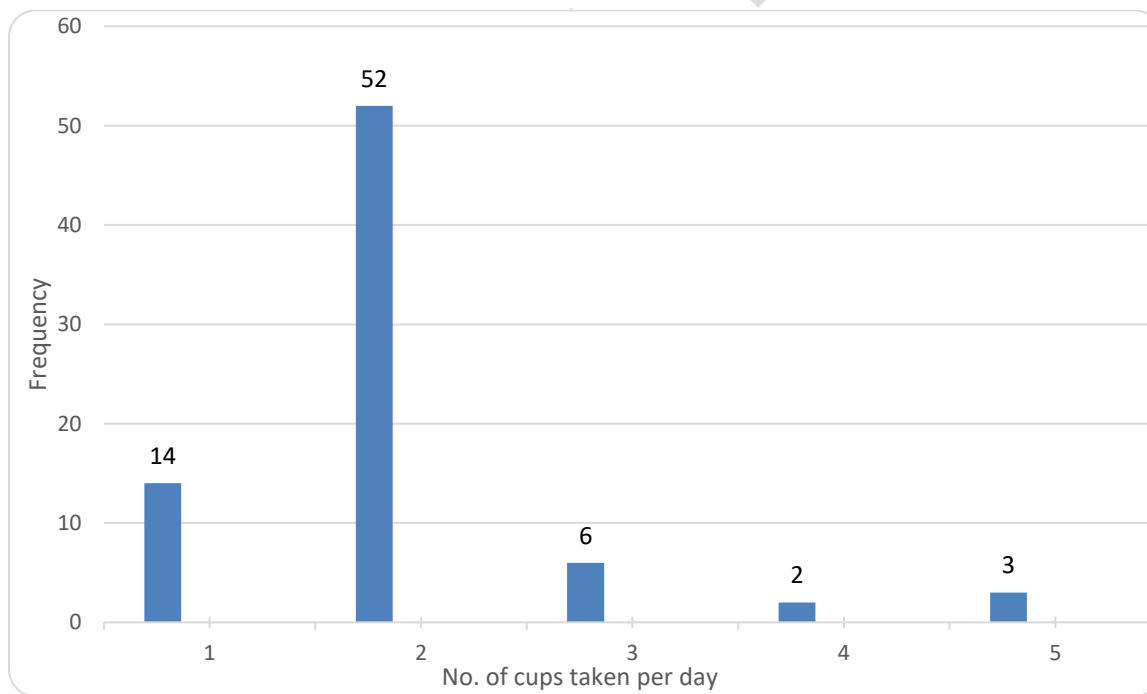


Image 5: Bar Graph Depicting Number of Cups of Coffee/Tea Taken Per Day

## **DISCUSSION**

This study revealed that overall, the police personnel of Eluru show significant levels of stress (30.4% of respondents) and anxiety (17.07% of respondents), but no significant levels of depression.

Females and older age groups showed higher levels of anxiety as compared to the male officers, which is in accordance with multiple studies such as those by Grover et. al., Hussain et. al, and Tsehay et. al, while no significant correlation was found between gender and age groups with stress.<sup>11,12,13</sup> This could be attributed to the fact that females generally face lack of recognition from both their male colleagues and the general public and also face the strain of doing their household chores along with their police work. Females are also more likely to express fear of the virus, according to multiple studies, therefore contributing to higher anxiety levels.

Anxiety was also found to be highly significant in married officers, which could be due to the concern about being a source for infection of COVID-19 for family members, as stated by previous literature.

For the physical health parameters, the present study found no significant correlation between BMI and psychological impacts, which is in accordance with the study by Vancini et. al., who found that while police officers in Brazil presented with moderate levels of anxiety and mild depression, they found no significant differences between normal and excess weight groups.<sup>14</sup>

There was a notable increase in the blood pressure and blood sugar levels in the police personnel after the lockdown duties. A total of 10 respondents were known hypertensive, while 7 of the respondents were known diabetics, i.e. they were diagnosed prior to lockdown duties. At the time of data collection, however, it was observed that 25 respondents had hypertensive levels of blood pressure, and 13 respondents had diabetic levels of blood sugar; thus indicating that there was a notable increase in the blood levels of the known cases, and an increase in the number of new cases of Hypertension and Diabetes Mellitus (type 2) after lockdown duties.

However, the present study did not find any significant correlation via Chi-square test between hypertensive and diabetic states with stress and/or anxiety, which goes against previous literature. This could be due to the sample size of the study.

Sleep habits were found to be altered in many police officers during their lockdown duties, as reported by Arindam Dey et. al.<sup>15</sup> In this present study, while no significant correlation between the sleeping habits and psychological impact was found. Majority (64.6%) of the respondents reported getting 7 hours of sleep or more, which is the required amount. However, many police officers (58.5% of the respondents) reported taking around 30 minutes to an hour to fall asleep both during lockdown duties and at present. An inference

can be made here that the prolonged time taken to fall asleep can be attributed to the occupational stressors police generally face, based on previous existing literature.

### Limitations

The present study has several limitations. Firstly, Eluru being a small city, the total number of police personnel available were less. Furthermore, the study took place in the months of August, September and October 2021, more than one year after the initial lockdown duties. Thus, a majority of police personnel reported that they have grown accustomed to the stress and pressures of the COVID-19 duties, which could be the reason for the variations in the outcome of the study. Another limitation is the lack of traffic personnel in the respondents; studies by Hua Chen et. al., and Dey et. al., have reported that traffic police face significantly higher levels of mental and physical health problems among police personnel.<sup>16,15</sup>

The lack of reported depression symptoms could be attributed to the stigma surrounding mental health issues still prevalent in India, especially in rural areas. Studies by Sneha et. al., Kallauri., and Guttikonda et. al., have all reported that people in rural areas tend to have low levels of awareness and knowledge regarding mental health illnesses, and thus view mental health issues to be shameful.<sup>17,18,19</sup> Additionally, males have a low tendency to seek hospital care for health conditions, even more so in regards to mental health issues, which could further explain the decreased levels of psychological impacts in the present study.<sup>19</sup>

The low levels of stress and anxiety in the present study could also be attributed to positive coping mechanisms in the police personnel. Healthy coping mechanisms such as exercise, sleep, seeking support and religiosity have been shown to have positive outcomes with regard to perceived stress and anxiety. Moreover, positive work characteristics such as colleague support, supervisor support, supervisor relationship and work support were found to be inversely related to depression.<sup>20</sup>

### Conclusion

To summarize, there is a significant correlation between gender and psychological impact; with females showing higher levels of anxiety than their male colleagues. There is a highly significant correlation between marital status and psychological impact; married personnel showed higher levels of stress and anxiety than unmarried personnel. There is also a significant correlation between age and psychological impact, with the older age groups of 50-55 showing higher levels of anxiety. This study also found no correlation between BMI, presence of comorbidity (Hypertension, Diabetes Mellitus), and the sleeping habits with psychological impact.

Despite the limitations, this study can play a role in contributing to the scientific literature on the effects of COVID-19 pandemic on police personnel in India, an area which is, at present, severely lacking. Further

studies regarding the health of police officers and the COVID-19 impacts on the health of police personnel, especially the potential increase in incidence of mental health issues such as PTSD and burnout due to the pandemic, would be beneficial.

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