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Assessment of prevalence of depression and anxiety and its correlation analysis with BMI, duration of work and exercise in police personal in North Karnataka

Subhashchandra R Mudanur [1], Santosh Ramdurg [2], Shridevi Kori [3] Basavaraj G Patil [4], S P Chaukimath [5]

[1] Professor and Head Dept of Obstetrics and Gynaecology Shri B M Patil Medical College, Hospital and Research Centre BangarammaSajjan campus, solapur road Vijayapur, Karnataka, India

[2] Associate Professor, Dept of Psychiatry Shri B M Patil Medical College, Hospital and Research Centre BangarammaSajjan campus, Solapur road Vijayapur, Karnataka, India

[3] Assistant Professor, Dept of Obstetrics and Gynaecology Shri B M Patil Medical College, Hospital and Research Centre, Vijayapur, Karnataka, India

[4] Senior Resident, Dept of Obstetrics and Gynaecology, Shri B M Patil Medical College, Hospital and Research Centre, Vijayapur, Karnataka, India

[5] Prof. and Head, Dept of Psychiatry, Shri B M Patil Medical College, Hospital and Research Centre, Vijayapur, Karnataka, India

Abstract

Introduction: In today's world the impact of stress caused by work is becoming out of control. The job of police personnel has many challenges. High amount of depression and anxiety has been observed among person. This an attempt to know that.

Method: It was cross sectional study done in 100 police constable of district reserve police. We applied semi-structured socio-demographic data scale and PHQ 9 for depression and GAD 7 for anxiety. Data were assessed using SPSS 26 software and results were analysed by Correlation analysis, chi square test and regression analysis.

Results: Depression was severe in 17%, moderate in 11%, and no depression in 72%. Anxiety was severe in 9%, moderate in 24 and no anxiety 67%. Correlation analysis shows statistically significant negative correlation between age, BMI and duration of service and PHQ 9 score (0.286[*], P=<0.004, -0.129, -0.261 respectively) and positive correlation between education and PHQ 9 (0.231). Negative correlation between anxiety scale vs age (-0.465[*]), BMI (-0.263) and duration of service (-0.453). There is positive correlation between education (0.216) and PHQ 9 (0.759) with GAD7

Conclusion: Depression and anxiety among police was high and it was comparable with other most studies. Our studies were matching with most of the studies in terms of co-relation between Depression with age, education, duration of service, duration of exercise and BMI across the world. In anxiety ours is the first kind of study. Depression and anxiety management program are therefore strongly needed in police forces.

Keywords: Anxiety, Duration of Service, Depression, Exercise, Police

INTRODUCTION

Depression is frequently cited as an adverse psychological health outcome of strain in existing police literature. Depression is increasingly regarded as an abnormality 8 of stress adaptation systems in the brain. Strain disrupts police officers' neuroendocrine systems, which could lead to the development of a depressive disorder. Rates and symptoms of depression have been observed at a higher rate among police officers compared to the general public (Wang *et al.*, 2010). For example, a longitudinal study conducted by Wang *et al.* (2010) determined that police recruits who experienced greater perceived work stress demonstrated greater levels of depression symptoms after their first year of service. Additionally, a higher prevalence of depressive symptomatology was observed among police officers who experienced chronic workplace violence in another study (Lee *et al.*, 2014). Other empirical findings revealed that depression was significantly associated with critical incidents, organizational factors (e.g., poor cooperation, inequality) (Gershon *et al.*, 2002), negative work characteristics (e.g., demand, effort, consultation on change, over-commitment), limited positive work factors (e.g., reward, control), and inadequate work support (e.g., colleague support, supervisor support, supervisor relationship, bullying) (Nelson & Smith, 2016) among police officers. In order to alleviate felt strain, police officers frequently use a range of cognitive, behavioural, and emotional coping strategies

*Corresponding author:
Dr Santosh Ramdurg
MD (AIIMS), Associate professor, Dept of Psychiatry Shri B M Patil Medical College, Hospital and Research Centre Bangaramma Sajjan Campus, Solapur road Vijayapur, Karnataka, India
Email:
santoshramdurg@gmail.com

Globally, the job of police personnel has many challenges and adversities in the form of long duty hours with inadequate facilities at the workplace, long distance traveling without proper time and place to rest, and an excessive burden of work and accountability.[1] many studies conducted throughout the world has shown many mental health problems like anxiety, depression, aggression, substance abuse, suicidal ideation, suicidal attempts, and higher suicidal rates in policemen.[2,3,4] Security Force has revealed that personnel posted in stressful areas perceived more stress and psychiatric morbidity compared with those posted in non-stressful areas.[4]

Keeping in view the impact of occupational stress on prevalence of depression and anxiety in police personnel, this study was intended to investigate prevalence of depression and anxiety among police personnel in the state of North Karnataka

METHODOLOGY

Aims and objective:

1. To study the prevalence of depression and anxiety among police person.

2. To assess co-relationship between depression, anxiety with BMI, duration of exercise, and duration of service

Materials and Method: It was cross sectional study. Sampling method was consecutive method. Institutional ethics committee clearance was obtained **and we took** approval from superintendent of Police of the district for study. Study was carried out over a period of 3 months from November 2019 to January 2020. During this period we evaluated 100 reserve police constable. After obtaining written informed consent we administered semi-structured socio-demographic data scale and PHQ 9 and GAD 7. Subjects anonymity was preserved. The **PHQ-9** consists of nine questions and scores each of the nine DSM-IV criteria based on the frequency of symptom. Sensitivity and specificity were reported as 89% and 77%, respectively. The Generalized Anxiety Disorder Scale-7 (GAD-7) is a 7-item, self-rated scale developed by Spitzer and colleagues (2006) as a screening tool and severity indicator for GAD. Using the threshold score of 10, the GAD-7 has a sensitivity of 89% and a specificity of 82% for GAD. Scores range from 0 to 21 with higher scores indicating more severe GAD symptoms. Research has suggested that the GAD-7 is a valid screening tool for GAD in a primary care setting and for assessing its severity in clinical practice and research (Spitzer *et al.*, 2006). We collected the information by questionnaire asking for duration of service, duration of exercise (Brisk walking, cycling, jogging, swimming, gym etc). we measured their height and weight with digital weighing machine and for all the police person same machine was used. Than we calculated the BMI as per WHO standards.

RESULTS

In Our study group 98% of them were male with mean age group of 38.65±10.339. Their mean years of education was 13.05±3.006 years. Eighty eight % of them were married and 55% of them were belonging to joint family and remaining 45% of them were having nuclear family . Eighty five percent of them were belonging to Hindu family and remaining belonged to minority group . Sixty nine percent of them were involved in at least one hour of physical exercise apart from their duties (mainly brisk walking/running and swimming). Fifty four percent of them were having normal weight, 40% of them were overweight and 6% them were obese among the study group (Table 1).

We administered PHQ 9 to assess the prevalence and severity of **depression** among police personnel. Seventeen percent of them were having mild to moderate depression and 11 % them were having moderate to severe depression and 72% were not having depression. Among anxiety 24% of them were having mild anxiety, 9% moderate to

severe and 67% no anxiety. Mean score of PHQ 9 was 3.4±3.9 and GAD 7 was 3.54 ± 3.9 (Table 2).

Correlation analysis shows statistically significant negative correlation between age, BMI and duration of service and PHQ 9 score (0.286*, P=<0.004, -0.129, -0.261 respectively). Which indicates older the police constable, lesser the depression and younger the police more was the depression. There was statistically negative relation between PHQ 9 with BMI (-0.129*) and duration of service (-0.261). By this we can draw conclusion that more the weight, less the depression. Longer the duration of service, less was the depression. There was positive correlation between education and PHQ 9 (0.231) means more the educated more will be the depression levels. Positive correlation (0.058) was present between depression and duration of exercise but statistically it was not significant (table 3).

Similarly there was negative correlation between anxiety scale vs age (-0.465*), BMI (-0.263) and duration of service (-0.453). This indicates older the person and longer the duration of service less will be anxiety. There is positive correlation between education (0.216) and PHQ 9 (0.759) with GAD7 which indicates more the educated more anxiety and more depression more anxiety. Positive correlation (0.050) was present between anxiety and duration of exercise but statistically it was not significant

Multiple regression analysis showed there was statistically significant difference was present between severity of depression and age (0.004*), duration of service (0.019*) and duration of physical exercise (0.048*) (Table 4). This indicates there was more depression among younger people compared to older one. Similarly shorter the duration of service more the depression. Depression was more in an individuals with physical exercise for <1 hour compared to >1 hour of exercise (0.048*). The depression was more among normal and overweight individuals compared to obese one but it was not statistically significant (0.060). Similarly in anxiety statistical significant difference was present with age (<0.001*), duration of service (0.001*) and BMI (0.012*) but not with duration of exercise (0.124) (Table 5). This suggest younger the age more was the anxiety. Shorter the duration of service more anxiety and normal and overweight people had more anxiety

DISCUSSION

This study was carried out in northern Karnataka among police constables .Socio demographic profile of Our study has shown in table 1. It is a overall demographic representation of police dept of our city. Our study has shown that 28% of them were having depression and 72% were not having depression. Among anxiety 37% of them were having anxiety and 67% no anxiety in police personnel. One of the study done in Shri Lanka has shown that prevalence of depression in the study sample was 22.8 %.[5] Another study by Chen *et al*. 2006 reported prevalence of depression has a wide range from 21.6 % among Taiwan police officers.[6] In the study by Wickramasinghe, N.D *et al* 2016 says it may vary from 21% to 65.6 % among Australian Police officers. A clinic based study conducted by Rajapakse and Sivapalasingam *et al* 2011 revealed 10.4 % patients were having severe depression with psychotic features at the time of presentation.[7] Compared to these study in our study has more number depression in police but fits into the range still the reason could be due to higher prevalence of depression in indian continent or the diversity in the socio-demographic, cultural and economic backgrounds of the study participants over different studies would have accounted for the differences in the estimates of prevalence. The heterogeneity in the form of occupational background should be also considered as a possible explanation for the observed differences. Another important aspect which should be taken into account is the difference in assessment tools used across these studies. The systematic review by Wagner, S *et al* 2019 suggest the prevalence of depression varied substantially across studies from 0.95 to 55.4 percent (M ¼ 20.4

percent, Median ¼ 15.0 percent). It also reported that the four studies examining the relationship between age and depression, none reported significant associations.[9] although one study reported preliminary evidence that the relationship between age and depression may be non-linear in nature .Another study by P. A. Collins and A. C. C. Gibbs *et al* 2003b has shown the prevalence of depression does not depend on age.[10] But our study has shown its depends on age. This may be due cultural patterns, kind of work they and other factors.

Again systematic review by Wagner, S *et al* 2019 and Collins *et al* 2003 also reports that years of service was unrelated to depression and one studies which examined the relationship showed a weak positive relationship between years of service and BDI scores. [5,9,11]

The study by Wagner *et al* says Outcomes concerning the prevalence of depression as a function of officers' gender and marital status were more inconsistent. Due to small sample of gender and marital status we have not made an attempt to look for difference.

The prevalence of anxiety in our sample was 33% . Again systematic review by Wagner, S *et al* 2019 says that four studies examined anxiety in police officers. Prevalence estimates for anxiety ranged from 0.3 to 31.4 percent (M ¼ 13.2 percent, Median ¼ 10.6 percent). Overall, the literature on police officers provided moderate evidence in support of the hypothesis that rates of anxiety are higher in police, but it is clear that more work remains to be done to expand the extant literature.

Only 4 studies examined the prevalence of anxiety. No studies examined possible associations between anxiety symptoms and severity and socio-demographic data and duration, service, duration of exercise and BMI . ours is the first kind of study in police population looking for prevalence of anxiety and its association with age, duration of service and exercise and BMI. More work remains to be done to expand the literature on prevalence of anxiety and depression in police populations.

We recommend counselling and anxiety management protocol for Younger police person, in his early career age. We should encourage them to involve in physical exercise at-least more than hour/day.

Table 1: socio demographic data

Gender	
• Male	98
• Female	2
Age	38.65±10.339
• Min	23
• Max	59
Education	13.05±3.006
• Min	3
• Max	17
Marital status	
• Married	88
• Unmarried	12
Type of family	
• Joint	55
• Nuclear	45
Religion	
• Hindu	85
• Muslim	15
Duration of service	15.28 ±9.566
• Min	3
• Max	38
Physical exercise	
• No activity	21
• <1 hour	69
• >1hour	10
BMI	
• **Normal weight**	**54**
• **Overweight**	**40**
• **Obesity**	**6**

Table 2: Distribution of depression and anxiety

	N	%
Depression		
No	72	72
Mild to moderate	17	17
Moderate to severe	11	11
Total	100	100
Anxiety		
No anxiety	67	67
Mild anxiety	24	24
Moderate to severe anxiety	9	9
Total	100	100

Table 3: Correlation analysis of various study variables

	Depression(PHQ 9)(r)	P	Anxiety (r) (GAD &)	P
Age	-0.286	0.004*	-0.465	<0.001*
Education	0.231*	< 0.05	0.216*	>0.05
Total hours of exercise	0.058	>0.05	0.050	>0.05
BMI	-0.129	>0.05	-0.263**	<0.001
PHQ	1		0.759**	<0.001
Duration of service	-0.261	0.009*	-0.453	<0.001*

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4: Association of Age, Duration of service with study variables

Parameters	Age (yrs)			Duration of service		
	Mean	SD	p value	Mean	SD	p value
Depression						
No	39.57	10.03	0.004*	15.85	9.11	0.019*
Mild to moderate	40.94	11.78		17.53	12.27	
Moderate to severe	29.09	2.51		7.82	3.49	
Anxiety						
No anxiety	41.36	10.87	<0.001*	17.60	10.26	0.001*
Mild anxiety	34.58	6.75		11.83	6.05	
Moderate to severe anxiety	29.33	2.74		6.89	3.14	

Table 5: Association of BMI, Duration of exercise with study variables

Parameters	BMI			p value	Duration of exercise			p value
	Normal	Overweight	Obese		No exercise	<1hr exercise	>1hr exercise	
Depression								
No	39	27	6	0.060	15	47	10	0.048*
Mild to moderate	6	11	0		6	11	0	
Moderate to severe	9	2	0		0	11	0	
Anxiety								
No anxiety	35	26	6	0.012*	18	41	8	0.124
Mild anxiety	10	14	0		3	19	2	
Moderate to severe anxiety	9	0	0		0	9	0	

CONCLUSION

High depression and anxiety disorders are a relevant issue among police officers, and can cause significant damage to health. Depression and anxiety management program are, therefore, strongly needed in police forces. The health and wellbeing of the police officers, because of the type of their work, should be pursued not only from the viewpoint of occupational medicine but also within the perspective of public health, in order to ensure better health of the police personnel. Society as a whole has a high interest in improving the health of police so that they can protect the public and enforce the law of the land. The scientific world should contribute to this need by improving the quality of research dedicated to police work.

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Disclosure Statement: Nil

Authors contribution:

All the authors have equally contributed for forming an research idea, data collection, analysis, script writing. All authors have approved the final copy

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