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Original Article

Nursing Section

Stress, Depression, Coping Strategy and Respiratory Health Status of Traffic Police at Anand District, Gujarat, India

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ABSTRACT

Introduction: There is lot of stress and stress associated mental illness among the traffic police fraternity. Many environmental factors are responsible for this development. Measurement of the stress levels and implementation of coping strategies are very important to maintain the health of the traffic police.

Aim: To assess the level of stress, depression, coping strategy and respiratory health status of traffic police at Anand district, Gujarat, India.

Materials and Methods: This cross-sectional descriptive study including 100 participants was conducted by the Department of Mental Health Nursing, Manikaka Topawala Institute of Nursing, Charotar University of Science and Technology, Anand District, Gujarat, India from December 2019 to February 2020. Validated tool Job Stress Scale, standardised tool beck depression inventory, coping strategy scale were used to assess the level of stress, depression and coping strategy respectively. Spirometer was used to assess respiratory function. Analysis was done using Statistical Package for the Social Sciences (SPSS) statistical software version 20.0 and Spirometry Longitudinal Data Analysis (SPIROLA) software version 3.0.3.

Results: The study reveals that majority (69%) of the traffic police were facing extreme stress, 11% of traffic police were suffering from mild mood disorder, 73% were having adequate coping skills, 88% were non smokers and 97% traffic police were not using any substances, 65% demonstrated expiratory Forced Vital Capacity (FVC) of 2.6%-3.5%, 66% demonstrated 2.6%-3.5% Forced Expiratory Volume in 1 second (FEV1), 76% experienced 96-100 FEV1/FVC ratio1, 53% experienced 6%-8% peak expiratory flow. Pulmonary function test found to be normal however, it is declined in smokers comparative to non smokers.

Conclusion: The study concludes that stress and depression were observed in traffic police which they were managing with adaptive coping strategy. However, pulmonary function is found normal in comparing to predictive value, necessary precautions need to be taken by Traffic Police Department by offering protective device like mask to decrease the respiratory health issues.

Keywords: Accidents, Occupational exposure, Police psychology, Respiratory function tests

INTRODUCTION

India stands for second populated country in the world, which is growing exponentially in all the terms increasing services and adopting new technology. To meet the demands of people, public transportation is expanding in all the dimensions. Accordingly every day, hundreds of vehicles roll on the road substantially, resulting in congestions in traffic. Numbers of vehicles increasing however, width of the road remains same resulting in heavy traffic congestion [1]. To monitor, regulate traffic rules, facilitate smooth transport and control road traffic accidents, traffic police need to sweats round the clock [2].

Regardless of heavy traffic fines, youngsters involved in violating traffic rules, reckless driving, lane indiscipline, entering into one way, digging roads, managing security for VIP's, other emergency services, processions, marriage ceremony's, strikes, road traffic accidents, heavy vehicles etc., creates a huge stress on traffic police in handling the traffic congestions [3]. Although many stress relaxation program are conducted by Government, intensity of stress increasing among traffic police to meet the traffic demands.Often many studies reports depression among traffic police due to extreme stress [4].

The traffic police working environment has many stressors that raises risk of mental issues among traffic police [5].Surveillance of Occupational Stress and Mental Illness (SOSMI) reports police work environment stands 3rd rank in occupational stress [6].

Purba A and Demou E conducted a systematic review to assess the relationship between occupational stressors and mental well-being among police officers using Cochrane and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. In initial screening 3571 studies were identified, however, 15 studies met the inclusion criteria, the study reveals that occupational stressors like lack of support, job demand and pressure, long working hours have significant association with mental outcome [4].

In spite of occupational stress and heavy workload, Traffic police are exposed to air pollution due to their nature of job are at high-risk to develop disorders of respiratory system like rhinitis, asthma, respiratory tract infection, chronic obstructive pulmonary diseases etc., [6].

Even though exposure to various pollutants like carbon dioxide, monoxide is inevitable, intensity of exposure can be managed by wearing appropriate mask which is not provided by the department [7,8].

The researcher(s) assumed to identify the level of stress, depression faced by the traffic police due to occupation and coping strategies adopted by traffic police to overcome the same and pulmonary function was also assessed to identify any respiratory issues of traffic police working in Anand district, Gujarat.

MATERIALS AND METHODS

This cross-sectional descriptive study was conducted by the Department of Mental Health Nursing, Manikaka Topawala Institute of Nursing, Charotar University of Science and Technology, Anand, Gujarat, India from December 2019 to February 2020. Ethical clearance was obtained from the ARIP-Institutional Ethics committee with proposal ID ARIP/IEC/19/09 dated 10th May 2019. Formal permission was obtained from the Superintendent of Police to conduct the study. After discussion with Road Traffic

Officer (RTO) data collection was scheduled, written consent from each participants were obtained. Initial data was collected at RTO Office where TRB's (Traffic Brigade) visits for marking attendance, further extended to the different circles to collect data from remaining TRB and Police constables.

Inclusion criteria: Total of 117 traffic police were working in Anand district, out which 103 consented to participate in the study; three participants were excluded. Finally, 100 participants completed the data who were active in field duty and willing to part of study. Subjects designated lower than ASI (Assistant Sub-Inspector of police), with designation TRB (Traffic brigade) and police constable were included.

Exclusion criteria: Traffic police who were diagnosed with any mental illness, who were on leave for more than one month in previous year (2017-18) and who had any chronic illness were excluded from the study.

Stress level was determined by job stress scale, coping strategy scale to assess coping level, and standardised tool beck depression inventory to assess the depression level. Spirometer was used to assess respiratory function.

1. Validated Job Stress Scale [9]

It was used to assess the level of stress, which consists of 38 items and categorised into four main domains as follows:- Work-Family Conflict (WFC), Work Overload (WO), Noxious Physical Environment (NPE) and Public Support (PS). Job stress Scale rated from 1 to 5, where 1 indicates strongly disagree and 5 indicates strongly agree. There are different score levels as follows:- 1-45 depicts mild stress, 46-91 depicts moderate stress, 92-136 portrays sever stress and 137-180 depicts extreme level of stress.

2. Beck Depression Inventory [10]

It was used to assess depression level and rated from 0-3. It's score level as follows 1-10 indicates normal, 11-16 indicates mild mood disorder, 17-20 indicates borderline clinical depression, 21-30 indicate moderate depression, 31-40 indicate severe depression and above 40 indicates extreme depression level.

3. Coping Strategy Scale [11]

It is a 5 point Likert scale, where 1 indicates never and 5 indicate always. It consists of 21 items in which items 1-6, 8-15, 21 scored positively and item 7, 16-20 scored in reverse way. Coping scale is interpreted as score levels as follows 81-72 indicates adequate coping skills, 54-63 indicates moderate coping skills and 45-53 indicates inadequate coping skills.

Spirometer

It is a digital portable device used to measure lung function, it consists of graphical measurement of curves volume-time, flow-volume, FVC, FEV1. Data like age, gender, height, weight and substance abuse need to be added manually, later participant was asked to take deep breath and blow inside the mouth piece of spirometer. Data recorded in spirometer retrieved in PC for analysis and interpretation of data was done with the help of SPIROLA software. It enables the researcher to monitor group means for FEV1 and FVC and in relation to mean predicted values based on group demographics (age, height, weight, gender, and substance abuse). During data collection few participants disclosed regarding consuming tobacco and smoking cigarette.

STATISTICAL ANALYSIS

Statistical data were analysed by Statistical Package for the Social Sciences (SPSS) statistical software version 20.0. and Spirometry Longitudinal Data Analysis (SPIROLA) software [available from Centers for Disease Control and Prevention (CDC) website]. The data calculated in frequency and percentages format.

RESULTS

Section I: Demographic variables of traffic police and Traffic brigade (TRB)

The [Table/Fig-1] portrays that majority of the police (68%) were aged below 29 years, majority 97 were males, 79 were married, majority 43 were above 170 cm height.

[Table/Fig-1] depicts majority 34 were 56-65 Kg, majority 50 studied up to HSC, majority 78 are working with designation TRB (Traffic brigade) and 22 as police constable, majority 80 are serving less than five years in traffic police department, majority 64 are serving for 8-9 hrs/day.

The [Table/Fig-1] portrays that majority 77 earns less than 10,000/ month as they were on contractual basis, majority 66 travel more than 10 km from home to working area, majority 88 stay with joint family with family members 4-5 and 97 are not suffering from any respiratory diseases or any other non communicable diseases.

Sr. No.	Demographic Variables	Frequency (n)
1.	**Age (Years)**	
	<29	68
	30-39	22
	40-49	04
	>50	06
2.	**Gender**	
	Male	97
	Female	03
3.	**Marital status**	
	Married	79
	Unmarried	20
	Divorced	01
4.	**Height (cm)**	
	155-160	03
	161-165	17
	166-170	37
	>170	43
5.	**Weight (kg)**	
	45-55	21
	56-65	34
	66-75	22
	>75	23
6.	**Academic qualification**	
	Postgraduate (PG)	8
	Undergraduate (UG)	19
	Higher secondary school certificate (HSC)	50
	Up to Secondary school leaving certificate (SSLC)	23
7.	**Present designation**	
	Police constable	22
	TRB (Traffic brigade)	78
8.	**Total years of services in traffic police department (in years):**	
	<5	80
	5-10	9
	>10	11
9.	**Average duration working hours:**	
	<9	64
	9-10	13
	>10	23
10.	**Salary per month (in rupees)**	
	<10000	77
	10001-15000	2
	>15000	21

11.	**Distance between residence and work place (in kilometre)**	
	<2	8
	2-5	3
	5-10	23
	>10	66
12.	**Total family members residing with you**	
	3	14
	4-5	50
	>5	36
13.	**Type of family**	
	Joint	88
	Nuclear	12
14.	**Are you suffering with any respiratory disease or any non-communicable diseases**	
	Yes	03
	No	97

[Table/Fig-1]: Frequency and percentage distribution according to demographic variables (N=100).

Section II: The level of stress experienced by traffic police

The [Table/Fig-2] portrays that majority 69 are facing extreme stress and 29 traffic police face severe stress.

Section III: The level of depression experienced by traffic police

[Table/Fig-3] depicts majority 81% are not suffering from any depression, 11% of traffic police are suffering from mild mood disorder and only one person is experiencing severe depression.

Level of stress	Frequency (n)
Mild stress (1-45)	00
Moderate stress (46-91)	02
Severe stress (92-136)	29
Extreme stress (137-180)	69

[Table/Fig-2]: Frequency and percentage distribution according to level of stress experienced by traffic police (N=100).

Level of depression	Frequency (n)
No depression (1-10)	81
Mild mood disturbance (11-16)	11
Borderline clinical depression (17-20)	04
Moderate depression (21-30)	03
Severe depression (31-40)	01

[Table/Fig-3]: Frequency and percentage distribution according to level of depression experienced by traffic police (N=100).

Section IV: The level of coping strategies among Traffic police

[Table/Fig-4] depicts majority 73% are having adequate coping skills and 14% are having inadequate coping skills.

Section V: The respiratory function of Traffic police

[Table/Fig-5] depicts majority 88 (88%) were non smokers and majority 97 (97%) traffic police personnel were not using any substance, majority 65 demonstrated expiratory FVC of 2.6%-3.5%, majority 66 demonstrated 2.6%-3.5% FEV1, majority 76 experience 96-100 FEV1/FVC ratio1, majority 53 experience 6-8 peak expiratory flow.

Level of coping strategies	Frequency (n)
Inadequate coping skills (45-53)	14
Moderate coping skills (54-63)	13
Adequate coping skills (64-81)	73

[Table/Fig-4]: Frequency and percentage distribution according to level of coping strategies adopted by traffic police (N=100).

Sr. No.	Demographic variable	Frequency (n)
1.	**Smoking**	
	Yes	12
	No	88
2.	**Drug uses**	
	Yes	03
	No	97
3.	**Expiratory forced vital capacity (FVC)**	
	1.5-2.5	26
	2.6-3.5	65
	>3.6	9
4.	**Forced expiratory volume in 1 second (FEV1)**	
	1.5-2.5	31
	2.6-3.5	66
	>3.6	3
5.	**FEV1/FVC ratio1**	
	75-85	5
	86-95	19
	96-100	76
6.	**PEF**	
	3-5	14
	6-8	53
	9-11	30
	>11	3

[Table/Fig-5]: Frequency and percentage distribution according to respiratory function of traffic police (N=100).

DISCUSSION

The study findings revealed that out of 100 participants majority 97% were males which was supported by the study Kaur R et al., in which out of 150 samples, 135 were males [12]. It may be due to female ratio is less in traffic police as it requires more physical demand. Mean age of the participants was 28.83+8.62 years, supported by the study Boyanagari M et al., in which samples mean age was similar [13].Majority of them 50% studied up to Higher Secondary, this result was in consistent with Kar S and Singh S. this may be due to minimum qualification for recruitment was matriculation [14]. Majority 80% traffic police serving less than 5 years in traffic police department and 64% are serving for 8-9 hrs/day, these results were in consistent with Kulkarni V et al., where traffic police were working long hours and had less years of experience,this may be one of the leading cause for stress [15]. Majority 77% earns less than 10,000/month as all the TRB were appointed on contractual basis and were on fixed pay, 97% were not suffering from any respiratory diseases, this result was in contradictory to findings of Gowda G and Thenambigai R in which study was conducted in metropolitan city, where majority of samples were suffering from rhinitis, cough, breathing difficulties as traffic police were working more than 10 years [7]. In this study, TRB's were appointed on contractual basis and their contract will be ended with in few years after appointment, also study was conducted in non metro where pollution level was less in comparison with metro cities, hence, traffic polices in this study were not suffering from any respiratory diseases.

Majority 69% were facing extreme stress and 29% traffic police face severe stress, similar results were observed in the study conducted by Kulkarni V et al., this might be due to long hours of working, managing huge traffic, road maintenance work, extreme climates, accidents, vehicle breakdown, social functions may worsen the stress level [15].

Majority 81% were not suffering from depression, 11% of traffic police were suffering from mild mood disorder and only one person was experiencing severe depression due to his family issue and

economical burden of the family. Majority were having adequate coping skills like watching TV, listening music, practicing yoga, exercise and spiritual practices (73%) to overcome stress and depression. Among them 14% were tobacco users, who were having inadequate coping skills like smoking more cigarette or tobacco, chewing more masala, wishes to be alone and displace tensions on someone or something else. These findings were concurrent with the study conducted by Kaur R et al., to overcome stress and depression [12].

Majority 88% were non smokers and majority 97% traffic police not use any substances, majority 65% demonstrated expiratory FVC of 2.6%-3.5%, majority 66% demonstrated 2.6%-3.5% FEV1, majority 76% experiences 96%-100% FEV1/FVC ratio1, majority 53% experience 6-8 peak expiratory flow.

Spirometer observation suggests that even though not much significantly decline in FVC, FEV 1 and Pulmonary function test when compared with predictive normal values (assessed using SPIROLA software), due to less exposure to automobile fumes. Traffic personnel who smoke showed lower test values in comparison with non smokers. The previous study conducted by Makwana AH et al., also revealed the similar results,automobile fumes causes impairments in pulmonary function and traffic police personnel should be offered personal protective equipments like mask [6].

Policy maker's needs to address the stress depression and respiratory health issues encountered by traffic police and different copping strategies adopted to overcome the stress and depression. Departmental heads need to organize relaxation classes to traffic police and address the depression at initial level,reduction of duty hours, appropriate work shifts, recruitment of more staff would decrease stress and improve physical and psychological well-being. Physical training along with will help to enhance their work efficiency and providing appropriate mask to protect the pulmonary health of traffic police.

Limitation(s)

The study was limited to Anand district; study can be replicated in multiple settings to generalise the study results, in this study subjective unit were used to assess stress level, physiological measures like cortical level can be used to ascertain stress level in further study.

CONCLUSION(S)

Study concludes that traffic police experiences extreme stress level, mild depression and adequate coping strategy, however, policymakers need to take appropriate measure to arrange stress reduction sessions, depression screening and assess pulmonary function test at regular intervals, to promote the mental well-being of traffic police.

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