

## Health status of Traffic Police in Kathmandu Valley: Findings from a cross-sectional study

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### ABSTRACT

**Background:** Traffic policemen are constantly exposed to health hazards due to their occupation. They are at risk of developing various diseases due to exposure to noise, dust, gases, fumes etc. during their work. Objective of this study was to find out the health status of traffic police and common health problems due to their occupation.

**Methods:** This cross sectional study was conducted among Traffic Police of Kathmandu Valley. Convenient sampling technique was used. A structured questionnaire was used to assess prevalence of musculoskeletal disorders, acute respiratory tract infection, skin allergy, eye problems, ear problems, utilization of safety measures and health seeking practice. Patient Health Questionnaire-9 was used for the assessment of status of depression. Clinical Examination was done by medical doctors to determine common physical health problems. Data were entered and analyzed in Statistical Package for the Social Sciences version 20.

**Results:** A total of 296 traffic police were enrolled in the study with mean age of 31.07 years. Burning Eyes or Tearful Eyes was complaining of 72.3% of the respondents and almost two-fifth complained of some problem in vision. Nearly nine out of 10 respondents (87.8%) had musculoskeletal pain in at least one part of the body (neck, shoulder, elbow, wrist/hands, upper back, lower back, hip/thigh, knee and ankle) with major problem being upper and lower back pain. Based on PHQ-9 Questionnaire, it was found that 58.8% of the respondents were in state of some kind of depression.

**Conclusion:** Traffic Police are constantly exposed to health hazards due to their occupation. The prevalence of musculoskeletal, ocular and hearing problems was higher among them. Awareness programmes should be carried out targeting them regarding the preventive measure, use of personal protective devices and regular health check-up.

**Key words:** Health problem, Kathmandu, Traffic Police

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### Introduction

The unplanned rapid urbanization and industrialization has significantly degraded the environment of urban areas. Increasing human population, industries and motor vehicles has turned out to be major environmental issue.<sup>1</sup> The motor vehicles are the source of traffic related air and noise pollution.<sup>2,3</sup> The limit for exposure to noise is 85 dBA (Time-Weighted Average) for 8-hours<sup>4</sup>, however an

average traffic sound due to motor vehicle for a close observer in the city is about 60-100 dB.<sup>5</sup> In addition, these are also the source of heat, water vapor, and may add stress due to the busyness of the traffic flow.<sup>6</sup> Large quantities of carbon dioxide, carbon monoxide, hydrocarbons, nitrogen oxides, particulate matter (PM), and substances known as mobile source air toxics, such as benzene, formaldehyde, acetaldehyde, 1,3-butadiene, and lead along with secondary by-products, such as ozone and secondary aerosols (e.g., nitrates and inorganic and organic acids), which can cause adverse effects on health are also emitted by motor vehicles. Re-suspended road dust, tire wear, and brake wear are other sources of air pollution from motor vehicles.<sup>3</sup>

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Having being working in close proximity to motor vehicles, health status of Traffic Police is hence, largely associated with the traffic environment.<sup>1</sup> Exposure to traffic has been associated with numerous adverse health outcomes such as depression<sup>2,3</sup>, respiratory and cardiovascular problems<sup>4</sup>, impaired glucose metabolism<sup>5</sup>, skin allergy<sup>4</sup>, eye problems<sup>6</sup> and ear problems<sup>3</sup>. Further, traffic police have to stand in the road intersection for several hours, making them prone to varicose veins of legs.<sup>7</sup> Traffic policing is 24 hours, 7 days job. In addition, they are in frequent communication with many people. Hence, apart from having adverse health outcomes due to traffic related pollution, they are surrounded by various other significant health threats such as musculoskeletal disorder<sup>7</sup>; stress, fatigue and communicable diseases.<sup>8</sup>

Kathmandu Valley has high level of air pollution and noise pollution.<sup>9,10</sup> Monthly and yearly average occupational and ambient Particulate Matters (PM<sub>10</sub>) concentrations at the high density traffic areas and road intersections greatly exceeded the 24 hour average limit value (120 µg m<sup>-3</sup>) in Kathmandu Valley. The average occupational PM<sub>10</sub> concentrations in the ten high density traffic road intersection in Kathmandu Valley, measured for one year, February 2008 to January 2009 was 822 µg m<sup>-3</sup> (±295 SD) and that of ambient PM<sub>10</sub> concentration was 640 µg m<sup>-3</sup> (±224 SD).<sup>9</sup>

Various studies have shown that traffic related air and noise pollution have significant health effects. Air pollution has been associated with depression<sup>2</sup>, respiratory and cardiovascular problems<sup>4</sup>, impaired glucose metabolism<sup>5</sup>, skin allergy<sup>4</sup> and eye problems.<sup>6</sup> Noise pollution has been associated with mental health, cardiovascular problems and ear problems.<sup>3</sup> The World Health Organization (WHO) estimates that 1,91,06,40,000 Disability Adjusted Life Years (DALYs) are lost per year due to outdoor air pollution and 15, 74,000 DALYs are lost per year due to occupational noise in South East Asia Region in the year 2004.<sup>11</sup> The study was conducted to assess the health status of Traffic Police of Kathmandu Valley, and to identify occupational hazards on this population.

## Methods

This cross sectional study was conducted among Traffic Police of Kathmandu Valley. Health campaign was organized at Metropolitan Traffic Police Division, Ramshahpath, Kathmandu on June 28, 2014 and July

12, 2014. Convenient sampling technique was used and a total of 296 Traffic Police was enrolled in the study.

A structured questionnaire was used to assess status of depression, dependency level on alcohol and nicotine, prevalence of musculoskeletal disorders, acute respiratory tract infection, skin allergy, eye problems, ear problems, utilization of safety measures and health seeking practice. Patient Health Questionnaire-9 (PHQ-9) was used for the assessment of status of depression. Clinical Examination was done by medical doctors to determine common physical health problems. Random Blood Sugar Level was tested using Glucometer (Bayer's CONTOUR TS meter).

Ethical clearance for the study was taken from Institutional Review Committee of Kathmandu Medical College. Written permission was taken from Metropolitan Traffic Police Division, Ramshahpath, Kathmandu and informed written consent was taken from the participants. Data were entered and analyzed in Statistical Package for the Social Sciences (SPSS) version 20.

## Result

The maximum number of respondents were of age group 25-29 years and mean age was 31.07 years with Standard Deviation of 6.64 years. Out of 296 respondents, 282 (95.3%) were males and 14 (4.7%) were females. Police Constables and Police Head Constables share the major portion (88.1%) of the respondents. Most of the respondents (72.0%) were married and most of them (78.4%) stay in Barrack. More than half of the respondents had worked on the field for more than three years (Table 1).

Based on PHQ-9 Questionnaire, it was found that 58.8% of the respondents were in state of some kind of depression.

Burning Eyes or Tearful Eyes was complaining of 72.3% of the respondents, whereas 61.5% complained for Red Eyes, 64.2% complained of Itching Eyes and 39.2% of the respondent complains of some problem in vision. Similarly, 52.7%, 53.4% and 56.8% complained for peeling of skin, appearances of rash/ redness on skin and itching of skin respectively. (Table 2).

Nearly one-tenth (7.8%) of the respondents had complained of ear discharge and 37.8% had complained of ear ringing (Tinnitus) (Table 3).

Nearly nine out of 10 respondents (87.8%) had musculoskeletal pain in at least one part of the body (neck, shoulder, elbow, wrist/hands, upper back, lower

back, hip/thigh, knee and ankle). Out of them, majority complained pain in upper back (56.1%), lower back (54.4%) and neck (48.3%) (Table 4).

**Table 1:** Demographic profile of respondents

Variable		Number	Percentage
Age group	20-24	83	28.0
	25-29	100	33.8
	30-34	67	22.6
	35-39	29	9.8
	40-44	11	3.7
	45-99	6	2.0
Gender	Male	282	95.3
	Female	14	4.7
	Others	18	6.2
Education status	Below SLC	7	2.4
	SLC	102	34.5
	Intermediate	125	42.2
	Bachelor	56	18.9
	Master	6	2.0
Rank	Constable	202	68.2
	Head Constable	59	19.9
	Asst. Sub Inspector	13	4.4
	Sub Inspector	18	6.1
	Inspector	1	0.3
	Others	3	1.0

**Table 2:** Effect on Eyes and Skin in last 3 months (In percent)

Eye and Skin problem	Never	1 or 2 episodes	Once in a week	More than 1 episodes in a week	Daily
Burning or Tearful Eyes	27.7	32.8	11.1	16.6	11.8
Red Eyes	38.5	31.4	7.4	13.2	9.5
Itching Eyes	35.8	30.7	10.5	10.1	12.8
Peeling of Skin	47.3	29.4	7.4	7.8	8.1
Appearance of Rash, Redness on Skin	46.6	31.8	8.1	7.4	6.1
Itching Skin	43.2	31.8	9.1	7.4	8.4

**Table 3:** Effect on Ear in last 3 month

Ear problem	Percent	
Hearing Loss	No hearing loss	82.8
	Subjective hearing loss	17.2
Ear Discharge	Never	92.2
	1 or 2 episodes	6.1
	3 to 5 episodes	0.7
	Often (5 episodes or more)	1.0
Tinnitus	Never	62.2
	1 or 2 episodes	26.7
	Once in a week	7.1
	More than 1 episodes in a week	2.7
	Daily	1.4

**Table 4:** Musculoskeletal Pain of the Respondent

Musculoskeletal Pain	Number	Percent
Neck	143	48.3
Shoulder	59	19.9
Elbow	24	8.1
Wrist/hands	41	13.8
Upper Back	166	56.1
Lower Back	161	54.4
Hip/Thigh	53	17.9
Knee	117	39.5
Ankle	102	34.5

A total of 88.2% of traffic polices were not using protective glasses. Around half of traffic police were wearing mask and 45% of them used sun burn protective cream (Table 5).

## Discussion

In present study, the highest prevalence of musculoskeletal was upper back pain (56.1%) and low back pain (54.4%). Similar result was found in another study.<sup>12</sup> The prevalence of low back pain among traffic police was found in 80% of traffic police in Dhaka, Bangladesh (2013).<sup>13</sup> The study done by Satish et al. in 2015 in Mumbai showed that the lower back was the major body region affected.<sup>14</sup> The major working posture for traffic police was standing. While standing, the centre of gravity is usually in the hip and waist area. This means that while standing hip carries most of the body weight and prolonged standing may cause fatigue of muscles around the hip. As a result, the lower back

assumes a severely arched position to allow the weight to be distributed on the back, resulting into lumbar strain causing back pain.

In present study, the prevalence of Tinnitus was 37.8%. This finding was consistent with the finding of Shrestha et al. where 35.5% had tinnitus & blocked sensation in ear and 66.4% noise induced hearing loss, Hearing threshold at 4 kHz increased according to age and duration of service.<sup>5</sup> Omidvari et al. in their study found that 60 % of the official and 73 % of duty policemen complained about buzzing sounds in their ears after a noisy workday.<sup>16</sup> This showed the primary effects of noise on their ears. The same study found that burning or tearful eyes was complained by 72.3% of the traffic police, whereas 61.5% had complained for red eyes and 64.2% complained of itching eyes. Prevalence of eye and ear morbidity was 25.0% and 20.4% respectively.<sup>15</sup> Similarly, in our study, 52.7%, 53.4% and 56.8% complained for peeling of skin, appearances of rash, redness on skin and itching skin respectively, and 39.2% of the respondents complained of some problem in vision. In our study, 88.2% of traffic polices were not using protective glasses. Around half of traffic police were wearing mask and 45% used sun burn protective cream. This result was consistent with the findings of Panta et al. where 79.4% traffic police were not using sunscreen, 64.9% not using sunglasses and 39% were not using facemask.<sup>16</sup>

It was observed that traffic polices were not using the proper personal protective equipment. This may be

**Table 5:** Protective Measures and Habit of the Respondent

Protective Measures		Number	Percent
Wearing Protective Glasses	Everyday	9	3.0
	Never	261	88.2
	Sometimes (during peak hour)	26	8.8
Regular Health Checkup	At least once in 3 months	30	10.1
	At least once in 6 months	19	6.4
	At least once in year	34	11.5
Wearing Mask	Only when I fall sick	213	72.0
	Everyday	151	51.0
	Never	27	9.1
Sun burn protective cream/ lotion	Sometimes (during peak hour)	118	39.9
	Daily	51	17.2
	Never	160	54.1
Wearing of Gloves	Sometimes	85	28.7
	Everyday	64	21.6
	Never	46	15.5
	Sometimes (during peak hour)	186	62.8

due to lack of awareness about occupational hazards they are exposed to and their health consequences.

Traffic polices are facing multiple musculoskeletal symptoms; most common being the low back pain and upper back pain. Age, working status, working posture body type, hypertension, diabetes, working period (years), and physical stress could be the common risk factors for occurrence of musculoskeletal problems in traffic polices. Prolonged standing, walking, uncomfortable posture, lifting heavy loads, frequent twisting hands was observed as ergonomics risk

factors for occurrence of musculoskeletal problems. Noise annoyance is an unwanted health impact and exposure to environmental noise can degrade hearing of traffic polices. All these factors are responsible for sickness absenteeism, reduction in productivity and chronic disability in traffic police. Hence, regular health checkup, health education program regarding musculoskeletal symptoms and safety measures should be conducted regularly and they will help to improve working environment and quality of life among traffic police.

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