International Journal of Science and Healthcare Research
Vol.8; Issue: 3; July-Sept. 2023
Website: ijshr.com
Original Research Article *ISSN: 2455-7587*

Factors Associated with Occupational Ergonomics and Health Risk Among Public Vehicle Drivers in Kathmandu Valley

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DOI: https://doi.org/10.52403/ijshr.20230336

ABSTRACT

Background: The prevalence of driving in Kathmandu is intertwined with the local livelihoods, necessitating a strong focus on driver safety and well-being. Ergonomics emerges as a pivotal tool in creating safe driving environments by addressing both immediate accident risks and long-term health issues such as LBP. This multifaceted approach is integral to fostering a healthier transportation system that benefits drivers and the community alike. The objective of the study was to assess the ergonomic factors and health risks among public vehicle drivers in Kathmandu Valley.

Methodology: This was a cross-sectional study encompassing three regions (Kathmandu, Lalitpur, and Bhaktapur) to ensure representation and a variety of vehicles. The study was conducted from Bhadra 2077 to Ashadh 2078. The research targeted public drivers between the ages of 20 and under 60, possessing a minimum of two years of experience. The sample size, consisting of 394 drivers, was determined using a 95% confidence interval and a 5% marginal error. The data were obtained through Face-to-face interviews using a structured questionnaire. The convenience sampling technique was employed in the selection of participants. The descriptive and inferential analyses were conducted to quantify and assess the factors and health risks.

Findings: The respondents experienced ergonomics-related health risks: fatigue (27.7%), LBP (22.5%), body ache (10.9%), shoulder pain (7.1%), neck pain (5.3%), musculoskeletal disorder (MSD) (4.8%), and RTA injuries (4.8%) within a year. The other health issues observed were respiratory problems (9.6%), gastritis (10.1%), headache (8.1%), blood pressure-related problems (4.8%), blood sugar (3.6%), and Covid-19 (1.5%). Overall, 4.96% reported health problems, with 0.39% requiring hospitalization during that period.

Conclusion: The study found that ergonomic problems were linked to factors such as alcohol consumption, speed, working hours, chosen route, seat comfort, adjustable seat height, and the availability of foldable seating. The resulting health hazards included serious injuries, post-accident hospitalization, sleep disorders, psychological stress, bodily discomfort, tiredness, lower back pain, neck discomfort, and musculoskeletal disorders (MSD).

Keywords: [Ergonomics, Occupational Ergonomics, Public Vehicles, Health Risks]

INTRODUCTION

Driving is one of the professions within Kathmandu, particularly among middle and lower-income households. This study delves into the imperative of safeguarding the overall well-being of workers in this industry. Employing ergonomic principles to create safe and effective work environments is pivotal in this pursuit. Driving occupations entail a spectrum of risk factors, encompassing challenging weather conditions, traffic-related impediments, and potential health hazards within the vehicle cabin such as noise, vibration, and temperature fluctuations [2]. Notably, human factors, particularly risky behaviors, emerge as primary contributors to road traffic accidents, especially among long-haul drivers [2]. Complementing these human-related factors are considerations related to vehicles, road conditions, and the surrounding environment, collectively influencing the occurrence of road traffic accidents (RTAs) [3].

Implementing ergonomic adjustments via engineering controls, administrative measures, and alterations in work practices holds the potential to significantly curtail the risk of driver injuries [4]. The safety and well-being of drivers extend beyond passenger security, encompassing the establishment of a secure working environment for drivers themselves. Ergonomics focuses on designing workspaces that prioritize safety and efficiency, thus fostering worker health and productivity. This emphasis on safety and efficiency forms a cornerstone of ergonomics across various professional domains [4].

In certain instances of public transportation, the absence of tailored ergonomic features for drivers is conspicuous. Drivers encounter challenges that go beyond fatigue and musculoskeletal issues, grappling with a spectrum of physical and mental health concerns [5]. Various factors impact the ergonomic experience of drivers, often leading to discomfort, stress, strain, and related issues [6]. Interventions spanning education, behavioral health, and policy have shown promise in mitigating lower back pain among three-wheeler drivers in Sri Lanka [7].

Overlooking the well-being of drivers can contribute to road accidents, necessitating prioritization of driver safety and health. All stakeholders, including transportation companies, vehicle manufacturers, traffic authorities, transportation policies, and management bodies, must remain vigilant against factors that could compromise drivers' well-being. Public transportation has been a cornerstone of the Kathmandu Valley since its inception in September 1959, with the introduction of a local bus service between Kathmandu and Patan, as documented by the Department of Transportation Management [8]. Between fiscal year 2046/47 and Falgun 2075, the Bagmati zone registered 3,539,519 vehicles, spanning buses, mini-buses, trucks, cars, motorcycles, and unique vehicles like e-rickshaws and tractors [9]. The Vehicle and Transportation Management Act of 1993 (VTMA) and the Vehicle and Transportation Management Regulations of 1999 (VTMR) prescribe technical and safety standards for all vehicle categories [10&11]. The VTMR of 1998 provides detailed vehicle standards and safety provisions, covering dimensions, seating, height, width, fire safety equipment, emergency exits, insurance, first-aid kits, locks, shock absorbers, speed limits, axle load limits, driver change protocols, and driver health – all pivotal elements for ensuring secure public transportation. Driver health encompasses physical, mental, and social well-being, profoundly influencing driver safety. Thoughtfully designed roads, lighting, signals, crossings, bridges, and lanes can markedly enhance public transportation while promoting the health and well-being of both drivers and passengers [12,13,14,15&16].

Globally, numerous studies underscore common health challenges among drivers: back pain, sleep disturbances, vibration-related ailments, exposure to air pollution, hearing problems, psychological stress, urinary disorders, obesity, hypertension, musculoskeletal problems, visual impairments, and sensitivities to temperature variations [4,5,17,18,19,20,21&22]. In 2016, approximately 1.35 million global deaths resulted from road traffic accidents, averaging nearly 3,700 fatalities daily. These incidents also led to injuries among 50 million individuals, with many becoming disabled. Alarmingly, the majority of these accidents (90%) occurred in developing nations and were preventable [12&25]. Multiple sources underscore low-back pain (LBP) as a predominant musculoskeletal issue among drivers and transport workers [7,17,19,24,26,27&28]. Additionally, drivers frequently contend with cardiovascular problems, obesity-related concerns, sleep disturbances, stress, driving-related anger, and more [3,29,30,31,32,33,34&35]. This study underscores the imperative of prioritizing driver well-being and safety within the context of Kathmandu's dynamic transport landscape.

LITERATURE REVIEW

Several factors intricately impact the realm of occupational ergonomics, as highlighted within the existing literature [6]. These encompass a multifaceted range of considerations influencing drivers' health, involving road conditions, human capabilities, vehicle design variability, and the potential volatility of government policies within the transportation sector. Occupational health hazards encompass diverse risks—chemical, safety-related, physical, psychological, and biological—that directly or indirectly influence drivers. The widespread usage of public vehicles, cutting across various economic strata, significantly contributes to urban advancement [8]. The prominence of public transportation lies in its contribution to both economical and environmentally sustainable travel options.

Driving safety theories, such as the driving safety field model, stress the interplay of driver behavior, vehicle attributes, and road conditions. A systems theory perspective conceptualizes safety as an emergent outcome arising from the intricate interactions among various system components [18]. Several theories elucidate the causation of accidents, encompassing the domino theory, human factors theory, accident/incident theory, systems theory, energy release theory, and behavior theory [40]. A comprehensive study in 2016 identified three primary factors influencing employee health: machinery, hardware and software; operational management; and environmental factors [41]. The field theory highlights various traffic-related factors contributing to driving risk [18]. The safety distance model serves to elucidate a vehicle's safety status, with space and positioning factors emerging as key variables influencing accident rates and overall productivity [42].

Empirical studies shed light on the challenges faced by city bus drivers, particularly concerning noise and vibrations that result in stress, fatigue, and health issues. Enhancements in ergonomic design are requisite to enable ease of movement and facilitate minimal effort in accessing steering mechanisms and pedals [4]. Among the most prevalent work-related musculoskeletal disorders, low back pain (LBP) incurs substantial economic losses for both individuals and communities [7]. Ergonomic risk factors related to driving correlate with increased susceptibility to neck, shoulder, or lower back discomfort [26].

The global concern of Road Traffic Accidents (RTAs) is underscored by several

studies, with a staggering 90% of RTA-related deaths occurring in low and middle-income countries [14]. The Sustainable Development Goal (SDG) target 3.6 seeks to halve the number of RTA deaths by 2020 compared to the 2016 figures [12&14]. The patterns of road traffic crashes often align with poor road conditions, afternoons, and weekends. In 2016 alone, road injuries accounted for 1.4 million deaths, placing them among the top 10 causes of death across various income brackets [43]. Nepal's commitment to road safety is exemplified by the United Nations Decade of Action for Road Safety 2011-2020, which focuses on five core pillars [15&44].

Notable studies delve into the exposure risks for musculoskeletal disorders among taxi drivers, showcasing significant risks for ailments like back, shoulder, wrist, and neck pain [45]. Prolonged driving is linked to driver fatigue and its subsequent impact on performance and health risks [46]. Urban bus drivers exhibit a prevalence of various musculoskeletal pain types, with lower back pain taking precedence [47]. Survey studies highlight the prevalence of back pain, neck pain, and other discomforts among drivers, often exacerbating with age and years of service [48].

Ergonomically deficient working conditions correlate with increased accident rates and diminished productivity. Recommendations emphasize the provision of suitable spaces and postures to ensure driver comfort, reduce fatigue, and curtail health concerns [42]. Regulatory frameworks, such as the Vehicle and Transportation Management Act, 1993 (VTMA) and the Vehicle and Transportation Management Regulations, 1999 (VTMR), delineate technical and safety stipulations for various vehicle types [11&12]. Cross-sectional studies unravel the intricacies of occupational health among package truck drivers, underscoring the profound impact of factors like role overload and perceived job incompetence on stress levels [49].

MATERIALS & METHODS

The research employed a descriptive cross-sectional design to assess the interplay of ergonomic factors and health risks among public vehicle drivers in Kathmandu Valley. Encompassing three districts—Kathmandu, Lalitpur, and Bhaktapur—the study period extended from Bhadra 2077 to Ashadh 2078, chosen for accessibility and the diversity of public vehicles. Participants included public vehicle drivers aged between 20 and below 60 years, boasting a minimum of two years' experience within Kathmandu Valley. Data collection revolved around a structured questionnaire designed to probe socio-demographic, economic, occupational, environmental, workload, and health risk factors encountered by public vehicle drivers. Primary data was acquired through face-to-face interviews using the structured questionnaire, supplemented by secondary sources for literature review and tool preparation. The sample size was determined to be 394, ensuring a 95% confidence interval with a 5% marginal error.

Sampling techniques consisted of convenience sampling for site selection, followed by purposive sampling for conducting face-to-face interviews with the selected drivers. Rigorous measures were taken to uphold the validity and reliability of the tools employed in the research. Approval was secured from the Department of Public Health, Asian College for Advance Studies and consent was duly acquired from all the participants involved. All collected data underwent meticulous scrutiny for completeness, consistency, and accuracy. Subsequently, the data was entered and subjected to analysis using the Statistical Package for Social Science (SPSS) version 20.

STATISTICAL ANALYSIS

The analysis encompassed both descriptive and inferential statistics. Descriptive statistics such as frequency, percentage, mean, and standard deviation were utilized to provide an overview of the collected data. Meanwhile, inferential statistics, specifically the chi-square test, were applied to find out the factors associated with ergonomics problems. The interpretation of these results was aligned with the research questionnaire's objectives and the inherent nature of the study.

RESULT

i) Socio-demographic characteristics

The study showed that most of the participants were male (99.5%), with a minor representation of females (0.5%). The age distribution spanned from 20 to 55 years, with an average age of 35.35 years. A significant majority of drivers were married (89.9%), and the average family size stood at 4.81, accompanied by a standard deviation of ±1.975. The distribution of drivers based on religion was as follows: Hindu (69.8%), Buddhist (25.4%), Christian (4.3%), and Islam (0.5%). Among the drivers, the majority belonged to the Disadvantaged Janajati group (42.4%), followed by Upper Caste Groups, Relatively Advantaged Janajati, and Dalits. A notable observation was that around 40.86% of drivers were the sole providers for their families, without any other family occupation. A significant portion of public vehicle drivers (60.7%) possess basic education, with a relatively minor proportion (3.0%) having attained higher education. Notably, drivers with lower and secondary-level education are prominently engaged in driving occupations (Table 1).

Table 1: Socio-demographic characteristics of the respondents n=394

Variables	Frequency	Percentage
Sex		
Male	392	99.50
Female	2	0.50
Age		
20-30 years	127	32.23
30-40 years	142	36.04
40-50 years	89	22.59
>50 years	36	9.14
Range = 20 to 55 years	Mean aged=35.55years	Sd = ±8.969
Education Status		
Literate	36	9.10
Basic education	239	60.70
Secondary education	107	27.20
Higher education	12	3.00
Marital Status		
Unmarried	41	10.4
Married	353	89.6
	Family size=4.81members	Sd=(±1.975)
Religious Status		
Hindu	275	69.80

Buddhist	100	25.40
Christian	17	4.30
Islam	2	0.50
Ethnicity		
Dalits	17	4.30
Disadvantaged Janajati	167	42.40
Relatively Advantaged Janajati	90	22.80
Upper Caste Groups	120	30.50

ii) Condition of vehicle

Every vehicle was equipped with operational horns, brakes, and side mirrors (100%). Nonetheless, other aspects of the vehicles exhibited defects or discomfort. Merely 72.60% and 71.25% of vehicles were equipped with foldable seats and seat belts for drivers, respectively, and a scant 18.00% offered height-adjustable facilities. These aspects collectively contributed to specific health risks (Table 2).

Table 2: Conditions of the vehicle. N=394

Condition of the parts			**Frequency**	**Percentage**
Horn	Functional		394	100
Break	Functional		394	100
Side Mirrors	Functional		394	100
Steering Wheel	Comfortable		391	99.25
	Uncomfortable		3	00.75
Headlight	Functional		392	99.50
	Non-functional		2	00.50
Windows	Good		390	99.00
	Broken		3	00.75
	Not available (NA)		1	00.25
Door	Good		392	99.50
	Damaged		2	00.50
Side-indicator	Functional		391	99.25
	Non-functional		3	0.75
Driver Seat	Comfortableness	Comfortable	369	93.75
		Uncomfortable	25	06.25
	Foldable	Foldable	286	72.60
		Non-foldable	108	27.40
	Height Adjustable	Adjustable	71	18.00
		Non-adjustable	323	82.00
	Availability of Seat Belt	Available	281	71.25

iii) Behavioural status of the respondents

Occasionally, 6.85% of drivers in the Kathmandu Valley deviated from designated traffic lanes. The habit of smoking was noted among 37.31% of drivers, whereas 12.95% had a propensity for drinking, with 33.50% engaging in both behaviors. Moreover, 3.6% confessed to consuming alcohol while operating a vehicle. Among those who engaged in drink-driving, 30.70% had faced fines for driving under the influence at some juncture. The majority of drivers maintained low to moderate speeds, with only 4.8 percent driving at high speeds (≥50 km/hr), thus increasing the potential for road accidents. (Table 3).

Table 3: Behavioural status of the respondents n=394

Variables	Frequency	Percentage
Follow the Traffic Lane		
Always	367	93.15
Sometimes not follow	27	6..85
Smoking and Alcohol Consumption		
Smoking Only	147	37.31
Drinking Only	51	12.95
Smoking and Alcohol Both Consumption	64	16.24
No Smoking and Drinking	132	33.50
Alcoholic Driving		
Yes	14	3.6
No	101	25.6
Having Fined for Alcoholic Driving		
Yes	4	30.70
No	9	69.23
Driving Speed		
Low Speed (< 30 km/hr)	37	9.40
Medium Speed (30-50 km/hr)	338	85.80
High Speed (≥ 50 km/hr)	19	4.80

iv) Road traffic accidents and hospitalization

Analyzing the drivers' one-year history, it was found that 19.00% had encountered some form of Road Traffic Accident (RTA). Among this group, 30.67% had experienced multiple RTAs. Additionally, 19.00% of drivers had been hospitalized due to RTAs. It's worth noting that the frequency of regular health check-ups among drivers was significantly low (Table 4).

Table 4: Road traffic accidents and hospitalization n=394

Variables	Frequency	Percentage
Fall in RTA Within Last One Year (n=394)		
Yes	75	19.0
No	319	81.0
Times of Falls in RTA Within Last One Year (n=75)		
One time	52	69.33

Two times	23	30.67
Hospitalized Due to RTA (n=75) (19.0 %)		
Yes	20	26.67
No	55	73.33

v) Health risks and health problems among respondents

Among the respondents, the highest occurrence was related to fatigue, with 27.70% reporting this issue. Low Back Pain (LBP) was also prevalent, reported by 22.50% of respondents. Other health concerns encompassed body ache (10.90%), respiratory problems (9.60%), gastritis (10.10%), headache (8.10%), shoulder pain (7.10%), neck pain (5.30%), as well as Musculoskeletal Disorders (MSD) and injuries from Road Traffic Accidents (RTAs) (4.80%). Additionally, 4.80% experienced problems associated with blood pressure, while 3.60% faced blood sugar issues. A minor percentage of respondents (1.50%) were affected by Covid-19, although hospitalization was not necessary during the same period (Table 5).

Table 5: Health risks and health problems among respondents n=394

Health risks and health problems	**Percentage**		
	Severe Problem	**Just a Problem**	**Not a Problem**
Fatigue	0.30	27.40	72.30
Low Back Pain (LBP)	0.30	22.50	77.20
Neck Pain	0.00	5.30	94.70
Shoulder Pain	0.00	7.10	92.90
Musculoskeletal Problem (MSD)	0.50	4.30	95.20
Injuries due to RTA	0.50	4.30	95.20
Cough	0.00	6.30	93.70
Respiratory Problems	0.00	9.60	90.40
Body Pain (body ache)	0.00	10.90	89.10
Sleeping Problem	0.00	0.80	99.20
Nerve Problems	0.30	1.00	98.70
Weight gain	0.00	1.30	98.70
Vision Problem	2.50	2.50	95.00
Ear Problem	0.00	0.00	100
Nose Problems (Sinusitis, Insomnia etc)	0.00	0.00	100
Mental Problems (Dipression, Stress etc)	0.00	2.50	97.50
Gastritis	0.50	9.60	89.90
High Blood Sugar	2.30	1.30	96.40
Blood Pressure (High/Low)	2.30	2.50	95.20
CVDs	0.50	0.30	99.20
UTIs	0.50	1.00	98.50
Reproductive Problems	0.00	0.00	100

Diarrhoea, AGE	0.00	0.50	99.50
Constipation	0.50	0.00	99.50
Headache	0.30	7.80	91.90
Dizziness	0.00	0.50	99.50
Vibration Related Problems	0.00	6.30	93.70
Chemical Exposure Related Problems	0.00	0.00	100
Asthma	0.50	0.00	99.50
Covid-19	0.00	1.50	98.50
Any types of health risks (average)	*0.39*	*4.57*	*95.04*

vi) Association between behavioral factors health and risks

The study showed that behaviors encompassing alcohol and smoking habits, alcohol consumption while driving, driving speed, and disregard for traffic lanes were all found to be interconnected with health risks among drivers (Table 6).

Table 6: Association between behavioral factors and health risk n=394

Behavioral factors and health risks	**Chi-square p-value**
Alcohol and Smoking Habit and Fall in RTA	0.015*
Drive with Alcohol and Fall in RTA	0.031*
Drive with Alcohol and Severe Injuries	<0.001**
Speed of Driving and Fall in RTA	**<0.001****
Speed of Driving and Hospitalized	**0.042***
Speed of Driving and Hospitalized due to RTA	**0.039***
Speed of Driving and Severe Injuries	**<0.001****
Not follow the Traffic Lane and Fall in RTA	**<0.001****
**Significant, **Highly significant*	

vii) Association between ergonomic factors and health risks

This analysis unveils noteworthy connections between ergonomic factors, including foldable and height-adjustable seats, as well as comfortable driver's cab conditions, and health risks experienced by public vehicle drivers. These health risks encompass issues such as neck pain, body ache, Low Back Pain (LBP), fatigue, shoulder pain, Road Traffic Accidents (RTA), and severe injuries (Table 7).

Table 7: Association between ergonomic factors and health risk n=394

Association between Ergonomic Factors and Health Risk	Chi-square p-value
Foldable Driving Seat and Neck Pain	0.033*
Height Adjustable and Neck Pain	0.027*
Height Adjustable and Bodyache	0.005*
Comfortable with Driving Seat and Neck Pain	<0.001**
Comfortable with Driving Seat and LBP	<0.001**
Comfortable with Driving Seat and Fatigue	0.680
Comfortable with Driving Seat and Bodyache	0.005*
Comfortable with Driving Seat and Shoulder Pain	<0.001**
Comfortable with Driving Seat and RTA	<0.001**
Condition of Drivers' Cab and Fall in RTA	<0.001**
Condition of Drivers' Cab and Neck Pain	0.025*
**Significant, **Highly significant*	

DISCUSSION

In this study, the majority of drivers were male (99.5%), with a small representation of females (0.5%). The age of the respondents ranged from 20 to 60 years, with an average age of 35.35 years. The marital status of most drivers was married (89.9%), and the average family size was approximately 4.81 individuals. In terms of education, around 60.7% had basic education, 27.2% had secondary education, and a mere 3.0% had attained higher education.

Looking into behavioral characteristics, 37.31% of drivers exhibited smoking habits, 12.95% had a history of alcohol consumption, and 33.50% engaged in both smoking and drinking. Approximately 3.6% openly confessed to drinking while driving, and within this subgroup, 30.70% had incurred fines for alcohol-related driving offenses.

The study brought to light various health risks experienced by respondents in the preceding year. Fatigue emerged as the most prominent issue, afflicting 27.7% of the respondents, followed by Low Back Pain (LBP) at 22.5%, body ache at 10.9%, respiratory problems at 9.6%, gastritis at 10.1%, headache at 8.1%, shoulder pain at 7.1%, neck pain at 5.3%, Musculoskeletal Disorders (MSD) at 4.8%, and Road Traffic Accident (RTA) injuries at 4.8%. Additionally, blood pressure-related concerns affected 4.8% of the respondents, while 3.6% grappled with blood sugar issues. Covid-19 had an impact on 1.5% of respondents, albeit without necessitating hospitalization.

Comparison with prior studies revealed a lower prevalence of health issues within the scope of this research. For example, lower back pain was reported at 45.4% in another study [46]. In terms of risk exposure, the scores from this study trended lower compared to earlier research, suggesting an improved ergonomic situation for drivers. Mental health problems such as depression and stress were also less prevalent in this study (2.5%) in comparison to another study (52.10% and 23.80% for taxi drivers).

A noteworthy finding was the significant association discovered between driving seat comfort and various health issues, including neck pain ($p<0.001$), LBP ($p<0.001$), body ache ($p=0.05$), and shoulder pain ($p<0.001$). Furthermore, extended working hours exhibited a noteworthy correlation with shoulder pain and fatigue.

Another study examining driving fatigue and performance among occupational drivers in simulated prolonged driving shed light on the fact that extended driving led to heightened fatigue levels, particularly in monotonous environments. This research also underscored the strong connection between drivers' performance and health risk, particularly in the context of prolonged driving periods. In a similar vein, our study identified a correlation between daily driving distance and health issues like LBP ($p = 0.003$), body ache ($p=0.001$), neck pain ($p<0.001$), and MSD ($p<0.001$) [46].

The study acknowledges certain limitations, including potential social desirability bias, selection bias, and recall bias. Nonetheless, the research team took proactive measures to mitigate these limitations. This study's implications extend to the public vehicle transportation system in Kathmandu Valley. It serves as a valuable source of insights into the factors influencing drivers' ergonomic conditions and their association with health risks. Remarkably, the impact of the Covid-19 pandemic on the study was minimal.

The outcomes of this study have catalyzed enhancements in the public transportation system by pinpointing risk factors and introducing educational, behavioral, and policy interventions, complemented by radio programs aimed at addressing these contributing factors. Public vehicle drivers were educated about the risk factors and encouraged to adopt measures and behaviors that promote occupational safety and reduce risks. Moving forward, further research involving stakeholders within the realm of public vehicle drivers is imperative.

CONCLUSION

In conclusion, this study highlights the interconnectedness between various factors and health risks among public vehicle drivers. These factors include driving under the influence of alcohol, driving speed, daily work hours, route duration, driving distance, driving seat comfort, height-adjustable driving seat, and foldable driving seat. The identified health risks encompass a range of issues such as severe injuries, hospitalization post road traffic accidents (RTA), sleeping disorders, mental stress, body ache, fatigue, low back pain (LBP), neck pain, and musculoskeletal disorders (MSD). Additionally, a small subset of respondents experienced the impact of Covid-19, although hospitalization was not required.

The study underscores the need for collaboration among stakeholders, including government entities and drivers themselves, to implement necessary changes in rules, behaviors, and external factors. Addressing these findings is pivotal to enhancing the overall well-being and safety of public vehicle drivers in the Kathmandu Valley and beyond.

Declaration by Authors

Ethical Approval: Approved from IRC, Asian College for Advance Studies

Acknowledgement: Department of Public Health, Asian College for Advance Studies

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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How to cite this article: Dip Bahadur Singh, Prem Prasad Neupane, Jeni Singh, Roshani Khadka, Subash Dawadi, Kshitij Karki. Factors associated with occupational ergonomics and health risk among public vehicle drivers in Kathmandu valley. *International Journal of Science & Healthcare Research.* 2023; 8(3): 252-266. *https://doi.org/10.52403/ijshr.20230336*

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