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## Prevalance of occupational injury among auto drivers of north 24 parganas, West Bengal, India

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### Abstract

Auto driving is a risky and hazardous job in the driving environment. Injuries among auto driver is a world-wide public health issue. This analysis investigates the possible consequences that auto drivers in North 24 Parganas, West Bengal, India confront of the job. The wide variety of risks impacting driver well-being and security in their regular work contest using an assortment of qualitative conversion and quantitative questionnaire was examine by this study. A cross-sectional study on 110 male auto-driver was conducted to know about their health and nutritional status. All data were statistically analysis using t-test and Chi-square test wherever appropriate. High prevalence of occupational injury-like neck and back pain, eye discomfort, hearing issue, skin problem, carpal tunnel syndrome or tendonitis, insomnia was notice on auto driver which gave hints to reduce work load, alternate posture, ergonomic intervention and changing of body movements are required to reduce the health risks.

**Keywords:** Occupational health, hazard, auto driver, MSD

### Introductions

Auto drivers face significant occupational health complication due to prolong exposure to challenging work environments (Hoque, 2023) <sup>[14]</sup>. Their health problems commonly include musculoskeletal disorder (Ghosh *et al.*, 2017; Saha *et al.*, 2023) <sup>[13, 24]</sup> caused by prolong hours of sitting in awkward postures, respiratory issues (Jain & Barthwal, 2022; Cunningham & Regan, 2016) <sup>[1, 6]</sup> from constant exposure to vehicular emissions, and hearing impairments from high noise levels (Melwani *et al.*, 2018) <sup>[16]</sup>. Additionally, stress, sleep deprivation (Kumar and Gururaj, 2016) <sup>[34]</sup> and poor nutrition are prevalent due to irregular work schedules and inadequate breaks. Key risk factors include exposure to air pollution, poor ergonomic design of vehicles, lack of protective measures, and unhealthy lifestyles habits such as tobacco use (Sharma *et al.*, 2019) <sup>[32]</sup> and poor eating (Rao *et al.*, 2018) <sup>[33]</sup> habit are affected all over the health of auto drivers. The nature of their work, often in high-traffic urban areas, further exacerbates these risks. Preventive strategies should focus on a holistic approach. Regular health checkups and access to affordable healthcare can aid early detection and treatment of occupational illness. Providing ergonomics seating and air-quality masks can minimize physical and respiratory risks. Educating drivers about stress management, healthy eating and safe driving practices is crucial. Encouraging breaks during work hours and incorporating fitness routine can also improve over health. Finally, enforcing policies to reduce vehicular emissions and noise pollution for long term occupational safety.

### Objective

As the workers are suffer from various kinds of work-related health hazardous, the main aim of this study is to assess the hazardous.

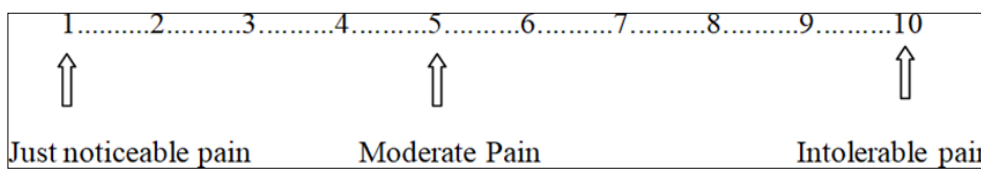
### Methodology

- Study Design and Type:** The subjects were randomly selected by cross-sectional survey methodology from North 24 Parganas, West Bengal, which comprised of different ages of male auto drivers and their health status by both qualitative and quantitative methods. The field work took place from February 2024 to May 2024.
- Sample for the present study:** A cross-sectional study was conducted on 110 auto drivers, and the subjects were divided into two groups according to their age group

- (Group I comprised between 20-40 years age and Group II comprised between 41-60 years age).
- c) Simple random sampling and systematic sampling with a sampling interval of two were the sampling techniques used in the study to choose 110 male auto drivers and determine the variables: different diseases, body composition, work pattern, and health status.
  - d) **Questionnaire Study:** The subjects were interviewed using pre-designed and pretested proforma of modified Nordic Musculoskeletal Questionnaire (mNMQ) and Body Part Discomfort Scale (BPD) which are used in epidemiological studies, to evaluate musculoskeletal problems in a specific manner. Here the musculoskeletal discomfort is evaluated according to tendency of problems during last seven days (acute pain) and during last twelve months (chronic pain).
1. **Modified Nordic Musculoskeletal Questionnaire:** This included two set of questions where first set includes the personal details of the workers like name,

age, sex, education, height, weight, working experience etc., and the other set was used to gather the pain related information of the subjects like past working history, present working history, working schedule, rest schedule, accident history, affected body parts etc. Here numbers of questions emphasizing details on nine body pain history of the worker viz., upper back, wrist or hand, lower back, neck, shoulder, elbow, hip knee and ankle. Which body organs are affected, how badly this pain level is calculated by this questionnaire (Ghosh *et al.*, 2021; Chakraborty *et al.*, 2023; Saha *et al.*, 2023) [4, 24].

2. **Rating of Body Part Discomfort (BPD) by BPD Scale:** BPD scale is a subjective symptom survey tool that evaluates the respondent’s direct experiences of discomfort in different parts of the body. The scale represents just noticeable pain as 1, moderate pain as 5 and intolerable pain as 10.



**Result and Discussion**

The physical characteristics, age, work experience and working hours have been compiled in Table 1, wherefrom it

may be noted that the Body Mass Index (BMI) of both groups.

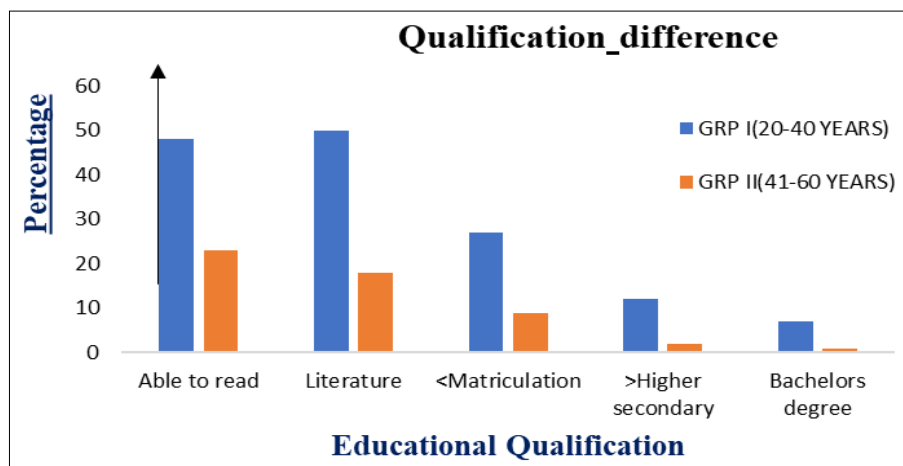
**Table 1:** Physical characteristics, age and general work experience of Auto drivers

Parameters	Group-I (20 to 40 Yrs)	Group-II (41 to 60 Yrs)	t value	p value
Age	33.13+3.95	46.29+3.34	-13.17	<0.0001**
Height (cm)	170.38+4.33	167.66+5.56	2.09	0.02*
Weight (kg)	73.63+8.42	74.91+4.51	-0.94	0.17
Body Mass Index (kg/m <sup>2</sup> )	25.38+1.20	26.63+0.86	-4.32	<0.0001**
Working Experience (Years)	9.02+1.14	8.45+2.56	-1.35	0.09
Working Hours	8+1.74	8.62+1.7	1.15	0.12

Level of significance (\*)  $p < 0.05$ ; (\*\*)  $p < 0.0001$

Table 1: shows that there is a great significant difference in Height and Weight of both groups of auto drivers. Consumption of quantitative diet by all groups portrays difference in BMI between the two groups. Work of the two

groups devoted an average 8 hours a day from morning to evening, though the activity type differed according to their work pattern.



**Fig 1:** Educational qualifications of the vegetable cultivators

Figure 1. represents the qualification level of auto drivers in various two groups where group 1 is highly educated than

group 2. Less education of the group 2 may result in less knowledge of safety measure and health hazards.

Apart from this two studies Melwani, *et al.*, (2018) <sup>[16]</sup> and Hoque, (2023) <sup>[14]</sup> above the 40 years aged auto drivers are

basically less educated than under 40 years aged auto drivers.

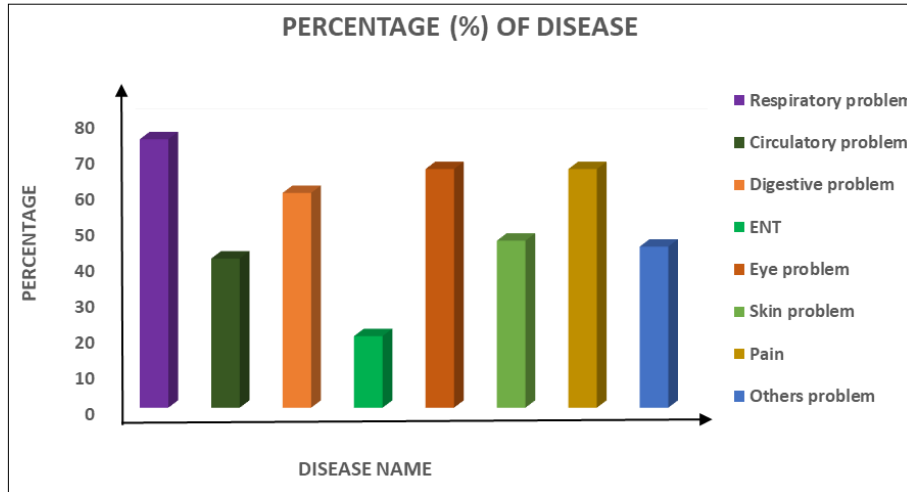


Fig 2: Percentage of response of different health problems

Table 2: Responses of MSD discomfort in different body parts of the male auto driver according to mNMQ

Body parts affected by the MSD	Group-I (20 to 40 Yrs)	Group-II (41 to 60 Yrs)	Chi square (X <sup>2</sup> )	P value
Neck	38.88	50	2.09	0.1483
Shoulder(s)	63.88	33.33	17.65	<0.0001
Elbows(s)	44.44	25	7.58	0.005
Wrist(s) or Hands(s)	66.66	91.66	17.78	<0.0001
Upper back	72.22	75	0.08	0.7773
Lower back	88.88	58.33	22.85	<0.0001
Hip(s)	77.77	37.5	31.9	<0.0001
Knee(s)	22.22	8.33	6.55	0.0105
Ankle(s)/ Foot/Feet	27.77	29.16	0.08	0.7773

Level of significance (\*)  $p < 0.05$ ; (\*\*)  $p < 0.0001$

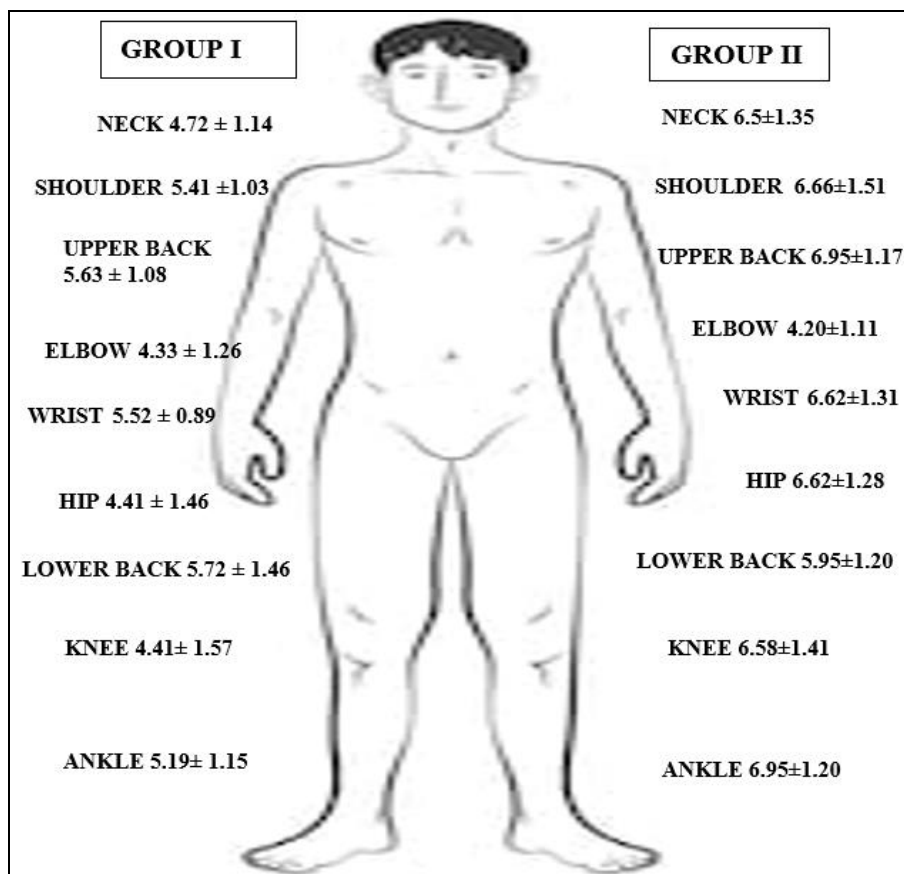


Fig 3: Body parts discomfort Level of both group of auto driver

Figure 2 described the general health problems of the auto drivers who suffer from respiratory (75%), circulatory (41%), digestive (60), ENT (ear, nose and throat) (20%), eye problems (66%), pain (66%), skin (46%) and other problems (45%). Pain due to musculoskeletal discomfort is a multi-factorial phenomenon. It can affect almost all body parts depending upon the physical movements, characteristics and work setup.

According to Melwani *et al.*, (2018) [16] and Pramanik, *et al.*, (2013) [2], 3.67% of diabetes, 6.67% of hypertension, 1% of diabetes with hypertension, 3% of ENT problems, 5.63% of MSD and 0.67% of eye pain are noticed in auto drivers that are most similar to Figure 2.

Table 2 represents the muscle pain or discomfort level between the two age groups of auto drivers in their various body parts; upper and lower back, neck, shoulders, elbows, wrists, hips, knees and ankles during the past seven days. There is significant difference ( $p < 0.05$ ) with special

reference to the upper lower back, neck and knees between the two groups of male auto drivers. 38% of group I people suffered from neck pain and 50% of group II feel discomfort in the neck. According to the results, here approximately 72% group I drivers and 75% of group II drivers having upper back problems. 88% of the group I drivers and 58% of the group II drivers have lower back issues along with ankle pain.

The above figure denotes the discomfort level of auto drivers. According to the figure, both age group suffer from body part discomfort but the comfort level varies with age, type of activity and also the level of repetitiveness. Group I workers those are under 40 years age have just noticeable pain but group II workers those who are above 40 years age have complained intolerable pain or discomfort in various body parts. Basically above 40 years aged auto drivers have many difficulties especially pain in joint, muscle, which create discomfort in body (Whitelegg, *et al.*, 1995) [30].

**Table 3:** Prevalence of MSD in two groups of MALE auto drivers categorized on the basis of their working experience.

Body Parts	Working Experience	Feeling pain	Without Pain	Chi square Value	p value
Neck	<10 years	20	15	0.82	0.36
	>10 years	18	7		
Shoulder	<10 years	18	17	2.76	0.09
	>10 years	19	6		
Elbows	<10 years	14	21	4.34	0.03
	>10 years	3	22		
Wrist/Hand	<10 years	21	14	0.13	0.71
	>10 years	17	8		
Upper Back	<10 years	29	6	1.06	0.30
	>10 years	17	8		
Lower back	<10 years	32	3	5.25	0.02
	>10 years	16	9		
Knee	<10 years	20	15	0.02	0.88
	>10 years	13	12		
Ankle	<10 years	30	5	0.02	0.88
	>10 years	22	3		

Level of significance (\*)  $p < 0.05$ ; (\*\*)  $p < 0.0001$

The prevalence of MSD was significantly high among auto drivers working for more than 10 years as the prevalence of MSD gradually increase with age due to change in body composition and decrease in muscle strength, with special reference to neck, upper and lower back and knees compared to those with less work experience (Table 1.3).

According to Ghosh, *et al.*, (2017) [13] and Singh, *et al.*, (2015) [25] Musculoskeletal disorder occurs for long-term sitting or working in an awkward position. The muscle becomes stiff and retardation shouldn't be happened so pain is made of.

**Conclusion**

Occupational injuries among auto drivers pose significant challenges to driver safety, health, and well-being. By understanding the prevalence, contributing factors, and consequences of these injuries, policymakers, employers, and healthcare providers can develop targeted interventions to mitigate risks and improve outcomes for auto drivers. Addressing occupational safety and health concerns in the auto driving profession is essential for fostering a safer and more sustainable transportation workforce.

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