

*Full Length Research Paper*

# Prevalence of neck pain among heavy truck drivers in Maiduguri north-eastern Nigeria

Auwal Shitu<sup>1</sup>, Adetoyeje Yunus Oyeyemi<sup>2,3</sup>, Abdullahi Salisu Muhammad<sup>1\*</sup>, Umar Muhammad Bello<sup>1</sup>, Adewale Luqman Oyeyemi<sup>3</sup>, Abdulrahman Jajere<sup>2,3</sup>

<sup>1</sup>Department of Physiotherapy, Yobe State University Teaching Hospital, Nigeria.

<sup>2</sup>Department of Physiotherapy, University of Maiduguri Teaching Hospital, Maiduguri, Borno State, Nigeria.

<sup>3</sup>Department of Medical Rehabilitation (Physiotherapy), University of Maiduguri, Maiduguri, Borno State, Nigeria.

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It is a general presumption that most workers in blue collar occupations are susceptible to spinal problems of postural nature including neck pain, the prevalence of which relatively less attention has been paid by researchers compared to other work related musculoskeletal disorder such as back pain. This study was aimed to investigate the prevalence of neck pain among heavy truck drivers in Maiduguri, North-Eastern Nigeria. One hundred and fifty participants (N=150) completed part 1 of the 19-item researcher administered questionnaires which elicited socio-demographic responses about history and prevalence of neck pain, factors that predisposes the drivers to neck pain and their driving routine and performance information. The collected data were analyzed using descriptive statistics of mean, frequency and percentages, while Spearman Correlation Coefficient ( $\rho$ ) was used to explore the relationship between age, educational status, years of driving experience and hours spent on driving, and neck pain. Prevalence of neck pain was 67.3% among the drivers, and this condition is associated with age and years of driving experience, and was more frequent among drivers that do not have any formal education when compared with those with primary, secondary or higher education (87.5% vs 54.1-74.6). These truck drivers also indicated that long distance driving and hours spent on driving are predisposing factors to neck pain. This study shows that there is high prevalence of neck pain among heavy truck drivers in Maiduguri North-eastern Nigeria. The risk of having neck pain increases with age, many hours spent on driving, years of driving experience and less education. Therefore, this study identified the need for ergonomic education and intervention to prevent, minimize, and manage neck pain among this occupational group.

**Key words:** Truck driver, neck pain, haulage industry.

## INTRODUCTION

Musculoskeletal pain is a major health problem that affects quality of life, causing morbidity and increased demand for health care and cost (Reginster and Khaltaev, 2002; Woolf and Pfleger, 2003). Cervicalgia or

neck pain is a common musculoskeletal condition globally and two thirds of any population could be having neck pain at some point in their lives (Binder, 2007). The incidence of neck disorders as a source of

\*Corresponding author. E-mail: [abdullahisalisu73@gmail.com](mailto:abdullahisalisu73@gmail.com).

musculoskeletal impairment or disability is second to lower back disorders (Cunningham and Kelsey, 1984). Neck pain may arise due to muscular tightness in the neck and upper back, pinching of the nerves emanating from the cervical vertebrae or joint disruption in the neck (Binder, 2007). It may also arise due to compression, destruction or irritation of pain-sensitive structures such as the annulus fibrosus, posterior longitudinal ligament and the capsule of the zygapophyseal joints. At any given time, neck pain affects about 10% of the general population (Binder, 2007).

Heavy truck drivers have a constant presence on the highways, transporting goods including cars, livestock, liquefied natural gas, gasoline and other materials often sitting and driving continuously for a long period across the country (Binder, 2007).

These drivers are also responsible for inspecting their vehicles for mechanical items or issues relating to safe vehicle operation (Binder, 2007) and are also involved in heavy lifting, loading and unloading the trailer with goods (Binder, 2007; EU-OSHA, 2010; Eurofound, 2012). Moreover, they sit for long hours sometimes without sleep, with the body subjected to constant vibration and sometimes poor diet while on the road (Binder, 2007; Chen et al., 2005; Robb and Mansfield, 2007; Tiemessen et al., 2008). Due to the nature of their job, the drivers may be susceptible to back and neck strains and sprains due to over exertion and improper lifting techniques.

Previous studies have shown a high incidence of spinal disorders among professional drivers, including aches or discomforts on the trunk or neck regions (Okunribido et al., 2007; Kaliniene et al., 2013). Other studies have identified high neck pain and functional problem as attributable to poor neck postures, or excessive loading of the neck (EU-OSHA, 1999). Additionally, driving for many hours at a stretch can be tiring, predisposing drivers to pain in the neck and/or lower back (Robb and Mansfield, 2007; Tiemessen et al., 2008; United State Bureau of Labour Statistic, 2004). In 2013, the United States Department of Labor (USDOL) reported that truck drivers had the second highest incidence rate (322.8/10,000) of injury among all occupations (USDOL, 2013) and 5 times more likely to die in a work-related accident than the average blue-collar worker (Bureau of Labour Statistics, 2008). It has been speculated that truck drivers spend most of their time in poor ergonomic seat and adopting poor postures when driving (United State Bureau of Labour Statistic, 2004; Massaccesi et al., 2003) and that any pre-existing condition in a neck and back area can aggravate the symptoms even further (EU-OSHA, 2010).

Neck pain or problem is potentially a more serious condition than other work related musculoskeletal disorder and can even be life threatening by virtue of the position of the neck in relation to other structures and organs of the body.

Structurally, joints in the lower part of the neck and

those at the upper back create a supportive structure upon which the head rests. Any problems that encroach on the spinal column at the cervical region may impact upper and lower extremity muscle function. Because of its proximity to cervico-thoracic autonomic nervous system outflow and its hierarchical neurological precedents over lumbo-pelvic outflow, any neck pain or cervical problems can potentially impact organs in the thorax, abdomen and pelvis. Naturally empirical data on the job hazard and risks to which various occupational groups of workers exposed to musculoskeletal disorders are important to the physiotherapists, ergonomics experts and other health workers.

In Nigeria, the pattern and prevalence of musculoskeletal pain have been documented on several occupational groups such as farmers (Birabi et al., 2012; Fabunmi et al., 2005), janitorial or cleaning workers (Warren et al., 2012), typist and secretaries (Olaogun, 2002), timber workers (Ezeukwu et al., 2011), factory workers (Ismaila and Adeolu, 2011; Sanya and Ogwumike, 2005), commercial drivers/motorcyclists (Akinbo et al., 2008), occupational drivers (Akinpelu et al., 2011), rural hospital staff (Omokhodion et al., 2000), and office workers (Omokhodion and Sanya, 2003). Despite the existing literatures on the prevalence of pain among different occupational groups, there is dearth of literature on the prevalence of neck pain among heavy truck drivers in Nigeria. Unlike back pain, neck pain as an occupational hazard and condition among this group of haulage industry workers has received relatively less attention among researchers. Therefore, this study aimed: (1) To determine the prevalence of neck pain among truck drivers in Maiduguri and, (2) To determine the socio-demographic characteristics that influence neck pain among truck drivers in Maiduguri, Borno State, Nigeria.

## METHODS

### Study design

For the purpose of this study, a cross-sectional design was used.

### Study setting

The study sites were eight (8) truck stations and parks in Maiduguri metropolis, Borno State, Nigeria. These stations are the designated parking spots for the trucks.

### Participants

The participants for this study were selected using purposive sampling technique. A total of 150 heavy truck drivers who were 21 years or above participated in the study.

### Outcomes and measurement

Socio-demographic data were collected using a self-developed

Socio-demographic data consisted of age, marital status, educational level, history and prevalence of neck pain, number of years spent in driving, number of hours spent on driving and factors that predisposes the drivers to neck pain, and their driving routine and performance information.

A 19-item structured questionnaire was used. The questionnaire consists of four sections (A, B, C and D). Section A elicits participants' bio-data; section B elicits information on the history of participants' experience of neck pain at the moment; section C consist of questions which sought to obtain the possible predisposing factors of the neck pain and section D elicits information on how the participants driving performance is affected and participants beliefs on other possible causes of neck pain. The instrument was originally designed by the authors taking cues from the neck section of the Nordic Questionnaire (Kuorinka et al., 1987).

The instrument was adjudged to have face validity by five physiotherapists each with at least 10 years of working experience. All the experts attested to the face validity of the instrument. Two of these physiotherapists were also experts, with experience in instrument development and adaptation, and also attested to the content and adequacy of the measure for the purpose intended. The instrument was also assessed for test retest reliability by administering the questionnaires to 10 participants and re-administering it two weeks after. The reliability testing yielded an ICC value of 0.87 indicating moderate and acceptable reproducibility.

## Procedure

Study approval of the University of Maiduguri Teaching Hospital was sought and obtained from the Ethical Committee prior to the commencement of the study. Permission of the leaders of the various truck stations were also obtained by the researcher and informed consents was obtained from the participants before their participation in the study. After the necessary introduction, the protocol for the study was explained to each participant before the commencement of the study. Each participant was issued a copy of the questionnaire for completion, anonymity was assured and confidentiality was ascertained.

## Data analysis

Descriptive statistics of mean (SD) and frequencies were used to summarize age, hours spent on driving and years of driving experience, marital status, educational qualification, type of truck, and years of driving experience of the subjects. Spearman Rank Order Correlation statistic and Chi statistics were used to explore the relationship between socio-demographic characteristics such as age, educational level, years of job experience, and hours spent driving in a day and presence of neck pain. Statistical significance was set at  $P < 0.05$ . Chi square statistics was also utilized to explore trends and associations.

## RESULTS

### Socio-demographic characteristics and neck pain history

A total of 150 questionnaires were administered to the participants and all the questionnaires were returned, giving a response rate of 100%. Majority of the truck drivers (67.3%,  $n=101$ ) reported having neck pain as a result of their job (Appendix).

The participants were all males (100%), 10 of them (6.7%) were single, 139 (92.7%) were married, and only one (0.7%) was divorced. Six of the participants (4.0%) received adult education training, 61(40.7%) had primary education, 67 (44.7%) had secondary education, and 16 (10.7%) never received any formal education as illustrated in Table 1.

Majority ( $n=101$ , 67.3%) of the participants reported that they had neck pain some time in their life, while 49 (32.7%) never had neck pain. Four participants (4.0%) with neck pain reported less than a year of onset and 23 (22.8%) reported neck pain of one to four years of onset, 53(52.5%) reported 5-10 years of onset. Sixty three participants (42.0%) reported that they presently experienced neck pain (Point prevalence rate of 42.0%).

### Predisposing factors and effect of neck pain on driving performance

Table 2 shows the distribution of neck pain by subgroups. Sixteen (10.7%) truck drivers with 2-5 years have never experienced neck pain while those with 11-15 years of neck pain experience were 53 (35.3%). Those in the age group of forty years and above had the highest prevalence rate of 95.5% ( $n=21$ ) while only 5% of those who never experienced neck pain were those in the age group between 21-25( 5%). Those who never received formal education have the highest prevalence of neck pain. Those who have been driving for fifteen years and above had the highest prevalence of neck pain 23(100%). Majority of the participants ( $n=93$ , 62%) who spent 15-20 h driving per day reported they have had a form of neck pain.

### Relationship by socio-demographic characteristics and neck pain history

Neck pain is directly related to age group ( $r= 0.537$   $p$ -value observed: 0.000) and so years of working experience ( $r= 0.492$ ,  $p= 0.000$ ), education ( $r= 0.234$ ,  $p=0.04$ ) and hours spent on driving per day ( $r= 0.253$ ,  $p=0.00$ ). Data were also analyzed for the relationship between point prevalence and socio-demographic characteristics. Again, age group ( $r=0.38$ ,  $p=0.01$ ), education ( $r=0.69$ ,  $p=0.01$ ), driving experience ( $r=0.38$ ,  $p=0.01$ ) and hours spent driving ( $r=0.14$ ,  $p=0.05$ ) were also related to neck pain experienced at the time of survey.

When data were analyzed using non-parametric statistics of Chi square, significant association was also observed by age group (Chi- 21.8,  $df=4$ ,  $p<0.001$ ), education (chi-12.3,  $df=3$ ,  $p<0.01$ ), years of driving experience (Chi-28.7,  $df=3$ ,  $p<0.001$ ) and hours spent driving in a day (Chi-9.2,  $df=2$ ,  $p<0.01$ ). Significantly higher point prevalence was also observed by age group (Chi statistics- 23.4;  $df=4$ ), education (chi statistics- 14.1;

**Table 1.** Socio-demographic characteristics of participants.

Characteristic	Number	Percent
<b>Age</b>		
21 - 25	8	5.3
26 - 30	14	9.3
31 - 35	43	28.7
36 - 40	63	42.0
>40	22	14.7
<b>Marital status</b>		
Single	10	6.7
Married	139	92.7
Divorced	1	0.7
Widowed	0	0
<b>Education</b>		
Adult Education	6	4.0
Primary Education	61	40.7
Secondary Education	67	44.7
Tertiary Education	0	0
Others	16	10.7
<b>Years spent in driving</b>		
2 -5	16	10.7
6 -10	57	38.0
11 -15	53	35.3
> 15	23	15.3
<b>Hours spent on driving</b>		
2 -5	2	1.3
6 -9	4	2.7
10 -14	13	8.7
15- 20	130	86.7
24	1	0.7
<b>Participants belief on causes of neck pain</b>		
Driving for many hours	77	75.5
Poor seat adjustment	25	24.5

df=3) and by driving experience (Chi statistics-9.2; df=3) and hours spend (Chi statistics- 5.2; df=2) in a day. Participants' were asked for their belief on what is the cause of their neck pain, and majority (76.2%, n=77) of those who ever experienced neck pain belief that their pain was as a result of driving for many hours and 24 (23.8%) participants reported their neck pain is as a result poor sit adjustment.

## DISCUSSION

The study was aimed to determine the prevalence of neck pain among heavy truck drivers in Maiduguri, Borno State, Nigeria.

This study found 67.3% truck drivers with prior history of neck pain and a point prevalence rate of 32.0% (n=63). The neck pain prevalence history as observed in the present study is slightly lower but is essentially compared to the 76% observed among heavy truck drivers in the commercial city of Kano (Eurofound, 2012; Chen et al., 2005). The reported prevalence of neck pain among truck drivers in the present study is higher than the prevalence in other studies (Abolfazl et al., 2015; Rehn et al., 2010; Mansfield and Marshall, 2001). This comparison is an indication that truck drivers in Nigeria may be more exposed to neck pain as job risk and hazard than their counterparts in other countries. Perhaps the state of infrastructures such as the road conditions, employment status, job benefits or service conditions, cultural and

**Table 2.** Prevalence of neck pain among the participants based on variables.

Characteristic	Respondent	Neck pain (%)	Prevalence (%)	r Statistic (%)	Chi Statistic	p Value
<b>Age groups</b>						
21-25	8	0	0.0			
26-30	14	1	7.1			
31-35	43	27	62.8	0.537	21.8	$p = 0.000$
36-40	63	52	82.5			
>40	22	21	95.5			
<b>Educational level</b>						
Adult education	6	4	0.0			
Primary education	61	33	87.5			
Secondary education	67	50	74.6	0.234	12.3	$p = 0.004$
Tertiary	0	0	0.0			
Others	16	4	87.5			
<b>Driving experience (years)</b>						
2-5	16	0	0.0			
6-10	57	36	63.2	0.492	28.7	$p = 0.000$
11-15	53	53	77.4			
>15	24	24	100			
<b>Hours spent on driving</b>						
2-5	2	1	50.0			
6-9	4	1	25.0			
10-14	13	5	38.5	0.253	9.2	$p = 0.002$
15-20	130	93	71.5			
24	1	1	100			

individual factors such as health seeking behaviour, availability and access to ergonomic education and other resources may be contributory to the differences in prevalence between the countries. However, Nigeria being one of the two lower middle-income country can be presumed to rank low in terms of the foregoing factors, may explain the higher prevalence observed among truck drivers in this study compared with the reports on their counterparts from other countries.

Significant relationship between history of neck pain on one hand, age and driving experience of the heavy truck driver on the other hand is an indication that neck pain is linked to age and years spent on driving. In the researchers' opinion, the high prevalence rate of neck pain among drivers who were 40 years and above may be related to possible osteophytic changes with age. This result is in agreement by Nwuga (1990) who surmised that ageing affects the nutritional status of the vertebral column. It may also be attributed to possible cumulative trauma with years on the truck driving job.

Truck drivers who never received formal education have the highest occurrence of neck pain, perhaps because the uneducated or less educated heavy truck drivers may not be able to access the necessary information on healthy habits and ergonomic tips usually

in writing. It is plausible that the components of Health Believe Model including perceived susceptibility, perceived benefits, perceived barriers, cues to action and self-efficacy and most especially the latter of which may be affected by the level of literacy and education also play a vital role in prevention through awareness and education. Significant relationship between hours spent on driving and neck pain, is an indication that sitting for long periods of time may continuously stress the neck and lower back (EU-OSHA, 2010).

More than substantial number (31.3%,  $n=47$ ) of those who reported history of neck pain were absent from driving at some point in time during their carrier. This corroborates the findings by Akinbo (1998) that shows 67.3% of those with neck pain were absent from their driving occupation on various occasions. Heavy truck drivers are mostly self-employed who do not own the truck they drive. Rather, they are paid commission on each trip and received no salaries and have no job benefits. In Nigeria, truck drivers have no paid holidays or sick leave and these workers cannot afford to stay off driving completely for long period. Therefore, health seeking behaviour of truck drivers may be affected by fear of loss of income and could be compelled to work even when symptom are apparent and may not access

care at early stage.

## Conclusion

This study shows that there is high prevalence of neck pain among heavy truck drivers in Maiduguri North-eastern Nigeria. The risk of having neck pain increases with increase in age, many hours spent on driving, years of driving experience and less education. Driving performance is affected by neck pain with some heavy truck drivers unable to attend to their occupation on various occasions. This study suggests heavy truck drivers may benefit from "Neck Care Education" in addition to other general ergonomic education needs for blue collar workers in the haulage industry.

## CONFLICT OF INTERESTS

The authors have not declared any conflicts of interests.

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**APPENDIX: QUESTIONNAIRE****SECTION A (Bio-Data)**

Tick ( ✓ ) the box opposite the option you are choosing for the following questions.

**1. Age (in years):**

(a) 21 – 25  (b) 26 – 30  (c) 31 – 35  (d) 36-40  (e) >40

2. **Sex:** (a) Male  (b) Female

3. **Marital Status:** (a) Single  (b) Married  (c) Divorce  (d) Widowed

**4. Highest Educational Qualification**

(a) Adult Education  (b) Primary Education   
 (c) Secondary Education  (d) Tertiary Education   
 (e) Other Specify.....

**SECTION B (Neck pain experience)**

If your response will be neither of the option, please leave the boxes blank.

5. **Have you ever had neck pain?** (a) Yes  (b) No

**6. When did you first experience neck pain?**

(a) < a year ago  (b) 1 -4 years ago   
 (c) 5- 10 years ago  (d) > 10 years ago

7. **Do you have neck pain now?** (a) Yes  (b) No

**SECTION C:****Predisposing factors**

8. **What type of truck do you drive?** .....

**9. Do you have any other occupation(s)?**

(a) Yes  (b) No

10. **If yes, what is/ are the occupation(s)?** .....

**11. For how long have you been driving? (Driving experience)**

(a) 2 -5 years  (b) 6 – 10 years  (c) 11 -15 years  (d) > 15 years

**12. How many hours do you spent in driving per day?**

(a) 2-5 hours  (b) 6-9 hours  (c) 10-14 hours  (d) 15-20 hours  (e) 24 hours

**SECTION D:**

**DRIVING PERFORMANCE**

**13. Is the neck pain affecting your driving performance in any way?**

(a) Yes  (b) No

**14. Have you ever been absent from your driving because of this problem?**

(a) Yes  (b) No

**15. How many day(s) have you been absent from driving in the last one year?**

(a) None  (b) 1-5 days  (c) 6-10 days  (d) >10 day

**16. Is your neck pain due to the kind of truck you drive?**

(a) Yes  (b) No

**17. Do you think may be due to the poor seat adjustment?**

(a) Yes  (b) No

**18. Is your neck pain associated with any other medical conditions?**

(a) Yes  (b) No

**19. What do you think is the cause of your neck pain?**

Please specify.....