Original article

Prevalence and risk factors for low back pain (LBP) among Taxi Drivers in Addis Ababa, Ethiopia: A community based cross-sectional study

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Abstract

Background: Low back pain has serious consequences on the overall health of an individual. Pain, decreased quality of life and disability can be a few to mention as examples of the consequences. Studies indicate that despite the increase in the prevalence of low back pain in Africa, little has so far been known in the continent about the epidemiology of low back pain in the continent. The case in Ethiopia cannot be held exception. The motivation for this study therefore arose from the need to fill this research gap in the local context.

Objectives: This study was aimed to assess the prevalence and determinants of low back pain among taxi drivers in Addis Ababa, Ethiopia.

Methods: A community-based cross sectional study was conducted in Addis Ababa, Ethiopia. The participants of the study were 422 full time taxi drivers. The study was carried out from February 2015 to May 2015. The data were collected through face-to-face interview using standardized and customized Nordic questionnaire. Data were analyzed using SPSS Version 20. Bivariate and multivariate logistic regression analyses were used to determine association between low back pain and risk factors.

Results: A total of 422 full time taxi drivers with the mean age of 35.28 (±10.059) participated in the study. Of the 422 participants, 271 (i.e., 64.2%) reported having low back pain at least for one day in the 12 months prior to the survey. Many of the participants mentioned alcohol consumption [AOR = 1.6 (95%CI; 1.0-2.7)] lack of physical exercise [AOR =1.6, (95%CI, 1.0-2.7)] and history of back trauma [AOR = 3.8 (95%CI, 2.2-6.5)] as factors leading to LBP.

Long years of driving [AOR =4.6 (95%CI, 1.6-12.9)], involvement in a similar activity prior to becoming taxi driver [AOR = 2.8 (95%CI and 1.7-4.6)] and lack of rest when on duty [AOR =1.76 (95%CI, 1.7-4.6)] were further risk factors mentioned. There were also respondents who mentioned sitting on non-comfortable seat while diving [AOR = 1.74 (95%CI, 1.1-2.79)] and frequent handling of passengers' luggage [AOR = 1.9 (95%CI, (1.2-3.0)] as risk factors of low back pain by taxi drivers in Addis Ababa.

Conclusion: Low back pain was found to be common among taxi drivers in Addis Ababa. Occupation and behavior related factors were noted as strong predictors of LBP among the taxi drivers covered in the present study. Further study, with an alternative design, was recommended to investigate other risk factors of low back pain among taxi drivers. The association LBP may have with the whole body vibration and seat type could be among the focus areas of future research. [*Ethiop. J. Health Dev.* 2017;31(4):244-250]

Key words: Back pain, Risk Factors, Drivers, Addis Ababa.

Introduction

The World Health Organization has characterized occupational diseases as multi-factorial diseases to which a number of risk factors such as physical, work organizational, psychosocial, individual, and socio-cultural contribute (1).

Lower back which is also known as the lumbar spine is one of the five major sections of the spine. This spine is a combination of strong bones, flexible ligaments and tendons. It has large muscles and highly sensitive nerves. The spine is designed to be very strong. The spine protects the highly sensitive nerve roots. It is highly flexible, and that is why it can provide mobility on many different planes (2).

According to European Agency for safety and health at work 2000, occupational low back pain is any back pain originating in the context of work and considered clinically to have been probably caused, at least in part, or aggravated by the worker's job (3).

Worldwide, low back pain (LBP) from occupational exposures was estimated to cause 21.7 million DALYs in 2010 and was among the top 10 diseases and injuries (4) that disabled people more than did any other group of diseases (5). Low back pain causes a huge economic burden on individuals' families, communities, industries and countries (6, 7). For example, in 2006, the total costs associated with LBP in the United States were more than $100 billion per year, Two-thirds of the costs were a result of lost wages and reduced productivity (8).

Lower back pain is highly prevalent across all occupations, and professional drivers have been found to be at a higher risk of developing LBP. Prolonged sitting and awkward posture were among the causes of such an illness (9, 10).

The prevalence of LBP among drivers has been shown to be high. The prevalence is believed to vary between 34.3% and 78% in different parts of the world (1, 10-15). The prevalence of LBP is on the rise in Africa and

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has already become a major public health threat (16). Studies conducted in Nigeria on occupational and professional drivers reported prevalence of LBP to be 64.8 % and 73.5% respectively (17, 18). Studies conducted in Ghana among urban taxi and commercial mini-bus drivers reported prevalence of LBP among occupational and professional drivers to be 34.3% and 58.8% respectively (12, 13).

In many studies, a wide-ranging factors associated with LBP have been identified. Among these are long driving hours (11-14), many driving days in a week (12), low job satisfaction (12) and history of back strain (19). Other factors such as awkward postures (20), height, weight and age of drivers (21), whole body vibration (15,22), smoking (23) and handling manual material (15) as well as psychosocial factors (20) were also noted to be associated with LBP,

Although several studies have assessed the prevalence of LBP among different drivers in different parts of the world, only a few studies have been conducted in Africa. Worse, no study has been carried out on taxi drivers in Ethiopia to date. Therefore, this study was aimed to fill this gap. It was designed to assess the prevalence and describe determinants of LBP among taxi drivers in Addis Ababa, Ethiopia.

Methods

Study design and study area: A community based cross-sectional study was conducted between February and May 2015 in Addis Ababa, Ethiopia.

Source and study population: All taxi drivers in Addis Ababa were the target population of the study. However, the sample used in the study was selected based on certain criteria established for sample size selection. Accordingly, only taxi drivers who fulfilled the criteria for inclusion were selected for participation in the study. The inclusion criteria required one to: be a full time taxi driver; produce a valid driving license; have at least one year taxi driving experience; be healthy; be able to communicate; be involved in driving a taxi at the data collection time, and be willing to participate in the study.

Sample size determination and procedure IB: Considering a 50% proportion of LBP among taxi drivers, because there was no previous data on this study group; and a precision level of 5%, a 95% confidence interval and 10% non-response rate, 422 taxi drivers were systematically sampled. Addis Ababa has ten sub-cities. Of these, five were randomly selected. From each selected sub city, one square km in the main road was randomly selected. Then, directions were assigned to each selected square roads (i.e. directions from the centre of the main road to North (N), south (S), west (W) and east (E). From each direction in one square km road, about twenty one taxi drivers, who were waiting for clients on taxi terminal, were randomly selected (i.e. about 84 taxi drivers from one square km road in each sub-city). In total, from the five sub cities, 422 taxi drivers were randomly selected. The sampling was conducted on randomly chosen days of the week until the sample size for each sub-city was filled. On average, the data collection from each sub city took 4-6 days. Driving license of each of the participants and identification number of their taxis were recorded to avoid double counting the drivers. .

Data collection and analysis: The data were collected through face-to-face interview, using standardized and customized Nordic questionnaire. Statistical package for social sciences (SPSS) version 20.0 was used for data entry, cleaning and analysis. Descriptive statistics was computed to display mean frequency and percentage. Multivariate logistic regression analysis was performed to identify factors associated with LBP. The associations were described using odds ratio with 95% confidence interval.

Ethical considerations: Ethical approval for the survey was obtained from Addis Ababa University, College of Health Science, School of Public Health Research and Ethics Committee. Permission was obtained from Addis Ababa city Administration Roads and Transportation Authority Agency.

During the survey, the purpose of the study was explained to each participant. Participants were told that the information they would provide would be kept confidential and that their identities would not be revealed. Informed consent was obtained from each participant.

Result

Socio-demographic and behavioral factors of the respondents: A total of 422 taxi drivers were included in the study. The mean age of the respondents was 35 years (±10 years). Two hundred and fifty-nine (61.4%) respondents were married and 270 (64%) of them had education above secondary school. The body max index of 278 (65.4%) participants ranged from 18.5 - 24.9 kg/m^2. Two hundred and forty-eight (i.e., 60%) of the respondents reported doing physical exercise at least once a week for about 30 minutes. One hundred and forty-nine (i.e., 35.3%) of the respondents reported having history of back pain. Drinking alcohol, chewing chat and smoking cigarettes were reported by 217 (51.4%), 152 (35.8%) and 130 (30.8%) respondents respectively (Table 1).

Table 1: **Socio-demographic and Behavioral Factors of Taxi Driver in Addis Ababa, Ethiopia (n= 422)**

Variable	Present of Low Back pain	
	Yes (%)	No (%)
Age group (years)		
Below 35 years	97 (64.2)	150 (55.4)
Above or equal to 35	54 (35.8)	121 (44.6)
Marital status		
Married & living together	138 (66)	71 (34)
Never married or separated	133 (62.4)	80 (37.6)
Educational status		
Only read & write	44 (69.8)	19(30.2)
Attended formal education	227 (63.2)	132 (36.8)
Income in Birr		
Less than 2067 ETB	104 (69.3)	46 (30.7)
More than 2067 ETB	167 (61.4)	105 (38.6)
Smoking cig.		
Yes	92 (70.8)	38 (39.2)
No	179 (61.3)	113 (38.7)
Chewing Chat		
Yes	105 (69)	47 (31)
No	166 (61.5)	104 (38.5)
BMI categories		
Below 24.9	184 (61.5)	115 (38.5)
Above or equal to 35	87 (70.7)	36 (29.3)
Drinking alcohol		
Yes	157(72.4)	60 (27.6)
No	114(55.6)	91 (44.4)
Doing physical exercise		
Yes	170 (62.7)	78 (51.3)
No	101 (37.3	73 (48.7)
History of trauma		
Yes	126 (84.6%)	23 (15.4%)
No	145 (53.1%)	128 (46.9%)

Job characteristics and respondents satisfaction: The mean year of the respondents' taxi driving was 6.6 years (±4.1 years; range 1-29 years). About 89.8% of the respondents had fewer than 10 years of taxi driving experience. More than eight hours of driving on a typical day was reported by 240 (56.9%) of the respondents. Slightly over a quarter 118 (28%) of the drivers were self-employed. Frequent lifting of a loading (at least once a day) was reported by 44 (10.4%) of the respondents. History of work that involved prolonged sitting (works that involved long hours of sitting in repeated manners) was cited by 166 (39.3%) of the respondents. Taking break during working hours was mentioned by slightly over half (54.4%) of the respondents. Obviously, this had to be at time they wait for clients.

Regarding the extent of the comfort of their seats, 225 (53.3%) were aware that their seat pans were not comfortable. Just over three-fourths (86.5%) of were aware that sitting posture influences occurrence of LBP. Finding shows that two hundred and ninety-one (69%) of the respondents reported to be satisfied by their job. The study found that 156 (37%) of the respondents had stressful job and 192 (45.5%) respondents reported not getting enough rest (Table 2).

Table 2: **Job characteristics of taxi drivers in Addis Ababa, Ethiopia (n= 422)**

Variables	Frequency (n)	Percent (%)
Years of driving		
<10	379	89.8
≥10	43	10.2
Daily working hours		
<=8	182	43.1
>8	240	56.9
Terms of employment		
Self-employee	118	28.0
Employee to other's	304	72.0
Previous job involve sitting		
Yes	166	39.3
No	256	60.7
Freq. of lifting load		
Never lift	59	14.0
Sometimes	319	75.6
Frequently	44	10.4
break during working hr		
Yes	230	54.5
No	192	45.5
comfort of Seat		
Comfortable	197	46.7
Uncomfortable	255	53.3
Job satisfaction		
Yes	291	69.0
No	131	31.0
Job related stress		
Yes	156	37.0
No	266	63.0
sitting postures		
Yes	365	86.5
No	57	13.5
Pres. of break drng wk		
Yes	230	54.5
No	192	45.5

Magnitude of LBP among taxi drivers: About sixty-four percent of the respondents reported having experienced LBP at least one day in the 12 months prior to the study.

Nearly half of these (i. e., 46.5%) reported that the pain persisted for more than 30 days. Just over a quarter (27.7%) reported perceiving the pain as severe. About 43% mentioned that the pain was gradual in onset. The spread of the pain to the leg and lower body part was reported by 176 (64.9%) of the study participants. Absence from work due to the LBP that lasted between thirty to sixty days was reported by 30 (11%) of the drivers. Sixty-nine (25.5%) respondents reported that, luggage handling was the immediate cause for their LBP, while 123 (45.4%) of the respondents who reported experiencing LBP did not remember any event that caused the LBP (Table 3).

Table 3: **Prevalence and characteristics of low back pain among taxi drivers in Addis Ababa, Ethiopia (n=271)**

Variables	Frequency (n)	Percent (%)
No of days LBP persisted		
≤ 30 days	145	53.5
31-60 days	42	15.5
> 60 days	84	31.0
Perceived severity of LBP		
High	75	27.7
Medium	138	50.9
Low	58	21.4
No of days of work absence due to LBP		
≤ 30 days	180	66.4
31-60 days	30	11.1
> 60 days	20	7.4
No absent	41	15.1
Nature of onset of LBP		
Gradually	116	42.8
Sudan at work	98	36.2
Sudan out of work	56	20.7
Believed immediate cause of LBP		
Load lifting	69	25.5
Twisting	34	12.6
Binding	45	16.6
Not remember	123	45.4

Table 4: **Multivariate analysis- factors associated with LBP among taxi drivers in Addis Ababa, Ethiopia (n=422)**

Variable	Present of Low Back pain		AOR (95% CI)
	Yes (%)	No (%)	
Current alcohol drinkers			
Yes	157(72.4)	60(27.6)	1.7(1.0-2.6)*
No	114(55.6)	91(44.4)	1
Those with habit of physical exercise			
Yes	170(62.7)	78(51.3)	1
No	101(37.3	73(48.7)	1.6(1.0-2.7)*
History of back trauma			
Yes	126(84.6%)	23(15.4%)	3.8(2.2-6.5)*
No	145(53.1%)	128(46.9%)	1
Year of taxi driving			
Less than 10 years	233(61.5)	146(38.5)	1
Over 10 years	38(88.4)	5(11.6)	4.6 (1.6-12.9)*
Driving hours/day			
8 hrs or less	107(58.8)	75(41.2)	1
More than 8 hrs	164(68.3)	76(31.7)	1.4(0.89-2.34)
Present of rest break			
Yes	128(55.7)	102(44.3)	1
No	143(74.5)	49(25.5)	1.76(1.1-2.85)*
Previous Job involve sitting			
Yes	133(79.6)	34(20.4)	2.81(1.7-4.6)*
No	138(54)	117(46)	
Level of sit pan comfort			
Not comfortable	162(72.3)	62(27.3)	1.74(1.1-2.79)*
Comfortable	109(55)	89(45)	1
Load lifting			
Never or rarely	119(57)	91(43)	1
Sometimes & always	151(71.6)	60(28.4)	1.9 (1.21-3.0)*

CI = Confidence Interval, AOR = Adjusted Odds Ratio, *= Statistically Significant

Discussion

The finding of this study indicated the prevalence of LBP 64.2% among taxi drivers. This finding is not agreement with the finding of the studies conducted on occupational drivers in Ghana (34.3%) and professional drivers in Nigeria 73.3 % (12, 18). The variation could be due to differences in the overall setting of the study areas, as well as the differences in occupation. The present study was limited only to taxi drivers.

Driving over ten years was significantly associated with increased risk of LBP, and this finding was consistent with the findings reported in the earlier studies. The studies carried out earlier on drivers in Ghana, Nigeria and other places (13, 19,24, 25) reported that years of driving was significantly related to LBP. The relationship could be due to occupational stress over the years.

In the present study, uncomfortable seat was associated with a higher prevalence of LBP among taxi drivers. This finding was similar with a cross-sectional study conducted in Israel (26). Uncomfortable seat may cause mechanical stress upon the spine and its surrounding soft structures, and this, may ultimately cause LBP.

Frequency of lifting loads was significantly associated with a higher prevalence of LBP. This might be due to the fact that taxi drivers spend most of their time confined to the driver's seat inside the taxi. This restricts muscle relaxation. In the absence of muscle relaxation load lifting may cause muscle injury on the lower part of the back.

Previous job that involved prolonged sitting of the present study participants' was found to be significantly associated with LBP. This result is in agreement with the study conducted in Israel among professional bus drivers (26). Sitting itself did not increase the risk of LBP. What increased LBP was sitting for more than half a workday, combined with whole body vibration and/or awkward postures. Awkward postures include static, confined and forward position at work. This increased the likelihood of having LBP and/or sciatica. Overall, the combination of these risk factors leads to the greatest increase in LBP (16).

In this study, lack of physical exercise was associated with increased LBP among taxi drivers. This might be due to increased stiffness and weakened muscles that arise from lack of physical exercise. The results of the previous studies on the relationship between physical activity and low back pain are inconsistent. Some studies indicated the importance of physical activity in reducing LBP (27, 28) while others indicated no association between the two (29, 30). There are also studies that indicated adverse effect of physical exercise on LBP (27, 31).

Age was not significantly associated with LBP in this study. Failure to find association between age and LBP in this study did not necessarily mean that age has no effect on LBP. It may be due to the involvement of healthier taxi drivers because of different reasons. For example, drivers with LBP might have been on sick leave or medical treatment during data collection

period. This may underestimated the association between the age and LBP in this study.

This study addressed one of the major occupational health problems among taxi drivers in Addis Ababa. No prior study was conducted that documented the magnitude of LBP and associated risk factors among taxi drivers in Addis Ababa, Ethiopia. However, this is a cross-sectional study that cannot provide evidence on temporal relationship. Future further longitudinal study is, therefore, recommend.

Conclusion:

Low back pain was common among taxi drivers in Addis Ababa, Ethiopia. This indicates that low back pain is an important public health problem that needs attention. Driving for ten and more years, uncomfortable seats, lack of physical exercise and alcohol consumption were identified as risk factor for low back pain. In addition, history of back trauma, frequent load lifting, lack of break on working days, involvement in a similar activity prior to becoming taxi driver were identified as risk factor for low back pain among taxi drivers in Addis Ababa, Ethiopia. Further study with an alternative design was recommended to investigate other risk factors of low back pain such as the whole body vibration and type of seat.

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