Original Article

Determinants of Low Back Pain among Health-care Providers in a Federal Tertiary Hospital in Ekiti State, SouthWestern Nigeria

Paul Oladapo Ajayi[1], Samson Ayo Deji[1], Kayode Rasaq Adewoye[2], OA Atoyebi[2], Ayo Kamal Alabi[2], Oluremi Olayinka Solomon[1], Adebowale Femi Akinwumi[1]

[1]Department of Community Medicine, Faculty of Clinical Sciences, Ekiti State University, Ado-Ekiti, [2]Department of Community Health, Federal Teaching Hospital, Ido-Ekiti, Ekiti State, Nigeria

Abstract

Introduction: Low back pain (LBP) is a usual musculoskeletal system disorder among the working population, especially among health-care providers (HCPs). It is a significant contributor to work disability, work absenteeism, and lost hours globally. The study objectives are to find the prevalence and determinants of LBP among HCPs in a Federal Tertiary Hospital in Ido-Ekiti, Ekiti State, Nigeria. **Subjects and Methods:** A cross-sectional study was done among HCPs in a Federal Tertiary Hospital, Ido-Ekiti, Ekiti State, Nigeria. The study included 336 participants working in the hospital. The respondents were selected using stratified sampling. Data were collected through an adapted questionnaire, which was pretested, semi-structured, and self-administered. The data were analyzed using STATA version 12. Univariate, bivariate, and binary logistic analysis was used to find the prevalence and determinants of LBP. The significance level was set at 95% confidence interval and $P \leq 0.05$. **Results:** The point prevalence, period prevalence, and lifetime prevalence were 39.9%, 44.6%, and 67.6%, respectively. The findings showed that the prevalence of LBP was higher among respondents who turn patient on the bed regularly (>3 times weekly) (odds ratio [OR] =18.46, 95% CL [6.84–49.81], $P < 0.0001$); and pulls and pushes object or people (more than 10 kg thrice a week) (OR = 8.22, 95% CL [3.46–19.56], $P < 0.0001$) were statistically significant. **Conclusion:** The study revealed that HCPs suffered from a high prevalence of LBP, and the identified risk factors (turning of the patient and pulling and pushing of an object or people) can be modified using an informed health intervention program (health education and ergonomics).

Keywords: Determinants, low back pain and health-care providers, prevalence

Introduction

Low back pain (LBP) is a common health issue worldwide affecting individuals, families, communities, industries, and governments at large.[1-7] Low backache is a key health issue impacting a large proportion of the populace, especially in the developed industrialized world. Globally, there is an increasing incidence of the disease condition, with a growing burden of the disease and increasing financial hardship caused by LBP, on the limited resources of the individual and community at large.[2,4,8-10]

LBP affects all aspects of health (physical, social, and mental health), leading to the disability of some individuals.[11] LBP is a common etiology of increasing disability affecting both general populace well-being and work-related performance.[12-16] It is a usual disorder of the musculoskeletal system among the working population.[17-19] It is a major contributor to work disability, work absenteeism, and lost hours of an affected individual, thereby imposing a huge economic burden on the individual and community.[2,9,10,20-22]

Among the working population, health-care providers (HCPs) (person[s] that provide any form of health care to the health-care customers[23]) have a greater probability of experiencing low backache than any other professional group.[9,20,24] Hence, the need to investigate the burden of disease and find the determinants of LBP among this group, who are highly vulnerable compared to the general population.

Access this article online

Quick Response Code:

Website: www.njmonline.org

DOI: 10.4103/NJM.NJM_59_21

Address for correspondence: Dr. Paul Oladapo Ajayi, Department of Community Medicine, Faculty of Clinical Sciences, Ekiti State University, Ado-Ekiti, Ekiti State, Nigeria.
E-mail: paulajayi123@gmail.com

How to cite this article: Ajayi PO, Deji SA, Adewoye KR, Atoyebi OA, Alabi AK, Solomon OO, *et al*. Determinants of low back pain among health-care providers in a federal tertiary hospital in Ekiti State, SouthWestern Nigeria. Niger J Med 2021;30:374-82.

Submitted: 12-Apr-2021 **Revised:** 02-Jun-2021
Accepted: 20-Jun-2021 **Published:** 17-Aug-2021

LBP is "any discomfort or pain around the spinal area, which lies between the lower costal margin of the 12th rib and inferior gluteal fold with or without radiation to the leg or below the knee for at least one day" during the preceding 12-month period.[3]

In the general population, the point prevalence of LBP lies between 12% and 33%,[1,25] with 12-month prevalence ranging from "22% to 65%,[1,5,25] and lifetime prevalence from 11% to 84%, respectively.[1,25] Annual incidence in the adult general population ranges between 1.5% and 36%.[1,3] LBP attributed to occupation is about 37%.[1,3,6]

HCP is one of the occupations contributing to work-related LBP, and LBP ranks highest as a cause of musculoskeletal health disorders affecting the HCPs.[22,26] Among the HCPs, the point prevalence is about 43.78% (nurses[27]); also, the annual prevalence of LBP among HCPs (nurse[25]) is 77%, and lifetime prevalence among HCPs ranges between 82.0% and 83.9%.[28,29] HCPs have a greater chance of experiencing low backache than any other professional group.[3,24]

In Nigeria, LBP is the most common work-related musculoskeletal disorder among the HCPs.[26] Point prevalence[29] of LBP among HCP is 17.2%, 12-month prevalence[29,30] is 39.1% to 73.5%, and lifetime prevalence[29] of LBP is 56.2%, whereas the incidence of LBP among HCPs (theater nurses) is 78.1%.[22] Most (83.9%) of the HCPs who had LBP experience started after the job.[29] A tertiary health facility is a place where large numbers of HCPs of different categories can be found; hence, the study is in a tertiary hospital in Ekiti State, Nigeria. The study investigates the magnitude and determinants of LBP among health workers in a tertiary facility in Nigeria.

Subjects and Methods

Study site

This study was conducted among HCPs in a Federal Tertiary Facility in Ido-Ekiti, Ekiti State, Nigeria (January to September 2018).[31] The "Federal Teaching Hospital (FTH) Ido-Ekiti" is a tertiary health facility.[31,32] There were about 1390 health-care workers (HCWs); doctor 305, nurse 348, community health extension workers 37, laboratory scientist and technician 40, pharmacist 28, radiographer 15, physiotherapist 7, health attendant, optometrist 3, others 267 (others such as speech therapist, medical psychologist, dietician/nutritionist, health record clerk, administrative staff, environmental health officer, tailor, food handlers, and engineers).[31]

Study design

An institution-based, cross-sectional study design was used.

Study population

The study population of this study is all HCPs in a tertiary hospital in Ekiti State, Nigeria.[32]

Inclusion criteria

All HCPs who worked for more than 1 year in the facility and voluntarily gave well-informed consent.[29]

Exclusion criteria

All HCPs that were on leave, pregnant, those diagnosed with neoplasm related LBP, infection or fracture-related LBP, and equally all chronically ill staff were excluded.

Sample size determination

This study derived its sample size using Fischer's formula for population <10,000 at 95% confidence level, and the sampling size was estimated to be 336.[33,34]

Sampling technique

A stratified random sampling method was used. The HCPs were divided into eight groups (doctors, nurses, health attendants, pharmacists, laboratory technicians/scientists, community health extension workers, radiographers/physiotherapists, and others (which include optometrists, administrative staff, speech therapists, medical psychologists, health record staff, dietician, and engineer). Proportionate allocation was used, the number of participants from each subgroup was determined by their number relative [as seen in Table 1] to the entire population (1390) against the desired sample size (336), and the respondents were randomly selected.[29,33,34]

Data collection method

A well-adapted questionnaire, which was pretested, semi-structured, and self-administered, was used to collect data.

Data management plan

The dependent variable was LBP prevalence among the HCPs in FTH Ido-Ekiti over the past 12 months was used. Other prevalence rates were obtained such as point and lifetime prevalence (s), but only the 12-month prevalence was used for further analysis.

Independent variables were sociodemographics and personal factors; sociodemographics include age, sex, educational status, marital status, religion, tribe, number of children, and personal factors.

Occupational/environmental risk factors and occupational risk factors include occupation type, working hours, experience, prolong standing and sitting, work breaks, pulling and pushing, and other factors).

Statistical analysis

STATA version 12 (Statacorp; College Station, Texas; United States of America) was used to analyze the collated data. Univariate, bivariate, and multivariate analysis was done. The univariate analysis was presented in the form of tables, a figure, and texts. Sample summary statistics such as arithmetic mean, standard deviation, and percentages were used to describe the key data. Bivariate analysis was used to investigate the association between the explanatory and outcome variables, using Chi-square analysis. Statistical significance was set at a $P < 0.05$. Multivariate analysis was initiated to investigate the determinants of LBP (setting the $P < 0.05$ and using 95% CL and the adjusted Odds ratio.

Table 1: Sample size calculation for the different professional groups

Professional groups	Total population	Sample size for group calculation	Sample size for group
Doctors	305	(305/1390)* 336	74
Nurses	348	(348/1390)* 336	84
Health attendants	340	(340/1390)* 336	82
Pharmacists	28	(28/1390)* 336	7
Lab tech/scientist	40	(40/1390)* 336	10
CHEW	37	(37/1390)* 336	9
Radiographer/physiotherapist	22	(22/1390)* 336	5
Others*	270	(270/1390)* 336	65
Total	1390		336

*Others includes optometrist, administrative staffs, speech therapist, medical psychologist, health record staff, dietician, engineer). CHEW: Community health extension worker

Ethical consideration

Research ethics approval was obtained from the Ethics and Research Review Committee of the FTH, Ido-Ekiti[32] (ERC/2018/06/12/120B). Written informed consent for the interview was obtained from each respondent after thoroughly debriefing the participant on the nature, aim, and benefit of the research.

Results

The response rate was 97.1% (336/346), while in Table 2, out of the 336 respondents, more than half (59.8%) were women. Most respondents fell in the age group between 35 and 44 years old (159, 47.3%); the mean age is 38.3 ± 7.8 years. Majority of the respondents were married (291, 86.9%) and had tertiary education (248, 73.9%). Most of the staffs were Yoruba by tribe (302, 89.9%) and Christian by religion (322, 95.8%), while about half of the HCPs had 1–2 children (159, 47.3%).

The point prevalence was 39.9% (134), while the 12 month period prevalence of LBP was 44.6% (150). The LBP lifetime prevalence was 67.6% (227) [Figure 1].

As shown in Table 3, the majority (147, 98%) of the LBP occurred within a day to 6–8 weeks (acute cases) of commencing work in the hospital and most LBP sufferers observed mild symptoms (98, 65.3%). About half of sufferers (77, 51.3%) noticed that the LBP started after starting the job, and in most cases (106, 70.7%), 1 year after starting their career. About half (76, 50.7%) of the LBP sufferers missed work (for about a day), while recovering from an acute onset of the illness. Re occurrence of LBP occurred in 80% (120) of LBP sufferers. LBP disturbs daily chores (105, 70%) and works (90, 60%), respectively.

As shown in Tables 4-6, respectively, LBP prevalence increases significantly with age ($P = 0.005$), also LBP is significantly higher among the female gender ($P = 0.001$) and the highest proportion among those with secondary school education ($P = 0.000$). Furthermore, among the personal factors, LBP prevalence increases significantly with emotional stress ($P = 0.000$) and exercise ($P = 0.05$). LBP prevalence and occupational risk factors: two occupations among the HCPs

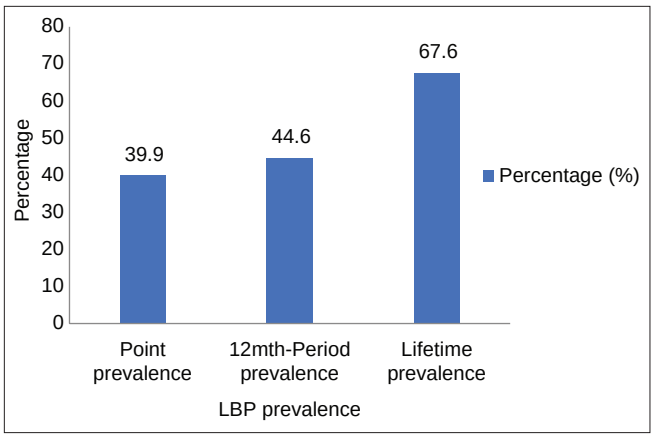

Figure 1: Point, Period, and lifetime prevalence of low back pain

contribute 74.7% (118) of LBP burden, nursing (53, 35.33%), and health attendant (59, 39.33%). Similarly, 75.6% (59) of all health attendant and 61.6% (53) of nurses in this study suffered LBP. Occupation categories ($P = 0.000$) are statistically significantly associated with LBP. Furthermore, there was statistically significant relationship existing between LBP and rest at work ($P = 0.000$), longer working hours ($P = 0.033$), bad equipment and instrument ($P = 0.002$), prolong standing ($P = 0.001$), bad/ awkward position ($P = 0.000$), carrying patient and heavy object ($P = 0.000$), turning patient regularly ($P = 0.000$), and pulling and pushing of object/patient ($P = 0.000$) (all increase LBP prevalence).

Further analysis [as seen in Table 7] of identified determinants revealed that the main risk factors of LBP include the turning of patients on the bed regularly (>3 times weekly) (odds ratio [OR] =18.46, 95%CL [6.84–49.81], $P < 0.0001$) and the pulling and pushing of object or people (more than 10 kg thrice a week) (OR = 8.22, 95%CL [3.46–19.56], $P < 0.0001$) were statistically significant when the effect of other confounding factors and other bias were removed.

A respondent who regularly turns the patient on the bed (>3 times weekly) has 18.5 times increased likelihood to suffer LBP than a respondent who does not turn the patient on the bed regularly. Finally, a respondent who pulls and pushes

Table 2: Sociodemographic characteristics of the respondents

Characteristics	Frequency, *n* (%)
Age (years)	
20-24	10 (3.0)
25-34	94 (28.0)
35-44	159 (47.3)
45-60	73 (21.7)
Gender	
Male	135 (40.2)
Female	201 (59.8)
Marital status	
Ever married	291 (86.6)
Never married	45 (13.4)
Highest level of education	
No formal education	10 (3.0)
Primary	0
Secondary	78 (23.1)
Tertiary	248 (73.9)
Religion	
Christianity	322 (95.8)
Islam	13 (3.9)
Others*	1 (0.3)
Tribe	
Yoruba	302 (89.9)
Igbo	17 (5.1)
Hausa	15 (4.4)
Others**	2 (0.6)
Number of children	
None	48 (14.3)
1-2	159 (47.3)
3-4	108 (32.1)
>4	21 (6.3)

*Other religion like traditional, **Other tribe like Igbira, Ijaw, Tiv

Table 3: Characteristics of the low back pain

Characteristics of LBP	Frequency (*n*=150), *n* (%)
How long was the pain?	
<1 week-0 day	115 (76.7)
≥1 week-6 weeks	31 (20.7)
>6 weeks-8 weeks	1 (0.6)
>8 weeks	3 (2.0)
Rate the pain	
Mild	98 (65.3)
Moderate	40 (26.7)
Severe	12 (8.0)
Pain after job	
Yes	77 (51.3)
No	73 (48.7)
How long after job (years)	
<1	106 (70.7)
<3-1	34 (22.7)
>3	10 (6.6)
How many day missed	
<1 day	76 (50.7)
1 day-1 week	31 (20.7)
1 week-3 weeks	42 (28.0)
3 weeks-6 weeks	0
>6 weeks	1 (0.6)
Re-occurrence of LBP	
Yes	120 (80.0)
No	30 (20.0)
Affect daily chores	
Yes	105 (70.0)
No	45 (30.0)
Disturb work	
Yes	90 (60.0)
No	60 (40.0)

LBP: Low back pain

object or people (more than 10 kg thrice a week) have 8.2 times increased likelihood of experiencing LBP than a respondent who does not pull or push object or people.

On regression analysis, other factors were not statistically significantly associated with LBP (age of the respondent, the gender of the respondent, educational level, presence of any form of emotional stress, regular exercise of the respondent, occupational type, working hours, sufficient time of rest at work, bad equipment/instrument, prolong standing, bad/awkward posture, and carrying patient/heavy object above 10 kg twice a week).

Discussion

This study revealed a higher number of female participants and a mean age of 38.3 ± 7.8 years, which agrees with the finding in another study "among health workers in South-South Nigeria that reported an average age of 36.6 ± 8.6 years with a male: female ratio of 2:3."[20,29]

In the current study, the point prevalence (39.9%), 12-month period prevalence (44.6%), and lifetime prevalence of LBP (67.6%) were comparable to the majority of LBP prevalence rates reported in the literatures, which varied between 17.2% and 4 3.78%[1,25,27,29] (for point prevalence), 22%–77%[1,25,29,30] (for 12 month period prevalence), and 11%–84%[1,25,29] (for lifetime prevalence), respectively. The different methodological calculations may elucidate the changes in LBP prevalence in obtaining LBP and the dissimilarities in the age group, gender, sample size, occupation categories, and study populations.[35] Hinmikiaye and Bamishaiye looked into the 12-month prevalence of LBP and reported 78.1% among the theatre nurses in two teaching hospitals in Nigeria.[22] Manadhar and Subedi reported a 12-month LBP prevalence of 75.7% among nurses in teaching hospitals in Nepal.[36] A study by Emmanuel *et al*. reported a 12-month LBP prevalence of 53.4% among nurses in a tertiary hospital in India.[37] Abbas *et al*.[4] showed that nurses in four teaching hospitals in Saudi Arabia had a point prevalence rate of 61.5%, a 12-month prevalence of LBP of 65%, and a lifetime prevalence of 40%. The results from these studies were higher than the present because the study population was different (nurses alone compared to our study, which involved all categories of HCPs). Wong *et al*.[35]

Table 4: Cross-tabulation of sociodemographic characteristics and low back pain prevalence

Sociodemographic characteristics	12 months LBP prevalence		Total (*n*=336), *n* (%)	Statistical indices
	Yes (*n*=150), *n* (%)	No (*n*=186), *n* (%)		
Age (years)				
20-24	8 (80.0)	2 (20.0)	10 (100)	χ^2=12.665
25-34	33 (35.1)	61 (64.9)	94 (100)	df=3
35-44	68 (42.8)	91 (57.2)	159 (100)	*P*=0.005*
45-60	41 (56.2)	32 (43.8)	73 (100)	
Gender				
Male	45 (33.3)	90 (66.7)	135 (100)	χ^2=11.168
Female	105 (52.2)	96 (47.8)	201 (100)	df=1, *P*=0.001*
Marital status				
Ever married	131 (45.0)	160 (55.0)	291 (100)	χ^2=0.007
Never married	19 (42.2)	26 (57.8)	45 (100)	df=1, *P*=0.934
Religion				
Christianity	146 (45.3)	176 (54.7)	322 (100)	χ^2=3.750
Islam	3 (23.1)	10 (76.9)	13 (100)	df=2
Other	1 (100.0)	0	1 (100)	*P*=0.153
Tribe				
Yoruba	139 (46.0)	163 (54.0)	302 (100)	χ^2=5.295
Igbo	3 (17.6)	14 (82.4)	17 (100)	df=3
Hausa	7 (46.7)	8 (53.3)	15 (100)	*P*=0.151
Other	1 (50.0)	1 (50.0)	2 (100)	
Number of children				
None	21 (43.8)	27 (56.2)	48 (100)	
1-2	66 (41.5)	93 (58.5)	159 (100)	χ^2=1.581
3-4	53 (49.1)	55 (50.9)	108 (100)	df=3
>4	10 (47.6)	11 (52.4)	21 (100)	*P*=0.664
Highest education status				
No formal education	4 (40.0)	6 (60.0)	10 (100)	χ^2=37.810
Primary	0	0	0 (100)	df=3
Secondary	58 (67.9)	20 (32.1)	78 (100)	*P*<0.0001*
Tertiary	88 (35.5)	160 (64.5)	248 (100)	

*Sign for statistically significant variable (s). LBP: Low back pain

Table 5: Cross-tabulation of personal risk factors and low back pain prevalence

PRFs	12 months LBP prevalence		Total (*n*=336), *n* (%)	Statistical indices
	Yes (*n*=150), *n* (%)	No (*n*=186), *n* (%)		
Smoking				χ^2=0.186, df=1
Yes	8 (40.0)	12 (60.0)	20 (100)	*P*=0.667
No	142 (44.9)	174 (55.1)	316 (100)	
Alcohol				
Yes	20 (44.4)	25 (55.6)	45 (100)	χ^2=0.001, df=1
No	130 (44.7)	161 (55.3)	291 (100)	*P*=0.977
Exercise				
Yes	116 (48.1)	125 (51.9)	241 (100)	χ^2=4.201, df=1
No	34 (35.8)	61 (64.2)	95 (100)	*P*=0.040*
Sedentary lifestyle				
Yes	33 (50.0)	33 (50.0)	66 (100)	χ^2=0.954, df=1
No	117 (43.3)	153 (56.7)	270 (100)	*P*=0.329
Emotional stress				
Yes	64 (61.0)	41 (39.0)	105 (100)	χ^2=15.830, df=1
No	86 (37.2)	145 (62.8)	231 (100)	*P*v<0.0001*

*Sign for statistically significant variables. LBP: Low back pain, PRFs: Personal risk factors

Table 6: Cross-tabulation of low back pain and occupational l risk factors

ORF	12th LBP prevalence		Total (*n*=336), *n* (%)	Statistical indices
	Yes (*n*=150), *n* (%)	No (*n*=186), *n* (%)		
Occupational type/categories				
Nurse	53 (61.6)	33 (38.4)	86 (100)	*P*<0.0001*
Doctor	8 (11.4)	62 (88.6)	70 (100)	df=7
Health Attendant	59 (75.6)	19 (24.4)	78 (100)	χ^2=85.166
Pharmacist	1 (16.7)	5 (83.3)	6 (100)	
Physiotherapist	2 (40.0)	3 (60.0)	5 (100)	
MLS/MLT	7 (50.0)	7 (50.0)	14 (100)	
CHEW	3 (37.5)	5 (62.5)	8 (100)	
Other	17 (24.6)	52 (75.4)	69 (100)	
Number of years in an occupation (years)				
0-1	9 (69.2)	4 (30.8)	13 (100)	*P*=0.158, df=2
>1-2	7 (36.8)	12 (63.2)	19 (100)	χ^2=3.6872
>2	134 (44.1)	170 (55.9)	304 (100)	
Working (h)				
≥6-8	47 (36.2)	83 (63.8)	130 (100)	*P*=0.033, df=2
≥8-12	90 (51.1)	86 (48.9)	176 (100)	χ^2=6.8146
>12	13 (43.3)	17 (56.7)	30 (100)	
Sufficient rest at work				
Yes	140 (51.5)	132 (48.5)	272 (100)	*P*<0.0001*, df=1
No	10 (15.6)	54 (84.4)	64 (100)	χ^2=26.9374
Bad equipment/instruments				
Yes	106 (51.5)	100 (48.5)	206 (100)	*P*=0.002*, df=1
No	44 (51.2)	86 (48.8)	130 (100)	χ^2=10.0017
Prolong standing				
Yes	93 (53.4)	81 (46.6)	174 (100)	*P*=0.001*, df=1
No	57 (35.2)	105 (64.8)	162 (100)	χ^2=11.3226
Bad and awkward position				
Yes	43 (32.8)	88 (67.2)	131 (100)	*P*<0.0001*, df=1
No	107 (52.2)	98 (47.8)	205 (100)	χ^2=12.1353
Carrying patient/heavy objects				
Yes	115 (55.3)	93 (44.7)	208 (100)	*P*<0.0001*, df=1
No	35 (27.3)	93 (72.7)	128 (100)	χ^2=25.0385
Turning patient				
Yes	132 (77.2)	39 (22.8)	171 (100)	*P*<0.0001*, df=1
No	18 (10.9)	147 (89.1)	165 (100)	χ^2=149.2901
Pulling and pushing				
Yes	122 (76.7)	37 (23.2)	159 (100)	*P*<0.0001*, df=1
No	28 (18.8)	149 (81.2)	177 (100)	χ^2=125.7441

*Sign for statistically significant variables. ORF: Occupational l risk factors, LBP: Low back pain, MLS: Medical lab scientist, MLT: Medical lab technologist, CHEW: Community health extension worker

stated "that the lifetime prevalence of LBP was 72.5% and a 12-month prevalence of 56.9%." The study was conducted among HCPs in a district hospital in Malaysia; this study was similar to our study for both 12-month prevalence and lifetime prevalence because the study populations were similar.

Johnson and Edward reported a 12-month LBP prevalence of 28% among workers in a General hospital in Akwa Ibom State, Nigeria.[20] A study by Awosan *et al*. reported a 12-month LBP prevalence rate of 39.1%, lifetime and point prevalence was reported to be 56.2% and 17.2%, respectively, among HCW in a tertiary health facility in Nigeria,[29] these studies revealed a lower prevalence compared to the present study which may have resulted from high job demand and a lower rate of HCPs: patient ratio increasing the exposure to more occupational risks.

The majority (98%) of the LBP occurred within a day to 6–8 weeks (acute cases); this is a sharp contrast to another study by El-Soud *et al*.,[38] which recorded 5.9% for acute cases where the majority (76.5%) experienced chronic LBP; this study was only among nurses and exposure to the risk factors may be more and repeatedly, compared to the present study, which used all categories of HCW. Most LBP sufferers observed mainly mild cases (65.33%) compared to a study by Karahan *et al*.,[5] which recorded 63% of moderate cases; these differences

Table 7: Binary logistic regression analysis of the risk factors of low back pain among healthcare workers in Ekiti State, Nigeria

Risk factors of low back pain	AOR (95% CI)	*P*
Age (years)		
20-24	1	
25-34	0.10 (0.01-1.50)	0.10
35-44	0.95 (0.32-2.86)	0.93
45-60	0.67 (0.25-1.82)	0.43
Gender		
Male	1	
Female	1.07 (0.44-2.55)	0.89
Educational level		
No formal education	1	
Secondary	1.30 (0.14-12.39)	0.82
Tertiary	1.08 (0.11-5.69)	0.80
Exercise		
No	1	
Yes	0.40 (0.17-0.97)	0.43
Emotional stress		
No	1	
Yes	1.08 (0.50-2.32)	0.84
Occupational type/categories		
Nurse	1	
Doctor	1.18 (0.05-28.60)	0.92
Health attendant	0.31 (0.01-11.44)	0.53
Pharmacist	0.58 (0.02-15.31)	0.74
Physiotherapist	6.27 (0.28-142.69)	0.25
MLS/MLT	0.44 (0.02-12.58)	0.63
CHEW	1.91 (0.09-40.60)	0.68
Other*	0.68 (0.25-18.30)	0.82
Working (h)		
≥6-8	1	
≥8-12	1.93 (0.45-8.22)	0.37
>12	1.51 (0.37-6.20)	0.57
Sufficient rest at work		
No	1	
Yes	1.77 (0.78-4.02)	0.18
Bad equipment/instruments		
No	1	
Yes	0.47 (0.19-1.18)	0.11
Prolong standing		
No	1	
Yes	1.78 (0.77-4.11)	0.18
Bad and awkward position		
No	1	
Yes	0.92 (0.43-1.95)	0.82
Carrying patient/heavy objects		
No	1	
Yes	1.34 (0.60-2.96)	0.47
Turning patient		
No	1	
Yes	18.46 (6.84-49.81)	0.00
Pulling and pushing		
No	1	
Yes	8.22 (3.46-19.56)	0.00

P-level of significance (<0.05), *Others includes optometrist, administrative staffs, speech therapist, medical psychologist, health record staff, dietician, engineer. AOR: Adjusted odds ratio, CI: Confidence interval, MLS: Medical lab scientist, MLT: Medical lab technologist, CHEW: Community health extension worker

may be attributed to the subjective nature of pain. More than half of respondents (51.33%) noticed pain after starting a job equally. Karahan *et al*.[5] observed 78.3% of HCWs noticed pain after starting job, also in this present study, the pain was noticed (70.67% of LBP sufferers) 1 year after starting the job which was statistically significant ($P < 0.0001$). Most LBP sufferers missed less than a day (50.67%) while recovering from the acute onset of the illness; hence, they may likely rest/self-medicate because most cases of LBP in this study were mild in severity. Re-occurrence of LBP occurred in 80% of LBP sufferers ($P = 0.05$); this is higher compared to 17.6% re-occurrence among nurses in a study by El-Soud *et al*.[38]

Fourteen variables were statistically significant using bivariate analysis when LBP (with 12-month prevalence) was cross-tabulated with sociodemographic characteristics, personal risk factors, and occupational factors (they include age, gender, higher educational status, emotional stress, exercise occupation categories, sufficient rest at work, longer working hours, bad equipment and instrument, prolong standing, bad/awkward position, carrying a patient and heavy object, turning patient regularly, and pulling/pushing of object/patient).

Two major risk factors were identified as statistically significant after binary logistic regression was done. The main factors of LBP include the turning patient on the bed regularly ([greater than three times weekly] [OR = 18.46, 95% CL (6.84–49.81)], [$P < 0.0001$]) equally similar to another study by Sopajareeya *et al*.[39] Using logistic regression analysis, LBP was statistically significantly associated with moving patients in bed without assistance ($P = 0.003$, 95%CL 2.26 [1.33–3.83]), and finally, the last factor is pulling and pushing of objects or people (more than 10 kg thrice a week) (OR = 8.22, 95% CL [3.46–19.56], $P < 0.0001$); this is similar to another study by Wong *et al*.[35] which relates to LBP with pulling or lifting patients or objects in 93.3% of HCPs who lifted patients ($P < 0.001$).

Conclusion

LBP prevalence remains high among HCPs, and the significant factors identified were turning patients and pulling/pushing of objects or people. The study highlights the sociodemographic characteristics of the LBP sufferers, personal risk factors, and occupational risk factors.

It is recommended that HCPs should identify their risk factors, which can be modifiable. The hospital management should training and retraining of HCPs occupational risk factors, its prevention, detection, and management (avoiding prolong standing ≥6 h, long working hours >8 h, ensure intermittent breaks at works, reduce stress at work, replace bad chairs and tables, replacing bad equipment, avoiding awkward or bad position, use of technology to carrying patients and objects, automated bed for turning of the patient, early treatment of the symptom of LBP, adequate rest should be given to sick HCPs to avoid further complication, and ensuring standard safety procedures to reduce the work hazard to the minimum).

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Hoy D, Bain C, Williams G, March L, Brooks P, Blyth F, *et al*. A systematic review of the global prevalence of low back pain. Arthritis Rheum 2012;64:2028-37.
2. Gupta E, Nandini N. Prevalence of low back pain in non-working rural housewives of Kanpur, India. Int J Occup Med Environ Health 2015;28:313-20.
3. Hoy D, Brooks P, Blyth F, Buchbinder R. The epidemiology of low back pain. Best practice and research Clin Rheumatol 2010;24:769-81.
4. Abbas MA, Abu Zaid LZ, Fiala LA, Alhamdan ND. Prevalence and risk factors of Low Back Pain among nurses in four tertiary care hospitals at King Fahad Medical city, Riyadh, KSA. Med J Cairo Univ 2010;78:219-33.
5. Karahan A, Kav S, Abbasoglu A, Dogan N. Low back pain: Prevalence and associated risk factors among hospital staff. J Adv Nurs 2009;65:516-24.
6. Hassan S. lower back pain among health care workers. Spring 2017;16:26-8.
7. Jimoh AA, Omokanye LD, Salaudeen AE, Saidu R, Saka MJ, Akinwale A, *et al.* Prevalence of low back pain among pregnant women in Ilorin, Nigeria. Acad J (Medical practice Review) 2013;4:23-6.
8. Al Dajah S, Al DA. Prevalence and risk factors of low back pain among nurses in sudayr region. ESJ 2013;9:198-205.
9. Shemory ST, Pfefferle KJ, Gradisar IM. Modifiable risk factors in patients with low back pain. Orthopedics 2016;39:e413-6.
10. Islam J, Haseen F, Saha SK, Khasru MR, Morshed M, Salek AK. Prevalence and risk factors of low back pain among medical professionals working in selected tertiary hospitals in Dhaka city Bangladesh. J Neurosurg 2020;9:137.
11. World Health Organization. Definition of Health. Available from: https://apps.who.int/about who/en/definition.html. [Last assessed on 2018 Aug 08].
12. Omokhodion FO, Umar US, Ogunnowo BE. Prevalence of low back pain among staff in a rural hospital in Nigeria. Occup Med 2000;50:107-10.
13. Stenner P, Cross V, McCrum C, McGowan J, Defever E, Lloyd P, *et al.* Self-management of chronic low back pain: Four view points from patients and healthcare providers. Health Psychol Open 2015;2:1-11.
14. Sandhya RV, Kumari MJ, Gopisankar D, Sheela AM. Prevalence of low back pain and knowledge on body mechanics among staff nurses in a tertiary care hospital. Int J Adv Res 2015;3:928-34.
15. Houben RM, Vlaeyen JW, Peters M, Ostelo RW. Healthcare providers' attitude and belief towards common low back pain: Factor structure and psychometric properties of the HC-PAIRS. Clin J Pain 2004;20:37-44.
16. Mehrdad R, Shams-Hosseini NS, Aghdaei S, Yousefian M. Prevalence of low back pain in healthcare workers and comparison with other occupational categories in Iran: A systematic review. IJMS 2016;41:467-78.
17. Jia N, Li T, Hu S, Zhu X, Sun K, Yi L, *et al.* Prevalence and its risk factors for low back pain among operation and maintenance personnel in wind farms. BMC Musculoskelet Disord 2016;17:314.
18. Nahar BN, Ahsan GU, Khan NA. Prevalence of low back pain and associated risk factors among professional car drivers in Dhaka city, Bangladesh. South East Asia J Public Health 2012;2:60-3.
19. El Sayyed M, Naushad T, Matthew A, Kumar P. Prevalence of work-related low back pain complaints among healthcare professionals: A Cross-sectional study. J Phys Ther 2013;7:7-11.
20. Johnson OE, Edward E. Prevalence and risk factors of low back pain among workers in a health facility in south-south, Nigeria. Br J Med Med Res 2016;11:1-8.
21. Tan BK, Smith AJ, O'Sullivan PB, Chen Gang, Burnett AF, Briggs AM. Low back pain belief are associated to age, location of work, education and pair related disability in Chinese healthcare professionals working in China: A cross-sectional survey. BMC Musculoskelet Disord 2014;15:255.
22. Hinmikaiye CD, Bamishaye EI. The incidence of low back pain among Theatre Nurses: A case study of the University of Ilorin and Obafemi Awolowo University Teaching Hospital. Int J Nurs Sci 2012;2:23-8.
23. Healthcare Providers. Medical Dictionary Available from: http://medicaldictionary.thefreedictionary.com/health+care+providers. [Last accessed on 2017 May 20].
24. Bello B, Muhammad IT. Estimation of economic cost of low back pain management in Kano, Nigeria. Adv Life Sci Med 2017;03:01-8.
25. Vahdati SS, Khiavi RS, Ghafouri RR, Adimi I. Evaluation of low back pain among resident in Tabriz University of Medical Sciences in relation with their position in work. Turk J Emerg Med 2014;14:125-9.
26. Oyewole OO, Adeniyi EA, Ajayi BF, Olajitan AA, Oritogun KS. Work-related musculoskeletal disorders and ergonomic stressors among direct and nondirect contact health care workers from a Nigerian tertiary health facility. Afr J Med Health Sci 2016;15:7-13.
27. Lin PH, Tsai YA, Chen WC, Huang SF. Prevalence, characterictics and work-related risk factoers of low back pain among hospital nurses in Taiwan. Int J Occup Med Environ Health 2012;25:41-50.
28. Almalki Almalki M, Alkhudhayri MH, Batarfi AA, Alrumaihi SK, Alshehri SH, Aleissa SI, *et al.* prevalence of low back pain among medical practitioners in a tertiary care hospital in Riyadh. Saudi J Sports Med 2016;16:205-9.
29. Awosan KJ, Yikawe SS, Oche OM, Oborien M. Prevalence, perception and correlates of low back pain among healthcare workers in tertiary institution in Sokoto, Nigeria. Ghana Med J 2017;51:164-74.
30. Sikiru L, Hanifa S. Prevalence and risk factor of low back pain among nurses in a typical Nigeria hospital. Afr Health Sci 2010;10:26-30.
31. Babatunde AO, Fadare JO, Ojo OJ, Durowale KA, Atoyebi OA, Ajayi PO, *et al.* Self-medication among health worker in a tertiary in South-west, Nigeria. Pan Afr Med J 2016;24:312.
32. Adewoye K, Aremu S, Ipinnimo T, Salawu I, Orewole T, Bakare A. Awareness and practice of proper health seeking behaviour and determinant of self-medication among physicians and nurses in a tertiary hospital in southwest Nigeria. Open J Epidemiol 2019;9:36-49.
33. Jekel JF, Katz DL, Elmore JG. Sample size, randomisation, and probability theory. In: Maddox S, Schmitt W, editors. Epidemiology, Biostatistics and Preventive medicine. 2nd ed. Philadelphia: Saunders Elsevier; 2001. p. 194-9.
34. Kirkwood BR, Sterne JA. Calculating the required sample size. In: Essential Medical Statistics. 2nd ed. Massachusetts: Blackwell Science; 2003. p. 413-28.
35. Wong TS, Teo N, Kyaw MO. Prevalence and risk factors associated with low back pain among health care provider in a district hospital. Malays Orthop J 2010;4: 23-8.
36. Manader N, Subedi S. Prevalence and risk factors of low back pain among nurses of a medical college of Bharatpur, Nepal. SCIREA J Health 2016;1:1-10.
37. Emmanuel NM, Ezhilarasu P, Bheemarao AB. Low Back Pain among

Nurses in a Tertiary Hospital, South India. J Osteopor Phys Act 2015: 3(4): 161. doi:10.4172/2329-9509.1000161.
38. El-Soud AM, El-Najjar AR, El-Fattah NA, Hassan AA. Prevalence of low back pain in working nurses in Zagazig University Hospital: An epidemiology study. Egypt Rheumatol Rehabil 2014;41:109-15.
39. Sopajareeya C, Viwatwongkasem C, Lapvongwatana P, Hong O, Kalampakorn S. Prevalence and risk factors of low back pain among nurses in a Thai Public Hospital. J Med Assoc Thai 2009;92:593-9.