ISSN: 2573-9565
Impact factor [0.825]

Research Article

Journal of Clinical Review & Case Reports

Nonspecific low back pain and associated factors in the professions of health care workers especially the physiotherapist

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Submitted: 09 Sept 2021; **Accepted**: 15 Sept 2021; **Published**: 25 Sept 2021

Citation: *Irena Kola, Sandër Kola, Oltiana Petri (2021) Nonspecific low back pain and associated factors in the professions of health care workers especially the physiotherapist. Journal of Clinical Review & Case Reports, 6(9):738-746.*

Abstract

Introduction: *Low back pain (LBP) is relatively a major cause of disability among the working population and has a significant socioeconomic impact. The study aims were to determine the prevalence and associated factors of low back pain among professions of health care workers especially the physiotherapist.*

Methods: *A total of 225 participants (78,7%female, 21.3% male) among students of Professional and Scientific Master degree in University of Medicine, Faculty of Technical Medical Science and healthcare workers that working in the University and in the tertiary University Medical Center of Tirana "Mother Teresa" were involved to evaluate LBP for a period for more than two years (from Mars 2017 until to November 2019). A standardized Nordic questionnaire for the analysis of LBP symptoms and epidemiological risk factor data was used to collect information from our study participants.*

Results: *Prevalence of LBP in healthcare workers was determined to be 87.5%. Female resulted to be 4.9 times in risk to have LBP compared to male for CI 95% (2.16-11.2) p value<0.001. The average age resulted to be 37 ± 5.9, where the minimum and maximum age were 21 and 55 years old respectively. The participants ≥51 years old were 14 times in high risk for LBP compared to other age groups for CI 95% (5.9-21.6) p value=0.001. It was observed that low back pain was most common among nurses (44.1%) p value<0.0001. Also risk factors such as job position, working condition, long standing and long sitting at desk, health status and also the physical activity demonstrated an association and increasing low back pain risk, p value in all these factors resulted less than 0.05.*

Conclusion:*Our study demonstrated that the prevalence of LBP were higher and healthcare workers especially the nurses are among group with high risk of low back pain.*

Keywords: Prevalence, Low Back Pain LBP Professions of Health Care Workers, Physiotherapist Risk Factors.

Introduction

Low back pain is a very common health problem amongst population and a major cause of disability that affects work performances and well-being. Non-specific low back pain is defined as low back pain (LBP) and isn't not attributable to a recognizable specific pathology [1]. Researchers in recent decades have no longer viewed low back pain as a purely structural, anatomical or biomechanical disorder of the lumbar spine, but them has highlighted that LBP is a complex disorder, which can be influenced by a wide range of other factors [2-4].

Kendall (1977) and van der Windt et al, (2007) mention some of the most important factors that are seen to act as catalysts for chronicity, contributing to poorer recovery and prolonged disability in at least some people with LBP. These include influence include cognitive, psychological, social [6,7]. Also some of sociodemographic factors, such as age, lifestyle factors, such as smoking and physical conditioning are other potential risk factors for low back pain [7]. Non-specific low back pain is usually categorized in 3 subtypes: acute, sub-acute and chronic low back pain. This subdivision is

based on the duration of the back pain. Acute low back pain is an episode of low back pain for less than 6 weeks, sub-acute low back pain between 6 and 12 weeks and chronic low back pain for 12 weeks or more [1].

Low back pain is associated with working postures which included bending heavily with one's trunk, bending and twisting simultaneously with one's trunk, a bent and twisted posture for long periods, and making repetitive movements with the trunk. Ehrlich (2003) has described the LBP as an occupational health problem when 37% of LBP cases in the world are attributed to occupation [8]. Professionals who are exposed to vibrations, or long standing positions such as health-care workers, occupational drivers, and construction workers are more prone to LBP [9-12]. Incidence and prevalence Low back pain is well documented to be an extremely common health problem. Expert Group of the Global Burden of Disease Study (GBD) 2010, showed that low back pain is among the top ten high burden diseases and injuries, with an average number of DALYs (disability-adjusted life years) higher than HIV, road injuries, tuberculosis, lung cancer, chronic obstructive pulmonary disease and preterm birth complications [1,13].

Many years ago LBP was seen as a problem confined to western countries, but during the last decade LBP cases have increased significantly and consequently are becoming a major problem in low- and middle-income countries [14].

For these reasons we have conducted this paper with aim to investigate the prevalence, the consequences and the risk factors associated with low back pain (LBP) among healthcare workers.

Methods

This was a descriptive study conducted among students of Professional and Scientific Master degree in University of Medicine, Faculty of Technical Medical Science and healthcare workers that working in the University and in the tertiary University Medical Center of Tirana "Mother Teresa" for a period for more than two years (from Mars 2017 until to November 2019). The number of participants enrolled into this study is 225 cases. A standardized Nordic questionnaire for the analysis of LBP symptoms and epidemiological risk factor data was used to collect information from our study participants [15]. Five students in master level were instructed on questions that they will direct to all participants in this study and each question was explaining so the result obtained was as accurate as possible. The questionnaire included the socio-demographic characteristics; and prevalence, perception and correlates of low back pain among them. For all participants a measurement in height and weight (Anthropometry) was required from standardized measures on the pharmacy. Weight and height were measured without shoes, for the weight we required to the nearest 0.5 kg using a SECA scale division with capacity until to 200 kg; and for the height was to the nearest 0.5 cm using a stadiometer with graduation length in cm until to 200 cm. The four categories of Body mass index (BMI) were involved in this study. The BMI was calculated as weight (kg) divided by height2 (m2). As the Underweight BMI were defined all participants less than 18.5kg/m2, for normal weight was defined all participants with BMI from 18.5 to 24.9 kg/m2, for overweight was defined all participants with BMI of 25.0 to 29.9 kg/m2, while obesity was defined all participants with BMI 30.0 kg/m2 and above. All data were analyzed by using IBM Statistical Package for Social Sciences (SPSS) Version 23. The socio-demographic data are presented in frequency, mean, standard deviation and percentage. Chi-square test and logistic regression analysis was used in determining the variables that predict LBP among the participants, p values<0.05 were considered statistically significant.

Results

Overall, 225 healthcare workers that working in the University and in the tertiary University Medical Center of Tirana "Mother Teresa" and students of Professional and Scientific Master degree in University of Medicine, Faculty of Technical Medical Science are included as participants in this study and most of them 87.5% (197/225) resulted to had problem with nonspecific low back pain. From 197 cases with LBP, 78.7% of them were female and 21.3% were male with significant association between them (Figure 1), female resulted to be 4.9 times in risk to have LBP compared to male for CI 95% (2.16-11.2) p value<0.001.

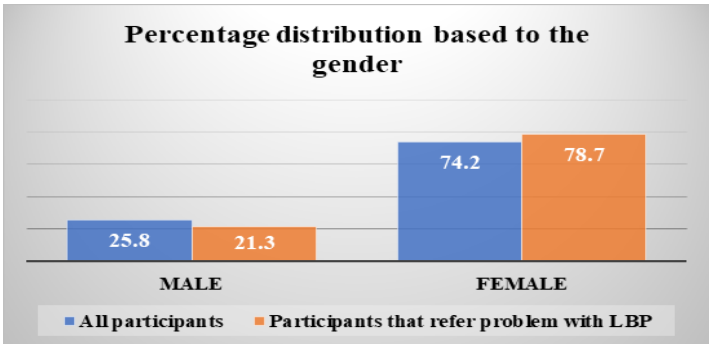

Figure 1: Percentage distribution of participants with and without LBP based to the gender.

The average age resulted to be 37 ± 5.9, where the minimum and maximum age were 21 and 55 years old respectively.

The most affected participants with LBP were the age groups 41-50 years old with 42.13% (83/197), in second places were the age groups 31-40 years old with 25.9% (55/108) and above them the age groups ≥51 years old with 21.3% (Figure 2). The participants ≥51 years old were 14 times in high risk for LBP compared to other age groups for CI 95% (5.9-21.6) p value=0.001. The age groups ≥20-30 years old presented only 10.6% (21/197) of participants.

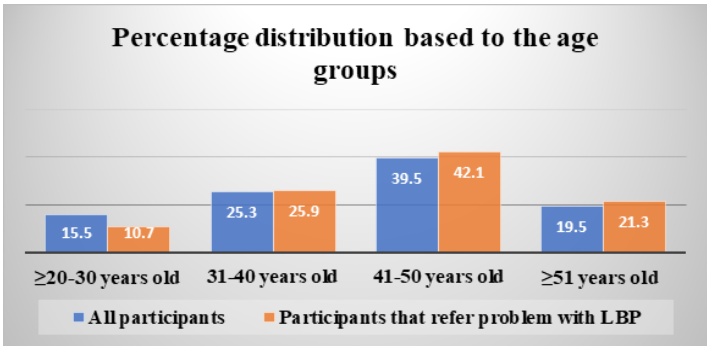

Figure 2: Percentage distribution of participants with and without

LBP based to the gender.

In table below we have presented all-demographic data of the healthcare workers and some of the individual risk factors associated with LBP. As we can see the most predominant risk factors that have influence in LBP among our participants were the gender, age older than 31 years old, job position, working condition, health status and also the physical activity. The p value in all these factors resulted less than 0.05.

10.1% of participants with LBP were physiotherapist students (2th years of MSC degree), 31% were physiotherapist, 44.1% were nursing and 39% were physician. Nursing were 15.6 times in risk to developed LBP for CI 95% (4.37-55.9) p value<0.0001 and physiotherapist 9.15times in risk for LBP for CI 95% (2.67-31.3) p value resulted=0.0004. Physician were 4.38 times in risk for LBP for CI 95% (1.34-14.2) p value=0.01.

Participants that referred long sitting were 3.99 times in risk for LBP (1.6-9.7) p value 0.002 compared to them that referred the long standing. About the health status (or other health problems in their lives) 34% refer that were in good health except the problem with LBP, 40.1% refer 1-2 chronic diseases and 25.9% refer more than 2 chronic diseases.

Participants with 1-2 chronic diseases resulted 6.77 times in risk for develop LBP for CI 95% (2.23-20.58) p value resulted=0.0007 if we compare with participants that refer a good health. 28.4% refer a daily physical activity and 71.6% does not refer a physical activity after the work.

About 10.15% of them have the BMI underweight, 27.9% were in normal BMI, most of them 41.7% pre-obese and 20.3% were obese. We have not seen an association for factor risk like the body mass index p value resulted>0.05. Job experience from 3-5 and more than 5 present the larger number of participants with LBP in this study, and in this factor risk we have not seen an association p value result>0.05. The living habit like smoking, participants of 50.8% regularly smoked tobacco and 49.2% were not smoked. The p value result>0.05.

Table 1: Demography data of the healthcare workers and some of the individual risk factors associated with LBP.

Socio-demographic variables	Total number of cases		Number of cases with low back pain		Odds ratio	P value
	(n=225)	(100%)	(n=197)	(100%)	CI 95%	
Gender						
Male	58	25,8	42	21,3	1 reference	
Female	167	74,2	155	78,7	4.9 (2.16-11.2)	p<0.001
Age groups						
≥20-30 years old	35	15,5	21	10,7	1 reference	
3-40 years old	57	25,3	51	25,9	4.8 (1.7-13.2)	p=0.003
4-50 years old	89	39,5	83	42,1	9.2 (3.1-19.8)	p<0.0001
≥51 years old	44	19,5	42	21,3	14 (5.9-21.6)	p=0.001
Body mass index						
Under weight	24	10,7	20	10,1	1 reference	
Normal	59	26,2	55	27,9	2.75 (0.62-12.4)	p=0.17
Pre-Obese	92	40,9	82	41,7	1.64 (0.46-5.77)	p=0.44
Obese	50	22,2	40	20,3	1.25 (0.34-4.48)	p=0.73
Job position						
Physiotherapist students (2th years of MSC degree)	19	8,4	10	5.1	1 reference	
Physiotherapist	67	29,8	61	31	9.15 (2.67-31.3)	p=0.0004
Nursing	92	40,9	87	44,1	15.6 (4.37-55.9)	p<0.0001
Physician	47	20,9	39	19,8	4.38 (1.34-14.2)	p=0.01
Job experience (in years)						
≤ 2 years	8	3,5	6	3	1 reference	
3-5 years	84	37,3	71	36	1.8 (0.3-10.0)	p=0.49
6-10 years	72	32	63	32	2.33 (0.40-13.3)	p=0.34
≥ 11 years	61	27,	58	29	6.44 (0.89-46.5)	p=0.006

Work conditions						
Long standing	54	24	40	20,3	1 reference	
Long sitting	124	55,1	114	57,9	3.99 (1.6-9.7)	p=0.002
Both	47	20,9	43	21,8	3.76 (1.14-12.38)	p=0.029
Health status (other health problems)						
No chronic disease	90	40	67	34	1 reference	
1-2 chronic diseases	83	36,9	79	40,1	6.77 (2.23-20.58)	p=0.0007
More than 2 chronic diseases	52	23,1	51	25,9	17.5 (2.28-133.9)	p=0.0058
Physical activity						
No	156	69,3	141	71,6	1 reference	
Yes	69	30,7	56	28,4	2.9 (1.29-6.4)	p=0.0094
Smoking						
No	109	48,4	97	49,2	1 reference	p=0.52
Yes	116	51,6	100	50,8	1.29 (0.58-2.87)	

In table 2 we have presented the perception and consequences of LBP among the healthcare workers and students. Almost 71.6% of them have been diagnosed with LBP by health care professionals. Regarding the characteristic of LBP, 68% of participants report localized LBP, and 32% LBP with numbness-pain of the leg/buttock. The 77.16% of LBP was related to work and 78.2% referred that LBP was developed after working in health care centers. All the cases about the perceived intensity 34.5% referred mild LBP, 51.8% moderate and 13.7% LBP severe and for frequency of LBP, 19.8% referred per day frequency for LBP, 22.8% per week, 25.9% per month and 31.5% per year LBP.

Table 2: Perception and Consequences of LBP in healthcare workers.

Variables	Number of cases	Percentage
	197	**100%**
Diagnosis of LBP from health care professionals		
No	56	28,4%
Yes	141	71,6%
Characteristic of LBP		
Localized LBP	134	68%
LBP with numbness-pain of the leg/buttock	63	32%
LBP related to work		
Yes	152	77,16%
No	45	22,84%
LBP development time (before or after working)		
LBP Develop before working	43	21.8%
After working	154	78,2%
Perceived intensity of LBP		
Mild	68	34,5%
Moderate	102	51,8%
Severe	27	13,7%
Frequency of LBP		
Daily	39	19,8%
Weekly	45	22,8%
Monthly	51	25,9%

Yearly	62	31,5%
Effect of LBP on personal Life and work		
No Effect	10	5,1%
Little Effect	32	16,2%
Moderate Effect	104	52,8%
Severe Effect	51	25,9%
Have you treated the LBP		
No	89	45,2%
Yes	108	54,8%
Types and mode of treatment		
Traditional	39	36.1%
Modern	57	52.8%
Both	12	11.1%

More than half of participants (52.8%) had referred that problems with LPB had affected the personal and work life. Apparently 54.8% of (108 participants) had treated the LBP, and from them 36.1% had been treated LBP with traditional type, 52.8% with modern type and 11.1% with traditional and modern types.

Table 3 presented the distribution of prevalence of LBP by some of the individual risk factors, perception and their consequences. The females (155) that have referred nonspecific low back pain, 32 had daily LBP, 34 weekly, 40 monthly and 49 yearly. The males with daily LBP were 7, weekly and monthly were 11 respectively and yearly 13. About the age distribution, the most frequent cases were related with age ≥20-30 years old referred the LBP monthly, most of them with age 31-40 years' old referred problems with LBP weekly and monthly. The participants of 41-50 years old and ≥51 years old referred the problems with LBP monthly and yearly. Most of all participants regardless of BMI refer to have LBP monthly and yearly.

Regarding the physiotherapist students (2th years of MSC degree) four of them refer LBP weekly and most of them monthly and yearly. Nursing refers that 35 had LBP yearly, 25 monthly and few of them weekly and daily. Participants with job experience 3-5 years or more refer LBP monthly and yearly. As we mention before the participants with job experience longer than 3 years present more problems with LBP and most of them have pain monthly and yearly.

Long standing and long sitting were considered as a risk factor for LBP, and our participants refer that during their work condition 57,87% had long sitting work, 20,3% refer long standing and 21,84% refer both.

Apparently 134 participants that refer the localized LBP, only 28 of them refer daily pain, 32 refer weekly pain, 34 refer monthly pain and 43 refer yearly LBP pain. About 63 participants that referred LBP with numbness-pain of the leg/buttock, 11 of them had LBP daily, 13 had weekly, 17 had monthly and 19 had pain yearly. 77.1% had referred that LBP were related to their work and 34 participants had LBP daily, 35 weekly, 37 monthly and 46 yearly. 22,9% referred that LBP were not related to work, so 5 of them had LBP pain daily, 10 weekly, 14 monthly and 16 yearly.

We have three categories for perceived intensity of LBP (mild, moderate and severe). More than half of participants that referred mild pain, had pain daily and weekly (20 and 22 participants respectively). On the other hand, participants that refer perceived intensity LBP moderate, most of them had pain monthly and yearly (32 and 42 participants respectively). and for severe LBP intensity were the same, most of them referred monthly and yearly pain (9 and 11 participants respectively).

Table 3: Distribution of prevalence of LBP by some of the individual risk factors, perception and consequences.

Variables	Numbers of cases	Daily	Weekly	Monthly	Yearly	P value
Gender	197					0.001
Female	155	32	34	40	49	
Male	42	7	11	11	13	
Age groups						< 0.0001
≥20-30 years old	21	8	6	3	4	
31-40 years old	51	10	18	17	6	
41-50 years old	83	19	16	16	32	
≥51 years old	42	2	5	15	20	
Body mass index						0.048
Under weight	20	3	7	6	4	
Normal	55	15	10	16	14	
Pre-Obese	82	14	19	20	29	
Obese	40	7	9	9	15	
Job position						0.007
Physiotherapist students						
(2th years of MSC degree)	10	1	4	2	3	
Physiotherapist	61	23	6	13	19	
Nursing	87	7	20	25	35	
Physician	39	8	15	11	5	
Job experience (in years)						0.003
≤ 2 years	6	5	1	0	0	
3-5 years	71	25	21	19	6	
6-10 years	62	6	14	18	24	
≥ 11 years	58	3	9	14	32	
Work conditions						
Long standing	40	9	7	18	6	0.01
Long sitting	114	11	24	30	49	
Both	43	19	14	3	7	
Characteristic of LBP						0.002
Localized LBP	134	28	32	34	43	
LBP with numbness-pain of the leg/buttock	63	11	13	17	19	
LBP related to work						<0.0001
Yes	152	34	35	37	46	
No	45	5	10	14	16	
LBP development time (before or after working)						
LBP Develop before working	43	2	10	16	15	0.03
After working	154	37	35	35	47	
Perceived intensity of LBP						0.0011
Mild	68	20	22	10	9	
Moderate	102	10	17	32	42	
Severe	27	9	6	9	11	

In the end of our questionnaire, we asked all participants "How good or bad is your perception for nonspecific low back pain today". A scale number from 0 to 100, were used to evaluate the LBP status they felt when asked, where the number 100 means the best perception they can feel and 0 means the worst perception that they can feel. In figure 3 we have presented the frequency distribution of "How good or bad your perception about LBP is today". Most of participants refer a perception between the 50 to 60 scale score. Some of them refer that, on that day they felt good (15 participants) and 7 of them were not feeling good.

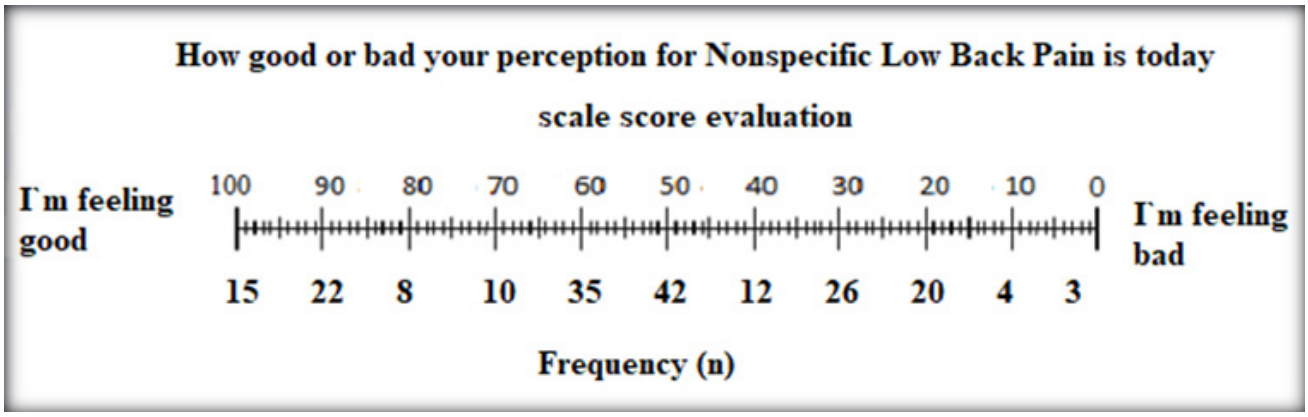

Figure 3: The frequency distribution of "How good or bad your perception about LBP is today".

Discussion

Many risk factors contribute to non-specific low back pain among the people especially to the health workers [16]. Knowledge of the prevalence of LBP among different jobs and their risk factors is critical [17]. Global 1-year prevalence of LBP in workers, office workers, and health-care workers was 25%, 18%, and 58%, respectively. In our study, during more than two years the prevalence of LBP among the university and tertiary hospital center health care workers in Albania, and students of Professional and Scientific Master degree result 87.5%. This evidence is similar with one previous cross-sectional study that reported one-year prevalence of LBP (86.1%) among emergency ambulance workers in tertiary hospitals in China [18], but on the other hand studies from Yadav Arun et al and Alnaami reported lower prevalence of LBP (24.74%) and 73.9% respectively among the healthcare workers [19, 20].

Refereed to demographic and other risk factor that contribute in development of LBP among the health care workers, in this study we found that older age, female gender, job position, working condition, health status and also the physical activity were significantly associated with LBP among the participants. These findings are in consistence with other studies [21-25]. Females are more susceptible to chronic LBP than males regardless of age, and based to a study conducted by Jimenez-Sanchez et. al, [24] women were two times more likely to develop chronic LBP compared to men.

Regarding the occupation among the health care works, nursing is among the occupations ranked highest in work-related LBP, so substantial research efforts have been dedicated to understanding the interactions between workplace demands and worker characteristics that increase risk of LBP. Patient lifting and transfer is clearly the most prominent causal factor, and usual interventions include lift/transfer devices, no-lift policies, and ergonomic assessments. In our study, 10.1% of participants with LBP were physiotherapist students (2th years of MSC degree), 31% were physiotherapist, 44.1% were nursing and 39% were physician. Nursing were 15.6 times in risk to developed LBP compared to other occupation. Tello et al report a 35 percent point prevalence and a 55 percent annual prevalence of LBP among the hospital nurses [26]. Also and Mannion et al. reached similar conclusions in their prospective study. They report that, for nurses, the frequency of recurrent LBP episodes decreased with longer length of employment [27].

Many studies have shown that comorbidities were positively related to at least one LBP episode [28-30]. Stewart et al, revealed that comorbid chronic conditions were positively related to at least one LBP episode in the last month in low- and middle-income countries. Specifically, the odds of LBP were 2.7 times higher among seniors with one chronic comorbid condition, compared to seniors without comorbidities, while the odds ratio was 4.8 for people with two or more comorbidities [29]. In our study participants with 1-2 chronic diseases resulted 6.77 times in risk for develop LBP for CI 95% (2.23-20.58) p value resulted=0.0007 if we compare with participants that refer a good health.

Different types and amounts of physical activity are related to persistent LBP in older adults [25,31]. In other age groups, smokers are more likely to experience LBP. It is thought that smokers may have different pain perception as compared to non-smoker although the effect of smoking on pain perception remains unclear [32,33]. We find an association between the physical activity p vale<0.05, but for the habit of living like smoking p value resulted>0.05.

Refereed the characteristic of LBP, most of them had localized LBP (68%), others presented LBP with numbness-pain of the leg/buttock. The number of 77.16% refereed that the LBP was related to work and 78.2% refereed that LBP was developed after working in health care centers. About the perceived intensity 34.5% of them referred mild LBP, 51.8% moderate and 13.7% LBP severe. For frequency of LBP, 19.8% referred daily frequency for LBP, 22.8% monthly, 25.9% monthly and 31.5% yearly LBP.

Answering the question of "How good or bad is your perception for nonspecific low back pain today", most of participants refer a perception between the 50 to 60 scale score. Few of them refereed that in that day they felt good (15 participants) and 7 of them were not feeling good.

Conclusion

Our finding accurate a higher prevalence of LBP among professions of health care workers especially the nurses. Many risk factors such as older age, female gender, job position, working condition, health status and also the physical activity were significantly associated with LBP and played important roles in the development of this problem. These findings support the appropriateness of preventative programmes dedicated to medical professionals, for preventing recurring of low back pain in the future.

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