Research article

Occupational factors are not factors for chronicity in patients with low back pain in sub-Saharan Africans: a hospital-based study from Cameroon

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Abstract

Background: Factors associated to chronicity of nonspecific Low Back Pain (LBP) are scarce in sub-Saharan Africa (SSA).
Objectives: To identify the factors associated to the persistence at two years of nonspecific LBP in rheumatology outpatients seen in a teaching hospital in Cameroon.
Design: This was a cross-sectional study done in the General Hospital, Douala.
Methods: Adult patients with chronic LBP were included and divided into two groups according to disease duration (<2 years and ≥2 years). Factors associated to the persistence at 2 years of LBP was statistically significant if $p<0.05$.
Results: Two hundred and three patients (157 women) with nonspecific LBP with mean age 55.9±12.8 years were included. The patients were grouped into workers involved in heavy labour or in jobs that require physical efforts (n = 122; 60.1%) and workers in blue-collar jobs with prolonged standing and/or sitting (n = 81; 31.9%). The following factors were significantly associated with the persistence at two years of LBP: advanced age, female gender, high number of children (for women), history of LBP, multiple recurrences with persistent pain and the high pain intensity. Even though there is a tendency towards the statistical significance of the lifting of heavy loads ($p=0.06$), we did not find any significant association between the occupational factors and the persistence at two years of LBP.
Conclusion: There is a lack of association between the occupational factors and the persistence at two years of the LBP in a sub-Saharan population in Cameroon. Only some socio-demographic and clinical factors are statistically significant.

Key words: Low back pain, Chronicity, Risk factors, Occupational factors, Sub-Saharan Africa

Introduction

Low Back Pain (LBP) is a major health problem with a great socio-economic impact in developed countries[1-3] as well as in sub-Saharan Africa (SSA)[4]. The lifetime prevalence of LBP in developed countries is reported to be as high as 84%, and the prevalence of chronic LBP is about 23%, with 11-12% of the population being disabled by LBP[1,2]. LBP can be accompanied by an important functional limitation which often leads to reduced activity and a drop in productivity, especially when it becomes chronic[5,6]. Several risk factors for chronicity have been identified. The main factor with a high level of scientific proof is a history of lumbar pain including among others a history of work cessation due to LBP[7,8]. Concerning the duration of work cessation due to low back pain, the longer it is, the lower the probability of returning to work. Thereby, after 6 months of work cessation, the probability of returning to work is about 50%. If the cessation lasts over 12 months, this probability is < 25%. It becomes close to none after 2 years of inactivity[9,10].

Few studies have been performed on LBP in SSA. A systematic review had found an annual prevalence of LBP at 50% in adults in SSA. It is 62% throughout an African's life[4]. The main risk factors identified in Africans are: female gender, history of LBP, smoking, farm labour, long walks (> 30 minutes), schooling problems (academic failure and dissatisfaction with school chair), marital status (married and divorced) and the psychological profile (presence or not of anxiety, depression, and sleeplessness)[4]. To the best of our knowledge, no study in SSA has looked at factors for chronicity. We then aimed to identify the factors to the persistence at two years of nonspecific LBP, followed up in rheumatology outpatient's hospital in Cameroon. This country is a lower middle-income country situated in Central Africa, with a population of

23.4 million people, with 8.1 million being in the low socio economic status. The labour market in this country is characterized by a large informal sector, low-paying jobs, and low productivity due partly to the fact that the education system is not geared toward meeting the needs of the jobs market. However, the Cameroon is often called "Africa in miniature" because it is endowed with all the diversity of Africa in climate, culture, lifestyle, and geography[11].

Materials and methods

Study design and target population: We carried out a cross-sectional study during 3 months in Douala General Hospital, Douala, Cameroon. Patients included in the study were aged at least 18 years, with the same job during the previous 3 years and were followed up for chronic to the persistence at two years of nonspecific LBP.

Low back pain assessment: The patients included were divided into two groups based on the duration of LBP (3 months to 2 years and > 2 years). We deliberately chose the limit at two years because of the near to zero probability of returning to work after two years of professional inactivity[9,10]. The patients were also divided depending on their occupation, into workers involved in heavy labour or in jobs that require physical efforts, and workers in blue-collar jobs with prolonged standing and/or sitting. This study was carried out following the ethics principles of the Helsinki declaration. It was approved by the National Ethics Committee of Cameroun.

Statistical analysis: For every patient, socio-demographic, occupational and clinical characteristics were represented on a pre-established data collection sheet. Data was analyzed using Epi Info 6.0 software (CDC, Atlanta, GA, USA). Factors associated with persistence at two years of LBP were analyzed by univariate logistic regression, reporting unadjusted Odds Ratios (ORs) and their 95% confidence intervals (95% CIs). All significant variables were mutually adjusted for each other in a final multivariable logistic regression model. A $p\ Value < 0.05$ was considered statistically significant.

Operational definition: LBP was defined as any pain in the lumbar region (pain or discomfort between the lower margins of the 12th rib and the gluteal folds), evolving for 3 months at least, mechanical in character, in the absence of any osteoporosis or fracture, infection, neoplasia or inflammatory origin. These conditions were ruled out after physical examination, imaging or laboratory test when required;

High number of children: More than 3 children for a women

Sickness leave: At least one day of rest related to low back pain and certified by a doctor

Heavy load: Load greater than 15% of the patient's weight

Functional disability: Assessed by the Roland and Morris Disability Questionnaire

The other elements (Exposure to vibrations at work, adapted occupational qualification, furnished working space, bad postures at work, insufficient salary, stress at work) were defined by their presence or not.

Results

Baseline characteristics: Two hundred and three patients among which 157 were women with nonspecific chronic LBP were included. The mean age of patients was 55.9 ± 12.8 years. The mean Body Mass Index (BMI) was 28.9 ± 5 kg/m^2 (overweight, 71; obese, 80). The mean value of pain on the Visual Analogue Scale (VAS) was 6.7 ± 1.9mm. There was 122 (women, 103) workers involved in heavy labour (farmers, labourers, maids, waiters, storekeepers) and 81 (women, 54) workers in blue-collar jobs (office workers, Teachers, Seamstresses, Nurses, Students, Drivers, Security agents). The main characteristics of patients are summarized in Table 1.

Table 1: Baseline characteristics of patients with chronic lumbago

Variables		
Mean age, years		55.9 ± 12.8
Female gender, n (%)		157 (77.3%)
Mean BMI, kg/m^2		28.9 ± 5
Mean VAS†, mm		6.7 ± 1.9
Occupations, n (%)	Workers involved in heavy labour	122 patients (60.1%)
	Workers in blue-collar jobs	81 patients (31.9%)
Median of low back pain evolution, months		36
Aetiology of chronic low back pain‡, n (%)	Lumbodiscarthrosis	133 (65.5%)
	Facet joint osteoarthritis	43 (21.1%)
	Spondylolisthesis	24 (11.8%)
	Disc herniation	15 (7.4%)
	Lumbar spinal stenosis	13 (6.4%)
	Scoliosis	10 (4.9%)

*BMI = Body Mass Index; †VAS = Visual Analogue Scale; ‡Based on X-ray or CT-Scan imaging. Some patients had more than one lesion found on imaging.

Socio-demographic and clinical factors associated with low back pain persistence at two years: On univariate analysis, the following were factors significantly associated with the persistence at 2 years of LBP: advanced age, female gender, low educational attainment, high number of children (for women), history of LBP, multiple recurrences with persistent pain and the high pain intensity. After multivariate analysis, only advanced age, female gender, high number of children (for women), history of LBP, multiple recurrences with persistent pain and the high pain intensity remained as significant independent predictor of persistence of LBP at two years (Table 2).

Table 2: Socio-demographic and clinical factors associated with low back pain persistence at two years

Variables	Duration of low back pain < 2 years (n = 90)	≥ 2 years (n = 113)	Unadjusted OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value
Mean age (years)	52.7	58.6	4.038 (3. 467-6. 092)	0.000	2.819 (1.368-5.367)	0.001
Gender (F/M), n	64/26	95/18	1.114 (1.002-2.324)	0.021	1.757 (1.070-2.865)	0.034
Low educational attainment, n	34	64	2.485 (1.253-5.107)	0.043	1.931 (0.918-4.531)	0.082
Marital status, n	65	80	1.722 (0.147 -2.568)	0.563	–	–
Number of children* ≥ 3, n	47	83	2.795(1.256-3.582)	0.030	2.362 (1.302-4.652)	0.011
Body mass index, n	70	81	0.715 (0.291-1.826)	0.585	–	–
History of low back pain, n	50	106	4.189 (1.266 -8.673)	0.000	4.726 (1. 683 - 6.107)	0.000
Physical activity, n	20	18	1.208 (0.805-1726)	0.252	–	–
Clinical presentation, n	59	37	2.302 (1.481-3.714)	0.000	2.695 (1.232-5.343)	0.003
Intensity of pain†, n	72	102	2.760 (1.339-3.594)	0.041	2.058 (1.103-3.246)	0.02
Mean functional disability‡	8.38	8.83	0571 (0.294-1.134)	0.398	–	–
Radicular pain, n	66	86	0.858 (0.426-1.479)	0.752	–	–
Exacerbation of pain with effort, n	66	76	0.569 (0.629-1.126)	0.369	–	–

* In women; † Using the numeric pain rating scale (VAS): mild: VAS < 4, moderate: 4≤ VAS ≤ 7, severe: VAS > 7; ‡ Using the disability rating scale for the evaluation of low back pain (Roland and Morris Disability Questionnaire)

Occupational factors associated with low back pain persistence at two years: A significant association was observed between the lifting of heavy loads and the persistence at two years of LBP on univariate analysis [OR = 4.783 (1.724-13.962); p = 0.038]. However, on multivariate analysis, no such independent association was seen [OR = 3.578 (0.831-10.215); p = 0.062]. In addition, no other occupational factor were significantly associated with persistence at two years of LBP on univariate analysis (Table 3). Nevertheless, when considering the 31 patients with health insurance, there was an independent positive association with heavy loads lifting and a sick leave for LBP in multivariate analysis (data not showed). A total of 44 patients (21.7%), including 22 with health insurance received a sick leave for more than 8 days in 30 patients.

Table 3: Occupational factors associated with low back pain persistence at two years

Variables	Duration of low back pain		Unadjusted OR (95% CI)	P-value	Adjusted OR (95% OR)	P-value
	< 2 years (n = 90)	≥ 2 years (n = 113)				
Heavy load-lifting, n	38	63	4.783 (1.724-13.962)	0.038	3.578 (0.831-10.215)	0.062
Exposure to vibrations at work, n	8	11	–	1	–	–
Adapted occupational qualification, n	33	28	3.875 (0.831-8.003)	0.081	–	–
Furnished working space, n	30	34	1.201 (0.712-1-765)	0.653		
Bad postures at work, n	45	65	1.335 (0.784-1.931)	0.323	–	–
Insufficient salary, n	48	53	1.231 (0.803-1.831)	0.392		
Stress at work, n	9	13	0.964 (0.567-1.685)	0.821	–	–
Sick leave, n	23	21	1.248 (0.817-2.129)	0.231	–	–

Discussion

The main finding of our study is the lack of association between the occupational factors and the persistence at two years of the LBP in a sub-Saharan population in Cameroon. Our results differ from those described in developed countries where occupational factors hold an important place as factors of persistence of LBP[12-14]. Four major hypotheses could be brought forward to explain our results: Firstly, the study design could explain the absence of relation with occupational factors. A cohort study of patients with acute LBP followed up over a period of 2 years could have given more accurate and pertinent results. Secondly our sample size could explain our results. Done on a larger number, these findings could be different. This is particularly true for the lifting of heavy loads which slightly misses significance ($p = 0.06$). Therefore, despite the difficulty of certain jobs, patients seem to underestimate the impact their lifestyle could have on their health. Indeed, as reported by patients, we can summarize their point of views as follows: "satisfied or not, if I do not do this work, I will not have money to feed my family". Thirdly, most patients are self-employed and in the informal sector. Thus sick leave would be synonymous to no income. Fourthly, the lack of social security coupled to the high cost of healthcare could lead the patients not to request sick leave for their disease. Indeed, less than 5% of Cameroonians have health insurance and this percentage tends to decrease over time[15]. These hypotheses seem likely given the statistical significance between the LBP and the occupational factors found in the subgroup of patients with health insurance. Our study was not performed to answer this question. Further studies are necessary to confirm these results.

As concerns the socio-demographic and clinical factors, we found a statistical significance with some factors. Therefore it seems that our patients come to consult more because of the intensity of the pain and less because of a disability, explaining the minimization of occupational factors. The socio-demographic and clinical factors found in our study are globally similar to those previously described in western countries[7,8,16-18] and in a systematic review on LBP in SSA[4], even though the methodology was different.

Our study had certain limits. As we mentioned above, our sample size, as well as our study design, could have an influence on our results. Furthermore, our study was carried out in tertiary hospitals which could modify the profile of the patients seen in consultation.

In conclusion, there is a lack of association between the occupational factors and the persistence at two years of the LBP in a sub-Saharan population in Cameroon. Socio-demographic and clinical factors may be comparable to that reported in study undertaken in developed countries. Therefore further research into the prevention and the implementation of a back school program is required.

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Compliance with ethical standards: This study was carried out following the ethics principles of the Helsinki declaration. It was approved by the local ethics committee (2013/013/CIE-UdM/Pr). Informed and signed consent were obtained from parents.

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Conflicts of interest: The authors declare no conflict of interest.

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