

Burden of Chronic Low Back Pain in Low and Middle-Income Settings: Case of the Yaounde Central Hospital, Cameroon

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Abstract

Background: Chronic low back pain is a leading cause of morbidity and disability globally. Low and Middle-Income Countries (LMICs) tend to be more affected, with chronic low back pain (CLBP) being among the leading presenting complaints at specialist consultation. The exact burden of this disease is sparingly known in our setting. **Objective:** To evaluate the burden of chronic low back pain at the Yaounde Central Hospital. **Methods:** This was a descriptive cross-sectional study for a period of 3 months, from March 2022 to May 2022. After obtaining ethical clearance and research authorisations, data was collected using structured questionnaires from patients with chronic low back pain presenting at the Yaounde Central Hospital during the aforementioned time frame. This data was then tabulated with the Statistical Package for Social Sciences (SPSS 23.0), and disability was assessed using the modified Roland Morris Disability Questionnaire and the Oswestry Disability Index. Data analysis was done using the International Business Machines Statistical Package for Social Sciences (IBM-SPSS) VERSION 23.0. **Results:** 115 cases of CLBP were included. The mean age was 52.62 years, and the sex ratio was 0.3. The average monthly income was less than 50,000 frs CFA, in 37.4% of cases. In 57.9%, patients had a job that involved physical labour. The patients had a secondary level of education in 40.9%, and alcohol consumption was observed in 36%. The average number of days of a work stoppage due to LBP was 12.75 days ($\pm 12SD$), and the median duration of CLBP was 7.15 (7.5SD) years. The median pain intensity was 7 ($\pm 2SD$), with leg pain and sensory neuropathy

observed in 67.8% and 63.5% respectively. Lumbar X-ray was done in 45.2% and revealed lumbar osteoarthritis in 62.4%. Hypertension as a comorbidity was observed in 26.1%. Medical treatment was used at least once in 98.3% of cases. The average cost of management per month was assessed, and the median was 52,000 FCFA ($\pm 20,876$ SD). Using the Oswestry Disability Questionnaire, 46 patients, that is 40% of the study population, were classified as severely disabled with a median ODI score of 40%. The factors which were independently associated with disability were level of education, alcohol consumption, treatment modality, pain intensity, body mass index (BMI), psychological wellbeing and number of sick leave days. **Conclusion:** Chronic low back pain is common in our setting. There is a female predominance with the mean age of the study population situated in the 5th decade. Low-income earners and patients with a job involving physical labour were the most affected. Medical treatment was the main therapeutic modality, with the average cost of management per month being above the average monthly income of the greater majority of the patients. Several factors influenced disability, some of which were independently associated with it, such as level of education, alcohol consumption and treatment modality.

Keywords

Burden of Disease, Chronic Low Back Pain, Disability, Yaounde Central Hospital

1. Introduction

Low back pain (LBP) is defined as pain sensation or stiffness below the costal margin and above the inferior gluteal folds, with or without leg pain. It is estimated that, at any point in time, about 11.9% of the world's population is suffering from it [1]. It can be divided according to the duration of symptoms to either acute or chronic LBP. Chronic low back pain (CLBP) is defined as low back pain persisting for longer than 7 - 12 weeks, or recurring back pain that intermittently affects an individual over a long period of time [2]. The prevalence of chronic LBP worldwide is estimated at 19.6% in those aged between 20 and 59 years [3]. In a study done at the Douala General Hospital, it was established that CLBP had a prevalence of 19.1% among the patients presenting for rheumatologic consultations [4].

Even though LBP is a major public health issue and one of the main presenting complaints during consultation, finding its cause remains a big challenge for the medical field. However, some risk factors have been identified and classified under individual, psychosocial and occupational in order to prevent the progression of CLBP. Still, most individuals will experience at least one episode of LBP in their lifetime [5].

LBP is the first cause of disability since 1990 [6]. Affecting physical performance and, consequently, work productivity, it accounts for 815 years lived with disability per 100,000 populations and this number is expected to grow [7]. In Sub-Sa-

haran Africa (SSA), a Ugandan hospital-based cross-sectional study described significant disability in LBP patients, with 87% of participants reporting up to 14 days of work loss due to LBP [8]. Also, in America, LBP has a major economic impact, with total costs related to this condition exceeding \$100 billion per year [9].

Although CLBP is highly disabling, information about its prevalence and associated factors is scattered in the literature, and most results are presented in a secondary way in studies evaluating multiple musculoskeletal outcomes simultaneously [3]. In low and middle-income countries like Cameroon, despite being the first cause of rheumatological consultation, LBP is neglected in favour of more pressing health issues like HIV/AIDS [10], and thus is the subject of barely any investigations. This, in turn, causes an apparent inconsistency in how these patients are treated.

We then opted to address this lack of knowledge by estimating the prevalence and cost of management of chronic low back pain while determining the resulting degree of disability and identifying the factors associated with it.

2. Patients and Methods

We carried out a descriptive cross-sectional study of patients who consulted in the neurology and neurosurgery services of the Yaounde Central Hospital during a 3-month period from March 1st to May 31st 2022. Included in this study were all the patients who consulted in the neurology or neurosurgery units of the Yaounde Central Hospital during the above-mentioned study period, aged 18 years and above, who presented with chronic low back pain (lasting for 12 weeks or more) and who gave their informed consent. Excluded from our study population were patients with LBP due to recent trauma and those who retracted from the study. The minimum sample size was determined to be 60 participants using the formula applicable to descriptive studies: $n = \frac{Z^2 * pq}{e^2}$ where n is the sample size, Z is the standard deviation of a chosen confidence interval (CI), a 95% CI corresponds to a standard deviation of 1.96, p is prevalence of CLBP in a study done at the Douala General Hospital in 2015: 19.1%, $q = 1 - p$, and e is the set margin of error (0.10). After obtaining ethical approval and research authorizations, we proceeded to collect data with the help of a pre-established technical form. The following variables were of interest in our study: Socio-demographic features (age, gender, marital status, employment status, employment type, level of education, smoking history, alcohol consumption, and average monthly income); clinical features (height, weight, BMI, overall pain duration, current pain duration, pain intensity using the visual analogue scale, associated symptoms, type of radiological exam, radiologic findings, number of sick leave days, comorbidities); Disability assessment (using the Oswestry Disability Index (ODI) and the Roland Morris disability questionnaire (RMDQ)); Psychological wellbeing, assessed using the psychological domain score of the World Health Organization Quality of Life brief tool (WHOQOL-BREF); and management (type of management, average cost of management per month).

Data collected was entered and analysed with Statistical Package for Social Sciences (SPSS) software version 23.0. Results summarized as counts and percentages for categorical variables and as means and standard deviation (SD) or median with 25th and 75th percentiles where appropriate for continuous variables. Standard assumptions of parametric tests (e.g. linearity, normality of residuals, homoscedasticity) were tested; as such, we performed no data transformations. The ODI and RMDQ scores were analysed as continuous outcome variables. We adopted a threshold score of ≥ 4 to report prevalence of dysfunctional CLBP, based on a previous study conducted among adult LBP patients [11]. Bivariate analysis was performed to investigate significant associations with RMDQ scores. Pearson's correlation was used for continuous variables and for categorical variables, the independent sample t-test was used to test the group differences in mean RMDQ scores and in the case of more than two groups, analysis of variance (ANOVA) was used. Variables that were significant, or trending towards ($p < 0.1$) in bivariate analysis, were then fitted in a multivariate analysis using the Poisson regression model to determine factors independently associated with disability. Prior to fitting the multivariable model, we checked for evidence of multicollinearity in the independent variables via a correlation matrix and then ran collinearity diagnostics to assess their tolerance and variance inflation factors (VIF). All VIFs were less than 2, suggesting the absence of any multicollinearity. Statistical significance was set at $p < 0.05$. Our study was carried out in strict compliance with the principles of ethics in medical research.

3. Results

3.1. Study Population Description

3.1.1. Sociodemographic Characteristics of the Study Population

One hundred and fifteen participants (115) were included in our study aged from 19 to 80 years, the mean being 52.62 (± 12.65 SD). There was a male to female sex ratio of 0.3. More than half of them (61.7%) were married and 45.2% were self-employed with 37.4% having an average monthly income lower than 50,000 FCFA and 30.4% earning more than 100,000 FCFA. The majority (57.9%) of employment types involved physical labour with 40.9% having a secondary educational level (Table 1).

Table 1. Distribution according to sociodemographic features of the patients.

Variable	Category	Frequency (N = 115)	Percentage (%)
Age	18 - 30	3	2.6
	31 - 40	21	18.3
	41 - 50	23	20
	51 - 60	37	32.2
	61 - 70	23	20
	More than 70	8	7

Continued

Gender	Male	27	23.5
	Female	88	76.5
Marital status	Single	24	20.9
	Married	71	61.7
	Widow	19	16.5
	Divorced	1	0.9
Educational level	None	1	0.9
	Primary	39	33.9
	Secondary	47	40.9
	Tertiary	28	24.3
Employment status	Employed	29	25.2
	Self-employed	52	45.2
	Student	3	2.6
	Unemployed	17	14.8
	Retired	14	12.2
Employment type	Physical labour	55	57.9
	Non-physical labour	40	42.1
Income level	<50,000 FCFA	43	37.4
	50,000 - 100,000 FCFA	37	32.2
	100,000 - 300,000FCFA	32	27.8
	>300,000 FCFA	3	2.6

3.1.2. Clinical Characteristics of the Study Population

Out of the 115 participants of the study, 35 were alcohol consumers with the majority (36%) having an alcoholic index of 2 units per week. Most patients (89.6%) were non-smokers. Sick leave days were present in 53.8% of cases with the average number of days of work stoppage being 12.75 days (± 12 SD). Most patients were overweight (45.2%) with a mean BMI of 28.6 (± 5 SD). The median duration of CLBP was 7.15 (± 7.5 SD) years while the median duration of the current episode of LBP was 7 (± 13.2 SD) months and the median pain intensity was 7 (± 2 SD). Leg pain was present in 67.8% of patients, sensory neuropathy in 63.5% and BBDS in 20% of cases. The most requested radiological exam was radiography of the lumbar spine (45.2%) and lumbar osteoarthritis was found in 58 patients (62.4%). However, 22 patients were unable to perform any radiological exam at all. A specific cause of LBP was found in 34.4% of patients whereas in 65.6% of cases, the cause was non-specific. Hypertension was the most common comorbidity, found in 26.1% of patients and it was associated with diabetes mellitus in 11.3% of cases (Table 2).

Table 2. Distribution according to the clinical characteristics of patients.

Variable	Category	Frequency (N = 115)	Percentage (%)
Alcohol	Consumer	35	30.4
	Non-consumer	80	69.6
Smoking	Current smoker	4	3.5
	Former smoker	8	7.0
	Non-smoker	103	89.6
Sick day leave	Yes	50	53.8
	No	43	46.2
BMI	Underweight	1	0.9
	Normal weight	23	20
	Overweight	52	45.2
	Obese	39	33.9
Sensory neuropathy	Present	73	63.5
	Absent	42	36.5
BBDS	Present	23	20
	Absent	92	80
Leg pain	Present	78	67.8
	Absent	37	32.2
Radiologic findings	Osteoarthritis	58	63
	Lumbar spinal stenosis	19	20.4
	Spondylolisthesis	16	17.2
	Disc hernia	14	15.1
	Nerve impingement	21	22.6
	Others	21	22.5
Comorbidities	Hypertension	30	26.1
	Diabetes	13	11.3
	HIV/AIDS	2	1.7
	2 or more	13	11.3
	Others	2	1.7
	None	68	59.1
Type of radiological exam	X-ray	52	45.2
	CT-scan	36	31.3
	MRI	2	1.7
	X-ray and CT-scan	2	1.7
	Others	1	0.9
	None	22	19.1

Continued

Treatment modality	Single modality	70	60.9
	Combination therapy	45	39.1
Roland Morris Disability Questionnaire	Functional	24	20.9
	Dysfunctional	91	79.1
Sleep satisfaction	Very dissatisfied	4	3.5
	Dissatisfied	28	24.3
	Neither satisfied nor dissatisfied	44	38.3
	Satisfied	35	30.4
	Very satisfied	4	3.5
Oswestry Disability Questionnaire	Minimal disability	21	18.3
	Moderate disability	39	33.9
	Severe disability	46	40
	Crippled	7	6.1
	Bed-bound	2	1.7
Psychological wellbeing (WHOQOL_BREF)	Good	54	47
	Poor	61	53

3.1.3. Treatment Modalities

Medical treatment was used at least once in 98.3% of patients, but only 5 patients had recourse to surgery. Physiotherapy was used by 45% of patients, and always in combination with the other treatment modalities. The average cost of management per month was assessed and the median was 52,000 FCFA ($\pm 20,875$ SD) with the lowest being 4000 FCFA and the highest going up to 1,500,000 FCFA.

3.1.4. Disability Assessment

In regards to the Roland Morris Disability Questionnaire, 91 patients (79.1%) were classified as being “dysfunctional” with only 24 (20.9%) being “functional”. The median RMDQ score was 11.11 (± 5.7 SD), the minimum being 0 and the maximum being 21 on 24. Concerning the Oswestry Disability Questionnaire, 46 patients (40%) were classified as severely disabled with a median ODI score of 40%, the maximum being 86% and the minimum 0%. Using the Pearson’s correlation test, we established that there was a strong positive correlation ($r = 0.765$, $p = 0.01$) between the RMDQ and the ODI thus, either of them can be used in our study (Figure 1). For the following data however, we will be using solely the ODI as our variable for disability.

3.1.5. Psychological Wellbeing and Sleep Satisfaction

The median value for psychological wellbeing was 56 (± 17.3 SD) with 53% of patients classified under “Poor psychological health” and 47% under “Good psycho-

logical health” the cut-off point being a score of 60% using the WHO-QOL assessment questionnaire. Sleep dissatisfaction was observed in 24.3% of patients.

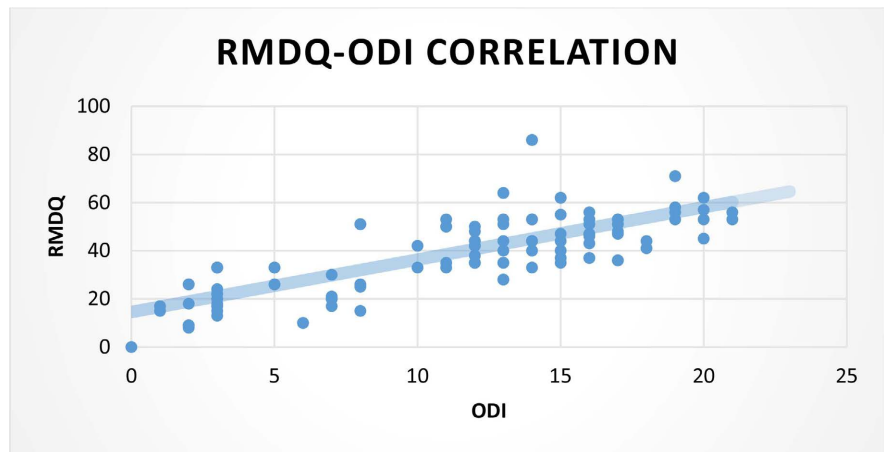


Figure 1. Pearson’s correlation test, showing a positive correlation ($r = 0.765$, $p = 0.01$) between the RMDQ and the ODI.

3.2. Factors Influencing Disability in the Study Population

3.2.1. Numerical Variables

Alcoholic index, pain intensity, cost of management, psychological wellbeing, sick day leaves, BMI and sleep satisfaction were identified as factors influencing disability in CLBP patients with p -value < 0.05 (**Table 3**, **Figures 2-6**).

Table 3. Numerical variables-factors associated with disability in CLBP patients are highlighted in bold.

Variable	ODI mean (\pm SD)	r	p-value
Age in years		0.111	0.238
Alcohol consumption index (units/week)		-0.216	0.02
Pack year		-0.163	0.081
Chronic low back pain duration		0.141	0.134
Duration of current episode		-0.44	0.642
Pain intensity	38.6 (16.554)	0.678	0.00
Cost of management		0.207	0.027
Psychological well being		-0.745	0.00
Sleep satisfaction		-0.356	0.00
Sick day leaves		0.688	0.00
BMI		0.225	0.016

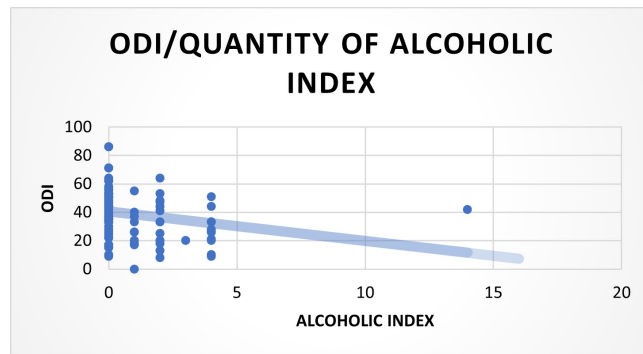


Figure 2. Alcohol consumption index (units/week) expressed as a function of ODI.

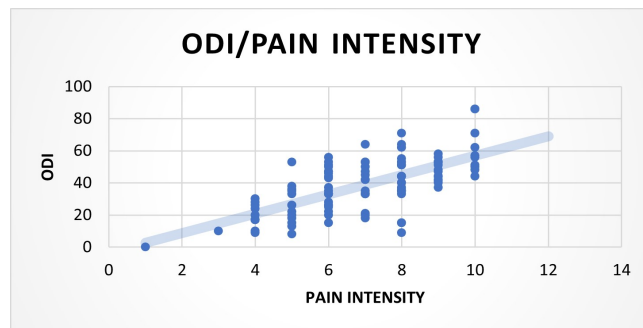


Figure 3. Pain intensity expressed as a function of ODI.

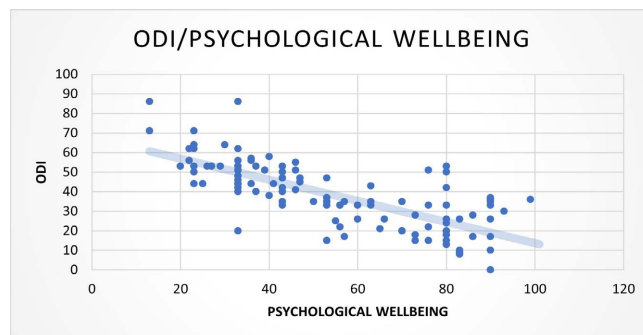


Figure 4. Psychological wellbeing expressed as a function of ODI.

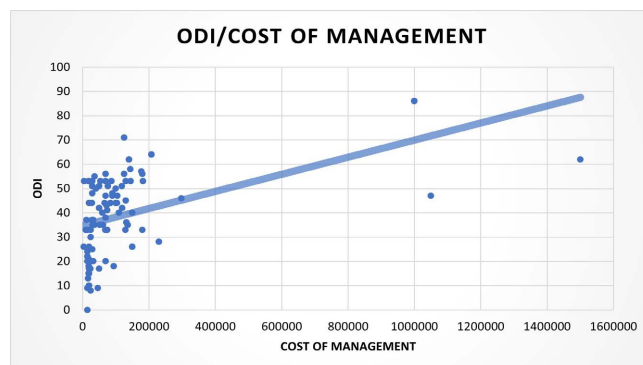


Figure 5. Cost of management expressed as a function of ODI.

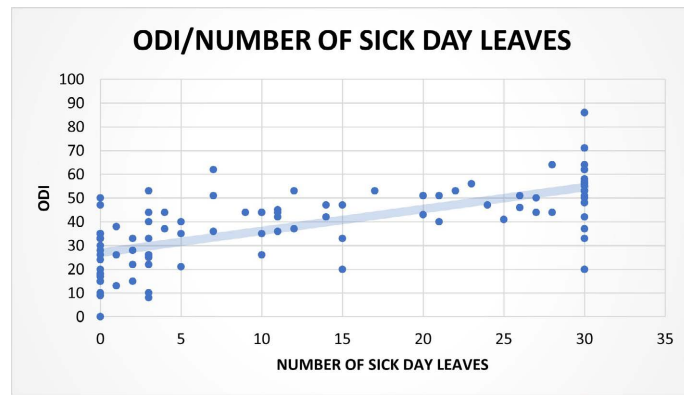


Figure 6. Number of sick day leaves expressed as a function of ODI.

3.2.2. Categorical Variables

Gender, level of education, alcohol consumption, leg pain, sensory neuropathy, and treatment type were identified as factors influencing disability in CLBP patients. p -value < 0.05 (**Table 4**).

Table 4. Categorical variables-factors influencing disability are highlighted in bold.

	Variable	ODI mean ± SD	F	p-value
Gender	Male	29.52 (19.342)	11.56	0.001
	Female	41.38 (14.622)		
Marital status	Married	37.23 (17.59)	1.39	0.248
	Single	38.75 (15.62)		
	Widowed	44.47 (12.50)		
	Divorced	20		
Average monthly income	<50,000	41.95 (41.95)	1.41	0.242
	50,000 - 100,000	36.92 (18.23)		
	100,000 - 300,000	37.22 (14.15)		
	>300,000	25.67 (16.55)		
Employment status	Employed	37.55 (15.96)	0.754	0.557
	Self-employed	40.48 (18.12)		
	Student	26.67 (26.67)		
	Retired	35.07 (17.03)		
	Unemployed	39.59 (12.02)		
Employment type	Physical labour	38.89 (16.47)	0.019	0.892
	Non-physical labour	38.40 (18.47)		
Educational level	No education	20	4.985	0.003
	Primary	46.18 (14.45)		
	Secondary	35.74 (17.77)		
	Tertiary	33.46 (13.688)		

Continued

Alcohol consumption	Consumer	30.17 (15.09)	14.56	0.000221
	Non-consumer	42.28 (15.88)		
Smoking history	Current smoker	25.25 (14.17)	1.40	0.251
	Former smoker	37.38 (11.38)		
	Non-smoker	39.2 (16.55)		
Leg pain	Present	42.44 (14.64)	14.64	0.000213
	Absent	30.49 (17.58)		
Sensory neuropathy	Present	43.45 (13.36)	20.131	0.000017
	Absent	30.14 (18.25)		
BBDS	Present	46.52 (17.18)	6.94	0.10
	Absent	36.61 (15.873)		
Presence of comorbidities	Yes	45.49 (12.83)	14.34	0.00
	No	34.16 (17.22)		
Comorbidities	Hypertension	38.33 (15.03)	2.299	0.063
	Diabetes	48.23 (16.55)		
	HIV/AIDS	55.5 (0.7)		
	2 or more	13 (48.23)		
	Others	48.5 (6.36)		
	None	36.07 (16.81)		
Treatment	Single treatment type	34.16 (17.22)	14.34	0.000246
	Combination	45.49 (12.83)		
Sleep satisfaction	Very dissatisfied	35.75 (24.37)	6.102	0.000
	Dissatisfied	46.14 (7.52)		
	Neither satisfied nor dissatisfied	41.93 (16.96)		
	Satisfied	30.86 (16.15)		
	Very satisfied	19.50 18.19)		

3.2.3. Independent Variables

The variables that were found to be independently associated with disability with statistical significance after the Poisson regression were primary level of education (AOR = 1.104 95% CI [1.102 - 1.1205], $p = 0.027$), alcohol consumption (AOR = 0.876 95% CI [0.796 - 0.964], $p = 0.007$), a combination of treatment modalities (AOR = 1.085 95% CI [1.014 - 1.161], $p = 0.018$), pain intensity (AOR = 1.055 95% CI [1.030 - 1.080], $p = 0.000$), BMI (AOR = 1.006 95% CI [1.000 - 1.012], $p = 0.045$), psychological wellbeing (AOR = 0.994 95% CI [0.992 - 0.996], $p = 0.000$) and sick leave days (AOR = 1.009 95% CI [1.006 - 1.012], $p = 0.000$) (Table 5).

4. Discussion

This study's main aim was to evaluate the socioeconomic burden of patients suf-

fering from chronic low back pain at the Yaounde Central Hospital and in order to do so, we had to determine the level of disability of these patients and identify the factors associated with it. The data obtained suggests that disability among the patients is highly prevalent (79.1%) with the women being more affected than men (76.5%). Level of education, alcohol consumption, treatment modality, pain intensity, BMI, psychological wellbeing and sick day leaves were independently associated with disability.

Table 5. Independent variables—statistically significant factors are highlighted in bold.

Variable		B	AOR 95% CI	p-value
Gender	Male	-0.71	0.931 (0.852 - 1.018)	0.116
	Female	0	1	
Educational level	No education	-0.412	0.652 (0.410 - 1.038)	0.072
	Primary	0.99	1.104 (1.102 - 1.1205)	0.027
	Secondary	-0.020	0.980 (0.900 - 1.067)	0.643
	Tertiary	0	1	
Alcohol consumption	Consumer	-0.133	0.876 (0.796 - 0.964)	0.007
	Non-consumer	0	1	
Leg pain	Present	0.031	0.969 (0.881 - 1.066)	0.520
	Absent	0	1	
Sensory neuropathy	Present	0.81	1.085 (0.992 - 1.186)	0.76
	Absent	0	1	
Treatment modalities	Single treatment type	0	1	0.018
	Combination	0.82	1.085(1.014 - 1.161)	
Sleep satisfaction		-0.028	0.972 (0.936-1.1010)	0.149
Pain intensity		0.53	1.055 (1.030 - 1.080)	0.000
Psychological wellbeing		-0.006	0.994 (0.992 - 0.996)	0.00
Cost of management		2.008×10^{-7}	1	0.758
BMI		0.006	1.006 (1.000 - 1.012)	0.045
Sick days leave		0.009	1.009 (1.006 - 1.012)	0.000
Alcoholic index		0.12	1.012 (0.988 - 1.038)	0.334

4.1. Sociodemographic Characteristics of the Study Population

Existing evidence suggests that prevalence rates of chronic LBP increase with increasing age [12]. As compared to working-age adults, older adults are more likely to develop certain lower back pathologies. This aligns with our study in which the mean age of the study population was 52.62 years with 54% of the population aged

51 years and above.

For one man with chronic low back pain, there were 3 women and this does not come as a surprise as 50% of chronic pain conditions have a higher prevalence in women, with only 20% of conditions being more prevalent in men. A similar pattern was obtained in the study by Kahere *et al.* in 2019 [12].

The mean number of sick day leaves during the previous month, attributable to LBP, was 12.71 days, similar with the findings of Doualla *et al.* in which the mean number of sick day leaves due to back pain was 6 ± 10 days [13].

Most patients were self-employed and earned less than 50,000 FCFA per month. The work type usually involved physical labour in more than half of the cases. According to the socio-economic impact assessment report recently published by the National Institute of Statistics (INS), 53% of Cameroon's households reported a decline in revenues from their family businesses in the 30 days before the survey, carried out in July 2021, in the framework of the report. In Yaounde, that percentage was 67% against 60% in Douala.

Primary and secondary level of education were the most prevalent among our patients and this is plausible when we consider the conclusion of a systemic review on formal education and back pain by Dionne *et al.* which stated that less well-educated people are more likely to be affected by disabling back pain [14].

4.2. Prevalence of Chronic Low Back Pain and Chronic Low Back Pain-Associated Disability

Using the RMDQ cut-off point proposed by Stratford PW. and Riddle DL. in 2016 [11], we found the prevalence of CLBP-associated disability which was 79.1%. This is higher than the prevalence of 65% found in a study by Salvetti *et al.* in 2012 in Sao Polo [15]. This difference can be explained by the type of study design used and the difference in the socioeconomic settings of the two countries. Available prevalence studies systematically reviewed have identified high LBP prevalence rates in LMICs [5]. In addition, lifetime LBP prevalence in LMICs can be as high as 93%, with greater prevalence in working populations [16].

The Roland Morris Disability Questionnaire (RMDQ) and the Oswestry Disability Index (ODI) are the two mainly used condition-specific patient reported outcomes and the choice of the tool used is generally operator dependent. In our study, the two had a strong level of association ($r = 0.765$, $p < 0.05$) and this is higher than the results of a study done in Korea ($r = 0.592$, $p < 0.01$) by Chung EJ *et al.* in 2013 [17] which can be explained by the bigger sample size of our study population.

4.3. Level of Disability and Factors Influencing It

Using the Oswestry Disability Index Questionnaire (ODI), 46 patients that is 40% of the study population were classified as severely disabled with a mean ODI score of $38.59\% \pm 16.55\%$, the maximum being 86% and the minimum 0%. This is in harmony with the results obtained from a study done in China in 2017 by Chin-

Pang Lee *et al.* [18] where the mean ODI score was 31.4 ± 15.4 .

Using the Pearson's correlation test, we established that there was a strong positive correlation ($r = 0.765$, $p = 0.01$) between the RMDQ and the ODI thus either of them can be used in our study. For the following data however, we will be using solely the ODI as our variable for disability.

On bivariate analysis, pain intensity, and sick leave days had a strong to moderate positive correlation with disability.

The median pain intensity level was $7 \pm 2SD$ and it was moderately correlated to disability ($r = 0.678$, $p < 0.01$). Our study suggested that pain intensity was independently associated with the level of disability and for every unit increase in pain, there was a 5.3% increase in disability (AOR: 1.055; 95% CI: 1.030 - 1.080, 0.000). This correlates with the findings of Doualla *et al.* [13] and can be explained by the fear avoidance theory.

Our study suggests that more than half of our study population had recourse to sick leave days during the month prior to the interview due to low back pain and this correlates moderately ($r = 0.688$, $p < 0.01$) and independently (AOR = 1.009, 95% CI = 1.006 - 1.012; 0.00) with the level of disability in these patients. For every unit increase in the number of sick leave days, there is a 0.9% increase in disability level. This is in contrast to the findings of Klemenc-Ketis Z. *et al.* in 2011 [19] where the number of sick leave days was not significantly associated with disability and can be explained by the difference in the study methods.

BMI had a weak positive correlation with disability ($r = 0.225$, $p = 0.016$) and was found to be independently associated with disability after regression (AOR: 1.006; 95% CI: 1.000 - 1.012, 0.045). This aligns with the results of an analytical cross-sectional study done by Teck *et al.* in 2016 which suggested that BMI and disability had a positive correlation in patients with CLBP [20].

There was a strong negative correlation between psychological wellbeing and disability ($r = -0.745$, $p < 0.01$) and a 0.6% increase in disability level for every unit decrease in psychological wellbeing. This is in line with the findings of P. Manninen *et al.*, and supports the theory of psychological wellbeing.

Sleep satisfaction had a moderately negative correlation with disability ($r = -0.356$, $p < 0.01$), however, there was no significant association between the two after multivariate regression. This is different from the results of Pagan R. *et al.* in 2017 where sleep satisfaction was significantly associated with disability as an independent variable [21].

The American College of Physicians recommends firstly non-pharmacologic treatment modalities such as: exercise, acupuncture, physical therapy, spinal manipulation, in chronic low back pain. However, more often than not in our study, we saw patients who were being managed with a combination of these modalities, especially physiotherapy and pharmacotherapy (39.1%). Our study suggests that patients on combination therapy have a higher disability score than those on single therapy (AOR = 1.085; 95% CI = 1.014 - 1.161). These findings support the validity of the fear-avoidance model which suggests that the presence of psycholog-

ical factors, such as fear of pain, catastrophising and depression after experiencing pain, leads to fear of movement, resulting in disuse and further disability.

History of alcohol consumption and alcoholic index were both found to be associated with disability to some extent. The results indicate that there is a weak positive correlation between the alcoholic index and the disability level ($r = -0.216$, $p < 0.05$) and the mean level of disability is higher in patients who are non-consumers ($F = 14.56$, $p < 0.01$). However, only the history of alcohol consumption was independently associated with the level of disability, that is, patients consuming alcohol were less likely to develop disability than those who didn't (AOR: 0.876; 95% CI: 0.796 - 0.964, 0.007). This concurs with the cohort study done in 2010 by Jensen *et al.* where lack of alcohol consumption was identified as a risk factor for increased pain and disability [22].

Our findings indicated that mean ODI was higher in patients with lower level of education compared to those with high educational level (primary: 46.18, secondary: 35.74, tertiary: 30.17). Those with a low level of education were more at risk of being disabled compared to those with a high one (AOR: 1.104, 95% CI: 1.012 - 1.205, 0.027). This finding seems to support the theory of fundamental causes which states that when new opportunities for lowering mortality arise, higher socioeconomic groups will benefit more because of their greater material and non-material resources. That is higher-educated adults appear to effectively manage their resources (e.g., cognitive, noncognitive, social, economic) to avoid disease, disability, and premature death across vastly different contexts. Lacking this "personal firewall," their less-educated peers are more exposed, vulnerable, and dependent on resources in those contexts.

Our findings suggest that the mean ODI is significantly higher in females (41.38 ± 14.622) compared to males (29.52 ± 19.342), however, gender was not significantly associated with the level of disability after regression thus, corroborating with the results of Doualla *et al.* [13].

The presence of both leg pain and sensory neuropathy resulted in a higher ODI compared to their absence, but they were not significantly associated with disability after regression.

4.4. Study Limitations

- As the patients were asked to remember the duration of their CLBP symptoms, and some had been suffering for more than 20 years, recall bias is possible.
- Also, interviews were conducted during outpatient consultation with other patients receiving services. Hence, participants may have altered responses due to a lack of privacy.
- This was a hospital-based study, thereby reducing the generalizability to the general population.

4.5. Study Strengths

- To the best of our knowledge, no such study has been conducted in this facility

since their creation. This study therefore provides useful baseline information on CLBP for policy making and future studies.

5. Conclusion

Chronic low back pain is common in our setting. There is a female predominance with the mean age of the study population situated in the 5th decade. Low-income earners and patients with a job involving physical labour were the most affected. Medical treatment is the main treatment modality, with the average cost of management per month being above the average monthly income of the greater majority of the patients. Several factors influenced disability, some of which were independently associated with it, such as level of education, alcohol consumption, treatment modality, pain intensity, body mass index (BMI), psychological wellbeing and number of sick leave days. Measures aimed at controlling these factors, such as the promotion of formal education, regular physical exercise, universal health coverage schemes, and more extensive research efforts, are required to alleviate the increasing burden of CLBP in our setting.

Conflicts of Interest

The authors have no conflicts of interest to declare.

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Appendix

Study Questionnaire

SECTION 1: IDENTIFICATION

- 001 Initials of name:
- 002 Address:
- 003 Telephone number:
- 004 Interview date:

SECTION 2: SOCIODEMOGRAPHIC DATA

- 005 **Age** (in years):
- 006 **Gender:** 1 = Male; 2 = Female
- 007 **Marital status:** 1 = Single; 2 = Married; 3 = Widowed; 4 = Divorced
- 008 **Employment status:** 1 = Employed; 2 = Self-employed; 3 = Student; 4 = Unemployed; 5 = Retired
- 009 **Employment type:** 1 = Physical labour; 2 = Non-physical labour
- 010 **Level of education:** 1 = No education; 2 = Primary; 3 = Secondary; 4 = Tertiary education
- 011 **Average monthly income:** 1 = < 50,000 FCFA; 2 = 50000 - 100,000 FCFA; 3 = 100,000 - 300,000 FCFA; 4 = >300,000 FCFA

SECTION 3: SOCIAL HISTORY

- 012 **Smoking history:** 1 = Current smoker; 2 = Former smoker; 3 = Non-smoker
Pack year:
- Alcohol:** 1 = Consumer; 2 = Non-consumer
- 013 an “alcohol consumer” will be considered to be a study participant who admits to consuming at least one alcoholic drink in the month preceding the interview
- 014 **Quantity of alcohol consumed** (in units per week)
- 015 **Number of sick days leave during the 30 previous days**.....

SECTION 4: CLINICAL FEATURES

- 016 **Height** (in m)
- 017 **Weight** (in Kg)
- 018 **BMI**
- 019 **Total duration of the back pain:**
For how long have you had an ongoing low back pain problem?
- 020 **Duration of the current pain symptoms/episode:**
How long has it been since you went for a whole month without low back pain?

Pain intensity: visual analogue scale (VAS)

021

0	1	2	3	4	5	6	7	8	9	10
No pain	Mild, annoying pain	Nagging, uncomfortable, troublesome pain	Distressing, miserable pain	Intense, dreadful, horrible pain	Worst possible, unbearable, excruciating pain					

Continued

- **Associated symptoms:** Choose 1 = Yes; 2 = No
- Leg pain |_____|: 1 = Yes; 2 = No
- Tingling |_____|: 1 = Yes; 2 = No
- Burning |_____|: 1 = Yes; 2 = No
- 022 - Electric-currents |_____|: 1 = Yes; 2 = No
- Numbness |_____|: 1 = Yes; 2 = No
- Pins and needles |_____|: 1 = Yes; 2 = No
- Uncontrollable urges to urinate or stool |_____|: 1 = Yes; 2 = No
- Urine or stool leakages |_____|: 1 = Yes; 2 = No
- Straining unduly when stooling or initiating urine |_____|: 1 = Yes; 2 = No
- 023 Radiologic findings (if any):
- 024 **Diagnosis:**
- 025 **Comorbidities**

SECTION 5: MANAGEMENT

- Type of management:**
- Medical |_____|: 1 = Yes; 2 = No
 - 026 - Surgical |_____|: 1 = Yes; 2 = No
 - Physiotherapy |_____|: 1 = Yes; 2 = No
 - Others
 - 027 **Average cost of management per month** (in FCFA)

SECTION 6: DISABILITY ASSESSMENT

- **Roland Morris Disability Questionnaire (RMDQ)**
- 028 I stay at home most of the time because of my back.
 - 029 I change position frequently to try to get my back comfortable.
 - 030 I walk more slowly than usual because of my back
 - 031 Because of my back, I am not doing any jobs that I usually do around the house.
 - 032 Because of my back, I use a handrail to get upstairs.
 - 033 Because of my back, I lie down to rest more often.
 - 034 Because of my back, I have to hold on to something to get out of an easy chair.
 - 035 Because of my back, I try to get other people to do things for me.
 - 036 I get dressed more slowly than usual because of my back.
 - 037 I only stand up for short periods of time because of my back.
 - 038 Because of my back, I try not to bend or kneel down.
 - 039 I find it difficult to get out of a chair because of my back.
 - 040 My back is painful almost all of the time.
 - 041 I find it difficult to turn over in bed because of my back.
 - 042 My appetite is not very good because of my back.
 - 043 I have trouble putting on my socks (or stockings) because of the pain in my back.
 - 044 I can only walk short distances because of my back pain.
 - 045 I sleep less well because of my back.
 - 046 Because of my back pain, I get dressed with the help of someone else.

Continued

- 047 I sit down for most of the day because of my back.
- 048 I avoid heavy jobs around the house because of my back.
- 049 Because of back pain, I am more irritable and worse tempered with people than usual.
- 050 Because of my back, I go upstairs more slowly than usual.
- 051 I stay in bed most of the time because of my back.

Conclusion: a score of 4 and above will be considered “dysfunctional” while a score below 4 will be considered “functional”

- **Oswestry Disability Index (ODI)**

Section 1

Pain Intensity

- 052 I have no pain at the moment.
- The pain is very mild at the moment.
- The pain is moderate at the moment.
- The pain is fairly severe at the moment.
- The pain is very severe at the moment.
- The pain is the worst imaginable at the moment.

Section 2

Personal Care (washing, dressing, etc.)

- 053 I can look after myself normally but it is very painful.
- It is painful to look after myself and I am slow and careful.
- I need some help but manage most of my personal care.
- I need help every day in most aspects of my personal care.
- I need help every day in most aspects of self-care.
- I do not get dressed, wash with difficulty, and stay in bed.

Section 3

Lifting

- 054 I can lift heavy weights without extra pain.
- I can lift heavy weights but it gives extra pain.
- Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently positioned (*i.e.* on a table).
- Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned.
- I can lift only very light weights.
- I cannot lift or carry anything at all.

Section 4

Walking

- 055 Pain does not prevent me from walking any distance.
- Pain prevents me from walking more than 1 mile.
- Pain prevents me from walking more than 1/4 of a mile.
- Pain prevents me from walking more than 100 yards.
- I can only walk using a stick or crutches.
- I am in bed most of the time and have to crawl to the toilet.

Continued

Section 5

Sitting

- 056
- I can sit in any chair as long as I like.
 - I can sit in my favourite chair as long as I like.
 - Pain prevents me from sitting for more than 1 hour.
 - Pain prevents me from sitting for more than 1/2 hour.
 - Pain prevents me from sitting for more than 10 minutes.
 - Pain prevents me from sitting at all.

Section 6

Standing

- 057
- I can stand as long as I want without extra pain.
 - I can stand as long as I want but it gives me extra pain.
 - Pain prevents me from standing for more than 1 hour.
 - Pain prevents me from standing for more than ½ an hour.
 - Pain prevents me from standing for more than 10 minutes.
 - Pain prevents me from standing at all.

Section 7

Sleeping

- 058
- My sleep is never disturbed by pain.
 - My sleep is occasionally disturbed by pain.
 - Because of pain, I have less than 6 hours sleep.
 - Because of pain, I have less than 4 hours sleep.
 - Because of pain, I have less than 2 hours sleep.
 - Pain prevents me from sleeping at all.

Section 8

Sex life (if applicable)

- 059
- My sex life is normal and causes no extra pain.
 - My sex life is normal but causes some extra pain.
 - My sex life is nearly normal but is very painful.
 - My sex life is severely restricted by pain.
 - My sex life is nearly absent because of pain.
 - Pain prevents any sex life at all.

Section 9

Social Life

- 060
- My social life is normal and causes me no extra pain.
 - My social life is normal but it increases the degree of pain.
 - Pain has no significant effect on my social life apart from limiting my more energetic interests, i.e. sports.
 - Pain has restricted my social life and I do not go out as often.
 - Pain has restricted social life to my home.
 - I have no social life because of pain.

Continued**Section 10**

Traveling

- I can travel anywhere without pain.
- 061 I can travel anywhere but it gives extra pain.
- Pain is bad but I manage journeys of over two hours.
- Pain restricts me to short necessary journeys under 30 minutes.
- Pain prevents me from traveling except to receive treatment.

Total partial scores:/..... (out of a maximum of 50)

Result in percentage (ODI score):%

SECTION 7: PSYCHOLOGICAL WELLBEING

World Health Organization Quality of Life Brief Tool (WHOQOL-BREF)

- 062 **How much do you enjoy life?**
1 = Not at all; 2 = A little; 3 = A moderate amount; 4 = Very much; 5 = An extreme amount
- 063 **To what extent do you feel your life to be meaningful?**
1 = Not at all; 2 = A little; 3 = A moderate amount; 4 = Very much; 5 = An extreme amount
- 064 **How well are you able to concentrate?**
1 = Not at all; 2 = A little; 3 = A moderate amount; 4 = Very much; 5 = An extreme amount
- 065 **Are you able to accept your bodily appearance?**
1 = Not at all; 2 = A little; 3 = Moderately; 4 = Mostly; 5 = Completely
- 066 **How satisfied are you with yourself?**
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither satisfied nor dissatisfied; 4 = Satisfied; 5 = Very satisfied
- 067 **How often do you have negative feelings such as blue mood, despair, anxiety, depression?**
1 = Never; 2 = Seldom; 3 = Quite Often; 4 = Very Often; 5 = Always

SECTION 8: SLEEP SATISFACTION ASSESSMENT

- 068 **In the past month how satisfied have you been with your sleep?**
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither satisfied nor dissatisfied; 4 = Satisfied; 5 = Very satisfied