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Original article

Prevalence and factors associated to low back pain among hospital staff

Ismail Bejia [a,*], Mohamed Younes [a], Hadj Belgacem Jamila [a], Taoufik Khalfallah [b], Kamel Ben Salem [c], Mongi Touzi [a], Mohamed Akrout [a], Naceur Bergaoui [a]

[a] *Service de Rhumatologie, EPS Monastir, Monastir 5000, Tunisia*
[b] *Service de médecine de travail, EPS Monastir, Monastir 5000, Tunisia*
[c] *Département d'épidémiologie et de biostatistique, Faculté de médecine, Monastir 5000, Tunisia*

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Abstract

Objectives. **–** Because of its frequency and consequences on professional life, low back pain (LBP) represents a real health care problem. Our study is aimed at determining the prevalence of LBP among hospital staff, analyzing the medical and professional consequences as well as investigating into the factors associated to this health problem.

Methods. **–** We have conducted an inquiry among 350 employees at Fattouma Bourguiba teaching hospital. The employees have answered a pre-established questionnaire including 51 items.

Results. **–** The cumulative life-prevalence was 57.7% of the cases. The annual prevalence was 51.1% of the cases. Chronic LBP prevalence was 12.8% of the cases. Medical care was required in 61.9% of the cases. Radiological explorations were performed in 45% of the cases. Sick leave was observed in 26.1% of the cases and an occupational change was necessary in two cases. Factors associated to LBP were age ($P < 0.01$), female gender ($P = 0.024$), high BMI ($P = 0.01$), the fact of being married or divorced ($P < 0.01$), smoking ($P = 0.016$), past medical LBP history ($P < 0.0001$), extra professional activity ($P < 0.01$), migraine ($P < 0.001$), years' service ($P = 0.007$) as well as heavy weight lifting ($P = 0.008$). Exercise is rather a protecting factor against LBP ($P = 0.019$).

Conclusion. – The prevalence of LBP among hospital staff as well as the socio-professional drawbacks is important. Many factors are associated to LBP urging medical teams to take some preventive measures to reduce this affliction.

Keywords: Low back pain; Hospital environment; Prevalence; Risk factors

1. Introduction

Common low back pain (LBP) is a very frequent affection. Indeed, 80% of the general active population suffers from LBP at least temporarily [1]. Common LBP is a major health problem in work sitting. LBP drags important socio-professional consequences and implies a raised cost for society by absenteeism and medical consumption [2]. Common LBP is the first reason of affections limiting professional activities before 45 years and the third after respiratory and traumatic affections between 45 and 64 years [3]. The nature of the professional activity and especially the physical load is questioned during common LBP in about 75% of the cases [4]. LBP work relation is not, however, always easy to establish because it is often difficult to separate the staffs risk factors from the risk factors bound to work.

We performed an investigation in the Fattouma Bourguiba teaching hospital in Monastir, Tunisia to specify the prevalence, the incidence, the medical and professional consequences and the associated factors to common LBP among hospital staffs, in order to lead preventive actions subsequently.

2. Material and methods

The Fattouma Bourguiba teaching hospital of Monastir counts apart from the medical staff of 1114 agents distributed in four professional categories: personal male nurses and nursing helps (55.1%), personal technicians (19.5%), administrative staffs (6.3%) and the workers (19.1%). We achieved

* Corresponding author. Tel.: +216-98-91-6902.
E-mail address: ismail.bejia@lycos.com (I. Bejia).

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our investigation after a random selection of 350 chosen agents by cluster sampling (1all 3) among the list of the employees, while respecting the proportion of every professional category. The investigation took place on one period of 2 months (from September to October 2002). The chosen staffs have been invited to fill in a standardized questionnaire composed of 51 items including personal information (demographic characteristics, civil status, tobacco addiction, sports or extra professional activities, psychological profile that has been tested on the presence or non presence of anxiety, depression, sleeplessness or soporific use), the professional information (professional category, journey, stance to work...), the information bound to LBP (LBP past history, mode onset, triggering factor, intensity and feature), and LBP medical and professional consequences during the last 12 months preceding the inquiry (medical consultation, laboratory and radiological exams, medicinal and physical treatment, work stop, station change, laborious works restriction and repercussion on the professional performance). In our survey, we defined common LBP (includes acute and chronic LBP) as a mechanical pain of the lower part of the back. A thigh pain irradiation not passing the knees was accepted. Chronic LBP was defined by pain lasting for more than 3 months. The cumulative life-time prevalence of common LBP was defined by the employee's rate having suffered from the lower part of the back at least at one time in their lives. The yearly LBP prevalence represents the rate of LBP during the last 12 months preceding the investigation. The term "LBP sufferers" used in this work included all LBP sufferers, even chronic LBP sufferers.

All collected data have been seized by computer while using the software SPSS version 10.0. For LBP associated factors research, we performed a multiple logistic regression analysis. The statistical significance level was fixed to 0.05.

3. Results

3.1. Prevalence and incidence

The 350 employees were 178 men and 172 women. The mean age was 37.0 ± 7.8 years (18–60). LBP cumulative life-time prevalence was 57.1%. LBP yearly prevalence was 50.1%. LBP incidence rate was 3.14%. LBP was often old, gladly relapsing (69.3%), and it was very often triggered by an uprising effort (44.3%). Mean age of LBP sufferers was 38.2 ± 8.2 years. Chronic LBP prevalence was 12.8%. Mean age of chronic LBP sufferers was 39.1 ± 8.2 years.

3.2. LBP consequences

The sought-after LBP consequences were of medical and socio-professional order. Among LBP and chronic LBP sufferers, medical care was sought in 61.9% and 68.8% of the cases, respectively, by self-medication or after medical consultation but in solely 19.6% and 33.3%, respectively. Nearly the half of LBP agents received a medicinal treatment and was explored by X-rays films. Hospitalization was necessary in five cases. Corticosteroids epidural injections were practiced in four cases. A surgical treatment of a herniated disc was necessary in one case (Table 1). Professional consequences are shown in Table 2. Work stop was observed in 26.1% of the LBP cases with a mean duration of 4.5 days. Comparison of work stop duration according to the professional category did not show a meaningful difference (P = 0.786). A restriction of some laborious works was necessary in 9.6% of LBP suffers, which were essentially of the chronic LBP suffers (15/17 cases). Repercussion on work performance was declared in 10.8% of the cases, mainly among chronic LBP agents (17/19).

Table 1
LBP medical consequences

	LBP (n = 176) n (%)	Chronic LBP (n = 45) n (%)
Standard X-ray	80 (45.5)	16 (35.6)
CT scan	3 (1.7)	0
MRI	1	1
Medicinal treatment	74 (42)	24 (53.3)
Hospitalization	6 (3.4)	1
Epidural infiltration	4 (2.3)	0
Discal surgery	1	0
Thermal care	28 (15.9)	16 (35.6)
Physiotherapy	17 (9.6)	5 (11.1)
Global medical care	109 (61.9)	31 (68.8)

n: number; MRI: magnetic resonance imaging.

Table 2
LBP professional consequences

	LBP (n = 176) n (%)	Chronic LBP (n = 45) n (%)
Sick leave	46 (26.1)	9 (20)
Sick leave duration (days, limits)	4.5 (1–90)	6.6 (1–90)
Work station change	2	1
Laborious works temporary restriction	17 (9.6)	15 (33.3)
Daily activities repercussion	19 (10.8)	17 (37.7)
Professional reclassifying	0	0

3.3. The factors associated to low back pain

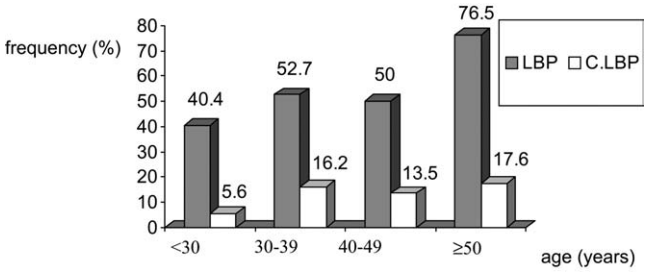
Factors associated to LBP were separated into individual factors and professional factors. Individual factors were: advanced age, female gender, high BMI, the fact to be married or divorced person, tobacco consumption, and unsettled psychological profile, LBP past medical history, extra professional activity practice, multiple pregnancies and migraine. Sports practice was rather a LBP pain protective (Table 3). LBP prevalence distribution according to age showed a maximum rate from 50-year-old (Fig. 1).

Individual factors associated to chronic LBP were the fact to be married or divorced person (P = 0.003), sports practice (P = 0.01), an unsettled psychological profile (P = 0.007), and LBP past medical history (P < 0.001). Age, gender,

Table 3
Individual factors associated to LBP

	LBP (n = 176) (%)	No LBP (n = 174) (%)	P
Age mean (years, S.D.)	38.1 ± 8.2	35.8 ± 7.7	<0.01
Female (n = 172)	55.1	43.1	0.024
BMI (kg/m^2)	26.7 ± 4.0	25.6 ± 4.1	0.01
Married or divorced (n = 276)	85.8	71.8	<0.01
Tobacco (n = 221)	69.3	56.8	0.016
Disturbed psychological profile	42.6	32.1	0.043
LBP past medical history (n = 191)	80.7	28.1	<0.0001
Sports (n = 118)	27.8	39.6	0.019
Extra professional activity (n = 191)	61.9	47.1	<0.01
Multiple pregnancy (n = 73)	51.5	30.6	0.006
Migraine (n = 75)	28.9	13.7	<0.001

n: number; S.D.: standard deviation.



LBP : Low back pain

C. LBP : Chronic low pain

Fig. 1. LBP and chronic LBP prevalences according to age.

elevated BMI, tobacco consumption, migraine and multiple pregnancies were not associated in a meaningful way to the chronic LBP.

The professional factors associated to LBP were the seniority in the establishment, the seniority in the same work station and heavy loads hold. Professional category, means of transportation, home to work journey length and duration, work rhythm nycthemeral, work posture, seat quality and vibrations exposition were not associated to LBP (Table 4).

The professional factors associated to chronic LBP were seniority in the establishment (P = 0.029), and vibrations exposition (P = 0.006). Seniority in the same work station, professional category, heavy loads hold, transportation means, home to work journey length and duration, work nycthemeral rhythm, work posture and seat quality were not associated to chronic LBP.

Multivariate analysis cleared two factors associated to common LBP: LBP past medical history with an odds ratio of 18.6 (95% confidence interval (CI) = 2.92–35.04) and tobacco consumption with an odds ratio of 1.69 (95% CI = 1.03–3.07).

We kept after multivariate analysis three factors associated to chronic LBP: the fact to be married or divorced person an odds ratio of 4.79 (95% CI = 1.56–22.57), LBP past medical history with an odds ratio of 6.46 (95% CI = 1.86–17.52) and the psychological profile with an odds ratio of 1.93 (95% CI = 1.01–3.90).

4. Discussion

The cumulative life-time prevalence of common LBP reported in the literature varies from 32% to 74% [5–9].

The yearly prevalence of LBP among hospital staffs varies from 6% to 62.4% [1,10]. Indeed, De Gaudemaris et al. in 1986 [1] reported a LBP yearly prevalence of 62.4% among nursing helps. Whereas, Burgmeier et al. in 1988 [10] returned from a cross-sectional study conducted among 5491 hospital staffs in Strasbourg teaching hospital to a LBP yearly prevalence of only 6%. In 1995, Smedley et al. [9] after a survey concerning 2405 nurses, found a LBP yearly prevalence of 45%. In 2000, Ando et al. [11] revealed in a population of 314 hospital staffs in Japan, a LBP yearly prevalence of 54.7%. This divergence in LBP prevalence rates reported in the literature can be explained by methodological heterogeneity used for the assessment of common LBP and the variability of the gender and age groups concerned. The results found in our survey of the cumulative life-time prevalence of common LBP (57.1%) and of the yearly LBP prevalence (50.1%) are comparable to major LBP prevalence rates reported in the literature. LBP incidence in our study is 3.14%. It varies in the literature from 1% to 32% [10,12–15].

With its strong prevalence, common LBP among hospital staffs causes high medical and professional consequences. LBP sufferers needed medicine treatment in 42.1–79% of the cases [12,16]. In our study, medicine treatment was used by 42% of LBP sufferers. Thermal water care and physiotherapy in our survey were used in, respectively, 15.9% and 9.6% of the cases, and in 6.5% and 11.5%, respectively, in the study of Lallahom et al. [12]. Only one employee suffering from LBP in our study has been operated for a herniated disc. Fanello et al. [4] reported a rate of 1.2% of cases operated. No agent has been operated in the survey of Lallahom et al. [12].

Professional consequences of LBP are usually evaluated by work stop. The rate of 26.1% of the LBP agents having had a work stop in our survey is comparable to those found by Lallahom et al. [12] and Caillard et al. [16], which were 25% and 24.1%, respectively. High rate of 93% was also reported [17]. In our investigation, mean work stop duration was 4.5 days. Lallahom et al. reported 15 days [12]. The work stop duration varies according to gender. Indeed, Boshuizen et al. [18] reported that 72% of women suffering from LBP stopped their professional activity for more than 8 days whereas 47% of men stopped their work for 1–8 days. In our survey, 10.8% of LBP employees declared a repercussion on their professional activities, and 9.6% had a reduction or a temporary restriction of some laborious works. In the investigation of Furber et al. [14], 38% of LBP employees declared some consequences on their professional activities. In our study, a work station change was necessary in two cases

Table 4
Professional factors associated to LBP

	LBP, n = 176 (%)	No LBP, n = 174 (%)	P
Professional categories			
Nurses (n = 193)	51.7	58.6	
Workers (n = 135)	41	36.2	NS
Administrative (n = 22)	7.4	5.2	
Seniority in the establishment (years, S.D.)	14 ± 9	12± 8	0.007
Seniority in the station (years, S.D.)	11.9 ± 8.3	9.6 ± 7.9	0.011
Heavy loads handling (n = 221)	35.7	28.7	0.008
Transportation means			
On foot (n = 71)	19.9	20.7	
To redhead (n = 97)	13.6	13.2	NS
Car (n = 108)	27.3	34.5	
Public transportation (n = 124)	39.2	31.6	
Work rhythm			
Day (n = 200)	57.9	56.3	
Night (n = 58)	15.3	17.8	NS
Day/night (n = 92)	26.7	25.8	
Stance to work			
Foundation (n = 48)	13.1	14.4	
Standing (n = 174)	49.4	50	NS
Leaned forward (n = 31)	10.2	7.5	
Varied (n = 97)	27.3	28.1	
The seat quality			
Good (n = 27)	4.2	6.2	
Moderate (n = 100)	6.3	14.8	NS
Fair (n = 50)	57.3	55.6	
Non judged (n = 173)	32.3	23.5	
Vibrations exposition (n = 113)	36.9	27.5	NS

n: number; NS: non significant; S.D.: standard deviation.

(0.6%) but Burgmeier et al. [19] found a rate of 12.8%. None of our LBP employees benefited from a professional reclassifying. Troussier et al. [15] reported a rate of 12%.

Several risk factors are associated to the prevalence of common LBP. As it is the case in our study, the association between advanced age and LBP was reported by several authors [3,20,21]. This association can be explained by the resistance reduction to the dynamic work observed in advanced age because of the frequent spine degenerative processes [12]. In our survey, the female gender was found to be a LBP associated risk factor ($P = 0.024$), in accordance to the literature [6,16,19]. Burgmeier et al. [10] showed that high BMI was associated to LBP as it is the case in our survey. Sick leave and consequences on daily activities were more frequent among LBP agents with high BMI [7]. In our study LBP and chronic LBP were more frequent among married or divorced employees. Some studies [12,19] showed that LBP prevalence increases with the family's dimension and especially with the number of young children. In our survey tobacco consumption was associated to LBP ($P = 0.016$) in accordance to the literature. Tobacco consumption was demonstrated to be significantly associated to LBP and to herniated disc [10,22,23]. It was well demonstrated that an unsettled psychological profile is a risk factor of common LBP, mainly chronic LBP [24–26], as it was the case in our investigation. LBP past medial history in our study was strongly associated to the forthcoming episodes of LBP ($P < 0.001$). This association was reported by others [12,16,27]. Sports activity was seen in our study to be a protective factor of LBP and an associated risk factor to chronic LBP. Reported results on sports activity and LBP in the literature are contradictory. For Demblans-Dechans et al. [28], sports activity was considered as a risk factor of LBP. Otherwise, Fanello et al. [13] found among physicians that regular sports practice was associated with low rate of LBP prevalence. Several factors seem to interfere, of which are competition level, sports activity nature and spine injuries [28,29]. As it is the case in our survey, extraprofessional activity was demonstrated by several authors to be a precipitating factor of LBP [30,31]. Some authors demonstrated the association between migraine and LBP as well as pregnancy particularly, when multiple and LBP [6]. This result was also observed in our investigation.

With these individual factors, several professional risk factors can influence LBP prevalence. In our survey, we did not find any interrelationship between professional categories and LBP. However, several studies [15,32,33] showed that administrative staffs and workers were more touched by LBP than nurses. For the formers, high LBP prevalence can be explained by the seated position and the sedentary nature of their activities [32] and for the later by the conditions of work, particularly heavy loads handling [16,33]. As in our

study, the seniority in the establishment and the work in the same station were shown to be associated with LBP [12,34]. Troussier et al. [15] reported that 10.6% of LBP agents have a seniority of less than 5 years and 37.9% have a seniority of more than 15 years. In our survey, these rates were 15.3% and 42.3%, respectively. A heavy load handling was observed in 69.9% of the cases in our investigation and in 56.2% in the survey of Caillard et al. [16]. Some authors [12,35] found a meaningful association between heavy loads handling and LBP prevalence. This is in accordance with our survey. According to our investigation, nor means transportation, nor journey duration was associated to LBP, which were well established elsewhere [4,14]. Also, we did not find a meaningful association between work posture and LBP prevalence. However, coercive stances particularly the standing position and leaned forward are returned frequently in the literature to be associated to LBP [4,16,32]. The seat quality is reported to be associated to LBP among administrative staffs [10,32]. This has been noted in our investigation but without meaningful association and can be explained by the weak number of this administrative professional category, which represents only 6.3% of our sample. Vibrations exposition, studied more in industrial environment has been returned to be a risk factor of LBP in the literature [36], as it was the case in our investigation for chronic LBP.

5. Conclusion

Common LBP is frequent among hospital staffs. LBP medical and socio-professional consequences are important. Individual risk factors as well as professional risk factors found in our survey are in accordance with the literature. The strong prevalence of LBP and its important socioeconomic consequences requires undertaking preventive measures of this affection in order to reduce its economic and socio-professional consequences.

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