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ORIGINAL ARTICLE

The impact of low back pain on health-related quality of life in old age: results from a survey of a large sample of Swiss elders living in the community

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Abstract

Purpose The present study aims at investigating the effects of low back pain (LBP), i.e., type of symptoms, activity limitations, frequency, duration, and severity on health-related quality of life (HRQoL) in a sample of 707 community-dwelling men and women aged ≥ 65 years living in Switzerland.

Methods The study is part of a larger survey conducted in Switzerland on a sample of older adults selected randomly from population records, stratified by age and sex. The Standardized Back Pain Definition was used to investigate LBP, and HRQoL was assessed by means of the EQ-5D, including Health Utility Index (HUI) measures.

Results For more than half of the sufferers, pain was chronic, occurred most days or every day and induced activity limitations. One-third of the sufferers reported sciatica symptoms. Individuals reporting every day pain, severe pain and more than 3 years since the last episode without pain lost nearly 10 points of HRQoL. Amongst the dimension of HRQoL, Mobility was the most affected by LBP.

Conclusions These results provide further insight into the impact of qualitative aspects of LBP and in particular the importance of radiating leg pain and pain frequency and duration. While LBP-related activity limitations had little impact on both self-rated overall health and HUI, radiating leg pain and pain frequency and duration were associated with significantly decreased scores on both dimensions.

Keywords Low back pain · Health-related quality of life · Older adults · Community dwelling · Sciatica

Introduction

The Global Burden of Disease Study reported that among 310 conditions [1], back pain ranked highest in terms of disability and overall burden. Low back pain (LBP) prevalence and burden increase with age, with a peak around 80 years [2]. Findings report that older people experience less frequent mild or acute LBP, but rather a higher prevalence of severe, chronic and disabling episodes [3]. Investigating back and leg pain in older adults has been strongly advocated to better understand their impact on health-related quality of life (HRQoL) [4]. A recent systematic review showed that when LBP is associated with leg pain, functional and social consequences are higher than for LBP alone [5]. Most of the studies included in this review showed no impact of patient characteristics (e.g., age, sex, education, depression, or duration of symptoms). However, these studies did not specifically focus on older individuals. A large survey focused on the prevalence and severity of LBP in older community-dwelling men showed that although the morbidity of LBP in this population was globally low, it became high when it was associated with leg pain and affected daily activities [6]. In a previous study, we showed that nearly 30% of

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community-dwelling individuals aged ≥ 65 report LBP in the preceding month and that LBP highly impacts HRQoL. The majority of LBP sufferers experienced episodes of persistent pain, with limitations in daily activity and significantly impaired scores of HRQoL [7]. Impacts of LBP on functional health and quality of life were also reported in the BACE cohort study which specifically addressed the characteristics and outcomes of pain in a sample of patients aged 55 or older consulting a primary care physician for LBP [8]. Specifically, results revealed that patients aged 75 or older [9], and patients who do not recover after a period of 3 months [10] report higher disabilities and poorer physical quality of life. Still, the literature remains scarce on the impact of LBP on HRQoL among elders, especially among those living in the community that is not surveyed in clinical settings. Moreover, there is currently a necessity to use a consistent definition of LBP with or without leg pain [6, 11], along with validated measures of outcomes to assess the consequences of pain, therefore, to identify subgroups of individuals in need of specific assessment, prevention and treatment. In the same line, distinguishing pain severity indicators, such as the presence of pain down the leg, interference with daily activity, pain duration, frequency and intensity, remains a major issue. Finally, with the demographic aging [12] and the high burden of LBP in the elderly population [2, 3], a focus on community-dwelling elderly individuals is warranted, even more so knowing that nearly 30% of older adults do not consult a physician despite suffering from LBP [13]. The purpose of this study was to investigate the effect of LBP (type of symptoms, frequency, duration, and severity) on HRQoL in a sample of a community-dwelling men and women aged ≥ 65.

Methods

Participants

This study is part of a wider survey [14] conducted between 2011 and 2013 in a large sample ($N = 3073$) of the Swiss population aged ≥ 65 living in the community. The survey was carried out in the three linguistic regions of the country selected on the basis of their representativeness of the diversity found in Switzerland. The sample was stratified by age and sex in each region, and randomly selected from the cantonal population records. The details of the methods have been presented elsewhere [7, 14, 15]. All respondents were cognitively able to give their written informed consent for participation and to answer the questionnaire as verified by trained interviewers. The protocol was approved by the ethical committees of each region involved in the study.

Procedure

Data considered for the present study were collected using face-to-face interviews conducted by trained interviewers using the Computer-Assisted Personal Interview (CAPI) method. LBP was assessed with the Standardized Back Pain Definition [11], a scale assessing LBP validated in prevalence studies. This five-item questionnaire investigates: (1) in the past 4 weeks, the presence of 'pain in the lower back' limiting Usual Activities for at least one day (0 = 'no', 1 = 'yes'); (2) the presence of 'sciatica', i.e., pain running down the leg and/or down the knee (0 = 'no', 1 = 'yes'); (3) 'pain frequency' (0 = 'never', 1 = 'on some days', 2 = 'on most days', 3 = 'every day'); (4) 'pain duration' assessed by the time without experiencing one whole month without LBP (0 = 'no back pain', 1 = 'less than 3 months', 2 = 'between 3 and 7 months', 3 = 'between 7 month and 3 years', 4 = 'more than 3 years'), with chronic LBP corresponding to code 3 or 4, recurrent LBP to code 2 and acute LBP to code 1; and (5) 'usual pain intensity', assessed by a Numerical Rating Scale (NRS, from 0 = 'no pain' to 10 = 'worst pain'). For analysis purposes, the latter was recoded into two categories (0 = mild pain, for responses < 7, and 1 = severe pain, for responses ≥ 7 as suggested by Dionne et al. [11]).

HRQoL was assessed with the EQ-5D [16] a psychometrically and clinically sound instrument entailing five subscales assessing 'Mobility', 'Self-Care', 'Usual Activities', 'Pain/Discomfort' and 'Anxiety/Depression', each quoted into three categories (0 = 'no', 1 = 'moderate', or 2 = 'extreme' problem). EQ-5D also assesses self-perceived overall health, recorded on a NRS (from 0 = 'worst imaginable health state' to 100 = 'best imaginable health state'). Respondents were asked to answer each item as it applied to them "today". For comparison purposes with other available data in Switzerland [15, 17], the three modalities of responses in the five 3-point items of the EQ-5D were reduced into 2-point scales (0 = 'no problem', 1 = 'moderate or severe problem'). Additionally, a Health Utility Index (HUI) was computed based on the responses provided in categorical five-item EQ-5D items. In the absence of Swiss tariff covering all linguistic areas of the country, the European tariff [18] was used to compute the HUI. Based on recent recommendations for Swiss surveys [19], this compound value set was preferred overs tariffs proposed for the French speaking part of Switzerland [17], for France [20], Germany [21] or Italy [22], which only partially fulfill the geographical proximity criteria proposed by the EuroQol Research Foundation [23]. The HUI ranges from 0 = worst health state to 1 = best health state and provides a global compound estimate of HRQoL based on the responses collected in the five 3-point items.

Data analyses

The data from the Standardized Back Pain Definition [11] and from the EQ-5D [16] were analyzed using descriptive statistics. Subsequently, inferential statistics were conducted to estimate the effect of LBP on HRQoL by means of repeated logistic and linear regressions, respectively, for binary and continuous outcomes. In these models, each of the six LBP measures was used as predictors of each of the seven HRQoL scores used as outcomes. All models were adjusted for age group, sex, linguistic area, and education. Age was coded into six categories (1 = '65–69', 2 = '70–74', 3 = '75–79', 4 = '80–84', 5 = '85–89', 6 = '≥ 90'), sex into two (0 = 'female'; 1 = 'male'), linguistic areas into three (1 = 'French'; 2 = 'German'; 3 = 'Italian') and education into three categories (1 = 'college and university'; 2 = 'superior secondary and apprenticeship'; 3 = 'elementary and inferior secondary'). The lowest values are used as references. Logit binary regression models were used for binary outcomes (Mobility, Self-Care, Usual Activities, Anxiety/Depression, Pain/Discomfort). The results are expressed as odds ratios (OR) which reflect, for each category of the predictor, the estimated differential risk of reporting a problem on the outcome (i.e., 1.5 times more or 2 times decreased), as compared to the risk in the reference category (set to 1.00). Linear regression models were used for linear outcomes (NRS and HUI). The results are expressed as beta coefficients (*B*) which reflect, for each category of the predictor, the estimated average difference (expressed in the score's unit) with the score in the reference category (set to 0.00).

Results

The initial survey sample consisted of 3073 individuals (48.2% females) among which 3042 (48.2% females, 99% of the survey sample) provided a valid response—either "no" or "yes"—on the item of the Standardized Back Pain Definition scale. The overall rate of LBP was of 29.2% ($N = 889$, as previously described [7]). Among the 889 participants reporting LBP, 707 had full data for both the Standardized Back Pain Definition scale and the EQ-5D. We considered this sample for the analyses (Table 1). The distribution of education was of 25.9, 52.2 and 21.9% for low, medium and high levels, respectively). As for the clinical characteristics as evaluated by the Standardized Back Pain Definition scale, the number of positive vs. negative responses to the various items is displayed in the 3rd column of Tables 2 and 3. In our sample, pain was chronic in most (69.2%) LBP sufferers aged ≥ 65 years, occurred most days or every day (49.2%) and induced activity limitations (51.1%). Pain was severe (≥ 7) in 20.7% of cases. A third of the sufferers reported pain running down the legs (33.0%, $N = 233$) and two-thirds of them ($N = 153$) declared that pain was also running down the knee.

Results of the multiple logistic regressions assessing the effects of each of the Standardized Back Pain Definition items on difficulties in Mobility, Self-Care, Usual Activities, Pain/Discomfort and Anxiety/Depression assessed with the EQ5D are reported in Table 2.

Regarding individual dimensions of HRQoL, the most striking results concern Mobility problems, which are reported by 41.7% of the LBP sufferers. Further, risks of Mobility problems are five times higher for individuals reporting pain every day [OR = 5.01, 95% CI = (3.36–7.49)], three times higher for individuals declaring severe pain [OR = 3.46, 95% CI = (2.24–5.35)], and almost twice as high for individuals reporting chronic pain [OR = 2.61, 95% CI = (1.67–4.08)] and sciatica symptoms [OR = 2.00, 95% CI = (1.40–2.85) when pain runs down the leg and OR = 2.04, 95% CI = (1.36–3.05) when pain runs down the knee]. Although problems in Self-Care (10.7%) and Usual activities (25.0%) are less frequently reported in the sample than the Mobility problems, the overall pattern of results is similar, with a fivefold increase of difficulties for individuals suffering from every day pain [OR = 5.59, 95% CI = (2.84–11.01) for Self-Care and OR = 4.59, 95% CI = (2.97–7.09) for Usual Activities) and a three-fold increase for individuals declaring severe

Table 1 Study of the impact of LBP on HRQoL in Switzerland (2011–2013); number of participants by age groups, sex and linguistic areas

N	French		German		Italian		Total		Total
	Women	Men	Women	Men	Women	Men	Women	Men	
65–69	25	22	29	22	11	8	65	52	117
70–74	27	18	36	30	15	14	78	62	140
75–79	29	22	28	22	11	16	68	60	128
80–84	26	22	36	21	13	4	75	47	122
85–89	16	18	41	18	12	9	69	45	114
90 +	17	8	23	25	7	6	47	39	86
Total	140	110	193	138	69	57	402	305	707

LBP low back pain, *HRQoL* health-related quality of life

Table 2 Study of the impact of LBP on HRQoL in Switzerland (2011–2013); summary of repeated logistic regressions assessing the effects of each measure collected with the standardized LBP definition scale on each of the EQ5D binary items (MO, SC, UA, PD, AD)

	N	%	Mobility			Self care			Usual activities		
			% Prob	OR (LCI–UCI)	*p*	% Prob	OR (LCI–UCI)	*p*	% Prob	OR (LCI–UCI)	*p*
Activity limits	707		41.7			10.7			25.0		
No	346	48.9	38.2	1.00		8.4	1.00		22.8	1.00	
Yes	361	51.1	45.2	1.55 (1.09–2.21)	$p < 0.05$	13.0	2.14 (1.24–3.69)	$p < 0.01$	27.1	1.37 (0.93–2.00)	0.109
Pain down the leg	707		41.7			10.7			25.0		
No	474	67.0	37.3	1.00		9.9	1.00		22.2	1.00	
Yes	233	33.0	50.6	2.00 (1.40–2.85)	$p < 0.001$	12.4	1.32 (0.77–2.26)	0.308	30.9	1.59 (1.09–2.31)	$p < 0.05$
Pain down the knee	707		41.7			10.7			25.0		
No	554	78.4	38.4	1.00		10.1	1.00		23.1	1.00	
Yes	153	21.6	53.6	2.04 (1.36–3.05)	$p < 0.001$	13.1	1.23 (0.67–2.26)	0.494	32.0	1.48 (0.97–2.26)	0.067
Pain frequency	707		41.7			10.7			25.0		
Some days	359	50.8	26.7	1.00		3.6	1.00		11.7	1.00	
Most of the days	128	18.1	46.1	2.13 (1.34–3.39)	$p < 0.01$	15.6	3.85 (1.76–8.41)	$p < 0.001$	36.7	3.54 (2.13–5.88)	$p < 0.001$
Every day	220	31.1	63.6	5.01 (3.36–7.49)	$p < 0.001$	19.5	5.59 (2.84–11.01)	$p < 0.001$	40.0	4.59 (2.97–7.09)	$p < 0.001$
Time with no pain	707		41.7			10.7			25.0		
Less than 3 months	157	22.2	25.5	1.00		5.7	1.00	–	17.8	1.00	
Between 3 and 7 months	61	8.6	19.7	0.87 (0.40–1.90)	0.733	3.3	0.78 (0.15–3.94)	0.765	14.8	0.94 (0.40–2.20)	0.890
Between 7 months and 3 years	106	15.0	47.2	2.07 (1.17–3.66)	$p < 0.05$	9.4	1.27 (0.47–3.42)	0.641	25.5	1.23 (0.65–2.31)	0.521
More than 3 years	383	54.2	50.4	2.61 (1.67–4.08)	$p < 0.001$	14.4	2.07 (0.95–4.51)	0.066	29.5	1.58 (0.97–2.57)	0.069
Pain average	707		41.7			10.7			25.0		
Mild	561	79.3	41.2	1.00		8.9	1.00		22.8	1.00	
Severe	146	20.7	54.2	3.46 (2.24–5.35)	$p < 0.001$	18.1	3.21 (1.84–5.59)	$p < 0.001$	34.2	3.95 (2.58–6.04)	$p < 0.001$

	N	%	Pain discomfort			Anxiety depression		
			% Prob	OR (LCI–UCI)	*p*	% Prob	OR (LCI–UCI)	*p*
Activity Limits	707		79.1			27.2		
No	346	48.9	83.5	1.00		28.6	1.00	
Yes	361	51.1	74.8	0.73 (0.48–1.11)	0.140	25.8	1.10 (0.76–1.60)	0.604
Pain down the leg	707		79.1			27.2		
No	474	67.0	75.5	1.00		24.7	1.00	
Yes	233	33.0	86.3	2.09 (1.35–3.26)	$p < 0.01$	32.2	1.39 (0.97–2.00)	0.074
Pain down the knee	707		79.1			27.2		
No	554	78.4	76.2	1.00		25.6	1.00	
Yes	153	21.6	89.5	2.64 (1.50–4.66)	$p < 0.001$	32.7	1.27 (0.85–1.92)	0.243
Pain frequency	707		79.1			27.2		

Table 2 (continued)

	N	%	Pain discomfort			Anxiety depression		
			% Prob	OR (LCI–UCI)	*p*	% Prob	OR (LCI–UCI)	*p*
Some days	359	50.8	69.4	1.00		23.1	1.00	
Most of the days	128	18.1	83.6	1.96 (1.14–3.39)	$p < 0.05$	31.3	1.35 (0.84–2.17)	0.214
Every day	220	31.1	92.3	5.27 (3.01–9.22)	$p < 0.001$	31.4	1.50 (1.01–2.23)	$p < 0.05$
Time with no pain	707		79.1			27.2		
Less than 3 months	157	22.2	66.2	1.00	–	19.7	1.00	–
Between 3 and 7 months	61	8.6	73.8	1.47 (0.74–2.93)	0.273	16.4	0.78 (0.34–1.75)	0.540
Between 7 months and 3 years	106	15.0	72.6	1.19 (0.67–2.10)	0.555	28.3	1.70 (0.93–3.10)	0.086
More than 3 years	383	54.2	86.9	3.00 (1.89–4.76)	$p < 0.001$	31.6	1.76 (1.10–2.81)	$p < 0.05$
Pain average	707		79.1			27.2		
Mild	561	79.3	78.0	1.00		25.2	1.00	
Severe	146	20.7	87.1	2.14 (1.20–3.79)	$p < 0.01$	38.1	1.74 (1.16–2.62)	$p < 0.01$

Results are adjusted for of age group, sex, linguistic area and education level

OR odds ratios, *LCI* lower value of the 95% confidence interval, *UCI* upper value of the 95% confidence interval, *%problems* percent-reported moderate or severe problems, *p* values associated with Wald estimates

pain (OR = 3.21, 95% CI = (1.84–5.59) for Self-Care and OR = 3.95, 95% CI = (2.58–6.04) for Usual Activities]. Symptoms of sciatica and chronic pain do not significantly enhance risks of problems in Self-Care and Usual Activities. As concerns Anxiety/Depression, results reveal that the risks of Anxiety/depression, overall reported by 27.2% of the sample, are significantly higher for individuals with severe [OR = 1.74, 95% CI = (1.16–2.62)], frequent [OR = 1.50, 95% CI = (1.01–2.23)] and chronic [OR = 1.76, 95% CI = (1.10–2.81)] pain. Symptoms of sciatica did not significantly affect the risks of Anxiety/depression. Concerning Pain/Discomfort, the overall report of problems was of 79.1%. Yet, individuals reporting frequent [OR = 5.27, 95% CI = (3.01–9.22)], severe [OR = 2.14, 95% CI = (1.20–3.79)] or chronic LBP [OR = 3.00, 95% CI = (1.89–4.76)] reported higher risks of Pain/Discomfort. It was also the case for individuals reporting symptoms of sciatica [OR = 2.09, 95% CI = (1.35–3.26) when pain runs down the leg and OR = 2.64, 95% CI = (1.50–4.66) when pain runs down the knee].

Results of multiple linear regressions assessing the effects of each of the Standardized Back Pain Definition items on the NRS scale and the HUI are reported in Table 3. Concerning overall HRQoL as estimated by HUI, results showed an average HRQoL of 0.71 ± 0.18 (*M* ± SD). Additionally, results showed that individuals reporting every day pain [$\beta = -0.14$, 95% CI = (− 0.16 to − 0.11)], severe pain [$\beta = -0.13$, 95% CI = (− 0.16 to − 0.10)] and more than 3 years since the last episode without pain [$\beta = -0.09$, 95% CI = (− 0.12 to − 0.06)] lost nearly 10% of HRQoL (i.e., ~ − 0.10 average HUI score), as compared to non- or milder sufferers. Sciatica affected HRQoL with individuals reporting pain running down the leg [$\beta = -0.05$, 95% CI = (− 0.08 to − 0.03)] and running down the knee [$\beta = -0.06$, 95% CI = − 0.09 to − 0.03)] demonstrating a reduction of HUI score of about 5% as compared to individuals not reporting symptoms of sciatica. Yet, HRQoL appeared not to be affected by LBP-induced limited activities [$\beta = -0.01$, 95% CI = (− 0.04 to 0.01)]. A similar pattern of results was reported for self-rated overall health (Table 3), which averaged 68.33 ± 20.90 (*M* ± SD).

Discussion

The study showed associations between the presence of self-reported LBP indicators, as assessed by a scale designed for use in prevalence studies [11] and lower scores on various dimensions of HRQoL, including the patients' perception of their overall health and the health utility index. More than two-thirds of this sample of community-dwelling older adults reported LBP in the preceding month. Pain was chronic for the majority of the participants, occurred most

Table 3 Study of the impact of LBP on HRQoL in Switzerland (2011–2013); summary of repeated linear regressions assessing the effects of each measure collected with the standardized LBP definition scale on each of the EQ5D continuous variables (visual analog scale, VAS and health utility index, HUI)

	N	%	VAS			HUI		
			Average	Adjusted difference		Average	Adjusted difference	
			M (SD)	*B* (LCI–UCI)	*p*	*M* (SD)	*B* (LCI–UCI)	*p*
Activity limits	707		68.33 (20.90)			0.71 (0.18)		
No	346	48.9	67.69 (20.22)	0.00		0.71 (0.17)	0.00	
Yes	361	51.1	68.95 (21.53)	0.83 (− 2.38–4.04)	0.613	0.71 (0.19)	− 0.01 (− 0.04–0.01)	0.358
Pain down the leg	707		68.33 (20.90)			0.71 (0.18)		
No	474	67.0	70.55 (19.99)	0.00		0.73 (0.18)	0.00	
Yes	233	33.0	63.81 (21.99)	− 6.60 (− 9.73–3.46)	$p < 0.001$	0.67 (0.18)	− 0.05 (− 0.08–0.03)	$p < 0.001$
Pain down the knee	707		68.33 (20.90)			0.71 (0.18)		
No	554	78.4	70.01 (20.17)	0.00		0.72 (0.18)	0.00	
Yes	153	21.6	62.26 (22.39)	− 7.28 (− 10.86–3.69)	$p < 0.001$	0.66 (0.18)	− 0.06 (− 0.09–0.03)	$p < 0.001$
Pain frequency	707		68.33 (20.90)			0.71 (0.18)		
Some days	359	50.8	74.28 (16.86)	0.00		0.78 (0.15)	0.00	
Most of the days	128	18.1	66.22 (21.16)	− 6.23 (− 10.20–2.25)	$p < 0.01$	0.68 (0.19)	− 0.07 (− 0.10–0.04)	$p < 0.001$
Every day	220	31.1	59.85 (23.47)	− 13.20 (− 16.48–9.93)	$p < 0.001$	0.62 (0.19)	− 0.14 (− 0.16–0.11)	$p < 0.001$
Time with no pain	707		68.33 (20.90)			0.71 (0.18)		
Less than 3 months	157	22.2	74.27 (19.54)	0.00		0.78 (0.17)	0.00	
Between 3 and 7 months	61	8.6	72.28 (18.63)	− 2.78 (− 8.69–3.13)	0.357	0.78 (0.12)	− 0.01 (− 0.06–0.04)	0.772
Between 7 months and 3 years	106	15.0	71.27 (19.49)	− 0.85 (− 5.80–4.10)	0.736	0.72 (0.16)	− 0.04 (− 0.08–0.00)	0.062
More than 3 years	383	54.2	64.46 (21.39)	− 7.89 (− 11.62–4.16)	$p < 0.001$	0.67 (0.19)	− 0.09 (− 0.12–0.06)	$p < 0.001$
Pain average	707		68.33 (20.90)			0.71 (0.18)		
Mild	561	79.3	70.41 (19.95)	0.00		0.74 (0.16)	0.00	
Severe	146	20.7	60.35 (22.55)	− 8.87 (− 12.58–5.16)	$p < 0.001$	0.59 (0.20)	− 0.13 (− 0.16–0.10)	$p < 0.001$

Results are adjusted for age group, sex, linguistic area and education level

B beta coefficients, *LCI* lower value of the 95% confidence interval, *UCI* upper value of the 95% confidence interval, *M(SD)* mean and standard deviation of the EQ5D scores, *p* values associated with Wald estimates

days or every day and a substantial proportion of the group reported pain down the leg and/or down the knee. Thus, the rate of chronic pain appears higher for community dwellers than for older patients who specifically consult for LBP complaints (54.2 vs 23% [9, 10]/20% [24]). The observed difference roughly corresponds to the estimated number of elder who do not consult a physician despite of LBP [13]. Yet, symptoms of sciatica and especially pain radiating below the knee seems less frequent in the sample investigated than previously documented either in clinical (21.6 vs 30%) [9, 10] or non-clinical samples (21.6 vs 44%) [4]. The presence of pain running down the leg and/or down the knee, a high pain frequency, chronic pain, and usual pain intensity above the mean were strongly associated with a decrease in the various dimensions of HRQoL. Such a relation between the presence of LBP and poorer quality of life was previously described, either on clinical samples [9, 10, 25, 26] or among community dwellers [4]. Since we controlled for the effect of sociodemographic variables, the results ascertain that individuals with LBP experienced a high burden of disease, especially when pain is running down the leg and/or down the knee.

Our results are in line with those of other studies pointing to worse clinical outcomes in patients with self-reported LBP with pain running down the leg, in general [27] and, more specifically, in the elderly living in the community [4]. Studies carried out in working populations (patients < 60 years) consulting their general practitioner in the UK, have shown that pain location matters and that the presence of radiating leg pain is of poor prognosis in terms of impact on HRQoL with significant decrements in EQ-5D scores [25, 26]. Similarly, a study conducted among community-dwelling men in Sweden showed that those suffering from radiating leg pain presented with more important restrictions in daily activities [6]. However, this study also stressed that globally, despite a high prevalence of LBP in this large cohort of elderly men (45%), the impact on functional status as measured by daily activities was low. Likewise, a study conducted in older American women also found a high prevalence

of LBP (42%), associated with difficulties in achieving Mobility tasks and basic daily activities; yet no associations were found between LBP and being unable to perform these daily activities [28].

In line with these studies, our results showed that, overall, HRQoL in elderly community-dwelling individuals is fairly good, with nearly 40% of the sample reporting no problem in any of the five dimensions of the EQ-5D [15]. Despite LBP, the overall rating of perceived health (NRS = 71.08 ± 18.07, M ± SD) and global HRQoL (0.68 ± 0.21) were fairly high, in line with previous reports on older LBP sufferers [24]. Expectedly, the highest percentage of problems was reported for the Pain/Discomfort dimension of the EQ-5D (79.1%). Further findings demonstrated that in this sample of LBP sufferers, Mobility was the most affected dimension of HRQoL with 41.7% of problems reported, followed by Anxiety/Depression, Usual Activities and Self-Care, replicating reports showing that LBP in community older adults is associated with reduced functional health [7, 29, 30], enhanced disability [24] and depression [31] and poorer physical quality of life [9, 10]. The significant variability of HRQoL among older individuals indicates that age is an imprecise predictor of health status, and that functional status alone is an imprecise predictor of HRQoL. In a previous study [7], we demonstrated that a comparison between individuals reporting LBP and paired pain-free controls indicated that older adults with LBP reported significantly impaired scores of HRQoL and a significantly lower self-rated overall health.

Chronic, frequent and severe LBP, as well as symptoms of sciatica, are all associated with a drastic and significant increase of reported Mobility problems. Yet, Mobility is a cardinal dimension of functional health [32] that has long been recognized as being amongst the primary activities of daily living altered in the course of progressive independence loss [33, 34]. Considering our findings and recognizing the impact of Mobility issues on independence loss, this work supports early LBP screening and treatment, to avoid or postpone pain chronicization, Mobility problems and ultimately, enhanced risks of dependence. Further, given the high rates of chronic LBP among community dwellers, as compared to the rates reported in clinical samples [9, 10], our findings foster community screening in addition to the screening done in general medical practice. These results provide further insight into the impact of qualitative aspects of LBP, and into the importance of radiating leg pain as well as pain frequency and duration. It is noteworthy that while LBP-related activity limitations had little impact on both self-rated overall health and health utility index measures, radiating leg pain as well as pain frequency and duration were associated with significantly decreased scores on both these dimensions.

Study strengths and limitations

To examine the effects of qualitative aspects of LBP on HRQoL in community-dwelling elderly aged ≥ 65, this study used an international uniform definition of LBP [11] allowing for a consensual evaluation of topography, temporality and severity of pain, requirements previously acknowledged for LBP studies [6]. Since participants were recruited from the general population and not from healthcare settings, the method ensures that the results were not subjected to biases related to differences in access to health care or treatment-seeking behaviors [35].

This study has limitations. The sampling excluded people living in long-term care facilities, often suffering from functional or cognitive problems. Another limitation is that radiating leg pain is based on self-report and has not been confirmed by clinical examination. Yet, as some authors have stressed [26], it has been acknowledged that consensus studies support the use of 'pain below the knee' as a proxy for sciatica [11]. A final drawback of the study lies in its cross-sectional design which precludes any prognostic or predictive estimation. The evolution of pain and HRQoL would be worth being studied using longitudinal designs to successfully address the predictive value of LBP with respect to HRQoL.

Conclusions

In line with previous reports on clinical samples [9, 10, 24], this study conducted in community dwelling older adults supports a negative effect of LBP on overall HRQoL, especially for individuals who report severe, persistent and long-lasting pain. Further, individuals declaring severe pain appear at higher risks of problems in Mobility, Self-care, Usual activities, Pain/Discomfort and Anxiety/Depression. Finally, when pain is chronic and persistent, and when symptoms of sciatica are present, risks of Mobility problems are drastically increased. Overall, the results provide further insight into the impact of qualitative aspects of LBP and highlight the importance of radiating leg pain and pain frequency and duration when considering risks of a loss in HRQoL.

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Compliance with ethical standards

Conflict of interest None of the authors has any potential conflict of interest.

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