

# BMJ Open EQ-5D-5L and SF-6Dv2 utility scores in people living with chronic low back pain: a survey from Quebec

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## ABSTRACT

**Objective** To describe how chronic low back pain (CLBP) impacts on utility scores and which patients' characteristics most affect these scores in the province of Quebec.

**Settings** Province of Quebec, Canada.

**Participants** 569 adult patients with CLBP.

**Methods and outcomes** An online survey on low back pain was conducted between October 2018 and January 2019. The EuroQol Five Dimensions (EQ-5D-5L) and the Short Form Six Dimensions version 2 (SF-6Dv2) are two generic preference-based measures used to evaluate health-related quality of life (HRQoL) and provide quality-adjusted life-year utility values.

**Results** The number of subjects who agreed to participate was 610, but 41 were excluded because 8 had low back pain for less than 3 months and 33 did not start the survey. A total of 569 subjects were analysed, but only 410 completed the survey up to the EQ-5D-5L or SF-6Dv2 sections. Median (range) of EQ-5D-5L was 0.622 (–0.072 to 0.905), and mean (range) of SF-6Dv2 and EQ-Visual Analogue Scale was 0.561 (0.301–0.829) and 51.0 (0–100), respectively. In all multivariate models, health or life satisfaction increased the health utility score, while pain reduced it. Co-occurring health problems were present for a majority (68%) of participants, mainly fatigue/insomnia (57.4%), musculoskeletal disorder (56.2%) and mental disorder (44%).

**Conclusion** This study provided utility scores with EQ-5D-5L and SF-6Dv2 in patients with CLBP in Quebec, and results were similar to other studies conducted in different settings. These values were well below those reported in the Quebec general population and highlight the association between CLBP and HRQoL.

## INTRODUCTION

Low back pain (LBP) refers to pain located between the lower rib margins and the buttock creases.<sup>1</sup> Four out of five adults will experience at least one form of LBP (pain and disability) during their lifetime.<sup>2–3</sup> Two types of pain are included in LBP: acute pain and chronic pain. The pain is considered chronic if it lasts for more than 3–6 months.<sup>4,5</sup> In Canada, the cut-off point for chronic pain is set at 3 months or more, thus following the International Classification of Diseases 11th Revision (ICD-11) classification system,

## Strengths and limitations of this study

- No study explored utility scores for chronic low back pain in Quebec.
- Utility scores were assessed with the EuroQol Five Dimensions and Short Form Six Dimensions version 2.
- A survey was conducted among members of a national patient organisation.
- Both English and French were considered to be representative of the population.
- A main limitation is that women were over-represented in the survey.

which also recommend to account for pain intensity, emotional distress and interference with function, when measuring pain severity.<sup>6</sup> Acute and chronic pain can cause a wide range of physical and mental effects, greatly affecting quality of life.<sup>7,8</sup> According to several studies, chronic LBP (CLBP) currently affects between 20% and 30% of the population,<sup>9–11</sup> a majority being women.<sup>9,12</sup>

As CLBP affects health-related quality of life (HRQoL) and represents a societal burden,<sup>13</sup> it is appropriate to perform cost utility analysis (CUA) to aid in decision-making (ie, clinical and organisational decision to manage CLBP). EuroQol Five Dimensions (EQ-5D) and Short Form Six Dimensions (SF-6D) are two generic preference-based measures largely used in CUA. These instruments provide utility values that are used to calculate gains in quality-adjusted life year (QALY).<sup>14,15</sup> The EQ-5D and SF-6D have been used and validated in different LBP populations,<sup>8,16–18</sup> but not in Quebec. Recently, a new version of the SF-6D was developed (ie, SF-6Dv2) that includes only 10 items from the SF-36v2 that can be rephrased into six questions.<sup>19–21</sup> This new version of the SF-6D has never been used patients with CLBP. Since some health technology assessment agencies recommend using local data to perform economic evaluation, especially data modelling, it is

worthwhile to provide utility values in CLBP specific to each jurisdiction.<sup>22 23</sup> This is all the more important for Quebec because its population is different from other Canadian provinces. Not only Quebec is the only Canadian province that has a predominantly French-speaking population,<sup>24</sup> but also showing different results in terms of health indicators.<sup>25</sup> In addition, since the decision of the Supreme Court of Canada in 2014, people of Quebec is recognised as a distinct society within Canada.<sup>26</sup>

The main purpose of this article was to describe health state utility scores with EQ-5D-5L and SF-6Dv2 in patients with CLBP in Quebec. Another objective was to describe health state utility scores stratified for various sociodemographic data, types of diagnoses and kinds of pain management. Predictors of health state utility scores for EQ-5D-5L index, EQ-Visual Analogue Scale (VAS) and SF-6Dv2 were also explored.

## METHODS

### Data

The data come from an online survey on LBP conducted between October 2018 and January 2019. The objective of the survey was to perform a discrete choice experiment (DCE) about preference of patients with CLBP for non-surgical treatments.<sup>27</sup> To note that the results of the DCE are not presented in this article. The Quebec Association of Chronic Pain (Association Québécoise de la douleur chronique—AQDC) distributed by email to its members the link to the online survey, and posters with this information were also placed at different outpatient clinics in our institution. No monetary compensation was offered for completing the survey. The inclusion criteria were to be a Quebec resident, at least 18 years old, who suffers from LBP. Subjects with LBP for less than 3 months, unable to complete an online questionnaire by themselves or with help, or unable to read either French or English were excluded.

### Survey

The first page of the survey presented the aim of the survey content, advantages and disadvantages for the participant, and the name of a contact person for questions or complaints. The questionnaire included sociodemographic data, self-reported medical back pain diagnosis, intensity of LBP (pain today, worst pain and average level of pain in the last 2 weeks) on a scale from 0 to 10, treatments other than medication, insurance, other diseases or physical or mental issues that diminish quality of life and general health on a five-point Likert scale from excellent to poor. Health and life satisfaction scores and willingness to take risks were measured with a Likert scale from 0 to 10 corresponding, respectively, to not at all satisfied to fully satisfied and from hate taking risks to love taking risks. A series of 12 choice cards for the DCE were also presented, following the methodology recommended by the International Society for Pharmacoeconomics and Outcomes Research (ISPOR).<sup>28</sup> The survey ended with four HRQoL questionnaires that

were administered in a random order: EQ-5D-5L, SF-6Dv2, Roland Morris Disability Questionnaire and Oswestry Disability Questionnaire (only the two first questionnaires are presented here). The survey is available in online supplementary file 1.

## Outcomes

### EQ-5D-5L

The EQ-5D-5L is widely used to measure QALYs. This questionnaire (English-Canadian and French-Canadian version) includes five dimensions (mobility, self-care, usual activities, pain/discomfort and anxiety/depression) with five levels each, from no problem to extreme problem. The EQ-5D-5L questionnaire also includes a vertical VAS with 100 on the top representing the 'best imaginable health state' and 0 at the bottom representing the 'worst imaginable health state'. Health utility scores were calculated with the value set developed by Xie *et al*,<sup>29</sup> and their recommended model was used. The health utilities elicited ranged from -0.148 for the worst (55555) to 0.949 for the best (11111) EQ-5D-5L health states. Since health utility scores were calculated using a linear model, worst and best states were different from 0 and 1.

### SF-6Dv2

The SF-6D is a multiattribute utility instrument derived from the SF-36 quality-of-life questionnaire. The SF-6Dv2 is a new version of the SF-6D that contains only 10 items from the SF-36 that may be rephrased into six questions, that is, one item per dimension (physical functioning, role limitations, social functioning, pain, mental health and vitality). Each item has five levels, except pain with six levels. Since a value set is neither available for Quebec nor for the SF-6Dv2, health utility scores were calculated with the value set model 2 developed for the UK by Brazier and Roberts.<sup>30</sup> The health utilities elicited ranged from 0.301 to 1, corresponding to the worst (555655) and the best (111111) health states. The main difference between the EQ-5D-5L and the SF-6Dv2 is that the last one includes more HRQoL dimensions. In the SF-6Dv2, the two first dimensions of the EQ-5D-5L (mobility and self-care) are merged into one (physical functioning), thus allowing to include two more dimensions not assessed in the EQ-5D-5L, namely social functioning and vitality.

### Statistical analysis

A histogram of health utility scores was used to evaluate normality distribution. Results were presented with mean (95% CI) for EQ-VAS and SF-6Dv2 and with median (IQR) for EQ-5D-5L. Health utility scores were compared by sociodemographic characteristics, health status, health and life satisfaction, willingness to take risks, diagnosis, pain intensity and treatment and management of pain. Analysis of variance or Student's t-test was used for utility scores normally distributed, otherwise Kruskal-Wallis or Mann-Whitney was used. The rate of problems affecting HRQoL was also described for the complete cohort. Ceiling and floor effects were calculated for each utility

instrument. Ceiling effect was the proportion of respondents reporting 'no problems' for all dimensions, and floor effect was the proportion of respondents reporting the worst level for all dimensions. Multivariate linear models with stepwise selection were performed to predict EQ-5D-5L, EQ-VAS and SF-6Dv2 utility scores. Explanatory variables were not transformed and were used as binary (noted as 1–0) or continuous (noted as continuous or 0–10). Only variables with  $p < 0.1$  in univariate analysis were included, and only variables with  $p < 0.05$  in multivariate model were retained. Since the EQ-5D-5L was not normally distributed, the model was applied on inverse logarithm utility score transformation ( $\log(x-1)$ ). Therefore, the estimates of the models must be interpreted in the opposite direction. As the EQ-5D-5L and SF-6Dv2 were at the end of the survey, and as the subjects were obliged to answer each question before going on to the next, the subjects with values for EQ-5D-5L and SF-6Dv2 answered all the previous questions. So, no imputation was done for missing data. Normality of residues was validated. Analyses were computed with SAS software (V.9.4; SAS Institute) and graphs with GraphPad Prism V.7.00 for Windows. A  $p$  value less than 0.05 was considered significant.

### Patient and public involvement

Patients were involved in the study in the following ways: (1) conception of the questionnaire survey; (2) critical revision of the questionnaire survey; (3) participation to recruitment through the AQDC.

## RESULTS

### Sample characteristics

Between October 2018 and January 2019, 610 subjects responded to questionnaire. There were 41 subjects excluded, 8 because they had LBP for less than 3 months and 33 who did not start the survey. Out of 569 subjects analysed, only 410 completed the survey up to the EQ-5D-5L or SF-6Dv2. Subjects who did not complete their health state with EQ-5D-5L and SF-6Dv2 were older, had slightly lower body mass indexes (BMIs), were more likely to be widowers, more likely to be retired, had more osteoporosis, did less aerobic activity and were more likely to have had a stroke. No difference was observed for education, income, pain, treatments, health status or life/health satisfaction (see online supplementary table 1). For subjects who went to the end of the survey, the median time to complete the questionnaire was 34 min. The mean (range) age was 56 (18–89) years; the majority were women (78.9%); 13.3% were smokers; education level was higher than the general population (43.3% at university vs 25.5%)<sup>31</sup>; but fewer were employed (24.9%) compared with the general population (59.5%). A majority of participants (94.3%) completed the French version of the survey even though an English version was available. This is slightly fewer than the 9% of the

Quebec population who consider English as their native language.<sup>32</sup>

### Distribution of EQ-5D-5L and SF-6Dv2 utility scores and EQ-VAS

Index score of EQ-5D-5L was not normally distributed, but those of SF-6Dv2 and EQ-VAS were normally distributed (figure 1). Median (range) of EQ-5D-5L was 0.622 (–0.072 to 0.905), and mean (range) of SF-6Dv2 and EQ-VAS was 0.561 (0.301–0.829) and 51.0 (0–100), respectively. There was no ceiling effect for EQ-5D-5L and SF-6Dv2 (ie, value of 0.949 or 1, respectively). Only one subject had a score of 100 for the EQ-VAS. There was no floor effect for EQ-5D-5L (ie, –0.148), four subjects for EQ-VAS and two for SF-6Dv2 (ie, value at 0.301). When each dimension was analysed, higher levels were observed for pain, vitality, role limitations and usual activity. For EQ-5D-5L, 88.3% had moderate-to-extreme pain (level 3 or more), and 37.8% had severe-to-extreme pain (level of 4 or 5). For SF-6Dv2, 99.7% had moderate to very severe pain (level 3–6), and 59.8% had severe or very severe pain (level 5 or 6; see online supplementary table 2).

### EQ-5D-5L and SF-6Dv2 utility scores and EQ-VAS according to sample characteristics

Scores varied significantly by age, but they did not decrease as age increased as may be expected in the general population (table 1). Women, subjects with non-obese BMIs, employed subjects and subjects owning a home had significantly higher utility scores. Utility scores significantly increased with better health status and with health and life satisfaction. Marital status, education, living with an adult and willingness to take risks had no impact on EQ-5D-5L, EQ-VAS or SF-6Dv2. As expected, subjects with more pain had lower utility scores (table 2). Similarly, subjects who used pain medication several times a day had the lowest scores, but those who never used pain medication also had low scores. Considering management of pain, subjects who used medical marijuana had lower utility scores, while subjects who practice endurance activities, strength training, relaxation, meditation and body-mind activities had higher utility scores.

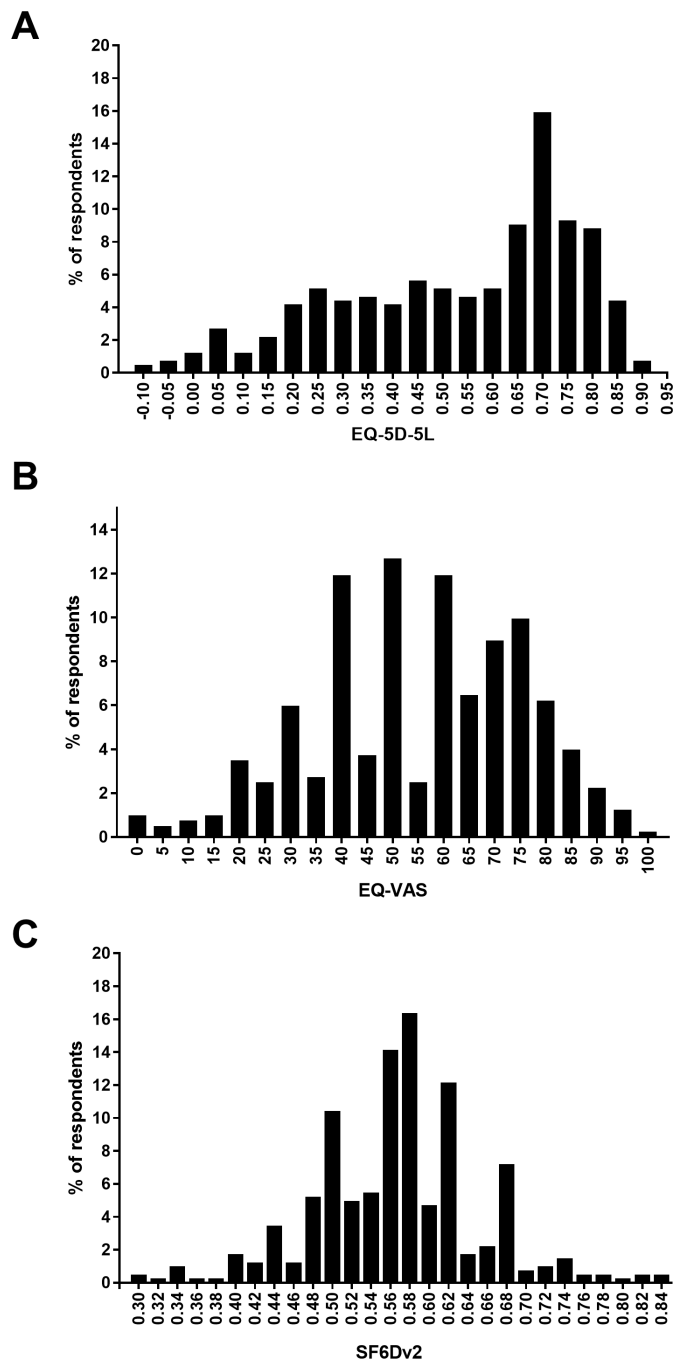
### Problems affecting HRQoL

A majority (68%) of participants self-reported having other problems affecting their HRQoL (table 3). The most frequent problems observed other than pain were fatigue or insomnia (57.4%), musculoskeletal disorder (52.2%; mainly defined by osteoarthritis (44.0%)) and mental disorder (44%). About a quarter also had cardiac, gastrointestinal or endocrine disorders. Respiratory disorder was present in 13.3% of subjects.

### Predictors of EQ-5D-5L, EQ-VAS and SF-6Dv2

One multivariate linear regression model by outcome was performed to explore predictors of utility scores (table 4). EQ-5D-5L index had more predictors than other instruments. Since EQ-5D-5L was transformed with inverse logarithm to obtain a normal distribution





**Figure 1** Distribution of utility scores and Visual Analogue Scale (VAS) for EuroQol Five Dimensions (EQ-5D-5L) and Short Form Six Dimensions version 2 (SF-6Dv2). The values on the x-axis correspond to the central value with an interval of 0.05 for EQ-5D-5L score, 5 points for EQ-VAS and 0.02 point for SF-6Dv2. There was no ceiling effect for EQ-5D-5L and SF-6Dv2. Only one subject had a score of 100 for EQ-VAS. There was no floor effect for EQ-5D-5L, four subjects for EQ-VAS and two for SF-6Dv2.

of residues, the estimates must be interpreted in the opposite sense. In all models, health or life satisfaction increased the health utility score, while pain reduced it. Self-reported good health increased the EQ-5D-5L index, but poor/fair health status decreased the EQ-VAS and SF-6Dv2 utility scores. Considering CLBP treatment, an

osteopathy session was a predictor of EQ-5D-5L index, and body-mind activities other than yoga were predictors of EQ-5D-5L and SF-6Dv2. As to occupational status, being employed or retired increased EQ-5D-5L, but sick leave reduced SF-6Dv2. Occupational status and treatment had no impact on EQ-VAS. Regarding other sociodemographic data, living in an urban area and having a lower BMI increased the EQ-5D-5L index, and having a child increased the SF-6Dv2. Patients with osteoporosis had higher EQ-VAS values compared with other diagnoses.

## DISCUSSION

This study examined health state utility scores with EQ-5D-5L and SF-6Dv2 in patients with CLBP in Quebec, a French-speaking province of Canada. It described health-state utility scores for various sociodemographic data, types of diagnoses and kinds of pain management. To our knowledge, this is the first Quebec study to report EQ-5D-5L and SF-6Dv2 utility scores in patients with CLBP. The population norms produced in this study for patients with CLBP will be very helpful in feeding models aimed at predicting the impact of interventions on such patients.<sup>33 34</sup> Indeed, to our knowledge, no representative portrait of people living with CLBP has been conducted in Quebec, although some initiative exists with their geographical and inclusion criteria limits.<sup>35</sup> As a consequence, it is hard to say how close is our survey to a representative sample of this population. However, since our survey was mainly conducted with members of the AQDC, which is a provincial-wide patient organisation, without any geographical limitation, we believe that our sample is representative of most people with CLBP in Quebec who are able to complete a survey in French or English.

As expected, the median value of EQ-5D-5L and EQ-VAS was lower than what we obtained as the reference value for the general population in Quebec (adjusted for age and gender). The results for population norms previously published were 0.245 points higher for the EQ-5D-5L (median 0.867 (IQR 0.802–0.911)) and 25 points higher for the EQ-VAS (75.9 (75.2–76.6)).<sup>36</sup> Moreover, our results were close to those of other studies of populations with LBP. In the study by Ye *et al*, EQ-5D-5L and SF-6D distributions were similar but slightly higher than our results (median (IQR) 0.702 (0.438, 0.862)) and mean score 0.593 (SD 0.143), respectively.<sup>16</sup> As they recruited Chinese patients in a hospital, we could have expected them to have lower health-state utility scores; this may be due to cultural differences. Furthermore, they had many more men (62%) than in our cohort (20.7%), which is contrary to the epidemiology of the disease.<sup>2 9</sup> Cheung *et al* studied Chinese patients, and their results were more similar to ours (mean EQ-5D-5L index of 0.664 (SD 0.204) and mean SF-6D of 0.573 (SD 0.119)), but their subjects had less pain when considering the dimension pain/discomfort of EQ-5D-5L.<sup>17</sup> The lower degree of pain could explain why their EQ-5D-5L utility scores were slightly higher than in our study. Finally, a

**Table 1** Sociodemographic characteristics

	n (%) or mean±SD	EQ-5D-5L index		EQ-VAS		SF-6Dv2	
		n	Median (IQR)	n	Mean (95% CI)	n	Mean (95% CI)
Overall		408	0.622 (0.369–0.745)	402	51.0 (48.8 to 53.2)	403	0.561 (0.553 to 0.569)
Age (years) (n=561)							
<35	25 (4.5)	19	0.531 (0.301–0.707)*	18	40.7 (30.9 to 50.6)*	18	0.523 (0.491 to 0.556)*
35–39	31 (5.5)	26	0.678 (0.365–0.738)	26	52.5 (45.1 to 59.9)	26	0.552 (0.529 to 0.576)
40–44	64 (11.4)	51	0.577 (0.316–0.746)	50	57.1 (51.9 to 62.3)	50	0.549 (0.522 to 0.576)
45–49	41 (7.3)	32	0.545 (0.393–0.702)	32	53.0 (46.5 to 59.5)	32	0.541 (0.519 to 0.564)
50–54	80 (14.3)	60	0.568 (0.206–0.707)	58	51.7 (45.6 to 57.9)	58	0.539 (0.516 to 0.563)
55–59	87 (15.5)	68	0.638 (0.405–0.745)	67	55.0 (49.7 to 60.3)	66	0.574 (0.551 to 0.596)
60–64	71 (12.7)	49	0.661 (0.475–0.803)	49	57.7 (52.2 to 63.2)	50	0.569 (0.547 to 0.592)
65–69	76 (13.6)	54	0.706 (0.513–0.784)	54	61.0 (55.8 to 66.2)	54	0.587 (0.563 to 0.612)
70–74	47 (8.4)	30	0.644 (0.459–0.745)	30	58.9 (52.1 to 65.6)	30	0.585 (0.562 to 0.607)
≥75	39 (7.0)	19	0.570 (0.328–0.784)	18	56.7 (45.1 to 68.2)	19	0.563 (0.510 to 0.617)
Mean±SD	56.14±12.76						
Range	18–89						
Gender (n=569)							
Men	118 (20.7)	83	0.578 (0.310–0.726)*	83	52.2 (47.5 to 56.9)†	81	0.556 (0.537 to 0.575)‡
Women	449 (78.9)	323	0.660 (0.399–0.746)	317	56.4 (54.2 to 58.6)	320	0.563 (0.554 to 0.573)
Intersex	2 (0.4)	2	0.065 (0.001–0.130)	2	15.0 (–48.5 to 78.5)	2	0.430 (0.067 to 0.792)
Body mass index (kg/m <sup>2</sup> ) (n=556)							
<18.5	10 (1.8)	6	0.645 (0.454–0.706)*	6	60.0 (46.7 to 73.3)*	6	0.592 (0.534 to 0.649)*
18.5–24.9	151 (27.2)	100	0.676 (0.434–0.765)	100	61.3 (57.5 to 65.0)	100	0.581 (0.564 to 0.598)
25–29.9	194 (34.9)	146	0.645 (0.401–0.763)	141	54.5 (51.1 to 58.0)	141	0.553 (0.539 to 0.568)
30–34.9	120 (21.6)	88	0.604 (0.369–0.707)	87	53.2 (49.1 to 57.2)	87	0.564 (0.547 to 0.581)
35–39.9	53 (9.5)	42	0.491 (0.297–0.726)	42	50.2 (42.8 to 57.7)	43	0.555 (0.531 to 0.579)
≥40	28 (5)	25	0.399 (0.206–0.706)	25	52.6 (44.4 to 60.7)	25	0.528 (0.495 to 0.561)
Mean±SD	28.8±6.53						
Range	13.71–62.75						
Smoking (n=526)							
Yes	70 (13.3)	54	0.560 (0.310–0.706)*	52	51.8 (46.5 to 57.1)	51	0.540 (0.513 to 0.567)‡
No	456 (86.7)	354	0.652 (0.372–0.750)	350	55.8 (53.7 to 58.0)	352	0.564 (0.555 to 0.573)
Marital status (n=557)							
Married/common law	327 (58.7)	246	0.625 (0.411–0.745)	245	55.8 (53.4 to 58.3)	244	0.564 (0.554 to 0.574)
Single	97 (17.4)	71	0.576 (0.372–0.726)	70	55.2 (50.8 to 59.6)	71	0.558 (0.539 to 0.577)
Divorced/separated	107 (19.2)	78	0.618 (0.301–0.736)	75	54.0 (48.5 to 59.5)	76	0.558 (0.532 to 0.583)
Widowed	26 (4.7)	13	0.637 (0.271–0.763)	12	54.2 (37.5 to 70.9)	12	0.541 (0.492 to 0.590)
Occupational status (n=555)							
Employed	138 (24.9)	110	0.718 (0.622–0.765)§	108	59.4 (55.8 to 63.0)†	108	0.578 (0.561 to 0.595)§
Student	13 (2.3)	8	0.493 (0.317–0.706)	8	53.8 (34.2 to 73.3)	8	0.557 (0.522 to 0.592)
Retired	218 (39.3)	141	0.668 (0.457–0.764)	140	57.9 (54.5 to 61.3)	141	0.585 (0.571 to 0.599)
At home	30 (5.4)	22	0.619 (0.335–0.672)	21	51.1 (42.7 to 59.6)	22	0.528 (0.494 to 0.562)
Unemployed	16 (2.9)	12	0.498 (0.251–0.661)	12	46.7 (33.6 to 59.8)	11	0.543 (0.500 to 0.586)
On sick leave, parental leave	73 (13.2)	57	0.411 (0.270–0.637)	57	48.6 (43.3 to 53.9)	57	0.519 (0.499 to 0.538)
Invalid	67 (12.1)	58	0.430 (0.280–0.580)	56	51.6 (45.7 to 57.5)	56	0.529 (0.509 to 0.549)
Education (n=555)							
Secondary or less	81 (14.6)	57	0.522 (0.353–0.736)‡	57	52.5 (46.9 to 58.0)	57	0.557 (0.535 to 0.579)
Professional diploma	81 (14.6)	61	0.570 (0.316–0.707)	60	52.1 (46.9 to 57.2)	60	0.545 (0.523 to 0.567)

Continued

Table 1 Continued

	n (%) or mean±SD	EQ-5D-5L index		EQ-VAS		SF-6Dv2	
		n	Median (IQR)	n	Mean (95% CI)	n	Mean (95% CI)
CEGEP/high school	153 (27.6)	115	0.622 (0.382–0.743)	115	55.1 (51.1 to 59.1)	113	0.552 (0.537 to 0.567)
Baccalaureate	158 (28.5)	110	0.660 (0.423–0.764)	106	56.3 (52.7 to 60.0)	108	0.571 (0.553 to 0.589)
Master	68 (12.3)	53	0.668 (0.411–0.763)	53	58.1 (52.7 to 63.6)	53	0.578 (0.558 to 0.598)
Ph.D.	14 (2.5)	12	0.764 (0.645–0.801)	11	67.1 (54.3 to 79.9)	12	0.586 (0.523 to 0.650)
Mean±SD	14.38±2.5						
Range	6–21						
Annual household income (K\$ CAN) (n=552)							
<10	16 (2.9)	12	0.572 (0.177–0.702)§	11	42.5 (27.7 to 57.2)	11	0.520 (0.435 to 0.605)*
10–14.9	43 (7.8)	35	0.411 (0.243–0.661)	35	51.5 (44.2 to 58.7)	35	0.527 (0.500 to 0.553)
15–19.9	40 (7.3)	27	0.353 (0.297–0.651)	26	52.8 (43.2 to 62.4)	27	0.513 (0.475 to 0.550)
20–24.9	29 (5.3)	19	0.581 (0.353–0.785)	19	55.9 (43.4 to 68.5)	19	0.584 (0.531 to 0.637)
25–34.9	44 (8.0)	32	0.577 (0.418–0.731)	32	54.0 (46.1 to 61.8)	32	0.555 (0.528 to 0.581)
35–44.9	73 (13.2)	48	0.680 (0.507–0.746)	48	52.6 (46.6 to 58.7)	48	0.569 (0.545 to 0.592)
45–49.9	37 (6.7)	25	0.636 (0.399–0.726)	25	54.7 (46.2 to 63.2)	25	0.568 (0.533 to 0.603)
50–54.9	51 (9.2)	44	0.611 (0.332–0.725)	42	57.8 (51.8 to 63.9)	43	0.563 (0.537 to 0.589)
60–69.9	35 (6.3)	27	0.706 (0.335–0.810)	27	54.9 (46.9 to 62.9)	28	0.576 (0.541 to 0.612)
70–79.9	50 (9.1)	39	0.660 (0.437–0.745)	38	59.5 (53.7 to 65.3)	37	0.570 (0.548 to 0.592)
80–89.9	35 (6.3)	29	0.707 (0.475–0.763)	29	65.2 (59.3 to 71.1)	28	0.569 (0.533 to 0.606)
90–99.9	25 (4.5)	17	0.616 (0.493–0.745)	17	51.3 (41.2 to 61.4)	17	0.582 (0.549 to 0.615)
100–119.9	32 (5.8)	23	0.736 (0.661–0.765)	23	60.6 (52.6 to 68.6)	23	0.575 (0.538 to 0.611)
120–149.9	27 (4.9)	22	0.553 (0.466–0.718)	21	52.7 (43.8 to 61.5)	21	0.568 (0.538 to 0.598)
≥150	15 (2.7)	9	0.763 (0.699–0.803)	9	53.3 (39.9 to 66.8)	9	0.598 (0.538 to 0.659)
Mean±SD	57.4±37.9						
Range	(2.5–165)						
Living with an adult (n=552)							
Yes	365 (66.1)	274	0.622 (0.382–0.745)	272	55.0 (52.6 to 57.4)	272	0.562 (0.553 to 0.572)
No	187 (33.9)	134	0.655 (0.362–0.745)	130	56.1 (52.4 to 59.7)	131	0.559 (0.542 to 0.575)
Have a child (n=551)							
Yes	87 (15.8)	67	0.622 (0.365–0.745)	65	53.8 (49.3 to 58.4)	64	0.539 (0.520 to 0.559)*
No	464 (84.2)	341	0.622 (0.372–0.745)	337	55.6 (53.4 to 57.8)	339	0.565 (0.556 to 0.574)
Urban area (n=551)							
Yes	389 (70.6)	289	0.655 (0.382–0.757)‡	285	55.6 (53.3 to 57.9)	286	0.556 (0.541 to 0.571)
No	162 (29.4)	119	0.578 (0.355–0.707)	117	54.6 (50.6 to 58.6)	117	0.563 (0.553 to 0.573)
Owning a home (n=547)							
Yes	351 (64.2)	260	0.668 (0.448–0.746)§	259	55.8 (53.5 to 58.2)	257	0.572 (0.563 to 0.582)§
No	196 (35.8)	148	0.520 (0.297–0.707)	143	54.4 (50.7 to 58.1)	146	0.542 (0.526 to 0.557)
Approximate amount spent per year for treatment (CAD) (n=509)							
Median	1000						
Range	(0–55 000)						
Health status (n=505)							
Excellent/very good	60 (11.9)	49	0.736 (0.552–0.827)§	49	70.3 (65.2 to 75.4)§	51	0.610 (0.585 to 0.634)§
Good	187 (37)	154	0.706 (0.561–0.775)	153	61.2 (58.2 to 64.2)	152	0.592 (0.580 to 0.605)
Fair	180 (35.6)	141	0.520 (0.316–0.700)	137	50.5 (47.6 to 53.4)	137	0.535 (0.522 to 0.548)
Poor	78 (15.5)	64	0.358 (0.212–0.577)	63	39.8 (34.8 to 44.9)	63	0.503 (0.486 to 0.520)
Satisfaction on his/her health (n=505)							
0–3	210 (41.6)	176	0.448 (0.260–0.661)§	172	45.1 (42.2 to 47.9)§	174	0.521 (0.510 to 0.532)§

Continued

Table 1 Continued

	n (%) or mean±SD	EQ-5D-5L index		EQ-VAS		SF-6Dv2	
		n	Median (IQR)	n	Mean (95% CI)	n	Mean (95% CI)
4–6	205 (40.6)	165	0.699 (0.520–0.757)	163	58.5 (56.1 to 61.0)	162	0.578 (0.568 to 0.589)
7–10	90 (17.8)	67	0.764 (0.660–0.846)	67	73.8 (69.4 to 78.3)	67	0.625 (0.602 to 0.648)
Mean±SD	4.07±2.45						
Satisfaction on his/her life (n=504)							
0–3	120 (23.8)	100	0.345 (0.190–0.537)§	97	42.7 (38.4 to 47.0)§	99	0.498 (0.483 to 0.513)§
4–6	190 (37.7)	152	0.622 (0.419–0.707)	150	52.0 (49.4 to 54.6)	150	0.551 (0.541 to 0.562)
7–10	194 (38.5)	156	0.736 (0.583–0.802)	155	66.5 (63.7 to 69.3)	154	0.611 (0.599 to 0.624)
Mean±SD	5.4±2.49						
Willingness to take risks (n=504)							
0–3	190 (37.7)	151	0.622 (0.353–0.745)	151	52.7 (49.6 to 55.9)‡	149	0.560 (0.548 to 0.572)
4–6	211 (41.9)	168	0.622 (0.417–0.744)	166	55.9 (52.9 to 59.0)	168	0.561 (0.548 to 0.575)
7–10	103 (20.4)	89	0.634 (0.316–0.763)	85	58.7 (53.9 to 63.5)	86	0.563 (0.542 to 0.584)
Mean±SD	4.28±2.54						

Omnibus test for statistical significance between groups:

\*P<0.05.

†P<0.01.

‡P<0.1.

§P<0.001.

EQ-5D-5L, EuroQol Five Dimensions; SF-6Dv2, Short Form Six Dimensions version 2; VAS, Visual Analogue Scale.

study by Søgaard *et al* found slightly higher EQ-5D-3L (median=0.691) and SF-6D (mean=0.677) utility scores, but their patients had undergone spinal surgery.<sup>37</sup>

Another objective of the study was to identify predictors of health-state utility scores for EQ-5D-5L index, EQ-VAS and SF-6Dv2. Some predictors were present in all models: health and life satisfaction were associated with better utility scores; good/poor health status was associated with better/lower utility scores, and pain was associated with lower utility scores. Body-mind activities were also associated with higher EQ-5D-5L and SF-6Dv2 utility scores, but not with EQ-VAS values. In multivariate models, age, gender, education, smoking and income had no impact on utility scores. To note that some predictors were tapping the same concepts incorporated in the utility instrument, such as pain, and logically showed a correlation.

Our cohort includes a majority of women, but men had lower utility scores in univariate analysis even though it was not a predictor in multivariate models. There were more subjects who were invalid or on sick leave than in the general population, and this is a negative predictor of SF-6Dv2 utility scores. To be employed is a predictor of higher EQ-5D-5L utility scores. It is not clear if there are specific age categories with higher or lower EQ-5D-5L and SF-6Dv2 utility scores as it was not a predictor in multivariate models. There were fewer smokers than in the general population, and smokers had lower utility scores in univariate analysis. We did not have questions about physical activities other than for pain management, but body-mind activities were associated with higher EQ-5D-5L and SF-6Dv2 utility scores in multivariate models, and subjects who used

physical activities for management of pain had higher utility scores. Some studies suggested that obesity or high BMI were risk factors<sup>9 38 39</sup>; others do not see an association.<sup>40 41</sup> In our cohort, a higher BMI was associated with lower utility scores only for the EQ-5D-5L.

As demonstrated in other studies, LBP is associated with the co-occurring of other chronic conditions.<sup>2 5 42–47</sup> In our cohort, two-thirds considered that they have other health problems, compared with a study by Pagé *et al* where only one-third of their Quebec cohort had comorbidity.<sup>5</sup> Pagé *et al* performed a very large study with 3966 patients.<sup>5</sup> Their study had a lower proportion of women, and their most prevalent pain diagnoses were chronic musculoskeletal pain (37.9%) and chronic neuropathic pain (32.2%). As these diagnoses are non-specific, they were not used in our study. Our most prevalent pain diagnoses were herniated lumbar disk (37.3%), facet osteoarthritis (35.6%) and fibromyalgia (34.6%). However, in our cohort, when considering other problems affecting HRQoL, 56% of respondents reported having a musculoskeletal disorder, principally osteoarthritis, and in other studies LBP is frequently associated with musculoskeletal disorders like arthritis, osteoarthritis and osteoporosis.<sup>43 47</sup> As in our cohort, LBP is associated with anxiety and sleep disorder<sup>43</sup> or depression and other psychological disorders.<sup>42 43 46</sup> Other comorbidities observed in our cohort and in the literature are the presence of cardiovascular disease<sup>45</sup> and respiratory disorder.<sup>44 45</sup>

A strength of our study is that our results and distribution of utility scores are similar to other cohorts with the

**Table 2** Diagnosis, pain, treatment and management of pain

	n (%) or mean±SD	EQ-5D-5L index		EQ-VAS		SF-6Dv2	
		n	Median (IQR)	n	Mean (95% CI)	n	Mean (95% CI)
Diagnosis given by a physician (n=523)							
No diagnosis	21 (4.0)	15	0.718 (0.579–0.764)	15	61.0 (51.6 to 70.4)	15	0.576 (0.520 to 0.632)
Herniated lumbar disk	195 (37.3)	158	0.577 (0.355–0.736)*	155	53.3 (49.9 to 56.6)	153	0.554 (0.541 to 0.568)
Facet osteoarthritis	184 (35.2)	145	0.590 (0.382–0.736)	141	54.7 (51.5 to 58.0)	143	0.551 (0.537 to 0.564)*
Fibromyalgia	181 (34.6)	148	0.573 (0.341–0.740)	145	51.2 (48.0 to 54.4)†	145	0.545 (0.532 to 0.557)†
Sciatica	133 (25.4)	107	0.615 (0.355–0.736)	106	53.3 (49.6 to 57.1)	105	0.557 (0.540 to 0.573)
Degenerative disk disease	98 (18.7)	79	0.561 (0.335–0.706)‡	77	54.1 (49.1 to 59.1)	76	0.542 (0.522 to 0.562)‡
Spinal osteoarthritis, spondyloarthritis	83 (15.9)	66	0.600 (0.399–0.718)	66	56.0 (51.1 to 60.9)	65	0.551 (0.531 to 0.572)
Deformations	65 (12.4)	46	0.597 (0.280–0.736)	45	59.0 (52.9 to 65.2)	46	0.559 (0.526 to 0.593)
Muscle and/or ligament sprain	48 (9.2)	36	0.638 (0.354–0.721)	36	47.8 (40.9 to 54.7)‡	35	0.544 (0.514 to 0.575)
Osteoporosis	40 (7.7)	26	0.661 (0.577–0.764)	25	67.0 (60.8 to 73.2)†	25	0.588 (0.560 to 0.615)
Spondylolisthesis	33 (6.3)	30	0.615 (0.355–0.763)	30	55.3 (47.9 to 62.7)	30	0.573 (0.540 to 0.607)
Autoimmune inflammatory disease	31 (5.9)	26	0.679 (0.271–0.743)	25	51.0 (41.4 to 60.6)	26	0.541 (0.504 to 0.578)
Stenosis	17 (3.3)	15	0.580 (0.399–0.764)	14	57.4 (42.4 to 72.3)	14	0.537 (0.473 to 0.602)
Spinal fracture or dislocation	15 (2.9)	11	0.423 (0.090–0.706)	11	57.3 (40.0 to 74.6)	11	0.543 (0.457 to 0.629)
Chronic pain	8 (1.5)	6	0.676 (0.622–0.707)	6	47.2 (27.3 to 67.0)	6	0.553 (0.502 to 0.603)
Neurological disease	6 (1.2)	5	0.501 (0.423–0.577)	5	57.0 (40.2 to 73.8)	5	0.543 (0.483 to 0.603)
Osteoporosis with spinal fracture	6 (1.2)	5	0.355 (0.347–0.661)	5	53.0 (34.6 to 71.4)	5	0.594 (0.519 to 0.668)
Other vertebral problem	10 (1.9)	9	0.616 (0.362–0.707)	9	56.6 (41.3 to 71.8)	9	0.546 (0.472 to 0.620)
Other lumbar problem	8 (1.5)	6	0.568 (0.232–0.828)	6	52.7 (33.8 to 71.6)	6	0.558 (0.467 to 0.648)
Other osteoarthritis	9 (1.7)	5	0.429 (0.353–0.655)	5	66.0 (46.7 to 85.3)	5	0.513 (0.378 to 0.648)
Other diagnosis	41 (7.8)	29	0.316 (0.661–0.345)*	29	50.3 (42.4 to 58.3)	30	0.547 (0.516 to 0.577)
How long have they had lower back pain (n=519)							
From 3 months to a year	8 (1.5)	8	0.590 (0.335–0.763)	8	62.5 (47.2 to 77.8)	8	0.594 (0.525 to 0.664)
More than a year	511 (98.5)	400	0.622 (0.377–0.745)	394	55.2 (53.2 to 57.2)	395	0.560 (0.552 to 0.569)
Intensity of pain today (0–10 cm) (n=518)							
0–3	92 (17.8)	74	0.745 (0.616–0.846)§	73	65.9 (61.4 to 70.4)§	74	0.611 (0.591 to 0.631)§
4–6	244 (47.1)	191	0.668 (0.411–0.746)	191	56.7 (54.1 to 59.4)	189	0.566 (0.555 to 0.577)
7–10	182 (35.1)	143	0.439 (0.243–0.660)	138	47.8 (44.3 to 51.3)	140	0.528 (0.514 to 0.542)
Mean±SD	5.48±2.03						
Worst level of pain in the last 2 weeks (0–10 cm) (n=518)							
0–3	12 (2.3)	7	0.867 (0.466–0.885)§	7	67.6 (44.2 to 91.0)§	7	0.661 (0.568 to 0.755)§
4–6	114 (22)	91	0.718 (0.608–0.810)	91	61.3 (57.4 to 65.3)	91	0.609 (0.593 to 0.625)
7–10	392 (75.7)	310	0.576 (0.316–0.726)	304	53.2 (51.0 to 55.5)	305	0.545 (0.536 to 0.554)
Mean±SD	7.58±1.87						
Average level of pain in the last 2 weeks (0–10 cm) (n=517)							
0–3	75 (14.5)	55	0.765 (0.668–0.859)§	55	64.2 (58.6 to 69.8)§	55	0.620 (0.598 to 0.642)§
4–6	281 (54.4)	224	0.644 (0.396–0.745)	221	56.5 (54.0 to 59.0)	223	0.566 (0.556 to 0.577)
7–10	161 (31.1)	129	0.495 (0.270–0.672)	126	49.4 (45.6 to 53.2)	125	0.526 (0.512 to 0.540)
Mean±SD	5.6±1.9						
Frequency of use of pain medication (n=516)							
Several times a day	158 (30.6)	136	0.491 (0.276–0.674)§	132	51.6 (48.0 to 55.2)†	133	0.531 (0.517 to 0.545)§
Every day	161 (31.2)	120	0.597 (0.351–0.746)	120	56.4 (52.8 to 60.0)	120	0.561 (0.546 to 0.575)

Continued



Table 2 Continued

	n (%) or mean±SD	EQ-5D-5L index		EQ-VAS		SF-6Dv2	
		n	Median (IQR)	n	Mean (95% CI)	n	Mean (95% CI)
Several times a week	70 (13.6)	58	0.706 (0.522–0.764)	57	53.6 (48.0 to 59.2)	57	0.580 (0.560 to 0.601)
Once a week	11 (2.1)	8	0.670 (0.607–0.772)	8	63.8 (51.2 to 76.3)	8	0.616 (0.518 to 0.714)
Several times a month	37 (7.2)	26	0.703 (0.616–0.763)	25	58.4 (53.0 to 63.9)	24	0.584 (0.560 to 0.607)
Once a month	17 (3.3)	12	0.734 (0.485–0.824)	12	69.2 (59.6 to 78.7)	12	0.603 (0.543 to 0.663)
One to several times a year	33 (6.4)	26	0.746 (0.672–0.828)	26	66.3 (59.5 to 73.1)	26	0.615 (0.576 to 0.654)
Never	29 (5.6)	22	0.521 (0.399–0.726)	22	49.1 (38.9 to 59.3)	23	0.561 (0.522 to 0.601)
Management of pain (excluding pain medication) (n=514)							
Massage-therapy sessions	205 (39.9)	162	0.660 (0.401–0.745)	161	56.5 (53.5 to 59.5)	159	0.566 (0.553 to 0.578)
Cortisone infiltration	186 (36.2)	148	0.604 (0.353–0.726)	146	53.7 (50.6 to 56.8)	145	0.564 (0.552 to 0.577)
Physiotherapy sessions	171 (33.3)	136	0.665 (0.426–0.763)‡	135	58.0 (54.7 to 61.2)*	134	0.570 (0.556 to 0.584)
Osteopathy sessions	131 (25.5)	101	0.698 (0.513–0.764)†	98	57.6 (53.6 to 61.6)	100	0.569 (0.552 to 0.586)
Stretching sessions	93 (18.1)	74	0.668 (0.423–0.763)†	73	57.6 (53.1 to 62.2)	72	0.572 (0.553 to 0.591)
Use of medical marijuana	83 (16.2)	67	0.457 (0.270–0.706)†	65	55.7 (50.9 to 60.6)	65	0.538 (0.520 to 0.555)†
Yoga sessions	77 (15.0)	59	0.688 (0.401–0.765)	59	58.1 (52.6 to 63.6)	59	0.566 (0.545 to 0.586)
Acupuncture sessions	68 (13.2)	50	0.670 (0.423–0.764)	50	59.3 (54.2 to 64.3)	49	0.565 (0.540 to 0.59)
Chiropractic sessions	67 (13.0)	55	0.581 (0.399–0.745)	55	57.1 (51.4 to 62.8)	54	0.569 (0.545 to 0.592)
Endurance activities (aerobics)	66 (12.8)	59	0.707 (0.577–0.770)§	59	60.2 (54.7 to 65.6)‡	58	0.597 (0.575 to 0.619)§
Psychotherapy sessions	56 (10.9)	42	0.627 (0.355–0.706)	42	55.3 (49.5 to 61.1)	41	0.546 (0.527 to 0.566)
Strength training	54 (10.5)	44	0.694 (0.549–0.764)‡	44	60.9 (55.1 to 66.8)†	43	0.590 (0.568 to 0.612)‡
Rest, relaxation, meditation	49 (9.5)	43	0.476 (0.316–0.706)‡	43	48.5 (42.2 to 54.7)‡	43	0.539 (0.511 to 0.566)*
Homeopathic products	39 (7.6)	30	0.518 (0.353–0.738)	30	54.3 (46.7 to 62.0)	29	0.578 (0.554 to 0.603)
Other treatment	29 (5.6)	25	0.655 (0.483–0.736)	24	53.1 (45.3 to 60.9)	24	0.560 (0.517 to 0.603)
Stretching and strengthening exercises	25 (4.9)	22	0.706 (0.501–0.770)	22	53.2 (42.9 to 63.6)	22	0.563 (0.528 to 0.597)
Occupational therapy sessions	9 (1.8)	22	0.615 (0.476–0.671)	22	56.0 (48.3 to 63.7)	21	0.568 (0.540 to 0.597)
Cupping therapy sessions	13 (2.5)	11	0.365 (0.353–0.745)	11	45.0 (30.4 to 59.6)*	11	0.534 (0.493 to 0.576)
Reflexology sessions	13 (2.5)	10	0.554 (0.411–0.707)	10	62.8 (50.6 to 75.0)	10	0.576 (0.526 to 0.626)
TENS, vibration	11 (2.1)	10	0.664 (0.439–0.827)	10	53.8 (30.1 to 77.5)	10	0.609 (0.518 to 0.700)
Body-mind activities other than yoga	8 (1.6)	8	0.783 (0.754–0.818)†	8	71.9 (63.0 to 80.8)‡	8	0.628 (0.566 to 0.690)‡
Physical therapy	8 (1.6)	5	0.736 (0.668–0.782)	5	47.6 (11.5 to 83.7)	5	0.592 (0.448 to 0.736)
Infrared therapy sessions	7 (1.4)	7	0.577 (0.316–0.808)	7	62.6 (46.2 to 78.9)	7	0.555 (0.506 to 0.604)
Other	15 (2.9)	12	0.344 (0.741–0.397)	11	54.5 (39.1 to 70.0)	12	0.514 (0.443 to 0.584)‡
Insurance (n=508)							
RAMQ (public health insurance card)	199 (39.2)	160	0.560 (0.310–0.740)	156	54.5 (51.1 to 57.9)	156	0.549 (0.535 to 0.564)
Private insurance	258 (50.8)	207	0.668 (0.475–0.757)	206	55.6 (52.9 to 58.3)	206	0.567 (0.556 to 0.578)
No insurance	51 (10)	41	0.655 (0.328–0.725)	40	57.1 (50.3 to 64.0)	41	0.575 (0.549 to 0.602)

Omnibus test for statistical significance between groups:

\*P&lt;0.1.

†P&lt;0.01.

‡P&lt;0.05.

§P&lt;0.001.

EQ-5D-5L, EuroQol Five Dimensions; RAMQ, Régie d'Assurance Maladie du Québec; SF-6Dv2, Short Form Six Dimensions version 2; TENS, Transcutaneous Electrical Nerve Stimulation; VAS, Visual Analogue Scale.

**Table 3** Problems affecting health-related quality of life (HRQoL)

	n (%)
No problem	162 (32.0)
Self-reported problems affecting HRQoL	345 (68.1)
Pain	307 (60.8)
Fatigue/insomnia	290 (57.4)
Fatigue	260 (51.5)
Insomnia	207 (41.0)
Musculoskeletal disorder	284 (56.2)
Osteoarthritis	222 (44.0)
Arthritis	59 (11.7)
Unintentional injury	24 (4.8)
Other musculoskeletal disorder	141 (27.9)
Mental disorder	222 (44.0)
Anxiety/stress	198 (39.2)
Depression	123 (24.4)
Other mental disorder	27 (5.4)
Cardiac disorder	138 (27.3)
High blood pressure	125 (24.8)
Heart disease	24 (4.8)
Stroke	5 (1.0)
Endocrine problem	121 (24.0)
Diabetes	73 (14.5)
Thyroid disorder	65 (12.9)
Other endocrine problem	18 (3.6)
Gastrointestinal problem	135 (26.7)
Digestion disorder	97 (19.2)
Other gastrointestinal problem	82 (16.2)
Respiratory disorder	67 (13.3)
Chronic obstructive pulmonary disease	8 (1.6)
Other respiratory disorder	63 (12.5)
Neurological disease	47 (9.3)
Urogenital disorder	36 (7.1)
Metabolic problem	9 (1.8)
Cancer	14 (2.8)
Migraines, headache	16 (3.2)
ORL	6 (1.2)
Other	17 (3.4)

Five hundred and seven subjects answered if they had a problem affecting their quality of life, but 2 mentioned 'yes' without specifying which ones. So the percentages of each of the problems were calculated on 505 subjects.  
ORL, oto-rhino-laryngology.

same condition, even though they are in other regions. Another strength is that no ceiling effect was observed in our cohort for EQ-5D-5L and SF-6Dv2 as it was in the study by Ye *et al*,<sup>16</sup> but different to the Cheung study that showed

**Table 4** Multivariate models to predict EQ-5D-5L, EQ-VAS and SF-6Dv2

	Estimate±SE	P value
EQ-5D-5L index (R <sup>2</sup> =0.5192)		
BMI (continuous)	0.003±0.001	0.0284
Urban area (1–0)	–0.046±0.019	0.0158
Employed (1–0)	–0.118±0.023	<0.0001
Retired (1–0)	–0.058±0.021	0.0069
Good health status (1–0)	–0.057±0.019	0.0030
Satisfaction on his/her health (0–10)	–0.018±0.005	0.0002
Satisfaction on his/her life (0–10)	–0.021±0.005	<0.0001
Intensity of pain today (0–10 cm)	0.031±0.006	<0.0001
Worst level of pain in last 2 weeks (0–10 cm)	0.013±0.006	0.0332
Osteopathy sessions (1–0)	–0.06±0.02	0.0030
Body-mind activities other than yoga (1–0)	–0.162±0.061	0.0088
EQ-VAS (R <sup>2</sup> =0.3571)		
Poor health status (1–0)	–5.812±2.526	0.0219
Satisfaction on his/her health (0–10)	2.482±0.475	<0.0001
Satisfaction on his/her life (0–10)	1.459±0.441	0.0010
Osteoporosis (1–0)	10.299±3.39	0.0025
Intensity of pain today (0–10 cm)	–2.133±0.427	<0.0001
SF-6Dv2 (R <sup>2</sup> =0.4593)		
Have a child (1–0)	0.022±0.009	0.0125
Sick leave (1–0)	–0.028±0.009	0.0026
Poor health status (1–0)	–0.041±0.01	<0.0001
Fair health status (1–0)	–0.023±0.008	0.0022
Satisfaction on his/her life (0–10)	0.013±0.001	<0.0001
Worst level of pain in last 2 weeks (0–10 cm)	–0.015±0.002	<0.0001
Body-mind activities other than yoga (1–0)	0.047±0.023	0.0393

BMI, body mass index; EQ-5D-5L, EuroQol Five Dimensions; SF-6Dv2, Short Form Six Dimensions version 2; VAS, Visual Analogue Scale.

14% for EQ-5D-5L and 1% for SF-6D.<sup>17</sup> Another strength is that our study provides utility scores for various socio-demographic data, type of diagnosis and management of pain for subjects with CLBP. For patients with LBP, very few studies present the utility score according to as many

variables. Most studies present only the global utility score for their cohort and compare the agreement between EQ-5D and SF-6D or compare with specific HRQoL questionnaires for patients with LBP (ie, Oswestry Disability Index and Roland-Morris Disability Questionnaire).<sup>16–18 48</sup>

One limitation for calculating EQ-5D-5L and SF-6Dv2 utility scores is that there is no value set for the Quebec population, which does not allow cultural specificities to be considered. Another limitation is that the female population is over-represented in our cohort, although it is recognised that LBP is more prevalent among women. The number of subjects in the survey is acceptable and is more than other studies analysing EQ-5D-5L and SF-6Dv2, but it is not quite enough to have a representative cohort of the Quebec population with LBP (ie, the sample size to be representative of 95% of the population with a margin of error of 3% is set at 1003). This may limit the generalisation of the results. Another limitation is that subjects who did not complete the survey up to the EQ-5D-5L and SF-6Dv2 section were older, which may cause this population to be under-represented in utility scores. It is possible that this clientele had more difficulty completing the online questionnaire and abandoned it before the end. Finally, since the AQDC is a patient organisation dedicated to chronic pain and not only to CLBP, we were not able to calculate a response rate to the survey (ie, the survey was sent to all members and not only to CLBP members).

## CONCLUSION

This study described utility scores with EQ-5D-5L and SF-6Dv2 in patients with CLBP in Quebec. Results were similar to other studies with patients with CLBP and in our sense could be used for population comparisons. Also, these values were well below those reported in the Quebec general population and highlight the association between CLBP and HRQoL.

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the end of the explanatory letter. All questionnaires were anonymous, and the data were stored on a protected network at our institution to ensure confidentiality and protection of the respondents.

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**Data availability statement** All data relevant to the study are included in the article or uploaded as supplementary information. Data are presented in tables and supplementary tables. As per our ethics committee rules, individual-level data will be made available upon reasonable request by email to the corresponding author.

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