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# SEVERAL LOW BACK PAIN-RELATED MISBELIEFS ARE STILL AROUND IN 2020: A CROSS-SECTIONAL SURVEY IN BELGIUM

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## Abstract

**Background and purpose:** Low back pain (LBP)-related misbeliefs are known to be among risk factors for LBP chronification and for persistence of chronic pain. The main objective of this study was to investigate the current LBP-related beliefs in the general population in Belgium, considering the fact that the last survey in Belgium about the topic was conducted more than 15 years ago.

**Methods:** A cross-sectional study design was used. Belgian adults (>17 years old) were recruited in the three regions of the country by means of non-probabilistic recruitment methods. Participants were invited to fill in a battery of questionnaires including demographic questions as well as questions about their LBP history and the LBP Beliefs Questionnaire (LBPBQ).

**Results:** A total of 3724 individuals participated in the study. The LBPBQ scores indicated several LBP-related misbeliefs. About 15%–25% of participants still think that imaging tests can always identify the cause of pain and that bed rest is the mainstay of therapy. The majority of the participants think that "unnecessary" movements should be avoided when having LBP (58% of the respondents), and that they should "take it easy" until the pain goes away (69%). Most respondents also had maladaptive/wrong expectations, for example, a systematic worsening with time (65%) and a need for surgery in case of disc herniation (54%).

**Conclusions:** The present study suggests that in 2020 several LBP-related misbeliefs are still current in Belgium, particularly regarding the vulnerability of the spine. Therefore, further efforts to improve LBP-related beliefs/knowledge in the general population are necessary.

## Keywords

attitude, fear, knowledge, low back pain

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# 1. INTRODUCTION

Low back pain (LBP) is a common, recurrent, and costly condition throughout the world. Indeed, 50%–80% of people will be affected during their lifetime (Rubin, 2007). In Europe, LBP is the most common cause of medically certified sick leave and early retirement (Hartvigsen et al., 2018). Although the prognosis of acute LBP is favorable in most patients, some will develop persistent LBP (Hartvigsen et al., 2018). The presence of misbeliefs regarding LBP increases the risk for LBP chronicity (Darlow et al., 2014; Demoulin et al., 2016; Linton et al., 2000; Munigangaiah et al., 2015; Picavet, 2002). The LBP-related misbeliefs can negatively impact pain levels, disability, medication use, health care utilization, and treatment outcomes (O'Sullivan et al., 2019; Rainville et al., 2011). In addition, LBP-related misbeliefs can increase alertness for symptoms, induce catastrophic thoughts and avoidance behaviors, and decrease activity levels (e.g., physical, occupational, or domestic; Darlow et al., 2014; Demoulin et al., 2016).

Various LBP-related misbeliefs have been reported in the literature, some of them even being referred to as "myths," for example, "Scans are always needed to detect the cause of LBP" or "Bed rest is the mainstay of therapy" (Deyo, 1998). The persistence of these myths suggests that a biomedical view on LBP and its treatment is still present in the general population. Considering the demonstrated negative impact of LBP-related misbeliefs and the fact that the last survey in Belgium about the topic was conducted more than 15 years ago (Goubert, Crombez, & Bourdeaudhuij, 2004), the main objective of this study was to investigate the current LBP-related beliefs in the Belgian adult population. A secondary objective was to investigate the relationship between the level of unhelpful beliefs and some participants' characteristics (pain/disability levels and LBP experience).

# 2. METHODS

## 2.1. STUDY DESIGN

A cross-sectional, self-administered survey design was used. The survey, available online on a digital platform (http://www.surveymonkey.com) between October 2019 and March 2020 was also distributed in a paper format (e.g., in environments where digitalization is not standard, such as nursing and care homes). The digital survey could only be submitted after having filled it out completely; the questionnaires used in a paper format were checked thoroughly to make sure there was no missing information. The study protocol was approved by the ethical committee of Liege University Hospital (Belgium) on September 12, 2019. Prior to completing the survey, all participants were invited to read information about the study and were informed that by filling in the survey, they were giving their informed consent.

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## 2.2. PARTICIPANTS

This study was conducted in the Belgian adult population (age above 17 years old). Participants were recruited in the three regions of the country (i.e., Flemish region, Walloon region, and Brussels capital region).

Non-probabilistic recruitment methods were used to obtain a representative sample of the Belgian population (regarding age, language, educational level, employment, and occupation). The survey was submitted via social networks such as private and public groups (universities, schools, hospitals, self-help groups, farmers, nature lovers, architecture lovers, etc.). The questionnaire was also sent by email to various student and professorial communities, to citizens, to more than 100 private and public companies (public transport, post office, police force, educational networks, etc.). Posters with QR code were also placed in various medical houses, general practitioner (GPs') offices, hospitals, supermarkets, bus stops, and train stations. Furthermore, participants were also recruited in nursing and care homes (with questionnaires in paper format).

## 2.3. PROCEDURE AND MEASURES

The survey used in the present study (available in French and Dutch) was similar to the one used by Goubert, Crombez, and Bourdeaudhuij (2004). However, only the general questions (assessing demographic characteristics) and the LBP-related questions were used as the focus of the present study was on LBP only. These LBP-related questions included general questions about LBP as well as the Low Back Pain Beliefs Questionnaire (LBPBQ), as in Goubert, Crombez, and Bourdeaudhuij (2004) study.

### 2.3.1. SOCIO-DEMOGRAPHIC QUESTIONS

The socio-demographic data collected included age, level of education, marital status, and employment status.

### 2.3.2. GENERAL QUESTIONS ABOUT LBP

Participants were asked if they had current pain. If not, they were asked if they had experienced any pain in the lumbar region (illustrated by means of a body chart) in the past six months or during their lifetime. Five questions enquired about medical encounters, in the past 6 months, to a GP, a specialist, and other therapists, about the medication prescribed to them and the advice received by the physician and their immediate social environment due to LBP.

Furthermore, this part of the survey also included several other items to evaluate pain and disability:

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- Three 0–10 pain numerical rating scales (NRS) (0 = "no pain" and 10 = "worst possible pain") investigating current pain, average pain in the past 6 months, and worst pain intensity in the past 6 months.

- Three 0–10 disability NRS (0 = "no interference" and 10 = "unable to carry on any activities") assessing the disability experienced in the past 6 months in daily activities, in leisure, social and family activities, and in work activities (including housework), respectively.

- One item about the number of disability days in the past 6 months (incapacity to perform usual activities, e.g., work, school, and housework).

These pain and disability data were used to classify participants into one of the five categories of the Graded Chronic Pain Scale (GCPS) according to pain intensity and disability (Von Korff et al., 1992): Grade 0: no pain in the past six months; Grade I: low disability and low intensity; Grade II: low disability and high intensity; Grade III: high disability and moderately limiting; Grade IV: high disability and severely limiting. The GCPS is a reliable and valid scale (Goubert, Crombez, & Bourdeaudhuij, 2004; Smith et al., 1997; Von Korff et al., 1992).

#### 2.3.3. LBP-RELATED MISBELIEFS

The "LBP Beliefs Questionnaire" (LBPBQ) developed by Goubert, Crombez, and Bourdeaudhuij (2004) was used in the present study. Items of the LBPBQ were selected and adapted from the back pain myths of Deyo (1998), the Tampa Scale for Kinesiophobia (Goubert, Crombez, Van Damme, et al., 2004; Kori et al., 1990), the Pain Attitudes and Beliefs Scale for Physiotherapists (Ostelo et al., 2003) and the Self-Care Orientation Scale from Von Korff et al. (1998). It includes 16 items (shown in the table in the Section3) investigating the respondents' LBP-related beliefs. Six dimensions are addressed within this questionnaire, namely harm, limited physical activity, belief in medical cure, caution, lack of self-control, and belief in pain medication. For each item, a Likert scale (1–4) is used to determine whether respondents disagreed (1 point), rather disagreed (2 points), rather agreed (3 points) or agreed (4 points) with the statement. The total LBPBQ score (ranging from 16 to 64) can be calculated by adding the specific score of each item (after inverting the score obtained for the items "d," "g," "h," and "p"). The higher the total score, the more misbeliefs the patient has and *vice versa*.

### 2.4. STATISTICAL ANALYSIS

For the statistical analysis, the software R 3.6.0 was used. The results are expressed as mean  standard deviation for continuous variables and as a number (%) for categorical variables.

The comparisons of the three groups ("current LBP," "currently asymptomatic but past LBP," and "never LBP") and of the five GCPS categories (based on pain intensity and disability) regarding the LBPBQ total score were carried out with a one-way ANOVA combined to Tukey *post hoc* tests. The statistical significance level was set at $p$-value $<0.05$.

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# 3. RESULTS/FINDINGS

The survey was completed by 3724 participants.

## 3.1. GENERAL SOCIO-DEMOGRAPHIC AND LBP-RELATED INFORMATION

Descriptive data on the sample are presented in Table 1. Within the whole sample, 93.7% of respondents reported LBP in their lifetime, 36.5% were suffering from LBP at the time of the survey ($n = 1358$) and 6.3% of the participants reported they had never had LBP ($n = 233$; Table 1). The Table 1 also presents the categorization of the participants into the GCPS categories; most participants were categorized in the Grades 0, I, or II.

Nearly three-quarters of the respondents reported having had LBP of 1 day or more in the last 6 months ($n = 2739$). The duration of LBP in these respondents was 48.5 57.6 days and the mean pain intensity at the time of response was 3.93 2.39. The average level of discomfort in daily activities, in recreational, social and family activities, and in work/household activities in the last 6 months was 3.91 2.54, 3.24 2.70, and 3.78 2.76, respectively. Radiation in the lower limbs was reported by 32.9% of these respondents ($n = 900$).

A total of 1207 participants (i.e., 32.4% of the whole sample) visited their GP in the last six months. Among the participants reporting LBP within the last six months, 7.3% reported having been hospitalized in the last 6 months because of LBP ($n = 201$), 4.9% having undergone surgery ($n = 135$), and 38.3% having consulted a health care professional (HCP) for this pain ($n = 1048$). On average, the number of specialists seen was 1.38 1.07. The most frequent advice participants reported to have been given was to stay in bed (17.2%), to stay active (30.9%), to take medication (25.1%), and/or to go to a physiotherapist or back school (41.4%).

## 3.2. BELIEFS ABOUT LBP

Table 2 shows the item-by-item results of the LBPBQ. In our sample, the prevalence of LBP-related misbeliefs was lower than 25% only regarding 5 out of the 16 items of the LBPBQ (e.g., only 14.7% of the participants (rather) disagreed with the statement "Remaining physically active is the best remedy against back pain"). In contrast, misbeliefs were present in most participants (>50%) for six other items. The most prevalent misbelief was "if your back hurts, you should take it easy until the pain goes away" (69.4% of the participants (rather) agreed with the statement). The prevalence of misbeliefs ranged from 25% to 50% regarding the 5 other items.

**TABLE 1** Sociodemographic variables and low back pain data of the study sample ($n = 3724$)

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| | Mean (±SD) |
|---|---|
| Age (in years) | 37.5 (15.9) |
| | ***n* (%)** |
| Education | |
| Elementary school (≤12 years) | 14 (0.4%) |
| Lower secondary school (≤15 years) | 81 (2.2%) |
| Higher secondary school (≤18 years) | 595 (16.0%) |
| University or similar (>18 years) | 3034 (81.5%) |
| Marital status | |
| Alone | 1604 (43.1%) |
| Married | 1169 (32.0%) |
| Separated/divorced | 205 (5.5%) |
| Cohabitation | 698 (18.7%) |
| Widow/widower | 48 (1.3%) |
| Employment status | |
| Student | 1015 (27.3%) |
| Employed | 2204 (59.2%) |
| Housewife/-husband | 43 (1.1%) |
| Unemployed | 65 (1.8%) |
| Compensation or juridical procedure | 82 (2.2%) |
| Retired | 315 (8.5%) |
| History of pain | |
| Current LBP | 1358 (36.5%) |
| Currently asymptomatic but past LBP | 2133 (57.3%) |
| Never LBP | 233 (6.3%) |
| Graded Chronic Pain Scale | |
| Grade 0 | 985 (26.5%) |
| Grade I | 1122 (30.1%) |
| Grade II | 1084 (29.1%) |
| Grade III | 355 (9.5%) |
| Grade IV | 178 (4.8%) |

The total score of the LBPBQ in the whole sample was 35.2  7.18 (min: 16 and max 57).

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### 3.3. SUB-GROUP ANALYSES

According to the statistical analysis, the LBPBQ total score was significantly higher in participants who reported current LBP than in asymptomatic participants with or without past experience of LBP (Table 3).

Table 4 shows that participants categorized in the Grades 0 and I had similar LBPBQ total scores ($p = 0.153$). Significant differences ($p < 0.001$) with and between the other GCPS categories were also found with the highest scores found in the Grade IV category.

## 4. DISCUSSION

The present study pointed out that some LBP-related misbeliefs, which are even often reported as "myths," are still extensively present in the general population in Belgium in 2020. Indeed, beside the fact that a non-negligible (15%–25%) number of respondents still think that imaging tests can always identify the cause of pain and that bed rest is the mainstay of therapy, the survey also indicated that the majority of the respondents think that avoidance is needed when having LBP and had maladaptive/wrong expectations.

The specific analysis of each of the 16 items of the LBPBQ used in the present study revealed that only one item ("Someone who has back pain, can do things himself to ease recovery") was rarely related to misbeliefs (i.e., present in less than 10% of the respondents) whereas 6 out of the 16 items reflected common LBP-related misbeliefs (i.e. present in more than half of the sample). The LBPBQ dimensions most commonly associated with misbeliefs were related to "harm" and "caution." The high rate of these LBP-related misbeliefs was also reported by Goubert, Crombez, and Bourdeaudhuij (2004) (agreeing respondents rate averaging 70%–80% for most of the related items) and more recently by Christe et al. (2021) and Pierobon et al. (2020) the latter reporting that 70% of respondents (rather) agree with the statement "it is easy to injure your back." Our results are in accordance with Morton et al. (2019) systematic review reporting that beliefs about back pain's negative consequences were common across countries and populations. The perceived vulnerability of the spine is a well-known risk factor for chronicity (Vlaeyen & Crombez, 1999) and should be challenged by the HCPs with statements such as "the back is one of the most solid body structures" to reassure LBP patients (O'Sullivan et al., 2019; Van Wambeke et al., 2017). Although our findings might be worrying, more positive beliefs/attitudes were found regarding the dimension related to physical activity. Indeed, 75% of respondents acknowledged the role and importance of physical activity for LBP recovery. Whereas positive representations regarding physical activity was also reported in most participants (80%) in the survey conducted in New-Zealand (Darlow et al., 2014), results were less favorable in Argentina (62.4%; Pierobon et al., 2020). Regarding the dimension "Belief in medical cure," only a minority of respondents (25.1%) agreed on the fact that imaging is always necessary in case of LBP and can always identify the cause of LBP. This result is positive considering the fact that it was considered as one of the most common myths by Deyo (1998) and that these misbeliefs were much more frequent in the study of Goubert, Crombez, and Bourdeaudhuij (2004, 47.4%) and in others studies (Darlow et al., 2014;

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Pierobon et al., 2020). However, misbeliefs related to the necessity of surgery in case of a slipped disc and ongoing attention from a physician, were present in our sample

**TABLE 2** Overview of means, standard deviations (SD), and percentage of agreeing respondents on the Low Back Pain Beliefs Questionnaire

| | Disagree (%) | Rather disagree (%) | Rather agree (%) | Agree (%) | Mean score (±SD) |
|---|---|---|---|---|---|
| Harm | | | | | |
| a. Back pain indicates the presence of organic injury or serious disease | 36.3[a] | 32.3 | 23.0 | 8.4 | 2.03 0.96 |
| b. When one has back pain a wrong movement can lead to serious problems | 12.7 | 21.7 | 42.1[a] | 23.5 | 2.76 0.95 |
| c. The worst thing about back pain is that in time you can do increasingly less | 13.0 | 21.8 | 42.8[a] | 22.4 | 2.75 0.95 |
| Limited physical activity | | | | | |
| d. Remaining physically active is the best remedy against back pain[b] | 2.9 | 11.9 | 35.0 | 50.2[a] | 1.67 0.79 |
| i. Back pain means one should refrain from physical activity | 48.5[a] | 37.4 | 10.8 | 3.3 | 1.69 0.79 |
| o. Bed rest is the mainstay of therapy | 37.6 | 38.5[a] | 18.6 | 5.3 | 1.92 0.87 |
| Belief in medical cure | | | | | |
| f. Back pain requires ongoing attention and advice from a physician | 19.6 | 37.5[a] | 32.5 | 10.4 | 2.34 0.91 |
| k. If you have a slipped disc (also known as a herniated or ruptured disc) you must have surgery. Surgeons agree about exactly who should have surgery | 19.3 | 26.9 | 34.8[a] | 19.0 | 2.54 1.01 |
| l. X-ray and imaging tests (scans) can always identify the cause of back pain | 38.6[a] | 36.3 | 18.8 | 6.3 | 1.93 0.91 |
| n. Everyone with back pain should have a spine X-ray or imaging test | 32.1 | 36.2[a] | 22.5 | 9.2 | 2.09 0.95 |
| Lack of self-control | | | | | |
| g. Someone who has back pain, can do things himself to ease recovery[b] | 2.0 | 7.7 | 39.8 | 50.5[a] | 1.61 0.72 |
| p. Psychological factors, such as thoughts and feelings, can influence pain intensity[b] | 4.6 | 11.0 | 36.7 | 47.7[a] | 1.73 0.83 |
| Belief in pain medication | | | | | |
| e. During a back pain episode it is necessary to take more pain medication | 29.6 | 41.3[a] | 22.8 | 6.3 | 2.06 0.88 |
| h. You would avoid using prescription medicines for back pain, even if pain were severe[b] | 24.0 | 35.5[a] | 26.2 | 14.3 | 2.69 0.99 |

*Note*: Numbers in red illustrate responses clearly indicating LBP-related misbeliefs ("totally" (dis)agreement with the statement). Numbers in orange illustrate responses suggesting LBP-related misbeliefs ("rather" (dis)agreement with the statement).

[a]Highest response rate.

[b]Items for which the score must be reversed to be interpreted in the same way as the other items.

**TABLE 3** Comparison of the LBPBQ total score in the three groups "Current LBP," "Currently asymptomatic but past LBP," and "Never LBP"

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| | Current LBP (*N*= 1358) *M±SD* | Past LBP (*N*= 2133) *M±SD* | Never LBP (*N*= 233) *M±SD* |
|---|---|---|---|
| LBPBQ total score | 36.6 6.9[a] | 34.3 7.2[b] | 34.6 7.5[b] |

*Note*: The values with different superscript letters in a column are significantly different ($p < 0.05$).

(43%–54%) although it does not fit with the best evidence (Traeger et al., 2019; Van Wambeke et al., 2017). The two items related to the dimension "Lack of self-control" suggested a relatively low rate of misbeliefs (10%–16%) which was lower than in Goubert, Crombez, and Bourdeaudhuij (2004) study (19%–36%). These results are positive considering that "self-efficacy" is more predictive of functional disability than pain-related fears (Denison et al., 2004; Jackson et al., 2014; Woby et al., 2007). As in other studies (Darlow et al., 2014; Goubert, Crombez, & Bourdeaudhuij, 2004; Pierobon et al., 2020), most of our responders acknowledge the influence of psychosocial factors on pain intensity, which is important as it may prompt people to perform some self-treatment exercises (e.g., relaxation; Karasawa et al., 2019). Finally, the dimension about "Belief in pain medication" revealed that, although they are not a majority, some patients have misbeliefs regarding the use of medication.

TABLE 4 Comparison of the LBPBQ total score in the five subgroups based on the categories of the Graded Chronic Pain Scale (GCPS)

| | Grade 0 (*N*= 985) *M±SD* | Grade I (*N*= 1122) *M±SD* | Grade II (*N*= 1084) *M±SD* | Grade III (*N*= 355) *M±SD* | Grade IV (*N*= 178) *M±SD* |
|---|---|---|---|---|---|
| LBPBQ total score | 34.1 7.4[a] | 33.4 7.1[a] | 36.2 6.6[b] | 38.1 6.1[c] | 40.6 6.6[d] |

Although this study was conducted in the Belgian adult population as in the study by Goubert, Crombez, and Bourdeaudhuij (2004) and though the questionnaires were identical, the differences between the two studies in the recruitment methods and in some respondents' socio-demographic variables (e.g., younger and more active and educated respondents than in Goubert, Crombez, and Bourdeaudhuij, 2004 study) prevent us from drawing firm conclusions regarding the decrease of LBPrelated misbeliefs observed for each dimension when comparing both studies. Some hypotheses might be raised to explain these potential improvements. Since the Goubert, Crombez, and Bourdeaudhuij (2004) paper release, the scientific literature has published many papers about guidelines for LBP management and about LBP-related misbeliefs and the necessity to consider the biopsychosocial model (Cutforth et al., 2011; Oliveira et al., 2018; Van Wambeke et al., 2017). Therefore, some of this new information has been implemented in HCP academic courses and HCP clinical practice which have a strong influence on patients' beliefs (Baker, 2016; Darlow et al., 2012; Daykin & Richardson, 2004; Oliveira et al., 2018; Werner et al., 2005). That might explain, for example,

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that in comparison with Goubert, Crombez, and Bourdeaudhuij (2004) findings, a decrease of the percentage of participants reported having been advised to stay in bed when in pain (23% vs. 17.2%) and an increase of participants reported they were advised to stay active (14% vs. 30.9%).

Anyway, the high prevalence of LBP-related misbeliefs in the Belgian adult population 15 years after a first study (Goubert, Crombez, & Bourdeaudhuij, 2004) is compelling. Considering the fact that LBP-related misbeliefs can negatively impact pain levels, disability, medication use, health care utilization, and treatment outcomes (O'Sullivan et al., 2019; Rainville et al., 2011), the present results and the ones reported in other countries (Morton et al., 2019) point out the necessity for better informing the population, for example, by conducting awareness media campaigns which can be beneficial for both the general population and HCPs and appear to be effective in debunking myths by making beliefs more consistent with current guidelines and principles of self-management (Buchbinder, 2001; Foster et al., 2018; O'Keeffe et al., 2018; Suman et al., 2020).

Regarding the secondary objective, the present study revealed that slight but significantly higher scores related to LBP-related misbeliefs were found in people with current pain and with a higher pain intensity/disability level. These findings are in accordance with previous studies (Christe et al., 2021; Goubert, Crombez, & Bourdeaudhuij, 2004; Pierobon et al., 2020).

### 4.1. LIMITATIONS

Despite the fact that the sample size used in the present study (3724 participants out of the 11.5 million Belgian people) was larger than in previous similar studies conducted in Switzerland, Argentina, and New Zealand (which included $n = 1129$ (out of 8.5 million inhabitants); Christe et al., 2021), $n = 1092$ (out of 45 million inhabitants; Pierobon et al., 2020), and $n = 602$ (out of 5 million inhabitants; Darlow et al., 2014), respectively), and the fact that individuals from the three areas of Belgium were recruited), the present study suffers from some limitations mainly related to the use of non-probabilistic recruit methods including the use of social network and an online survey. They prevent from knowing how many people were reached by the survey and how many accepted. Furthermore, although numerous and various different strategies were used to recruit participants, the majority of our participants were young active adults with a good education level preventing us from having a representative sample of the Belgian population (whose mean age, activity rate for the 15–64 years old and high education diploma rate are 40.4 years, 66%, and 28%, respectively[1]). Although most characteristics are similar than in previous studies (Christe et al., 2021; Pierobon et al., 2020) and there is no consensus on the influence and importance of sociodemographic factors on people LBP-related misbeliefs (Beales et al., 2014; Bowey-Morris et al., 2011; Christe et al., 2021; Goubert, Crombez, & Bourdeaudhuij, 2004; Ihlebæk & Eriksen, 2005; Mannion et al., 2013; Sharma et al., 2020; Suman et al., 2017), this selection bias should not be ignored. In the survey, gender was not asked for. Although the proportion of females and males is quasi identical in the Belgian population,[1] and though Goubert, Crombez, and Bourdeaudhuij (2004) did not report any influence of the gender on LBP-related beliefs, this outcome could have been taken into consideration. Another limitation lies in the fact that only the LBPBQ was used to assess peoples' beliefs although other questionnaires have been validated. This choice resulted from our desire to not lengthen the survey to reduce the risk of drop-out and favor the

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recruitment of participants. Finally, the item "avoid using prescription medicines for back pain" (i.e., the last item of the questionnaire) might be interpreted differently. Some patients might be reluctant to trust their doctor with regard to medication because opioids are prescribed too often. However, physicians now recommend opioids with much more caution than several years ago because of their secondary effects (Deyo et al., 2015).

In conclusion, the present study suggests that in 2020 several LBP-related misbeliefs are still extent in the adult population in Belgium, particularly regarding the vulnerability of the spine.

Therefore, further efforts to improve LBP-beliefs in the general population, through media campaign, for example, are necessary.

# 5. IMPLICATIONS FOR PHYSIOTHERAPY PRACTICE

As the present study confirms that LBP-related misbeliefs are common in the general population, it is essential for physiotherapists to spend some time to screen patients' beliefs and to manage potential misbeliefs so as to avoid inducing/reinforcing patients' misbeliefs (notably on the vulnerability of the spine as the LBPBQ dimensions most commonly associated with misbeliefs were related to "harm" and "caution" in the present study and patients' perceived vulnerability is a well-known risk factor for chronicity (Vlaeyen & Crombez, 1999). Indeed, HCPs have a major influence on patients' beliefs and can favor LBP-related misbeliefs in case of inappropriate discourse/wordings (e.g., "your back is weak" instead of positive messages such as "motion is lotion" (O'Sullivan et al., 2019; Stewart et al., 2011; Van Wambeke et al., 2017) or attitudes (e.g., misinterpretation of the imaging results, emphasis on rest and/or passive treatments; Black et al., 2017; Caneiro et al., 2019; Darlow et al., 2013, 2014; Daykin & Richardson, 2004; Demoulin et al., 2016; Setchell et al., 2017; Stewart et al., 2011).

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**CONFLICT OF INTEREST**

The authors declare no conflict of interest.

**ETHICAL STATEMENT**

The study protocol was approved by the ethical committee of Liege University Hopital Center on 12th September 2019.

**AUTHOR CONTRIBUTIONS**

The authors confirm contribution to the article are as follows: study conception and design: Christophe Demoulin, Laura Pitance, Nathalie Roussel, and Liesbet Goubert; data collection: LiesbetLaura Henket, L. Gabriel, and O. Nève de Mévergnies; analysis and interpretation of results: C. Demoulin, L. Pitance, N. Roussel, L. Goubert, L. Henket, L. Gabriel, O. Nève de Mévergnies, and M. Vanderthommen; draft manuscript preparation: C. Demoulin, L. Pitance, N. Roussel, L. Goubert, L. Henket, L. Gabriel, O. Nève

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de Mévergnies, and M. Vanderthommen. All authors reviewed the results and approved the final version of the manuscript.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon a reasonable request.

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## ENDNOTE [1]

[1] https://bestat.statbel.fgov.be.

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