

## Original article

## Low back pain prevalence, beliefs and treatment-seeking behaviour in multi-ethnic Suriname

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## Abstract

**Objectives.** The aims were to determine, for the first time, the prevalence of low back pain (LBP) in urban and rural communities and to assess back beliefs and treatment-seeking behaviour in Suriname, a multi-ethnic country in the Caribbean community.

**Methods.** A cross-sectional community-based survey using the Community Oriented Program for the Control of Rheumatic Diseases methodology was performed between April 2016 and July 2017. Information was collected on LBP prevalence and LBP-related treatment seeking, beliefs about LBP [Back Beliefs Questionnaire (BBQ)], level of disability (Oswestry Disability Index) and the risk of developing persistent disabling pain (Start Back Screening Tool).

**Results.** A total of 541 out of 2902 individuals reported current acute or chronic LBP. It was more prevalent in urban (20.2%) than in rural (13.7%) communities, especially in females and older adults (>55 years of age). Individuals from rural areas [median BBQ = 18.00 (14.00–22.00)] had significantly more negative beliefs than the urban population [median BBQ = 25.00 (19.00–31.00);  $P < 0.001$ ]. Maroons displayed more negative beliefs than Creole ( $P = 0.040$ ), Hindustani ( $P < 0.001$ ), Javanese ( $P < 0.001$ ) and mixed ethnicity ( $P < 0.001$ ) groups. At least 75% of the LBP population sought care, especially from a western health-care practitioner. Seeking treatment and having a higher risk of developing persistent disabling pain was significantly associated with more disability ( $P < 0.001$ ). Age  $\geq 45$  years ( $P < 0.001$ ), Indigenous ethnicity ( $P < 0.05$ ) and functional disability ( $P < 0.001$ ) were factors influencing treatment seeking.

**Conclusion.** Low back pain is a prevalent health problem in the Surinamese urban community, especially in older adults and among females. Most individuals experiencing LBP visited a western health-care practitioner and had more negative beliefs compared with other communities.

**Key words:** prevalence, low back pain, beliefs, treatment seeking, ethnicity, COPCORD, Suriname

## Key messages

- In Suriname, low back pain is highly prevalent in urban communities, females and older people.
- The multi-ethnic low back pain population seems to exhibit more negative beliefs towards low back pain.
- Treatment seeking is associated with older age, functional disability and Indigenous ethnicity.

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## Introduction

Low back pain (LBP) is the most common musculoskeletal complaint globally and it is the main cause of disability and work absence, resulting in a high economic burden on individuals, families and communities [1, 2]. Low- and middle-income countries (LMICs) have high prevalence rates for LBP; in the general adult population (age  $\geq 18$  years) a prevalence of 21% was reported, with higher rates in the elderly (28%) and working population (52%) [3]. In Latin America, Community Oriented Program for Control of Rheumatic Diseases (COPCORD) studies reported LBP prevalence estimations between 1.8 and 11.3% [4].

Although several risk factors, including age and lifestyle factors, have been identified [4], the causes of LBP remain unknown. To understand the complexity of LBP and to improve treatment, the World Health Organization proposed a biopsychosocial approach [5, 6], which acknowledges that LBP is not simply a result of nociceptive input. Multifactorial contributors seem to play an important role in persistent disabling LBP. Evidence shows that psychosocial factors, such as beliefs and kinesiophobia are linked to non-recovery and chronicity if not addressed during treatment [7]. Most recognized beliefs concerning LBP are the fear avoidance beliefs and the beliefs about the consequences of LBP as measured by the Back Beliefs Questionnaire (BBQ). Positive beliefs can be protective against unfavourable behaviour when experiencing LBP, as seen in Australian Aboriginals [8]. On the contrary, negative beliefs that can limit a person's ability to cope with LBP are associated with high pain intensity, fear of movement and high level of disability [7, 9].

The decision to seek treatment seems to be driven by the level of disability and pain intensity [10]. Also, individuals with limitations in activities of daily living, worse general health or of female sex are more likely to seek care for LBP [11]. This behaviour is present in both western communities and LMICs [11–13]. It is important to understand the treatment-seeking behaviour of the community because it determines how health-care services are used [14].

In Suriname, a multi-ethnic country in the Caribbean community, prevalence, beliefs and treatment-seeking behaviour of people with LBP have not yet been explored. Owing to the various ethnic groups and diverse culture, Suriname provides a unique setting to explore different contributors to LBP. Therefore, the overall aims of this study were to determine the LBP prevalence and beliefs regarding the consequences of LBP in urban and rural communities in multi-ethnic Suriname, and to assess various factors that influence treatment-seeking behaviour in this population sample.

## Methods

### Study design and setting

In 2017, COPCORD stage 1 phases 1 and 2, a cross-sectional descriptive survey, were completed in Suriname

[15]. The Surinamese population consists of different ethnic groups based on a history of slavery, contract labour and immigration. Asian descendants from India [Hindustani (27.4%)] and Indonesia [Javanese (13.7%)] and African descendants [Creoles (15.7%) and Maroons (21.7%)] are the majority in the population of Suriname. The Indigenous (Amerindians) are the original inhabitants and form a small fraction of the population (3.8%). This community-based study was executed in Paramaribo, the capital city, and Wanica, its neighbouring urban district. Two rural villages, Galibi in district Marowijne and Goejaba in district Sipaliwini, were also selected to participate because these villages have the largest population of Indigenous people and Maroons, respectively [16].

### Participants and recruitment

Between April 2016 and July 2017, trained interviewers executed the COPCORD Suriname survey. In the urban districts, a house-to-house visit was conducted on a random sample of home addresses, selected through a stratified, multi-stage, cluster sampling design [17]. In the rural communities, all individuals who were present in their village during the survey and eligible for the study were interviewed. Recruitment of eligible participants has been described in a previously published paper [15]. Written informed consent was given by all participants. Consent forms of under-aged persons (<21 years old) were co-signed by a parent or guardian. In our study, ethnicity was based on grandparental origins according to the method described by Krishnadath *et al.* [17]. It has been shown that beliefs and behaviours of significant others (for example, family members) may influence an individual's illness perception, beliefs and subsequent behavioural responses [18]. To minimize the effect of beliefs and perspectives of immediate family members when analysing BBQ scores, the next-birthday method was used to select randomly one person with LBP per household. The next-birthday method identifies the person in the household who will have the next birthday among all eligible household members [19]. The study was approved by the Ethical Committee of the Ministry of Health in Suriname (approval number VG016-14).

### Instruments

The COPCORD questionnaires were translated via the forward-backward translation method by accredited translators. All questionnaires used in the COPCORD Suriname study were pre-tested via a pilot survey, with all ethnic groups and both sexes included.

The COPCORD Suriname study was used to collect basic sociodemographic information and the presence of musculoskeletal symptoms [15]. Only respondents with current LBP were included, regardless of whether the pain was acute or chronic. Lower back pain was defined as pain, muscle tension or stiffness between the costal margin and the lower gluteal folds, with or without lower extremity pain [20]. Acute LBP was defined as

pain that persists for <12 weeks and chronic LBP as pain that exists for  $\geq 12$  weeks [20].

Standardized questionnaires were administered that assessed the level of disability [Oswestry Disability Index (ODI)], beliefs about LBP (BBQ) and the risk of developing persistent disabling pain [Start Back Screening Tool (SBST)]. The ODI questionnaire was used to indicate the extent to which a person's functional level is restricted by disability [21]. The total possible score ranges from 0 (no to minimal disability) to 100 (maximal disability). As suggested by Tonosu *et al.* [22], the cut-off value of 12 was used to discriminate between respondents with functional disability and those without. Functional disability was defined as the inability to perform routine work for  $\geq 1$  day owing to LBP [22]. The BBQ examines the general belief of the consequences of LBP [23]. The scores were reversed and then summed to calculate a complete score that ranges between 9 and 45, with five statements acting as distractors. There is no established cut-off score for the BBQ. To perform the logistic regression analysis, the median BBQ score of the total LBP population (median BBQ = 23.00) was used as a reference. An individual BBQ score of  $\leq 23.00$  represents more negative beliefs toward LBP. The SBST measures the level of risk of developing persistent disabling pain in persons with LBP [24]. It categorizes the patients into a low-, medium- or high-risk subgroup (scores range from zero to nine).

Treatment was divided into western and non-western treatment. Western treatments included treatment by medical doctors or other westernized health-care professionals. Traditional massage, homeopathy, acupuncture, homemade ointment and use of herbs provided by a cultural herbalist were classified as non-western treatment.

### Data analysis

Descriptive statistics were reported as the mean (s.d.) for continuous data and as the frequency for categorical variables. The prevalence of LBP was calculated as a percentage of the total COPCORD population and as a percentage within each category or group. Statistically significant differences were calculated by  $\chi^2$  tests and/or Fisher's exact tests. *Post hoc* tests were performed when a significant effect between the variables was found. Given that data on the BBQ were not normally distributed (via the Shapiro–Wilk test), back beliefs were presented as median sum scores with the interquartile range (IQR). The Kruskal–Wallis *H*-test and the Mann–Whitney *U*-test were used to determine characteristic differences between two or more groups. Logistic regression was used to analyse associations between treatment-seeking behaviour and the different outcome variables (geographical location, gender, ethnicity, age, duration of LBP, ODI and BBQ). Data from the univariate and multivariate analyses were presented as the odds ratio (OR) and 95% CI. Calculated *P*-values  $\leq 0.05$  were considered significant. The results were analysed with SPSS v.25.

## Results

### Selection of the total LBP population

During the COPCORD Suriname survey, 2902 respondents were interviewed. Individuals who answered, 'Yes' on the question, 'Do you have LBP now?' were categorized as having LBP ( $n = 541$ ). At the time of the interview, 442 out of 541 individuals experienced chronic LBP. Using the next-birthday method, 395 out of 541 respondents with LBP were selected to assess their beliefs about LBP (Fig. 1).

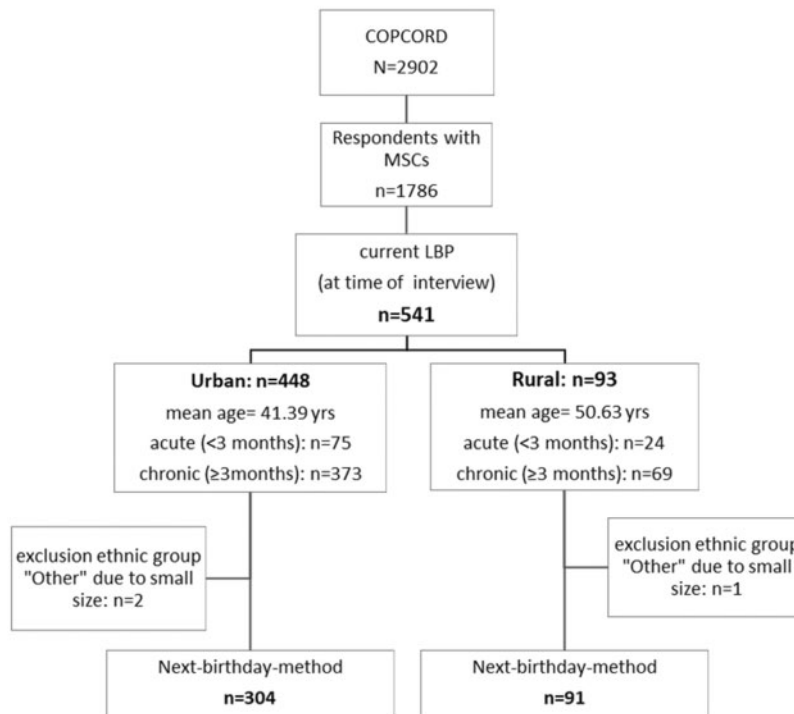
### Prevalence of LBP

The overall prevalence of LBP in our study population was 18.6%. The prevalence of LBP in the rural and urban communities was 13.7% and 20.2%, respectively ( $P < 0.001$ ). In general, there was a higher prevalence rate for all variables in the urban population compared with the rural population, with only significantly higher rates for gender and age (Table 1). Lower back pain was more prevalent in the female population. Within the urban community, Bonferroni analysis showed that LBP prevalence rates of Javanese (11%) and Maroons (14.7%) were significantly lower compared with Hindustani (24.7%) ( $P < 0.001$ ). However, no significant difference was found between the ethnic groups in the rural community ( $P = 0.096$ ). The point prevalence for each age range is shown in Table 1. Higher prevalence rates were found in persons in the older age categories in both rural ( $P = 0.003$ ) and urban ( $P < 0.001$ ) populations.

### Beliefs about the consequences of LBP

The median (IQR) BBQ score for the LBP population was 23.00 (22.63–24.13). Individuals from the rural area [median BBQ = 18.00 (14.00–22.00)] had significantly more negative beliefs than the urban population [median BBQ = 25.00 (19.00–31.00);  $P < 0.001$ ]. Overall, Maroons had significantly more negative beliefs compared with Creole ( $P = 0.040$ ), Hindustani ( $P < 0.001$ ), Javanese ( $P < 0.001$ ) and people of mixed ethnicity ( $P < 0.001$ ; Table 2). However, Maroons living in the rural community had significantly lower BBQ scores [median BBQ = 17.00 (14.00–21.00)] compared with Maroons in urban areas [median BBQ = 22.00 (17.00–29.00);  $P = 0.005$ ].

About half of the respondents (50.1%) had functional disability owing to LBP. These individuals had more negative beliefs [median BBQ = 21.00 (16.00–26.25)] compared with respondents without functional disability [median BBQ = 25.00 (19.50–31.00)]; ( $P < 0.001$ ). More than 50% of the respondents agreed or strongly agreed with at least five negative statements from the BBQ (Table 3). Most of the respondents agreed or strongly agreed with statements 4 (50%), 7 (73.1%) and 8 (85.4%). There was a significantly higher percentage of negative responses between individuals with and without functional disability owing to LBP for seven of the nine statements of the BBQ (Table 3).

**Fig. 1** Selection of low back pain population

COPCORD: Community Oriented Program for Control of Rheumatic Diseases; LBP: low back pain; MSCs: musculo-skeletal complaints.

### Treatment-seeking behaviour

More than 75% of the LBP population living in rural or urban areas sought care. Most persons experiencing LBP consulted a western health-care practitioner (74.7%), and <20% visited both western and non-western health-care practitioners (Table 2).

The SBST categorized 253 respondents (64.0%) as low risk, 94 (23.8%) as medium risk and 48 (12.2%) as high risk. A significantly higher percentage of respondents in the treatment-seeking group, compared with the no-treatment group, was categorized as high risk for developing persistent disabling pain ( $P < 0.001$ ). The opposite was found for participants who were classified as low risk (Fig. 2). Persons who sought treatment and who were classified as having a higher risk of development of persistent disabling pain presented with significantly more functional disability ( $P < 0.001$ ).

The results of the univariate analysis yielded the following significant factors related to treatment-seeking behaviour: geographical location (OR = 0.821; 95% CI: 0.746, 0.904;  $P < 0.001$ ), Indigenous and mixed ethnicity (respectively: OR = 1.134; 95% CI: 1.005, 1.280;  $P = 0.041$ ; and OR = 0.815; 95% CI: 0.668, 0.966;  $P = 0.018$ ), older age (45–54 years: OR = 1.615; 95% CI: 1.221, 2.135;  $P = 0.001$ ; 55–64 years: OR = 1.521; 95% CI: 1.142–2.026;  $P = 0.004$ ; and  $\geq 65$  years: OR = 1.520; 95% CI: 1.140, 2.028;  $P = 0.004$ ), functional disability (OR = 1.237; 95% CI: 1.109, 1.380;  $P < 0.001$ ) and positive beliefs (OR = 0.827; 95% CI: 0.739, 0.927;

$P = 0.001$ ). No significant difference was observed for gender ( $P = 0.163$ ) or duration of LBP ( $P = 0.201$ ). When including the significant determinants from the univariate analysis in the adjusted logistic model, factors contributing to treatment-seeking behaviour were age, ethnicity and functional disability. Persons  $>45$  years old ( $P = 0.010$ ), of Indigenous ethnicity ( $P = 0.030$ ) and with functional disability ( $P = 0.017$ ) were more likely to seek treatment for LBP (Table 4).

## Discussion

### Prevalence of LBP

This is the first study using COPCORD methodology to report LBP prevalence in Suriname. The overall LBP point prevalence of 18.6% in our study is high compared with the global point prevalence of 11.9% in the world population [1] and compared with COPCORD studies executed in Ecuador (9.3%) and Colombia (7.2%) [25, 26]. In COPCORD studies, prevalence rates between 2.8 and 11.6% were noted for urban populations (Venezuela: 2.8%; Brazil: 7.2%; Cuba: 11.6%) [27–29] and between 2.2 and 9.2% for rural communities (Mexico: 2.2%; Ecuador: 9.2%) [25, 30]. Probably, an adaptation in the COPCORD methodology has contributed to these differences. In our study, LBP was self-reported, whereas in other COPCORD studies participating rheumatologists made this specific diagnosis in the observed population.

TABLE 1 Prevalence of low back pain

Characteristic	Total (n = 2902)		Rural (n = 681)		Urban (n = 2221)		P-value <sup>a</sup>
	n	Prevalence (%)	n	Prevalence (%)	n	Prevalence (%)	
Overall	541	18.6	93	13.7	448	20.2	<0.001**
Gender							
Male	176	16.4	20	9.0	156	18.2	0.001**
Female	365	20.0	73	15.9	292	21.4	0.011*
Ethnicity							
Creole	77	19.9	<sup>b</sup>	–	77	20.1	
Hindustani	166	24.7	na	na	166	24.7	
Javanese	35	11.0	na	na	35	11.0	
Maroon	112	14.1	71	13.8	41	14.7	0.717
Indigenous	27	14.0	19	12.4	8	20.0	0.218
Mixed	121	23.6	<sup>b</sup>	–	119	23.6	
Other	3	13.6	<sup>b</sup>	–	<sup>b</sup>	–	
Age, years							
15–24	59	10.2	<sup>b</sup>	–	58	11.2	
25–34	84	17.4	7	8.5	77	19.3	0.020*
35–44	95	20.0	17	14.5	78	21.8	0.088
45–54	114	22.4	32	21.2	82	22.8	0.683
55–64	98	23.1	10	10.1	88	27.1	<0.000**
65+ years	91	21.0	26	15.2	65	24.7	0.017*
LBP duration							
Acute (<3 months)	99	3.4	24	3.5	75	3.3	
Chronic (≥3 months)	442	15.2	69	10.1	373	16.8	

<sup>a</sup>Comparison of prevalence between rural and urban areas. <sup>b</sup>n ≤ 5 persons. \*P < 0.05, \*\*P < 0.01. LBP: low back pain; na: not applicable, because these ethnic groups are not part of the community in Goejaba and Galibi.

The use of 'current LBP' as an inclusion criterion instead of 'ever experienced LBP' could also be a factor. Another explanation could be cross-regional sociodemographic, socio-economic and cultural differences [2, 31]. A significantly higher LBP prevalence rate was also reported for the urban population vs the rural population in our sample. Diverse demographic and socio-economic profiles between rural and urban regions could have contributed to the difference in prevalence rates in our study. Consistent with other research, LBP was more prevalent in the female population and in the older age categories (≥45 years) [1, 4]. A difference in pain sensitization and catastrophizing between males and females might be one of the causes for the gender difference in prevalence rate for LBP [26].

The prevalence of LBP differs between ethnic groups in the urban population, with the highest prevalence in the Hindustani and lowest in the Javanese population. Future studies should investigate whether a lower educational level, higher physically demanding working conditions, lifestyle factors, such as obesity, and ethnic disparities contributed to differences in prevalence rates for LBP [2, 32]. Different cultural aspects regarding pain might also have influenced the reporting of LBP [31]. Each cultural and social group has its own unique way to express pain and how or when they make other people aware of their suffering [31, 32]. Based on common

knowledge and the clinical experience of some of the co-authors working for a long time in Suriname, it is known, for example, that in some Asian cultures there is a tendency to avoid talking about their pain experience or to communicate less openly with non-Asians regarding their own pain [33]. Possibly, in our study, partly owing to these cultural characteristics, the Javanese reported low prevalence rates for LBP.

#### Beliefs about the consequences of LBP

Our findings suggest that our study population had more negative beliefs compared with communities in other studies [9, 34]. Urquhart *et al.* [9] reported a mean (s.d.) belief score of 30.70 (6.0) in community-dwelling women in Australia. Similar BBQ scores were found in Denmark [34] and the USA [35]. The BBQ statement most agreed upon was 'Back trouble must be rested'. This belief is in strong contrast to the recommendations from current clinical guidelines on the management of LBP, where remaining active within the early stages of an episode and once pain becomes persistent is advised [36]. These more pessimistic views on LBP could be explained by lack of knowledge about current LBP management.

Individuals from the rural area had significantly worse beliefs than the urban population. This was observed



**TABLE 2** Descriptive characteristics of the LBP population, with a comparison between median Back Beliefs Questionnaire scores

Characteristic	LBP population n (%)	Back Beliefs Questionnaire		Comparison of median	
		Mean (s.d.)	Median (IQR)	P-value <sup>a</sup>	Post hoc <sup>b</sup>
Location					
Rural	91 (23.0)	18.56 (±4.61)	18.00 (14.00–22.00)	<0.001**	
Urban	304 (77.0)	24.82 (±7.69)	25.00 (19.00–31.00)		
Gender					
Male	124 (31.4)	23.85 (±7.58)	23.00 (17.00–30.00)	0.352	
Female	271 (68.6)	23.16 (±7.57)	22.00 (17.00–29.00)		
Ethnicity					
Creole	51 (12.9)	23.27 (±7.51)	24.00 (17.00–31.00)	<0.001**	0.040*
Hindustani	105 (26.6)	24.53 (±7.95)	24.00 (18.50–31.00)		<0.001**
Javanese	31 (7.8)	26.87 (±6.64)	27.00 (23.00–33.00)		<0.001**
Maroon	103 (26.1)	19.58 (±6.18)	18.00 (14.00–23.00)		Ref.
Indigenous	23 (5.8)	21.00 (±4.93)	21.00 (17.00–25.00)		1.000
Mixed	82 (20.8)	26.07 (±7.64)	26.50 (20.00–33.00)		<0.001**
Age, years					
15–24	41 (10.4)	26.44 (±7.49)	27.00 (20–32.50)	0.088	
25–34	54 (13.7)	22.50 (±7.63)	22.50 (16.75–28.00)		
35–44	69 (17.5)	22.99 (±7.67)	23.00 (16.00–29.50)		
45–54	85 (21.5)	22.24 (±7.06)	21.00 (17.00–26.50)		
55–64	77 (19.5)	23.68 (±8.05)	23.00 (17.00–31.00)		
65+	69 (17.5)	23.71 (±7.28)	22.00 (17.50–30.50)		
LBP duration					
Acute (<3 months)	78 (19.7)	23.03 (±7.16)	22.00 (21.41–24.64)	0.700	
Chronic (≥3 months)	317 (80.3)	23.46 (±7.68)	23.00 (22.61–24.31)		
Oswestry Disability Index					
No functional disability	193 (48.9)	25.30 (±7.67)	25.00 (19.50–31.00)	<0.001**	
Functional disability	198 (50.1)	21.44 (±7.04)	21.00 (16.00–26.25)		
Missing	4 (1.0)	–	–		
Treatment seeking					
No	88 (22.3)	26.06 (±7.43)	27.00 (20.00–33.00)	<0.001**	
Yes	307 (77.7)	22.61 (±7.45)	21.00 (17.00–28.00)		
Treatment					
None	88 (22.3)	26.06 (±7.43)	27.00 (20.00–33.00)	<0.001**	Ref.
Western	224 (56.7)	22.58 (±7.35)	21.00 (17.00–27.00)		<0.001**
Non-western	12 (3.0)	25.00 (±9.69)	26.00 (15.00–35.25)		1.000
Both western and non-western	71 (18.0)	22.31 (±7.41)	22.00 (16.00–28.00)		0.011*

<sup>a</sup>Via non-parametric statistics. <sup>b</sup>Via Dunn–Bonferroni *post hoc* test. \* $P < 0.05$ , \*\* $P < 0.01$ . IQR: interquartile range; LBP: low back pain; Ref.: reference.

specifically for Maroons, where those living in the rural areas presented with significantly more pessimistic beliefs. Changes in living conditions owing to urbanization, educational level, access to optimal health-care systems, ways of earning, and beliefs of significant others [18, 35] are factors that might play an important role in creating these discrepancies in beliefs of Maroons from the rural village compared with the urban group. Culture rather than self-reported ethnicity alone should also be explored further to understand the differences in these beliefs [31, 37]. Culture influences someone's beliefs and behaviour, in addition to the way in which pain is perceived, experienced and communicated [31].

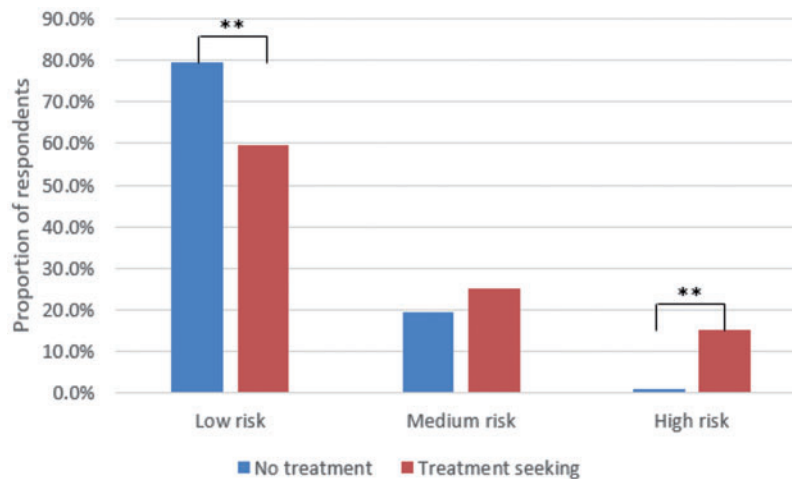
There is strong evidence that the beliefs of health-care professionals about back pain influence the beliefs of their patients and thus play an important role in the complex recovery process of LBP [38, 39]. Given that most respondents with LBP visited the general practitioner, beliefs of health-care professionals in the rural villages (in Goejaba and Galibi, a local nurse and not a general practitioner is mostly available) need to be investigated to assess their impact on the beliefs and behaviour of the patient. This is important for future studies, because we have seen in the study by Lin *et al.* [40] that exposure to Western biomedical approaches has led to a negative change in the beliefs of the Aboriginals.

TABLE 3 Back beliefs statements

BBQ statements	Negative responses <sup>a</sup>			
	Total n = 391 [n (%)]	No disability <sup>b</sup> n = 193 [n (%)]	Disability n = 198 [n (%)]	Univariate analysis ( $\chi^2$ )
1 There is no real treatment for back trouble	131 (33.5)	59 (30.6)	72 (36.4)	0.225
2 Back trouble will eventually stop you from working	176 (45.0)	75 (38.9)	101 (51.0)	0.016*
3 Back trouble means periods of pain for the rest of one's life	206 (52.7)	88 (45.6)	118 (59.6)	0.006**
4 Back trouble makes everything in life worse	209 (53.5)	76 (39.4)	133 (67.2)	<0.001**
5 Back trouble may mean you end up in a wheelchair	151 (38.6)	64 (33.2)	87 (43.9)	0.029*
6 Back trouble means long periods of time off from work	220 (56.3)	95 (49.2)	125 (63.1)	0.006**
7 Once you have had back trouble there is always a weakness	286 (73.1)	132 (68.4)	154 (77.8)	0.036*
8 Back trouble must be rested	334 (85.4)	166 (86.0)	168 (84.4)	0.745
9 Later in life back trouble gets progressively worse	226 (57.8)	98 (50.8)	128 (64.6)	0.005**

<sup>a</sup>Agree or completely agree was selected, which is a score of 4 or 5, respectively. <sup>b</sup>No disability was defined if Oswestry Disability Index score <12. \* $P < 0.05$ , \*\* $P < 0.01$ . BBQ: Back Beliefs Questionnaire.

FIG. 2 Proportion of respondents at risk for development of persistent disabling pain (Start Back Screening Tool)



\* $P < 0.05$ , \*\* $P < 0.01$ .

The results indicated no significant statistical differences for back beliefs between acute and chronic LBP respondents. A qualitative study by Darlow *et al.* [41] reported that participants with acute and chronic LBP had similar beliefs about avoiding or performing certain types of activities, such as bending, twisting, running and lifting, that were perceived as dangerous for the back. They also reported that beliefs were different regarding the prognosis for back pain. Therefore, more data collection on back beliefs and their related factors should be executed in the future to explore the differences between acute and chronic LBP populations in Suriname.

As expected, more negative beliefs were reported when functional disability was present. Previous studies also found the same associations between negative back beliefs and disability [9, 42]. It is still not clear how

these aspects are linked, because most research, including our study, was of cross-sectional design, and no causal inferences could be made.

#### Treatment seeking for LBP

A large part of our study population sought treatment for LBP. A similar percentage was found by Carey *et al.* [43] for treatment seeking among different ethnic groups with chronic back pain. Other studies, however, such as those included in the meta-analysis by Ferreira *et al.* [11], showed a pooled prevalence of 51% (95% CI: 44%, 58%). The differences in prevalence might be caused by variances in definitions for LBP and treatment seeking and by data collection methods. In our study, non-western therapies, such as acupuncture, traditional massage and the use of herbs, were included in

**TABLE 4** Results of multivariate logistic regression to identify predictors for treatment seeking

Characteristic	LBP population (n = 395)		
	OR	95% CI	P-value
Location			
Rural	Ref.		
Urban	0.966	0.819, 1.139	0.677
Ethnicity			
Creole	1.058	0.866, 1.293	0.578
Hindustani	0.980	0.814, 1.181	0.832
Javanese	0.894	0.673, 1.188	0.441
Maroon	Ref.		
Indigenous	1.157	1.012, 1.323	0.033*
Mixed	0.923	0.746, 1.142	0.460
Age, years			
15–24	Ref.		
25–34	1.045	0.745, 1.466	0.797
35–44	1.177	0.870, 1.592	0.292
45–54	1.438	1.093, 1.893	0.009**
55–64	1.398	1.057, 1.848	0.019*
65+	1.363	1.024, 1.814	0.034*
Oswestry Disability Index			
No functional disability (≤12%)	Ref.		
Functional disability (>12%)	1.148	1.029, 1.280	0.013*
Back Beliefs Questionnaire			
Negative beliefs (≤23.00)	Ref.		
Positive beliefs (>23.00)	0.916	0.815, 1.030	0.141

\* $P < 0.05$ , \*\* $P < 0.01$ . OR: odds ratio; Ref.: reference.

treatment seeking, because these methods are widely used to treat musculoskeletal complaints in Suriname [15]. In contrast to these previous findings, only 21.0% of the LBP population used non-western therapy, and 85% of those combined it with western therapy. The clinical presentation of LBP and the treatment method that is perceived as most effective for their complaints could explain these results [44].

Bivariate analysis showed that geographical location, age, ethnicity, functional disability and back beliefs were each associated with treatment seeking. This was not the case for gender and duration of LBP. Similar findings were reported by Jacob *et al.* [45], who also concluded that LBP intensity is more consistently associated with treatment seeking, regardless of LBP duration. However, Ferreira *et al.* [11] reported that pain intensity showed on only a slight association with seeking care. When performing a multivariate analysis with all significant variables from the univariate analysis, only age, ethnicity and functional disability remained as predictors for treatment-seeking behaviour. In our study, we found that older age groups ( $\geq 45$  years of age) seek treatment more often than younger age groups

( $P < 0.001$ ). This is consistent with previous literature [46, 47]. Knauer *et al.* [47] found that older age groups ( $> 65$  years of age) had a significantly higher usage of care compared with adults aged 45–64 years (80.6% vs 88.6%). To our knowledge, ours is the first study in which a comparison has been made for LBP treatment seeking among ethnic groups in Suriname. Indigenous persons were found to have a higher chance of seeking care compared with other ethnic groups. It is possible that socio-cultural factors and beliefs could explain the differences in care seeking among the various ethnic groups. Unfortunately, to date no research has been conducted on the effects of culture on pain and pain management in Suriname. It might be that the Indigenous people in our study showed more concern for solving their health problems by visiting western medical care [48], whereas African descendants possibly display a more personal individualized coping strategy (self-management) [49]. Although the largest part of the Indigenous population came from rural area, they still made relatively more use of Western therapies. This behaviour was confirmed in the study by Ho-A-Tham *et al.* [15]. Given that this group was too small in the present study to make any comparisons regarding their beliefs, this should be explored further. Several studies found a high level of disability to be a major predicting factor for seeking treatment [10, 11]. This was emphasized by our findings that persons who sought treatment and who were also classified as high risk for poor prognosis, as determined by SBST, had significantly more disability.

#### Strengths and limitations of the study

The strengths of this study include the random sampling through a stratified, multi-stage, cluster sampling design of the multi-ethnic Surinamese community. Looking at treatment-seeking behaviour, we assessed not only western treatment but also non-western treatment, such as traditional medicine. The most common forms that are discussed in the literature are western treatment forms such as a physician's visit and physical therapy. Non-western (or alternative) forms of treatment have become popular in the last decades, and in Suriname they are widely used [15, 50].

There are several limitations in our study. Although the standardized questionnaires were available in Dutch and were included only after pre-testing in the target population, they were not tested for reliability and validity in this specific population. Although every effort was made to include all eligible persons by revisiting the household three times when an individual was absent, a risk of sampling bias might still be present. Another limitation of our study is the use of self-reported data; therefore, recall bias regarding treatment seeking may be present. To minimize this effect, not only the COPCORD questions regarding LBP but also specific questions regarding LBP treatment were asked during the interview. In this study, only some factors, such as gender, age, ethnicity and disability, influencing beliefs and treatment-seeking behaviour were considered in a multifactorial



problem across different biopsychosocial domains. It is important to identify both physical and psychosocial risk factors to facilitate a more comprehensive understanding of the clinical needs of patient.

## Conclusion

This study indicates that LBP is highly prevalent in Suriname, predominantly in urban communities, in middle-aged groups and among females. The multi-ethnic LBP population seems to agree largely with beliefs that LBP has inevitable negative consequences. Treatment seeking is more prevalent among older age groups, persons with functional disability and the Indigenous ethnic group. Lower back pain imposes a burden on society owing to the high prevalence rate and, consequently, the treatment-seeking behaviour.

The multifactorial complexity of people's beliefs and their treatment-seeking behaviour needs further exploration using qualitative and longitudinal surveys, especially in women and older age groups, health-care professionals and different cultural minority groups. A gap was found between clinical guidelines and beliefs regarding 'Back trouble must be rested'. Therefore, it is important that educational interventions regarding LBP need to be initiated in the community, aiming to change how people manage back pain within the general population.

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## Data availability Statement

The data underlying this article will be shared on reasonable request to the corresponding author.

## References

- Hoy D, Bain C, Williams G *et al.* A systematic review of the global prevalence of low back pain. *Arthritis Rheum* 2012;64:2028–37.
- Hartvigsen J, Hancock MJ, Kongsted A *et al.*; Lancet Low Back Pain Series Working Group. What low back pain is and why we need to pay attention. *Lancet* 2018; 391:2356–67.
- Jackson T, Thomas S, Stabile V *et al.* A systematic review and meta-analysis of the global burden of chronic pain without clear etiology in low- and middle-income countries: trends in heterogeneous data and a proposal for new assessment methods. *Anesth Analg* 2016;123: 739–48.
- Hoy D, Brooks P, Blyth F, Buchbinder R. The epidemiology of low back pain. *Best Pract Res Clin Rheumatol* 2010;24:769–81.
- Gatchel RJ, Peng YB, Peters ML, Fuchs PN, Turk DC. The biopsychosocial approach to chronic pain: scientific advances and future directions. *Psychol Bull* 2007;133: 581–624.
- O'Sullivan P. It's time for change with the management of non-specific chronic low back pain. *Br J Sports Med* 2012;46:224–7.
- Vlaeyen JWS, Kole-Snijders AMJ, Boeren RGB, van Eek H. Fear of movement/(re)injury in chronic low back pain and its relation to behavioral performance. *Pain* 1995;62: 363–72.
- Honeyman PT, Jacobs EA. Effects of culture on back pain in Australian aboriginals. *Spine (Phila Pa 1976)* 1996;21:841–3.
- Urquhart DM, Bell RJ, Cicuttini FM *et al.* Negative beliefs about low back pain are associated with high pain intensity and high level disability in community-based women. *BMC Musculoskelet Disord* 2008;9:148.
- Walker BF, Muller R, Grant WD. Low back pain in Australian adults. Health provider utilization and care seeking. *J Manipulative Physiol Ther* 2004;27:327–35.
- Ferreira ML, Machado G, Latimer J *et al.* Factors defining care-seeking in low back pain – a meta-analysis of population based surveys. *Eur J Pain* 2010;14:747.e1–e7.
- Vingård E, Mortimer M, Wiktorin C *et al.*; Musculoskeletal Intervention Center-Norrköping Study Group. Seeking care for low back pain in the general population: a two-year follow-up study: results from the MUSIC-Norrköping study. *Spine (Phila Pa 1976)* 2002;27:2159–65.
- Chiwaridzo M, Naidoo N. Functional consequences and health-care seeking behaviour for recurrent non-specific low back pain in Zimbabwean adolescents: a cross-sectional study. *Eur Spine J* 2016;25:643–50.
- Shaikh BT, Hatcher J. Health seeking behaviour and health service utilization in Pakistan: challenging the policy makers. *J Public Health (Oxf)* 2005;27:49–54.
- Ho-A-Tham N, Vanlandewijck Y, de Donder L *et al.* Prevalence of musculoskeletal complaints in urban communities in multi-ethnic Suriname: a cross-sectional study with the COPCORD methodology (stage 1, phase 1 and 2). *Clin Rheumatol* 2020;39:1065–75.
- Suriname census 2012, districtsresultaten volume I. Paramaribo-Wanica, Suriname: Algemeen Bureau Voor de Statistiek/Censuskantor, 2013.
- Krishnadath IS, Smits CC, Jaddoe VW, Hofman A, Toelsie JR. A national surveillance survey on noncommunicable disease risk factors: Suriname health study protocol. *JMIR Res Protoc* 2015;4:e75.

- 18 McCluskey S, Brooks J, King N, Burton K. The influence of 'significant others' on persistent back pain and work participation: a qualitative exploration of illness perceptions. *BMC Musculoskelet Disord* 2011;12:236.
- 19 Salmon CT, Nichols JS. The next-birthday method of respondent selection. *Public Opin Q* 1983;47:270–6.
- 20 Airaksinen O, Brox JI, Cedraschi C *et al.*; COST B13 Working Group on Guidelines for Chronic Low Back Pain. Chapter 4. European guidelines for the management of chronic nonspecific low back pain. *Eur Spine J* 2006;15(Suppl 2):S192–300.
- 21 Fairbank JC, Pynsent PB. The Oswestry Disability Index. *Spine (Phila Pa 1976)* 2000;25:2940–52; discussion 2952.
- 22 Tonosu J, Takeshita K, Hara N *et al.* The normative score and the cut-off value of the Oswestry Disability Index (ODI). *Eur Spine J* 2012;21:1596–602.
- 23 Symonds TL, Burton AK, Tillotson KM, Main CJ. Do attitudes and beliefs influence work loss due to low back trouble? *Occup Med (Lond)* 1996;46:25–32.
- 24 Hill JC, Dunn KM, Lewis M *et al.* A primary care back pain screening tool: identifying patient subgroups for initial treatment. *Arthritis Rheum* 2008;59:632–41.
- 25 Guevara-Pacheco S, Feicán-Alvarado A, Sanín LH *et al.* Prevalence of musculoskeletal disorders and rheumatic diseases in Cuenca, Ecuador: a WHO-ILAR COPCORD study. *Rheumatol Int* 2016;36:1195–20.
- 26 Londoño J, Peláez Ballestas I, Cuervo F *et al.* Prevalence of rheumatic disease in Colombia according to the Colombian Rheumatology Association (COPCORD) strategy. Prevalence study of rheumatic disease in Colombian population older than 18 years. *Rev Colomb Reumatol (Engl Ed)* 2018;25:245.
- 27 Granados Y, Cedeño L, Rosillo C *et al.* Prevalence of musculoskeletal disorders and rheumatic diseases in an urban community in Monagas State, Venezuela: a COPCORD study. *Clin Rheumatol* 2015;34:871–7.
- 28 Reyes-Llerena GA, Guibert-Toledano M, Penedo-Coello A *et al.* Community-based study to estimate prevalence and burden of illness of rheumatic diseases in Cuba: a COPCORD study. *J Clin Rheumatol* 2009;15:51–5.
- 29 Pereira AM, Valim V, Zandonade E, Ciconelli RM. Prevalence of musculoskeletal manifestations in the adult Brazilian population: a study using COPCORD questionnaires. *Clin Exp Rheumatol* 2009;27:42–6.
- 30 Rodríguez-Amado J, Peláez-Ballestas I, Sanin LH *et al.* Epidemiology of rheumatic diseases. A community-based study in urban and rural populations in the state of Nuevo Leon, Mexico. *J Rheumatol Suppl* 2011;86:9–14.
- 31 Peacock S, Patel S. Cultural influences on pain. *Rev Pain* 2008;1:6–9.
- 32 Meints SM, Wang V, Edwards RR. Sex and race differences in pain sensitization among patients with chronic low back pain. *J Pain* 2018;19:1461–70.
- 33 Hsieh AY, Tripp DA, Ji LJ. The influence of ethnic concordance and discordance on verbal reports and nonverbal behaviours of pain. *Pain* 2011;152:2016–22.
- 34 Grøn S, Jensen RK, Jensen TS, Kongsted A. Back beliefs in patients with low back pain: a primary care cohort study. *BMC Musculoskelet Disord* 2019;20:578.
- 35 Bowey-Morris J, Davis S, Purcell-Jones G, Watson PJ. Beliefs about back pain: results of a population survey of working age adults. *Clin J Pain* 2011;27:214–24.
- 36 O'Connell NE, Cook CE, Wand BM, Ward SP. Clinical guidelines for low back pain: a critical review of consensus and inconsistencies across three major guidelines. *Best Pract Res Clin Rheumatol* 2016;30:968–80.
- 37 Henschke N, Lorenz E, Pokora R *et al.* Understanding cultural influences on back pain and back pain research. *Best Pract Res Clin Rheumatol* 2016;30:1037–49.
- 38 Darlow B, Fullen BM, Dean S *et al.* The association between health care professional attitudes and beliefs and the attitudes and beliefs, clinical management, and outcomes of patients with low back pain: a systematic review. *Eur J Pain* 2012;16:3–17.
- 39 Houben RMA, Ostelo RWJG, Vlaeyen JWS *et al.* Health care providers' orientations towards common low back pain predict perceived harmfulness of physical activities and recommendations regarding return to normal activity. *Eur J Pain* 2005;9:173–83.
- 40 Lin IB, O'Sullivan PB, Coffin JA *et al.* 'I am absolutely shattered': the impact of chronic low back pain on Australian Aboriginal people. *Eur J Pain* 2012;16:1331–41.
- 41 Darlow B, Dean S, Perry M *et al.* Easy to harm, hard to heal: patient views about the back. *Spine (Phila Pa 1976)* 2015;40:842–50.
- 42 Beales D, Smith A, O'Sullivan P, Hunter M, Straker L. Back pain beliefs are related to the impact of low back pain in baby boomers in the Busselton Healthy Aging Study. *Phys Ther* 2015;95:180–9.
- 43 Carey TS, Freburger JK, Holmes GM *et al.* Race, care seeking, and utilization for chronic back and neck pain: population perspectives. *J Pain* 2010;11:343–50.
- 44 Idriss A, Diaconu K, Zou G *et al.* Rural–urban health-seeking behaviours for non-communicable diseases in Sierra Leone. *BMJ Glob Health* 2020;5:e002024.
- 45 Jacob T, Zeev A, Epstein L. Low back pain – a community-based study of care-seeking and therapeutic effectiveness. *Disabil Rehabil* 2003;25:67–76.
- 46 Mannion AF, Wieser S, Elfering A. Association between beliefs and care-seeking behavior for low back pain. *Spine (Phila Pa 1976)* 2013;38:1016–25.
- 47 Knauer SR, Freburger JK, Carey TS. Chronic low back pain among older adults: a population-based perspective. *J Aging Health* 2010;22:1213–34.
- 48 Granados Y, Rosillo C, Cedeño L *et al.* Prevalence of musculoskeletal disorders and rheumatic disease in the Warao, Kariña, and Chaima indigenous populations of Monagas State, Venezuela. *Clin Rheumatol* 2016;35(Suppl 1):53–61.
- 49 Rogers A, Allison T. What if my back breaks? Making sense of musculoskeletal pain among South Asian and African-Caribbean people in the North West of England. *J Psychosom Res* 2004;57:79–87.
- 50 van Andel T, Carvalheiro LG. Why urban citizens in developing countries use traditional medicines: the case of Suriname. *Evid Based Complement Alternat Med* 2013;2013:687197.