How do people in China think about causes of their back pain? A predominantly qualitative cross-sectional survey

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Abstract

Background: Low back pain (LBP) is the second highest cause of health burden in China. Delayed recovery, poor clinical outcomes and persistence of LBP are associated with negative pain beliefs about LBP. Chinese philosophies are nested into Chinese people’s daily life, which is likely to influence pain beliefs. However, there is lack of knowledge about people’s thinking patterns regarding their LBP in China. The primary aim of this study was to explore the patterns of beliefs (discourses) underlying Chinese people’s beliefs about what causes their persistent or recurrent LBP. The secondary aim was to investigate the sources of these pain beliefs.

Methods: People (n=152) from South Central, East and North Mainland China with LBP completed an online survey about what they believed caused their persistent or recurrent LBP and where these understandings came from. Potential causes of persistent or recurrent LBP were explored qualitatively using discourse analysis. The sources of these discourses were assessed by descriptive statistics with conventional content analysis.

Results: Five discourses were identified to underpin participants’ beliefs about what caused their persistent or recurrent LBP, namely: (1) biomedical problems (66.4%), (2) unbalanced lifestyle (48.7%), (3) menstruation and ‘kidney’ status (9.2%), (4) the ‘Five Elements’ imbalance (7.9%), and (5) energy status (5.9%). Most participants responded that their pain beliefs were based on information derived from healthcare professionals (59.2%), followed by the internet (24.3%) and family (23.0%).

Conclusions: Chinese people from moderately and well-developed parts of Mainland China think predominantly in line with a Western biomedical viewpoint about their LBP. Traditional Chinese medicine related pain beliefs were evident on contemporary Chinese society’s understandings of LBP. These cultural beliefs could be relevant to consider in LBP management and involve healthcare professionals, family and patient in this process.

Background

Low back pain (LBP) is a common and disabling disorder, ranked as the leading cause of Years Lived with Disability (YLDs) worldwide (1). The impact of LBP, as measured by YLDs, varies between
different parts of the world (2). In China, LBP is ranked as the second highest reason for health burden (3).

Recovery rates differ between patients with acute and persistent LBP (4, 5). Evidence indicates that 72% of the patients with acute LBP completely recover within 12 months in terms of pain, disability and work status (4). Of patients with persistent LBP, 41% are recovered at 12 months (5). Delayed recovery, poor clinical outcome and persistence of LBP are associated with negative pain beliefs, such as fear avoidance beliefs and weak beliefs regarding the controllability of LBP (6, 7).

Pain beliefs are thought to differ between countries and cultures (8). A recent study reported four thinking patterns (discourses) underlying beliefs of Australians about the causes of persistent or recurrent LBP (9). The discourses were predominantly biomechanical or anatomical, which is in line with the traditional western biomedical view of health (9). As Chinese philosophies are nested into people’s daily life in China, it is likely that these philosophies would influence thinking about health for people living in China (10). For instance, Yin-Yang posits that the development of a disease is caused by the imbalance of equilibrium in the body (10–12). This ideology suggests that equilibrium can be disrupted by various factors, such as an excess of particular emotions (e.g., anger, happiness), overload (e.g., mental and physical), dietary imbalance and also by climate/weather (e.g., wind, cold weather) (13). Although Western medicine is also commonly practiced in China, it is plausible that Chinese philosophies underpin beliefs about pain and persistence of pain. Thinking patterns about the causes of persistent or recurrent LBP in people living in China have not yet been investigated.

Understanding beliefs about causes of persistent or recurrent LBP is argued to be helpful to tailor pain management (14, 15), and may be a critical element to reduce the burden of LBP. The primary aim of this study was to explore the thinking patterns (discourses) underlying Chinese people’s beliefs about what causes their persistent or recurrent LBP. The secondary aim was to investigate the individual’s perception of the information sources of these discourses.

Methods
Study design
This study used a cross-sectional online survey which was based on an earlier Australian survey.
exploring LBP beliefs (9). The study was approved by the scientific and ethical review board of Vrije Universiteit Amsterdam (VCWE, number 2019-065R1). All participants provided online informed consent.

**Survey**

The survey (see Additional file 1) was designed in collaboration with the researchers who conducted the Australian survey (9). The survey was translated in Chinese by one of the researchers (YJL) who is a native speaker in Chinese and fluent in English. The translation accuracy was verified and confirmed by a second Chinese native speaker fluent in English. The Chinese survey was pilot tested in four Chinese people (n = 2 with a history of LBP and n = 2 who studied linguistics), which resulted in slight modifications of the original translation.

The survey had three sections:

1) Background information: Participants were asked demographic questions and questions about their LBP characteristics (e.g., duration of LBP, intensity, presence of LBP).
2) An open-ended question (Question 17) to explore patients’ perspectives of what they believed caused their persistent or recurrent LBP: What is your perception of why your low back pain is persistent or recurrent? Please kindly explain your answers.
3) A question (Question 18) to identify where these perspectives came from: Where does the perception listed above come from: (several options are possible) 1) Healthcare professionals; 2) Internet; 3) Family; 4) Friends; 5) Religion; 6) Other ________________.

The Chinese language online survey was uploaded to a professional online questionnaire platform (WenJuanXing), and released through WeChat in Mainland, China. WeChat is the equivalent to the combination of WhatsApp and Twitter. The link to the survey was first shared via personal contacts with lay people and health care providers in China, such as hospital and allied health centres. Subsequently, the survey was further spread through these connections. Responses were translated back into English by a Chinese researcher (YJL) and checked for accuracy by a second Chinese reviewer. Discussion to consensus was used to resolve translation discrepancies.

**Participants**

Participants were invited through WeChat, the most popular Chinese social media platform.

Inclusion criteria were: 1) aged between 18 and 65 years; 2) persistent or recurrent LBP within the last 6 months; and 3) proficiency in Chinese language.
Sample size
Based on previous study experiences with satisfying the principal of theoretical saturation (9), we predicted that approximately 130 participant responses were needed to identify the range of discourses underlying pain beliefs in a Chinese population with persistent or recurrent LBP.

Data analysis
The survey data in response to the question about causes of LBP were analysed using discourse analysis. Both the discourse and conventional content analysis (below) were inductive which means that no pre-existing theory was imposed on the analysis. Discourse analysis is a qualitative research methodology which considers that language constructs social and psychological reality (16). This means that the language people use provides insights into how people view and act in the world (16). For instance, people with LBP who claim that a herniated disc is the cause of their back pain, are considered to have a biomedical discourse underpinning their beliefs about the cause of their LBP.

Drawing on these concepts, discourse analysis was used in this study to interrogate the underlying discourses behind the responses given by Chinese LBP population.

Three researchers (JS, GGMSP and YJL) reviewed the entire dataset independently and proposed potential patterns of thinking underpinning the data during a meeting. Subsequently, two researchers (YJL, GGMSP) formulated five tentative discourses in a consensus meeting. The five tentative discourses were reappraised by one researcher (JS). During a second consensus meeting, the five discourses were refined, and consensus was reached between the three researchers (JS, GGMSP and YJL). Subsequently, YJL and GGMSP independently reviewed the full dataset again and coded each participant’s response into one or more of the five discourses. Initial agreement about the coding was calculated between YJL and GGMSP. Discrepancies were discussed until consensus was reached between the two researchers. Finally, the complete dataset, the coding and the findings of the discourse analysis were reviewed by JS who agreed with the discourses and coding.

The data from the final question about where participants’ beliefs came from was analysed using descriptive statistics on the quantitative data (option 1 to 5) and conventional content analysis (17) on the qualitative data from option 6 ‘Other’. In cases where there were overlaps of the answers, the
two types of data were compared. This type of analysis was able to provide a descriptive overview of where participants believed the discourses came from. Conventional content analysis was performed by two independent researchers (YJL and GGMSP) and discussion was used to reach consensus. Sociodemographic and clinical information was analysed using descriptive statistics in SPSS version 24 (IBM Corp, Armonk, New York, USA). Normality of continuous variables was visually inspected by histograms, Q-Q plots and box plots. Also, Z-values of skewness and kurtosis, and the Kolmogorov-Smirnov tests (n > 50) or Shapiro-Wilk tests (n < 50) were performed. If the data were normally distributed, means and standard deviations were reported. Otherwise, medians and interquartile range were presented.

To observe whether there were any differences between participants with and without missing data, the main baseline characteristics were statistically tested with independent sample t-tests or Mann-Whitney U tests.

Results
There were no differences in sociodemographic and clinical data between participants with and without missing values. In total, 171 participants completed the survey. Nineteen participants were excluded as they did not fulfil the selection criteria or had missing values for question 17 (Fig. 1). A total of 152 responses were included for data analysis. Seventy-three percent (73%) of the study population was female, 98.7% were Chinese nationals and most came from South Central China (51.3%), which is also the second most populated region (18). Fifteen percent indicated that they experienced LBP every day and the mean (SD) pain intensity was 3.9 (1.5) on a 10-point numeric rating scale. Additional participant characteristics are presented in Table 1.
What is your perception of why your low back pain is persistent or recurrent?

Five discourses were identified. Most participants answered this question with one or two sentences, and their responses were assigned into one or more of the identified discourses. The initial agreement between YJL and WSP was 90%, and all discrepancies were resolved through discussion. An overview of the five discourses is presented in Table 2 and below.

| Table 1                                                                 |
|-------------------------------------------------------------------------|
| *Participant characteristics (n = 152)                                    |
| **Age (years)**                                                          | 29.0 (24.0–40.8) |
| **Median (IQR)**                                                         | 73.0% |
| **Sex (% female)**                                                       | 98.7% |
| **Nationality (% Chinese)**                                              | 51.3% |
| **Region**                                                              | 21.1% |
| **South Central China (28.4% of total population)**                      | 15.1% |
| **East China (29.5% of total population)**                              | 7.9% |
| **North China (12.5% of total population)**                             | 3.9% |
| **Southwest China (14.5% of total population)**                         | 0.0% |
| **Northeast China (7.7% of total population)**                          | 0.7% |
| **Northwest China (7.4% of total population)**                          | 0.0% |
| **Other**                                                               | 0.7% |
| **Years since the first episode of LBP**                                | 3.0 (0.2–6.0) |
| **Median (IQR)**                                                        | 15.1% |
| **LBP everyday (% yes)**                                                 | 44.1% |
| **LBP present now (% yes)**                                              | 3.9 (1.5) |
| **Pain intensity* (if LBP present now)**                                | 17.1% |
| **Mean (SD) on 10-point numeric rating scale**                          |     |
| **Pain medication use in history (% yes)**                              |     |
| **Comorbidities (e.g., cardiovascular diseases, arthritis)**            |     |
| **% yes**                                                               |     |
| **Work/school absenteeism due to LBP (% yes)**                          | 17.1% |
| **Median (IQR)**                                                        | 14.0 (7.0–32.5) |
| **Duration of absenteeism* (Days)**                                     | 36.8% |
| **LBP impacts daily life (% yes)**                                      |     |
| **Years since the first episode of LBP* (11 missing values)**           |     |
| **Pain intensity* (1 missing value)**                                   |     |
| **Duration of the absenteeism* (5 missing values)**                     |     |

What is your perception of why your low back pain is persistent or recurrent?

Five discourses were identified. Most participants answered this question with one or two sentences, and their responses were assigned into one or more of the identified discourses. The initial agreement between YJL and WSP was 90%, and all discrepancies were resolved through discussion. An overview of the five discourses is presented in Table 2 and below.
Table 2

Discourses identified from the answers to the question “What causes your persistent or recurrent LBP”.

| Discourses (Thinking Patterns) and n (%) | Explanation | Examples |
|----------------------------------------|-------------|----------|
| LBP as biomedical problem. N = 101 (66.4%) | LBP is explained by incorrect postures, damage, degeneration or weakness of neuromusculoskeletal structures. Pain is produced or provoked because something is biomedically wrong in the body. | Participant 20: “Pelvic tilt anteriorly, lacking strength in abdominal muscles with hypertonic erector spinae muscles, thorax vertebrae kyphosis, slight scoliosis, flat foot problem and gait problem” |
| LBP as unbalanced lifestyle. N = 74 (48.7%) | LBP as a warning sign, or consequence, of an unbalanced lifestyle. A metaphorical individualised “balance scale” about the amount of exercise, sitting, standing, walking time or load. | Participant 21: “... Doing too much or too little exercise? ...” Participant 58: “Unregular daily routine ...” |
| LBP is about menstruation and 'kidney' status. N = 14 (9.2%) | In Chinese culture, menstruation is important to women’s overall health while ‘kidney function’ is vital to men’s. Women during menstruation are generally believed vulnerable and emotionally unstable while men who have poor kidney function, are believed to have low sexual performance. | Participant 21: “ShenKui (kidney deficiency) ...” Participant 37: “Because of menstruation” |
| LBP is about the ‘Five Elements’ imbalance. N = 12 (7.9%) | There are ‘Five Elements’ in Chinese medicine: Water, Fire, Wood, Metal and Earth. It is considered important to keep the balance between these elements to maintain good health. Climate conditions such as wind, heat, dampness, dryness and cold are represented separately by wood, fire, earth, metal and water. It is thought that climate conditions can ‘invade’ the body and cause an imbalance in the Five Elements. | Participant 38: “... after staying in cold water for several hours, my back pain suddenly occurred” Participant 61: “Accumulation of Wind, Damp” Participant 114: “... and drinking too little water will cause my recurrent low back pain” |
| LBP is about energy status. N = 9 (5.9%) | Thinking low or disturbed energy status is a cause of LBP. In traditional Chinese medicine a low (disturbed) mental energy status can be caused by, or causes a possible ‘Qi’ stagnation, resulting in muscle pain. ‘Qi’ understood as a ‘matter-energy’ or ‘vital force’, connects physical and mental energies in individuals. | Participant 10: “JingShen status is not optimal” ‘Jing’ means essence while ‘Shen’ means ‘Mind’. ‘JingShen’ status can be understood as mental energy status. Participant 70: “... also because of life stress and fatigue caused by work” |

Participant’s response can be coded into one or more of the five discourses.

Discourse 1: LBP as a biomedical problem

‘LBP as a biomedical problem’ was the most prevalent discourse. Two-thirds of the responses were underpinned by this discourse. Participants explained their persistent or recurrent LBP by physical damages, incorrect posture, muscle imbalance and congenital issues. Their responses indicated that they considered their body in an anatomical, biomechanical and/or physiological way. Their underlying belief seemed to be that if there was something wrong biomedically in their back (body) that this would produce or provoke pain. For instance, some discussed physical damages as the cause...
of their ongoing LBP, such as Participant 16, who wrote: “I had an injury during long jump in secondary school and I didn't pay attention to it. So, I probably got LaoSun (muscle strain) for a prolonged period”. ‘LaoSun’ is a common Chinese term which means overuse of muscles that can lead to muscle strain and injury (19). Participant 72 wrote:

Probably because of continuous stimuli, and I didn't get the right diagnosis and treatment for my low back injury. In the beginning, I had an injury in another part of the body which caused poor posture during running. Later on, this led to unequal left and right muscle strength which compressed and pushed out my vertebra.

Like a number of other participants, Participant 106 also discussed posture, attributing their LBP persistence or recurrence to “Lower-crossed syndrome, anterior tilt of my pelvic causes incorrect posture during standing”. And participant 157 wrote: “…Working posture is not correct”.

Also underpinned by biomedical discourses, one participant indicated congenital issues as the source of their LBP. Participant 98 wrote: “I had an X-ray, the doctor said there is a deformation in my bone, my family members also have hereditary low back problems”.

Discourse 2: LBP as unbalanced lifestyle
‘LBP as unbalanced lifestyle’ was the second most commonly reported discourse. Around half of participants’ answers were identified to fit within this discourse. LBP was described as a warning symptom or the result of an unbalanced lifestyle. A figurative individualised ‘balance scale’ that considers exercise, sitting, standing, walking time or load, could be identified from the responses. For instance, Participant 5 wrote: “I don’t perform enough exercise and physical activities, I sit for a long time” and Participant 21 thought the cause could be “Doing too much or too little exercise?”. Often, ‘LBP as unbalanced lifestyle’ seemed to be related to the first discourse ‘LBP as a biomedical problem’. For example, a quote selected from the response of Participant 59:

I think it’s because I’m not exercising regularly. When I do go to gym, I will definitely train my lower back muscles with the back-extension equipment. The problem is, I should have gone more frequently than I usually do.

First, this participant pointed out the importance of balanced lifestyle (exercising regularly). They
then related the lack of exercise to the idea that back muscles should be trained specifically (indicating a biomechanical view of LBP). The participant then reinforced the importance of a balanced lifestyle by adding “I should have gone more frequently (to the gym) than I usually do”. One response related to unbalanced lifestyle based on traditional Chinese beliefs regarding pregnancy: “I didn't take care of my low back during ZuoYueZi (postpartum care)“ (Participant 143). This answer related to traditional Chinese health beliefs. ZuoYueZi is a part of Chinese custom that intends to improve health after pregnancy (20). After delivery, it is strongly recommended that the mother takes particular actions such as limiting movement, eating special food and not washing her hair (20). Also, family members are an important part of ZouYueZi, providing social support to the mother, such as doing housework and taking care of the baby (20).

**Discourse 3: LBP is about menstruation and ‘kidney’ status**

‘LBP is about menstruation and kidney status’ was the third identified discourse. Approximately, 9% of the responses appeared from this discourse. In Chinese culture, menstruation is important to women while ‘kidney function’ is vital to men. To a certain extent, menstrual function and ‘kidney function’ reflect reproductive health. The understanding of ‘kidney function’ in Chinese medicine is fundamentally different to Western medicine (21). In traditional Chinese medicine, the kidney is not be considered as a real organ but as a symbol that controls reproductive health (13) and causes LBP when the kidney is deficient (13).

As is evident in this quote from Participant 50, “Because of menstruation, I have LBP 2 days before menstruation, but I don’t know the reasons behind it”, several participants considered menstruation to be the cause (or one of the causes) of their LBP. Further, Participant 28 wrote, “LBP appears before menstruation” and Participant 37 responded, “Because of menstruation”. One male participant indicated “ShenKui” was a reason for his LBP. ‘Shen’ means Kidney while ‘Kui’ means deficiency (22). In China, women are generally believed vulnerable and emotionally unstable during menstruation (23), whereas men who have ShenKui are believed to have low sexual performance (22). Psychosocial stresses in this discourse may be relevant to the LBP reported by participants.

**Discourse 4: LBP is about the ‘Five Elements’ imbalance**
The discourse ‘LBP is about Five Elements imbalance’ was only occasionally mentioned (7.9%) but was identifiable from the responses. Related to the balance of Yin and Yang, there are ‘Five Elements’ in Chinese medicine: Water, Fire, Wood, Metal and Earth (13). There is a self-regulating balance within the five elements. For example, Water balances Fire, but Fire produces Earth that balances Water in return. In traditional Chinese medicine it is considered important to encourage this self-regulating balance to maintain good health. Water is considered to be the foundation of the other Elements (13). This appears to be the discourse underpinning Participant 114’s response “Drinking too little water will cause it (LBP) to recur”.

The Five Elements can represent different seasons, directions, colours, tastes and climates (13). For example, spring, summer, autumn and winter are represented by wood, fire, metal and water, respectively (13). Climates such as wind, heat, dampness, dryness and cold are represented separately by wood, fire, earth, metal and water, respectively. The self-regulating balance can be disturbed by exterior invasion of cold, wind and dampness which is believed to cause LBP (13). Also, external cold can affect ‘kidney function’ when it invades the low back region, which often happens to modern women due to exposure of lower abdominals and loins in modern fashion (13). Thus, participant’s answers related to climates (e.g., “Probably suffer from cold” - Participant 9), and seasonal change (e.g., “…Pain will certainly occur during autumn-winter seasonal rotation and spring-autumn seasonal rotation, mainly because of climates…” - Participant 41) were considered to be underpinned by this ‘Five Elements’ discourse.

**Discourse 5: LBP is about energy status**

The least common discourse (5.9%) was based on ‘LBP is about energy status’. In traditional Chinese medicine, ‘Qi’, understood as a ‘matter-energy’ or ‘vital force’, connects physical and mental energies in individuals (13). Qi should circulate freely inside the body and also flow in and out the body in a healthy situation (13). A low (disturbed) energy status can be caused by, or causes, ‘Qi’ stagnation, resulting in muscle pain (13). Answers related to low energy status were considered to draw from this discourse. For example, Participant 10 responded, “…JingShen status is not optimal”. ‘Jing’ means ‘essence’ while ‘Shen’ means ‘mind’. ‘JingShen’ status can be understood as energy status. Also,
answers indicating a disturbed energy status, caused by stress or mental fatigue, were underpinned by this discourse. For example, Participant 70 wrote, “...also because of life stress and fatigue caused by work”.

Where does the perception come from?

Most participants selected only one of the five options and did not provide additional sources as ‘other’ options. Almost two thirds indicated that their perception of what causes their LBP to become persistent or recurrent came from healthcare professionals (n = 90, 59.2%). The options ‘internet’ (n = 37; 24.3%), ‘family’ (n = 35; 23.0%) and ‘friends’ (n = 25; 16.4%) were also frequently listed.

‘Religion’ 0 (0%) was not indicated as an information source. Originally, the option ‘other’ was selected by 30 participants. However, two answers overlapped with the option ‘healthcare professionals’, and were moved from the option ‘other’ and into the option ‘healthcare professionals’.

In total, twenty-eight participants (18.4%) selected the option ‘other’. One of these reported two information sources and another reported three. Under the option ‘other’, most reported some sort of self-reflection (n = 24, 15.8%) as information source. Others indicated previous medical related education (n = 2, 13.2%), scientific literature (n = 1, 0.7%), and TV programmes (n = 1, 0.7%) as information sources. Three participants (2.0%) provided unclear answers. For example, Participant 19 answered “my personal experience” and Participant 37 wrote “daily observation”. An overview of responses for this question are provided in Table 3.

| Source of beliefs       | n (%)   |
|-------------------------|---------|
| Healthcare professionals| 90 (59.2%)|
| Internet                | 37 (24.3%)|
| Family                  | 35 (23.0%)|
| Friends                 | 25 (16.4%)|
| Religion                | 0 (0%)   |
| Other                   | Total*: 28 (18.4%) |
| - Self-reflection       | 24 (15.8%) |
| - Education             | 2 (1.3%)  |
| - Scientific literature | 1 (0.7%)  |
| - TV programme          | 1 (0.7%)  |
| - Unclear answers       | 3 (2.0%)  |

* Under the option ‘Other’, one participant reported two information sources and another one reported three.

Discussion

This study identified five key discourses underlying the beliefs of people living in China about what
causes their persistent or recurrent LBP. The most predominant discourse was that LBP persisted or recurred due to biomedical problems, followed by the discourses influenced by traditional Chinese medicine related beliefs: unbalanced lifestyle, menstruation and ‘kidney’ status, the ‘Five Elements’ imbalance, and mental energy status. Most participants responded that their pain beliefs were based on information derived from healthcare professionals followed by the internet and family.

A similar study assessed discourses underpinning beliefs about the causes of the persistence of LBP in participants living in Australia (9). Four discourses were identified in that study: 1) Body as a machine; 2) LBP as permanent/immutable; 3) LBP is complex; 4) LBP is very negative. ‘Body as a machine’ is comparable with the discourse ‘LBP as biomedical problem’ and was also the most common discourse in the Australian study. The assumed biomedical causes to explain the ongoing nature of LBP was thus a common trend in both the Chinese and Australian study populations. This comparable understanding of the body between Chinese people and Western people is not surprising. Since 1978 the ‘Reform and Opening’ policy has been embraced in China, and this has included an increasing uptake of Western medical methods and interventions (24). Currently, the principal medical practice in China is Western medicine (24–26). Our study results highlight that, at least in the case of LBP, Chinese people often think about their health in line with a Western biomedical viewpoint.

From the answers underpinned by the discourse ‘LBP as unbalanced lifestyle’, a metaphorical personalised ‘balance scale’ about time or load of exercise, sitting, standing or walking could be identified. The language the participants used to describe time or load, was ‘too much’, ‘too little’ and ‘too long’. However, there was no specific duration, number or load mentioned by the participants. This ‘balance scale’ seems personal. Although lifestyle causes of ill-health are also found in Western medicine, considerations of balance can be found in traditional Chinese medicine which has long discussed balance as a key to health (13). Any imbalance, e.g., the imbalance between rest and exercise, unbalanced emotion or diet, too much and too little work or sex, can become a cause of disease based on traditional Chinese medicine (13). The idea of an individualised balance scale is part of the Chinese culture. ‘LBP as unbalance lifestyle’ from a Chinese perspective was at times entangled with the most common discourse ‘LBP as a biomedical problem’ as many participants
related the time or load with certain positions or postures to explain their ongoing LBP. To a certain degree, the discourse ‘LBP as unbalanced lifestyle’ may show how Chinese philosophy merges with a Western biomedical view.

The other three discourses were less common but unique. Unlike a qualitative synthesis study which reported that individuals held homogenous biomedical beliefs about their LBP (27), it is novel that these three discourses likely demonstrate the ongoing impact of traditional Chinese medicine on contemporary Chinese society and represent the complexity of the population’s understandings of what causes their LBP to be persistent. The three identified thinking patterns underlying Chinese people’s pain beliefs, which might indicate high thoughtfulness to the body, mind and environment; might generate related neural networks that collaborate to evoke pain (28) and increase susceptibility to pain.

Reported by the earlier study (9), the Australian group also frequently indicated their LBP as permanent/immutable and very negative. The Chinese group seemed more positive about their persistent LBP. We undertook a post-hoc analysis of the present data by reallocating Chinese participants’ responses into the discourses ‘LBP as permanent/immutable’ and ‘LBP is very negative’. Only two Chinese participants indicated their LBP as permanent/immutable with possible negative emotions, by complaining about no useful LBP medical interventions available or saying LBP is inevitable and impacts one’s study and life. Although the reasons for these differences across the populations are not known, two possible explanations are that; 1) the study may represent a population with less severe symptoms than the Australian study; and 2) stoicism (meaning showing no emotions when encountering pleasure or pain) is considered as a positive trait in Chinese culture (29).

Our study found that healthcare professionals were the main (59%) information source of beliefs about causes of persistent or recurrent LBP in Chinese people. This finding was much lower than the previous Australian study where 89% of participants attributed “healthcare professionals” as information source (9). Information sources ‘Family’ and ‘Friends’ were higher (23.0% and 16.4%) in the Chinese sample, compared with 9.0% and 5.0% respectively in the Australian sample (9). These
differences might be explained by a less severe LBP population in our study. Only 15.1% of Chinese versus 82.0% of Australian participants reported having daily LBP. Due to the less severe level of LBP, we assume that less participants needed to seek medical professionals’ help. A post-hoc analysis including only the participants who reported LBP every day (n = 23), revealed that 52.2% of Chinese people with LBP every day, selected ‘healthcare professionals’ as information source. This percentage is still lower than in the Australian study (9). However, these comparisons should be interpreted with caution due to the small sample size. The lower percentage of ‘healthcare professionals’ information source, might also be explained by Chinese people’s historical grounding in Confucianism, which emphasises family and community needs over those of an individual. As health concerns are viewed as family problems rather than personal ones, seeking help from healthcare professionals may be considered a shameful revelation of private family matters to outsiders (29). This might be one reason why less Chinese participant chose to seek medical help, even if they had LBP every day.

Confucianism has been identified as a cultural barrier to the Chinese population receiving pain interventions (29). However, Chinese healthcare professionals have been held negative beliefs about LBP (30), Confucianism might be considered positive for people in China with LBP by avoiding unhelpful medical help.

This is the first study that examined the discourses underpinning pain beliefs in a Chinese population with persistent or recurrent LBP. It provides a starting point for future research in pain management. The nature of the study design (electronic survey) limited direct interaction with participants, however it allows participants to express themselves freely as they are not being observed. Discourse analysis, frequently applied in social science (16), is innovative in medical science and thus presents opportunities for new knowledge.

It is important to consider the representativeness of this study population. Notably, half of the participants were from South Central China and most other participants were from either East China or North China. This can be explained by the way the data were collected by WeChat as most connections were with South Central, East and North region. Due to the lack of data from less-developed China, the study findings may not be as representative of those parts of China. Considering
also to the demographics of this study population with 73% females and generally mild LBP, the results may not be as applicable to populations with predominantly males and people with more severe conditions.

Cultural factors have strong influences on pain-related factors (8, 31, 32). For example, in contrast with the overwhelming LBP medical care in the West (27), a Nepalese study showed that people who suffered from LBP continued with their daily activities without seeking medical help as they consider LBP to be a normal aging process (32). Insights from different cultural perspectives can provide useful information to understand patients’ beliefs about the causes of pain and can therefore assist with tailoring treatments and addressing beliefs. Our study highlights the complexity of the Chinese population’s pain beliefs and provides a starting point for how to address them. It is recommended for future research that customised interventions to explain LBP appropriately, should contain biomedical and thinking of psychosocial causes with integration of Chinese culture related thoughts concerning causes of LBP.

Conclusions
The findings of this study support those from previous studies in other cultural groups that suggest that people frequently use biomedical viewpoints to explain the persistence or recurrence of their LBP. This perspective appears to be strong in Chinese populations as well. However, it also establishes the persistent impact of traditional Chinese medicine on contemporary Chinese society’s understandings of LBP. Findings suggest that comprehensive LBP management for Chinese people should be culturally relevant, multifaceted and involve healthcare professionals, family and the patient.

Abbreviations
LBP
Low back pain
YLDs
Years lived with disability

Declarations
Ethics approval and consent to participate
The study was approved by The Scientific and Ethical Review Board (VCWE) of the Faculty of
Behaviour and Movement Sciences, Vrije Universiteit Amsterdam (VCWE-2019-065R1). All participants gave digital informed consent before completing the survey.

Consent for publication
Not applicable.

Availability of data and materials
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests
The authors declare that they have no competing interests.

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No funding body was involved in the design of the study, and collection, analysis, and interpretation of data and in writing the manuscript. JS and PH are supported by a Fellowship from the National Health and Medical Research Council of Australia.

Authors’ contributions
YJL, GGMSP, MWC and JS participated in study conception and design. YJL, GGMSP and JS performed the data collection and data analyses. All authors interpreted the data, wrote the manuscript, read and approved the final manuscript.

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Figures

Flowchart of the study

Excluded (n=19)
1. Did not meet the inclusion criteria (n=11)
2. Missing values for the question “What is your perception of why your LBP is persistent or recurrent?” (n=8)

Supplementary Files
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