

A modified Delphi approach to standardize low back pain recurrence terminology

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Abstract Lack of standardization of terminology in low back pain (LBP) research has significantly impeded progress in this area. The diversity in existing definitions for a ‘recurrence of an episode of LBP’ and ‘recurrent LBP’ is an important example. The variety of definitions used by researchers working in this area has prevented comparison of results between trials and made meta-analyses of this data unfeasible. The aim of this study was to use a modified Delphi approach to gain consensus on definitions for a ‘recurrence of an episode of LBP’ (e.g. outcome event) and for ‘recurrent LBP’ (e.g. patient population). Existing definitions for both constructs were classified into the main features comprising the definition (e.g. ‘duration of pain’) and the items that defined each feature (e.g. ‘pain lasting at least 24 h’). In each round, participants were asked to rate the importance of each feature to a definition of a ‘recurrence of an episode of LBP’, and a definition of ‘recurrent LBP’ and rank the items (defining each feature) in order of decreasing importance. Forty-six experts in LBP research, from nine different countries, participated in this study. Four rounds were completed with responses rates of 94, 91, 83, and 97% in rounds 1, 2, 3, and 4, respectively. Consensus definitions were reached in both areas with 95% of panel members supporting the definition of a ‘recurrence of an episode of LBP’ and 92% of panel members supporting

the definition of ‘recurrent LBP’. Future research is necessary to evaluate these definitions.

Keywords Delphi approach · Recurrence · Recurrent · Low back pain · Standardization · Definitions

Introduction

The number of randomized controlled trials evaluating treatments for low back pain (LBP) has risen exponentially [1]. With this rise in clinical trials, the popularity of systematic reviews and meta-analyses has also increased so that information from multiple trials investigating similar problems can be accurately summarized. However, pooling of data from trials is only feasible if the trials have adopted standardized ways of measuring outcomes and defining patient populations [2]. Unfortunately, this does not always occur. The lack of standardization in clinical research may be the most significant hindrance to progress to date, as many trials are completed in the same area, but we cannot validly combined their results because of diversity in definitions used.

It is well-established that LBP runs a recurrent course for many patients [3–5]. Importantly, recurrent episodes of LBP are more costly than the original episode, making secondary prevention crucial [6]. This makes research on therapies that can treat recurrent LBP and prevent future recurrences of LBP of utmost importance. Unfortunately, research in this area has experienced the same pitfalls noted above. Specifically, definitions used to describe a ‘recurrence of an episode of LBP’ are very heterogeneous which prevents comparison between many studies [7]. The same problem was found for definitions used to describe patient populations with ‘recurrent LBP’ [8]. This makes it very

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difficult to summarize the effect of treatment on secondary prevention of LBP.

Admittedly, recurrence is a difficult area to study as the terminology often refers to two different constructs: an event and a population. In the first situation, recurrence is an event that occurs, e.g. a ‘recurrence of an episode of LBP’. Studying recurrences of LBP allows us to determine how often pain returns once it has resolved and how well treatment works to prevent return of pain. In the second situation, the terminology describes a population of patients, e.g. patients with ‘recurrent LBP’. In this case, we can study patients with ‘recurrent LBP’ and determine if different treatments work better to resolve their pain as compared to patients with other types of LBP (e.g. acute LBP or chronic LBP).

The need for standardized definitions in LBP research has been previously identified. Other research groups have used consensus approaches to suggest definitions for LBP in epidemiological prevalence studies [9], but to date, this has not been applied in the area of recurrence. A recent discussion paper examined the interpretation of recurrence of LBP as a health condition within the International Classification of Functioning, Disability and Health (ICF) model (e.g. LBP recurrence is considered a return of atypical pain) [10]; however, standardized definitions for use in research were not suggested. Further, no standardized definitions for recurrent LBP have been suggested which requires researchers and clinicians to continually construct their own definitions. This reduces the ability to effectively communicate both research results and patient outcomes and creates a strong need to standardize recurrent LBP terminology. Accordingly, the aim of this study was to reach consensus on definitions for (1) ‘recurrence of an episode of LBP’ (as an outcome event) and (2) ‘recurrent LBP’ (as a patient population) that could be applied in research.

Methods

Study design

A modified Delphi approach was used in this study [11–13]. All of the authors were involved in the design and conduct of this study. This study received ethical approval from the University of Sydney Human Research Ethics Committee.

Participants

A panel of international experts in the area of LBP and/or recurrence was included in this study. Table 1 outlines the eligibility criteria. Experts in the area of LBP were

Table 1 Eligibility criteria of panel members

Inclusion criteria	Exclusion Criteria
Currently active in publishing low back pain research (has been an author on at least two papers in the last 5 years covering prognosis or management of low back pain)	People included as authors on papers in the area of low back pain research who: are not researchers (e.g. secretaries or study coordinators) will be excluded.
or Have specifically studied recurrent LBP/recurrence of LBP in their research	
Participants must have a researcher role on the papers they have published.	are included as authors for a specific expertise that they possess (e.g. statistical advice), but who are not expert in the area of low back pain. Authors of relevant papers for whom contact information is not retrievable will not be included (e.g. retired professors).

determined via a systematic search of Web of Science to identify researchers most widely published in the area of recurrence of LBP and recurrent LBP. Further, researchers attending the International LBP Forum XI held in June 2009 in Boston, MA, USA were considered potentially eligible. To determine if eligibility criteria were met, a publication search on Pubmed was completed for each potential panel member and for those who attended the LBP Forum, the research presented at the Forum was evaluated additional to the publication search. Eligible panel members were randomly chosen to take part in the study.

We aimed to include 40 researchers, from a wide geographical range, as part of the expert panel. This number was chosen to maximize the variety of expertise of panel members included, while at the same time keeping the panel sufficiently small to allow for efficient conduct [11].

Data collection

Round 1

The results from the authors’ previous systematic reviews on definitions of a ‘recurrence of an episode of LBP’ [7] and definitions of ‘recurrent LBP’ [8] were used to create the first round of the Delphi questionnaire. From the reviews it was identified that different *features* were used to define these two constructs (e.g. ‘minimum intensity of pain’). For each *feature*, different *items* were used to quantify the feature. For example, for the *feature* of ‘minimum intensity of pain’, an *item* that quantified this feature was ‘>10 mm on a 100 mm pain scale’. A total of 93 articles from the reviews were examined, as well as

relevant discussion papers [3, 14] to identify features/items that could be included in the definitions. The two constructs ('recurrence of an episode of LBP' and 'recurrent LBP') were evaluated separately.

Recent work by de Vet et al. [14] on defining an episode of LBP had the potential to be used as part of consensus definitions for a 'recurrence of an episode of LBP' and 'recurrent LBP'. Specifically, an episode of LBP was defined as: 'a period of pain in the lower back lasting for more than 24 h, preceded and followed by a period of at least 1 month without low back pain' [14]. Therefore, in Round 1, we specifically asked panel members if they felt that de Vet's definition of an episode of LBP should be incorporated into the consensus definitions.

Features The features that were included in a definition of a 'recurrence of an episode of LBP' in the literature could be grouped into five categories: (1) 'Minimum intensity of LBP', (2) 'Minimum duration of LBP', (3) 'Location of LBP', (4) 'Definition of recovery included', and (5) 'Maximum duration between current episode and previous episode'. For 'recurrent LBP', the features that were included in a definition could be grouped into two categories: (1) 'Number of previous episodes of LBP' and (2) 'Frequency of previous episodes of LBP'. The features were listed in a questionnaire and panel members were asked to rate each feature on an 11-point rating scale, where 0 = not suitable for a definition of a 'recurrence of an episode of LBP'/'recurrent LBP' and 10 = would definitely use for a definition of 'recurrence of an episode of LBP'/'recurrent LBP'.

Items The items used to quantify a particular feature in the literature were listed under the five main feature categories ('recurrence of an episode of LBP') and two main feature categories ('recurrent LBP'). The items were listed in a questionnaire and each panel member was asked to rank the items in order of best to worst (where 1 = best item to quantify this feature and subsequent rankings [e.g. 2, 3, ..., etc.] are less optimal items to quantify this feature). If participants rated a feature as 0, they were not required to rank the items comprising this feature.

Feedback from panel members Panel members were also asked to suggest new features and/or new items that they felt to be important for definitions of a 'recurrence of an episode of LBP' or 'recurrent LBP'. Any newly suggested feature or item was automatically included in the next round for evaluation. The questionnaire also allowed for both general and specific comments to be made on each feature and item. The round 1 questionnaire was sent via

email with a Word attachment in two batches of 60 participants each—the first on September 30, 2009 and then on November 3, 2009. E-mail reminders were sent at 2 and 4 weeks following the initial email.

Analysis Completed responses were returned to the study team via email. Panel members' individual scores were then recorded by the researchers and entered into an Excel database.

In relation to the appropriateness of de Vet's definition for use in definitions of 'recurrence of an episode of LBP'/'recurrent LBP', an a priori consensus level of at least 60% was required to include this definition. Similarly, features that did not achieve an a priori consensus median score of at least 6 out of 10 were excluded. The items of each feature were evaluated by calculating the average score (sum of all the responses for each item divided by the number of responses). The items with the lowest average scores (relative to the other items of that feature) were advanced to the second round. All items with low average scores of similar magnitude were advanced and this usually resulted in advancing three items per feature.

Panel members' comments were reviewed in relation to their given ratings to ensure that no discrepancies were present with panel members emailed for clarification when necessary. Following Round 1, a graphical representation of the overall scoring (from all panel members) for each feature/item was supplied to each panel member with their own individual score indicated.

Round 2

New features/items suggested by the panel in Round 1 were added to the questionnaire. Panel members again rated each feature and ranked the items. Round 2 questionnaires were e-mailed on December 12, 2009. E-mail reminders were sent at 4 and 6 weeks to remind those panel members who failed to respond to the first email.

As per Round 1, each panel member's individual scores in Round 2 were recorded and features not achieving an a priori consensus median score of at least 6 out of 10 were excluded. Items with the lowest average score were advanced to Round 3. Again, feedback was given to each panel member regarding the overall rating for each feature/item for the entire group and their individual score.

Round 3

Similar procedures were used for Round 3. Consensus for definitions was considered present if features were rated above 6/10, if there was a clear preference for an item

(based on average scores and graphical representation of responses), and if no additional features or items were suggested (that were not already captured by a previous suggestion). Once a consensus definition was reached, panel members were asked if they supported the definition.

In Round 3 only rating of the items under one feature ('Minimum Intensity of LBP') for the 'recurrence of an episode of LBP' definition was required. A consensus definition was achieved for 'recurrent LBP' at the end of Round 2. Therefore in Round 3 participants were asked 'Do you support the consensus definition for 'recurrent LBP'?' (Yes/No). Round 3 questionnaires were e-mailed on March 18, 2010. E-mail reminders were sent at 2 and 4 weeks to remind those panel members from whom a response had not been received.

Round 4

A consensus definition was achieved for a 'recurrence of an episode of LBP' at the end of Round 3. Therefore, in Round 4 participants were asked if they supported the consensus definition (Yes/No). Further, based on panel member feedback, we also asked if the feature, 'minimum pain intensity' should be included in the 'recurrent LBP' consensus definition to improve consistency between definitions. Round 4 questionnaires were e-mailed to participants on May 7, 2010 with reminder emails sent at 2 weeks.

Summary feedback

Following completion of Round 4, ten participants randomly identified from the panel members, were contacted to get feedback regarding the consensus definitions (e.g. regarding the importance and applicability of results). All panel members were sent the final definition for both: (1) 'recurrence of an episode of LBP' and (2) 'recurrent LBP'.

Results

A total of 120 eligible participants were contacted to participate in the Delphi Study. Of these, 49 experts in LBP agreed to participate (41%). Response rates were high achieving 94% in Round 1 (46/49), 91% in Round 2 (42/46), 83% in Round 3 (38/46), and 97% (37/38) in Round 4. Panel members were from nine different countries (Australia, Brazil, Canada, Denmark, Norway, the Netherlands, Sweden, the United Kingdom, and the United States of America). See Appendix A for a list of panel members completing all four rounds.

Recurrence of an episode of LBP

Round 1

66% of participants agreed that de Vet's definition of an episode of LBP should be used as part of the definition of a 'recurrence of an episode of LBP' (60% unqualified support; 6% with minor amendments). Adequate consensus was reached on the following features (median score > 6): 'Minimum duration of pain', 'Definition of recovery', 'Minimum intensity of pain'. The features of 'Location of LBP' and 'Maximum duration between current and previous episode' did not reach the a priori minimum consensus rating. (Table 2)

While the 'Location of low back pain' feature did not reach the a priori median rating necessary, the majority of panel members commented that as long as the definition of location was not too strict, they would support this feature. In recognition of this, it was proposed in the second round that the definition of LBP location [15] previously published by Dionne et al. [9] be adopted. (See Fig. 1) There would be no stipulation that symptoms of back pain be the same from one episode to the next.

New features that were suggested by panel members included: (1) 'Minimal functional impact of symptoms' and (2) 'Recovery from LBP (in terms of function)'. Items defining these new features were suggested by participants. New items were also suggested for the feature of 'Minimum intensity of LBP'. Due to participants' acceptance of de Vet's definition for use in the 'recurrence of an episode of LBP' definition (and the items corresponding to de Vet's definition having the lowest average scores), items under 'Minimum duration of LBP' and 'Definition of recovery' were not re-ranked.

Round 2

The features reaching consensus included: (1) 'Minimal functional impact of LBP' and (2) 'Recovery from LBP (function)'. There was no clear preference between three items under the feature 'Minimal Intensity of Pain', therefore, this was carried over to Round 3 to re-rank. Panel members' comments regarding the items under the 'Minimum intensity of pain' feature were supplied to all members prior to re-ranking. No new additional features or items were suggested in Round 2.

Despite being rated above the minimum consensus score required, numerous panel members' comments suggested that a measure of function should *not* be included into the consensus definition. Many participants pointed out that as the purpose of the survey was to determine consensus definition for a 'recurrence of an episode of low back pain'

Table 2 Round specific results for features and items of the ‘recurrence of an episode of low back pain’ consensus definition

Features	Median rating ^a	Top three items for each feature	Average score ^b
Round 1			
Minimum duration of pain ^c	8	<i>LBP at least 24 h</i>	1.59
		LBP > 1 day	2.24
		LBP lasting 2–9 days	3.37
Definition of recovery (pain) ^c	8.5	<i>At least 30 days pain-free</i>	2.56
		Pain-free, no duration specified	3.32
		VAS score of 0 or <10 on 100 mm scale, no duration specified	3.66
Minimum intensity of pain	7	At least the minimum important change (MIC) for the scale used	2.62
		>10 mm on a 100 mm VAS	2.79
		>33 mm on a 100 mm VAS	3.26
Location of pain	5	N/A	N/A
Maximum duration between current and previous episode	5	N/A	N/A
Round 2			
Minimum intensity of pain	–	At least the minimum important change (MIC) for the scale used	2.85
		>20 mm on a 100 mm VAS	2.88
		>10 mm on a 100 mm VAS	3.02
Minimum functional impact ^d	8	Pain that interferes with work and other daily activities	2.06
		Pain that impacts function or lifestyle in some way	2.33
		Pain intensity leading to activity limitations	3.03
Definition of recovery (function) ^d	8	Pain that does not interfere with normal activities, no duration specified	2.48
		Pain-free with return to usual activities, no duration specified	2.55
		Minimum of 14 days without activity limitations due to LBP	2.75
Round 3			
Minimum Intensity of pain	–	>20 mm on a 100 mm VAS	1.66
		At least the minimum important change (MIC) for the scale used	2.08
		>10 mm on a 100 mm VAS	2.26

Items in italics are included in the final definition

^a Assessed by a 0–10 scale, where 0 = not appropriate for a definition of recurrence and 10 = would definitely use for a definition of recurrence

^b Calculated by summing the ratings of all participants (where 1 = best item and 2, 3... = less optimal items) divided by the number of responses

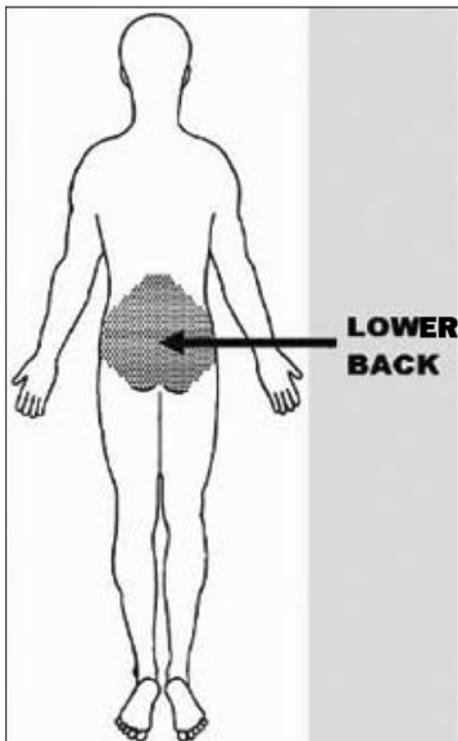
^c Part of de Vet’s definition [14] of an episode of low back pain

^d Feature not included in final definition due to incongruity with study aims

it is incongruous then to include *function* within this definition. However, panel members’ comments from both Round 1 and 2 did indicate that it is important to know if a ‘recurrence of an episode of LBP’ has an impact on function. Therefore, it is recommended that these function-related features are assessed additional to applying the consensus definition to patients.

Round 3

At least 2 points on an 11-point Numerical Rating Scale (> 20 mm on a 100 mm visual analogue scale) was chosen as the minimum pain intensity necessary to be considered a ‘recurrence of an episode of LBP’, thus a consensus definition was reached. (Fig. 2)



Do you have pain in your lower back
(in the area shown on the diagram)?

Fig. 1 Method of determining location of low back pain. The diagram is reproduced with permission [15]

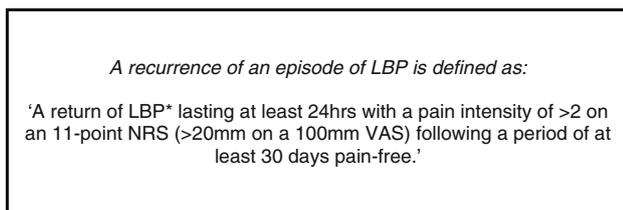


Fig. 2 Consensus definition for a 'recurrence of an episode of low back pain' *For determining if LBP is present please refer to Fig. 1

Round 4

95% of panel members (35/37) supported the consensus definition of a 'recurrence of an episode of LBP'.

Summary feedback

All nine responding panel members reported that they felt that the 'recurrence of an episode of LBP' consensus definition was very important to clinical research. Most panel members felt that the definition could be easily incorporated into current research. However, participants indicated the need for prospective validity testing to further evaluate the current definition.

Recurrent LBP

Round 1

61% of participants agreed that de Vet's definition of an episode of LBP should be used as part of a definition of 'recurrent LBP' (58% unqualified support; 3% with minor amendments). Adequate consensus was reached on the following features (median score > 6): 'Previous episodes of LBP' and 'Frequency of previous episodes'. As no new items were suggested under these features, we used the item with the lowest summation score as the definition for each of the features. (See Table 3).

New features that were suggested by panel members included: (1) 'Frequency of painful days', (2) 'Minimum functional impact of LBP', and (3) 'Duration of episodic LBP'. As above, all new items under these features were supplied by participants.

Round 2

The feature, 'Minimal functional impact of LBP' reached a priori consensus levels. However, this function-related feature was also excluded based on the same rationale discussed above for 'recurrence of an episode of LBP'. The remaining two features, 'Frequency of painful days' and 'Duration of episodic pain', did not achieve adequate ratings. No new features or items were suggested.

Round 3

92% of panel members (35/38) supported the consensus definition of 'recurrent LBP'.

Round 4

92% of panel members (34/37) supported inclusion of the minimum intensity of pain into the 'recurrent LBP' definition. (Please see Fig. 3 for the consensus definition.)

Summary feedback

As above, all nine responding panel members reported that the definition for 'recurrent LBP' was important to clinical research, that it could be easily incorporated into clinical studies and that its use could allow for meaningful study of this condition. Again, further validity testing was recommended.

Discussion

This modified Delphi study resulted in LBP consensus definitions for use in research for both an outcome event ('a

Table 3 Round specific results for features and items of the ‘recurrent low back pain’ consensus definition

Features	Median rating ^a	Top items for each feature	Average score ^b
Round 1			
Number of previous episodes of LBP	7	<i>At least 1 previous episode^c</i>	1.97
		At least 2 previous episodes	2.10
		Not specified (history of previous episodes of low back pain)	2.82
Frequency of previous episodes of LBP	8	<i>At least 2 episodes of low back pain over the past year</i>	3.40
		At least 1 episode of low back pain over the past year	3.69
		At least 4 episodes of low back pain over the past year	5.46
Round 2			
Frequency of painful days	3	N/A	N/A
Minimum functional impact of LBP ^d	8	LBP resulting in limitations in activities	1.43
		LBP must be of sufficient intensity to be troublesome	1.73
Duration of episodic pain	2.5	N/A	N/A

Items in italics are included in the final definition

^a Assessed by a 0–10 scale, where 0 = not appropriate for a definition of recurrence and 10 = would definitely use for a definition of recurrence

^b Calculated by summing the ratings of all participants (where 1 = best item and 2, 3... = less optimal items) divided by the number of responses

^c This item was removed from the consensus definition as it became redundant when the ‘Frequency of previous episodes of low back pain’ feature (consensus decision: at least two episodes in the past year) was included

^d Feature not included in final definition due to incongruity with study aims

Recurrent LBP is defined as:

‘LBP* which has occurred at least 2 times over the past year with each episode of LBP lasting at least 24hrs, with a pain intensity of >2 on an 11-point NRS (>20mm on a 100mm VAS), and with at least a 30 day pain-free period between episodes.’

Fig. 3 Consensus definition for ‘recurrent low back pain’ *For determining if LBP is present please refer to Fig. 1

recurrence of an episode of LBP’) and for a patient population (‘recurrent LBP’). Use of these consensus-based definitions in LBP research has the potential to harmonize and strengthen research in this area. However, while these definitions were arrived at through consensus, there were several areas of controversy that merit discussion. Further, results of this article also provide support for some previous recommendations [14] and stimulation for debate with a recent discussion paper [10].

The findings of this study support and build upon de Vet et al’s previous recommendations for defining an episode of LBP [14]. Panel members demonstrated support for incorporating this episode definition into both consensus definitions. The findings of this study differ, however, from those of a recent discussion paper evaluating recurrence as a health condition in the ICF model [10]. This discussion paper suggested that based on the ICF model, back pain becomes a health condition when it is atypical (impaired body function or structure). It was proposed, therefore, that

a recurrence of back pain occurs when there is a return of atypical back pain [10]. This includes both a person without pain who subsequently experiences a return of pain and a person with a constant level of pain, whose pain then gets worse [10]. This recommendation does not deem recovery from LBP to be an important consideration when defining recurrence. The results of our study suggest otherwise, based on panel members’ agreement to incorporate de Vet’s definition of an episode of LBP (which contains a definition of recovery from pain) [14].

One of the concerns raised by some panel members was that the timeframes chosen were arbitrary. For example, some panel members questioned the validity of requiring that LBP be present for at least 24 h to be considered a new episode or that a 30-day pain-free period is required to delineate episodes. These timeframes were originally suggested by de Vet et al. [14] based on an extensive review of the literature. While de Vet’s recommendations were not informed by prospective testing in LBP patients, it appears that the majority of panel members took the view that until research demonstrates otherwise, these timeframes appear logical.

A second concern of panel members was related to the assessment of the impact on function of a recurrence. The large majority of members felt that function was important to assess but not as part of the pain definitions. However, a small percentage indicated function to be a necessary part of the definition. It can be argued that by only including pain measures in the definitions, there is greater potential to

identify trivial recurrences of pain (or trivial recurrent LBP) that likely would not warrant intervention. However, when performing a Delphi study, the purpose of the study must be clear [11]. As the intent of this study was to reach consensus on definitions for pain ('recurrence of an episode of low back pain' and 'recurrent low back pain'), it makes sense to limit the definition to pain measures.

The value of considering a 'recurrence of an episode of LBP' and 'recurrent LBP' as two distinct entities was an issue that was also raised. Whether a difference is seen between the two entities appears to rely on what is considered to be 'recurrent LBP'. Some panel members ascribed to the view that if a person has a first episode of LBP and then has a second episode of LBP at any time in their life, this person should be considered to have 'recurrent LBP'. This view results in nearly all people with LBP to be considered to have 'recurrent LBP' and negates study of this 'condition'. This view also makes it difficult to distinguish between the two entities. On the other hand, some panel members felt that to accurately describe 'recurrent LBP' for use in research, we are interested in a definition that describes patients whose LBP is 'currently recurrent'. That is, a person has to recently have had a certain number of episodes of LBP over a specific period of time to be considered to have the condition 'recurrent LBP'. Based on the results of this Delphi approach, the latter definition seems more widely accepted. Further, the latter definition also allows a patient to recover from 'recurrent LBP' while the former does not.

The practicality of using the definitions also merits discussion. Feedback from panel members provided strong support for the usefulness of these definitions in research. However, some concern over the accuracy of pain intensity recall was raised as the information required for these definitions is often assessed retrospectively. For example, when determining if someone has had a 'recurrence of an episode of LBP', the subject is often asked at a later time point to recall their pain (e.g. in the last 3 months has your LBP returned?). There is evidence that recall of pain intensity over a 3-month period yields valid data [16]. Therefore, these consensus definitions may be most reliable when studying patients prospectively with regular follow-ups. The recent use of text messaging in research [17] appears a convenient method for regular follow-up which would be well suited for these consensus definitions. As using the 'recurrent LBP' definition for a study's inclusion criteria usually requires retrospective pain recall over the past year the reliability of this measure needs to be determined.

This study, while providing an important step forward in standardizing recurrence terminology, has limitations that must be addressed. First, these consensus definitions, while based on the current literature and knowledge of the LBP

expert panel, have not been evaluated in research to test their validity. This will be an important next step and one that is recommended following Delphi methodology [11]. Second, the consensus definitions are only published in English to date. The accurate translation of these definitions to other languages is essential to allow standardization across LBP research. Lastly, these definitions are a consensus of LBP research experts, and thus may not cover the scope of what clinicians and patients deem to be recurrence.

Future research testing the validity of the consensus definitions could take numerous forms. For the definition of a 'recurrence of an episode of LBP', it would be useful to conduct patient-centred focus groups to see how the proposed definition aligns with patients' views of recurrence (e.g. content validity). For the definition of 'recurrent LBP', it would be valuable to study the predictive validity of the definition to see if those with 'recurrent LBP' have a different prognosis compared to those with non-recurrent LBP. This could also be extended to testing response to treatment (e.g. treatment effect modification) to see if people with 'recurrent LBP' respond differently to a therapy than those with non-recurrent LBP.

Conclusions

This study provides consensus-based definitions from LBP experts for both a 'recurrence of an episode of LBP' and for 'recurrent LBP'. These standardized definitions will allow for an improved ability to compare results between studies and to make definitive statements on the value of treatments for specific conditions. Research evaluating these definitions in prospective samples is warranted.

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Conflict of interest None.

Appendix A

Panel members completing Round 4 included: Carlo Ammendolia, Steven Atlas, Tom Bendix, Tony Bohman, Alan Breen, David Cassidy, Leonardo Costa, Pierre Cote, Henrica CW de Vet, Clermont Dionne, Kate Dunn, Paul Enthoven, Manuela Ferreira, Simon French, Douglas Gross, Margreth Grotle, Jan Hartvigsen, Rob Herbert, Lise

Hestbaek, Bart Koes, Vicki Kristman, Martyn Lewis, Jan Lonn, Pim Luijsterburg, Jon Lurie, Luciana Macedo, Wolf Mehling, Raymond Ostelo, James Rainville, Eva Rasmussen-Barr, William Shaw, Henry Tsao, Danielle van der Windt, Linda Van Dillen, Jeanine Verbunt, and Nina Vollestad.

Please note that the consensus definitions may not be representative of each panel member's view.

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