Representation of Specific Diagnosis for Low Back Pain Using the 11th Revision of International Classification of Diseases and Related Health Problems: Perspectives of Conventional Medicine and Traditional Medicine

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Background: The 11th revision of the International Classification of Diseases and Related Health Problems (ICD-11) was released on June 18, 2018, by the World Health Organization and will come into effect on January 1, 2022. Apart from the chapters on the classification of diseases in the conventional medicine (CM), a new chapter, traditional medicine (TM) conditions – Module 1, was added. Low back pain (LBP) is one of the common reasons for the physician visits. The classification codes for LBP in the ICD-11 are vital to documenting accurate clinical diagnoses. Methods: The qualitative case study method was adopted. The secondary use data for 100 patients were randomly selected using the ICD-11 online interface to find the classification codes for both the CM section and the TM Conditions – Module 1 (TM1) section for LBP diagnosis. Results: Of the 27 codes obtained from the CM section, six codes were not relevant to LBP, whereas the other 21 codes represented diagnoses of LBP and its related diseases or syndromes. In the TM1 section, six codes for different patterns and disorders represented the diagnoses for LBP from the TM perspective. Conclusion: This study indicates that specific diagnoses of LBP can be represented by the combination of CM classification codes and TM1 classification codes in the ICD-11; the CM codes represent specific and accurate clinical diagnoses for LBP, whereas the TM1 codes add more accuracy to the diagnoses of different patterns from the TM perspective.

Keywords: 11th revision of the International Classification of Diseases and Related Health Problems revision, low back pain, traditional medicine conditions – module 1

INTRODUCTION

Traditional Chinese Medicine (TCM) adopts a sophisticated diagnostic system called pattern differentiation, which allows for the tailor-made treatment of individuals. Pattern differentiation is a unique TCM concept that summarizes the nature, location, and pattern of diseases according to the World Health Organization’s (WHO) definition. The pattern categories are as follows:

- Principle-based patterns
- Environmental factor patterns
- Body constituent patterns
- Organ system patterns
- Meridian and collateral patterns.

The concept of disorder in TCM means that the functioning of an organ or tissue of the body, as well as the mental and emotional state has lost balance. The main disorder categories include:

- Organ system disorders
- Qi, blood, and fluid disorders
- External contraction disorders.

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In TCM, patterns and disorders are used in diagnosing a disease or a syndrome. Traditional medicine (TM) is a broader concept of TCM from the perspective of International Classification of Diseases (ICD) terminology. The patterns and disorders categorized in TM are conceptually the same as those defined in TCM.

Studies have shown that TCM pattern diagnosis can bring innovation to basic research, enhance efficacy and safety in clinical research, and aid in the new drug discovery. The application of pattern differentiation in the clinical practice contributes to the integration of Chinese medicine and evidence-based medicine in the treatment based on the accurate diagnosis of many mild and severe diseases, such as cardiovascular disease, low back pain (LBP), rheumatoid arthritis, stroke, etc. TCM practitioners apply differentiation reasoning for decision-making in their treatment of patients. In clinical practice, guidelines for the diagnosis based on pattern differentiation and disorders of TCM have been created and applied; for instance, the common cold can be divided into four patterns according to the clinical practice guidelines (CPGs) in China. Although the millions of people use TM worldwide, it has never been classified in the ICD system. The purpose of compiling the International Classification of TM (ICTM) by China, Japan, and Korea is to allow reporting on the various practices of TM in a useful manner to improve clinical care and resource allocation. The scope of the ICTM includes disease names, diagnosis patterns and disorders, symptoms, signs, indications for treatment, and interventions within the selected TM systems.

The eleventh revision of the International Classification of Diseases (ICD-11) was endorsed on May 25, 2019 by the WHO member countries during the 72nd World Health Assembly (WHA) in Geneva and will come into effect on January 1, 2022. The new chapter for ICTM is Chapter 26 in the ICD-11– “Supplementary Chapter TM Conditions – Module 1 (TM1).” Chapter TM1 provides the possibility to code more accurately in the classification of disease diagnosis.

LBP is “an extremely common problem that most people experience at some point in their life” as an epidemiological study reports. It is associated with more disability globally than other conditions, and it raises the global burden of the medical management. Hence, the classification codes for LBP based on the ICD-11 are vital to documenting accurate clinical diagnosis to better manage LBP and reduce its cost. The discussion of LBP diagnostic classification in the ICD-11 has been lacking until now. Therefore, the knowledge gap related to how a combination of CM and TM1 classification will work in LBP diagnosis needs to be bridged.

This study focuses on how the ICD-11 can represent specific clinical diagnoses of LBP; moreover, it explores how the TM1 of the ICD-11 leads to more accurate diagnostic coding for LBP.

**Methods**

The qualitative case study method suits the demands of this study based on the research objective stated in the introduction. The qualitative case study contains three parts: Data collection, data search, and results analysis. The workflow of the study, shown in Figure 1, focuses on the relevancy between the diagnoses of LBP and the ICD-11. The data search was conducted in both the CM section and the TM1 section.

Data collection: The data were registered on the International Patient Registry Platform of Acupuncture-Moxibustion, which was established in 2014 by the China Academy of Chinese Medical Sciences (CACMS). The data for 457 patients aged between 25 and 87 years were collected between 2014 and 2016 and were originally used for the acupuncture treatment. The second-hand data were permitted for the use in this study.

Due to the limitation in the scale of research, this study was designed to generate a random permutation of a sequence of data for 100 patients from a dataset of 457 patients. To be specific, every fourth patient of the first 400 patients was tagged. The selected data were divided into 10 groups, each made up of 10 patients, to easily record the results.

Data search

In the first step, “LBP” was typed in the “Search” space on the ICD-11 online browser (https://icd.who.int/browse11/l-m/en). The search results appeared as shown in Figure 2. From Figure 2, it is evident that four pathology codes in the CM section and 1 code in the TM1 section are given for the general classification of LBP:

- ME84.2 LBP, ME84.2Y Other specified LBP, ME84.2Z LBP, unspecified
- MG30.02 Chronic primary musculoskeletal pain and chronic primary LBP
- SC61 Lumbago disorder (TM1), LBP disorder (TM1).

In the original patients’ table, the diagnosis of all patients is simply categorized with a label from 1 to 6, for six categories. Many patients were given more than one diagnosis. Hence, it is necessary to precisely search the clinical-pathological diagnoses using the newly released ICD-11 coding system to clarify every pathology diagnoses that could cause LBP.

In the next step, pathology names from the patients’ table were translated from Mandarin to English and searched manually one at a time by typing in the blank on the ICD-11 online browser in the CM section. Then, the classification codes were obtained and filled in the patients’ table. Finally, the categories
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Chapter 15: Diseases of the musculoskeletal system or connective tissue

Chapter 21: Symptoms, signs, clinical findings, not elsewhere classified

Chapter 22: Injury, poisoning, or certain other consequences of external causes

Chapter X: Extension codes.

Results of traditional medicine conditions – module 1 section

The obtained six codes from the TM1 section of the ICD-11 were: SC61-Lumbago disorder (TM1), SF96-Kidney essence deficiency pattern (TM1), SD90-Seasonal cold disorder (TM1), SE81-Cold factor pattern (TM1), and SE82-Dampness factor pattern (TM1).

Table 2 contains codes obtained from TM1 (6), codes for patterns and disorders (number of patients), and the sub-categories involved in TM1. The average age of patients and the numbers of male and female patients are same as that in Table 1.

Discussion

From Table 1, it is evident that the 21 pathology classification codes and the related chapters in the CM section represent a more specific clinical diagnosis of LBP and its related diseases or syndromes than the categories from 1 to 6 in the original patients’ table.

Table 2 shows that the six patterns and disorders in the TM1 section are the main reasons for LBP occurrence from the TCM perspective. According to TCM theories and expert consensus, LBP is mainly due to the internal and external factors. It depends on patient conditions, such as young or old, strong or weak, acute pain, or chronic pain. The same pathology diagnosis by the CM classification for several patients can be coded as the different patterns in TM classification, depending on the conditions of these patients, as TCM focuses on tailor-made treatment for individuals.

In this study, every patient who was diagnosed with a specific pathology would also be diagnosed by a pattern or a disorder in TM1. For example, three patients diagnosed as “NB9Z-Injuries to the abdomen, lower back, lumbar spine or pelvis, unspecified” in the CM part could also be coded as “SF96-Blood stasis pattern (TM1)” in the TM1 part. Furthermore, 33 patients diagnosed as “XA54S5-Lumbar discs or space” in the CM section could be coded as “SC61-Lumbago disorder (TM1),” “SF96-Kidney essence deficiency pattern (TM1),” and “SE81-Cold factor pattern (TM1),” respectively, depending on their personal conditions.

The combination of CM classification and TM1 classification provides a more specific and accurate clinical diagnosis for the same patient from CM and TM perspectives; in this sense, the TM1 classification can add greater accuracy to a diagnosis.

Clinical practice guidelines

The creation of CPGs for LBP is based on a specific and accurate diagnosis. Two CPGs that have been widely applied in the clinical management are “LBP-CPG linked to the International Classification of Functioning (ICF), Disability, and Health from the Orthopaedic Section of the American

Figure 2: Low back pain classification codes searched in 11th revision of International Classification of Diseases and Related Health Problems of International Classification of Diseases and Related Health Problems

of the codes and the number of patients in each category were calculated. In total, 27 pathological codes were obtained.

Following this, the TCM patterns and disorders from the patients’ table were searched using the ICD-11 online browser in the TM1 section. There were six codes for the patterns and disorders among 100 patients. The classification codes obtained and the number of patients corresponding to each code were added to the patients’ table.

Ethical considerations

The usage of the second-hand patient data in this study was granted by the platform owner of the CACMS. The collection of the data and its usage was approved on December 21, 2016 (file number: 2016NO.13) by the Ethics Committee of the Institute of Basic Clinical Medicine of CACMS.

Results

Results of conventional medicine section

Of the 27 pathological codes obtained from the search results from the CM section of the ICD-11, 6 codes, including “sleeping disorder (7B22),” “hypertension (BA00),” “diabetes II (5A11),” “low limb phlebitis (BD70.0),” “chronic atrophic gastritis of unknown etiology (DA42.73),” and “pulmonary contusion (NB32.30)” were not related to LBP. The other 21 codes represented pathology diagnostic classifications that could lead to LBP.

The details of the results demonstrated in Table 1. The average age of the patients was 53. Apart from six patients who were not related to LBP, the other 94 patients, 35 male and 59 female patients had LBP symptoms or related diseases.

The 21 codes were: 1B71.Y, 1E91.3, 8B40, 8B93.6, FA03.Z, FA80.A, FA80.9, FA82, FA8Z, FA84.Z, ME84.20, ME84.2Y, ME84.2Z, MG30.02, NB53.5, NB92.Y, NB94.1, NB9Z, ND56.2, XA54S5, and XA80 × 7.

The six chapters involved included:

- Chapter 01: Certain infectious or parasitic diseases
- Chapter 08: Diseases of the nervous system
- Chapter 15: Diseases of the musculoskeletal system or connective tissue
- Chapter 21: Symptoms, signs, clinical findings, not elsewhere classified
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Clearly, in this clinical guideline, the CM classification codes in the ICD-11 transferred from the ICD-10 can better represent specific and accurate diagnoses for LBP, because with 55,000 codes,[14] the ICD-11 is more detailed than the ICD-10. The combination of CM and TM1 diagnostic classification makes the treatment recommendations more precise.

Limitations of this study
Due to the small research scale, this study was designed to randomly select the data for 100 patients from the original dataset of 457 patients. Other diseases or syndromes related to LBP could be missing, such as “1B71-Necrotising fasciitis,” and “FB00-Ankylosis of spinal joint” that some of the other 357 patients might have had. Therefore, the results of this study may be insufficient to determine all the diseases or syndromes which can cause LBP.

Conclusion
The ICD-11 contains nearly four times as many codes as the

Table 1: Pathology codes of Low Back Pain in the International Classification of Diseases ‑ 11

| Codes in ICD-11 (21) | Codes of pathology (number of patients) | Chapters involved (6) |
|----------------------|----------------------------------------|-----------------------|
| 1B71.Y, 1E91.3       | 1B71.Y Necrotizing fasciitis due to other specified bacterial infection (3) | Chapter 01: Certain infectious or parasitic diseases |
| 8B40, 8B93.6         | 8B40 Cauda equina syndrome (3)       | Chapter 08: Diseases of the nerves system |
| FA03.Z, FA08.A, FA08.9, FA82, FA98, FA84.Z | FA03.Z Osteoarthritis of other specified joint, unspecified (3) | Chapter 15: Diseases of the musculoskeletal system or connective tissue |
| ME84.20, ME84.2Y, ME84.2Z, MG30.02 | ME84.20 Lumbago with sciatica (3) | Chapter 21: Symptoms, signs, clinical findings, not elsewhere classified |
| NB53.5, NB92.Y, NB94.1, NB9Z, ND56.2 | NB53.5 Strain or sprain of lumbar spine (3) | Chapter 22: Injury, poisoning or certain other consequences of external causes |
| XA54S5, XA80X7       | XA54S5 Lumbar discs or space (33)    | Chapter X: Extension codes |
| XA80X7 Processes of third lumbar vertebra (2) |

Average age = 53; Male 35/Female 59. ICD: International classification of diseases, LBP: Low back pain

Table 2: Low Back Pain codes in Traditional Medicine Conditions ‑ Module 1

| Codes in TM1 (6) | Codes of patterns and disorders (number of patients) | Sub-categories involved in TM1 |
|------------------|------------------------------------------------------|-------------------------------|
| SC61, SF01, SF96 | SC61: Lumbago disorder (TM1) (20) | Bone, joint and muscle system disorders (TM1) |
| (Internal factors) | SF01 – Blood stasis pattern (TM1) (19) | Body constituents patterns (TM1) |
| SD90, SE81, SE82 | SE81 – Cold factor pattern (TM1) (12) | Organ system patterns (TM1) |
| (External factors) | SE82 – Dampness factor pattern (TM1) (11) | Environmental factor patterns (TM1) |
| NB92.Y, NB94.1, NB9Z, ND56.2 | NB92.Y Injury of other specified pelvic organs (2) | External contraction disorders (TM1) |
| NB94.1Strain or sprain of muscle, fascia, or tendon of lower back (9) | NB9Z Injuries to the abdomen, lower back, lumbar spine or pelvis, unspecified (3) | Environmental factor patterns (TM1) |
| ND56.2 Fracture of unspecified body region (2) |

Average age = 53; Male 35/Female 59

Physical Therapy Association,”[11] published in 2012, and “Interpretation of CPG for LBP Treated with Acupuncture and Moxibustion,”[12] developed by the State Administration of TCM of China and CACMS in 2015.

Here, taking the Chinese CPG as an example, the original classification of LBP in the CPG was based on the ICD-10 and TCM disorders and patterns. The clinical Acupuncture-Moxibustion treatment recommendations were created according to this original classification. As Table 3 shows, the CM codes in the ICD-11 were transferred from the ICD-10 through the “ICD-10/ICD-11 mapping Tables” under the “Info” icon on the ICD-11 online browser, and the TM1 codes in the ICD-11 were added according to the original TCM disorders and patterns in the CPG. The abbreviations of meridians in Table 3 were referenced by the Standard Acupuncture Nomenclature composed by the WHO in 1989 in Geneva. The acupoints listed were referenced from its second edition published in 1993.[13]
Acupoints and TM classification from the ICD-11 can be viewed as a feasible way to diagnose LBP from both CM and TM. This study shows that the combination of CM classification with the different patterns from the TM perspective. This classification codes add greater accuracy to LBP diagnoses and accurate clinical diagnoses for LBP, whereas the TM1 section, 6 codes for different patterns and disorders represented diagnoses for related diseases and syndromes. In the TM section, 21 codes for the 94 patients represented detailed diagnoses for LBP and its disorders. TM pattern differentiation allows for the tailor-made treatment of individuals based on the accurate disease diagnoses. TM pattern differentiation for LBP from the TM perspective.

In conclusion, the CM classification codes represent specific clinical diagnoses for LBP, whereas the TM1 classification codes add greater accuracy to LBP diagnoses with the different patterns from the TM perspective. This study shows that the combination of CM classification and TM1 classification from the ICD-11 can be viewed as a feasible way to diagnose LBP from both CM and TM perspectives. It provides evidence for making precise treatment recommendations in the CPGs.

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Conflicts of interest
There are no conflicts of interest.

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