



Research paper

Traditionally trained acupuncturists' views on the World Health Organization traditional medicine ICD-11 codes: A Europe wide mixed methods study[☆]

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ABSTRACT

Introduction: The diagnostic categories used in Traditional Medicine (TM) that originated in China and are now used around the world have been classified for inclusion as a chapter within the World Health Organization's International Classification of Diseases (ICD). As a new chapter in ICD, the TM ICD codes were subject to international field testing. A pilot field test of the TM ICD codes was conducted to investigate their clinical utility in the European context.

Design: A mixed methods approach, including a Europe wide survey of practitioner views on TM ICD codes; and investigating the coding process of case study vignettes to explore coders' experiences of using TM ICD codes.

Results: Survey: The majority of participants felt TM ICD codes provide a meaningful way to classify TM disorders and patterns; felt their patients' diagnoses could be represented within the codes; and felt the codes would be important in their clinical practice.

Coding of vignettes: In 60.7% of cases the specificity of the assigned code was perceived as 'just right'. Participants experienced difficulties assigning a single TM ICD disorder and pattern code, due to multiple codes being viewed as appropriate for the case.

Conclusions: The European TM practitioners who participated in this study largely perceive the TM ICD codes as valuable, conceptually accurate, and incorporating the range of TM diagnoses utilized within clinical practice. The TM ICD codes could be improved for European TM practitioners by expanding the scope of TM ICD codes, and adopting a multidimensional approach whereby more than one disorder and/or pattern code can be applied to single patients.

1. Introduction

The International Classification of Diseases (ICD) is the standard international classification for epidemiology, health management and clinical purposes. This includes the analysis of the general health situation of population groups. It is used to monitor the incidence and prevalence of diseases and other health issues, providing a picture of

the general health situation of countries and populations [1].

ICD is used by physicians, allied health professionals, researchers, health information managers and coders, health information technology workers, policy-makers, insurers and patient organizations to classify diseases and other health problems. ICD diagnoses are recorded on many types of health and vital records, including death certificates and health records. In addition to enabling the storage and retrieval of

[☆] We dedicate this paper to the excellent researchers and our good friends Professor George Lewith and Dr Peter Fisher who both sadly passed away before this study was complete.

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diagnostic information for clinical, epidemiological and quality purposes, these records also provide the basis for the compilation of national mortality and morbidity statistics by World Health Organisation (WHO) Member States [1]. ICD codes are also used for reimbursement and resource allocation decision-making by individual countries, including the provision of acupuncture within some European countries [2].

In 2010, WHO started a collaborative project to produce an international classification of traditional medicine (ICTM). As part of the ICTM project the diagnostic categories used in the traditional medicine (TM) that originated in ancient China and are now commonly used in China, Japan, Korea and elsewhere around the world have been classified for inclusion as a chapter within ICD [3,4]. These classification rubrics represent a unified set of harmonized TM diagnoses from national classifications from China, Japan and Republic of Korea, with some variation between countries according to their specific diagnostic approaches.

The TM chapter is a new chapter for ICD, to be included for the first time in its 11th revision (ICD-11), due to be released in 2018. ICD-11 are due to be presented at the World Health Assembly in May 2019 for adoption by member states, and come into effect on the 1st January 2022. The rationale for the inclusion of a TM chapter in ICD-11 is to enable TM health services and encounters to count and be counted (to measure their form, frequency, effectiveness, safety, quality, outcomes and cost) nationally and internationally in health information systems. This TM chapter constitutes the formative step for the integration of TM into a classification with standards used in conventional medicine ICD. This will enable the digitization of TM diagnoses data and for the first time, the computerized collection of valuable international health statistics relating to TM. The consequent increase in knowledge and information leads to various potential uses of the TM chapter. In particular it is envisaged that this Chapter will facilitate enhanced integration of TM into insurance coverage and reimbursement systems, in line with larger WHO objectives relating to universal health coverage.

The content and structure of the TM Chapter represent a common language developed jointly through the international cooperation of TM clinicians, researchers, academics and classification experts to enable international comparability of practice and reporting of morbidity in TM. The chapter in its current form refers to disorders and patterns which originated in ancient Chinese medicine and developed throughout history to incorporate contemporary science and technology. TM disorders refer to a set of dysfunctions in any of the body systems which presents with associated manifestations, i.e. a single or a group of specified signs, symptoms, or findings. Each TM disorder may be defined by its symptomology, etiology, course and outcome, or treatment response. TM patterns refer to the complete clinical presentation of the patient at a given moment in time including all findings. Findings may include symptomology or patient constitution, and other variables. These disorders and patterns are commonly used in China, Japan, Korea, United States of America, Australia, Europe and elsewhere around the world.

As a new Chapter in ICD-11, the TM Chapter was subject to international field testing. A mixed methods approach was conducted to pilot field test the TM ICD-11 codes with European traditionally trained acupuncturists and investigate their clinical utility. This is the first evaluation of the TM ICD-11 codes.

2. Design and methodology

The overall aim of the study was to pilot field test the clinical utility of TM ICD-11 codes with European traditional acupuncturists. Specific objectives included (1) assessing conceptual issues related to the ICD-11 TM Chapter and evaluate whether the ICD-11 TM categories will assist practitioners in understanding and communicating TM conditions, (2) assessing whether the ICD-11 TM categories incorporate and accurately

reflect the range of TM disorders and TM patterns utilized by European traditional acupuncturists within clinical practice, and (3) assessing the ease of use for practitioners using the ICD-11 TM categories. To achieve the objectives of the study a mixed methods approach was adopted, including a Europe wide survey of practitioner views on the TM ICD-11 codes (addressing mainly objectives 1 and 2); and a coding process of case study vignettes to explore European coders' experiences of using the TM ICD-11 codes (addressing mainly objective 3).

2.1. Europe wide survey of practitioner views

A draft questionnaire was developed by JH focussing on practitioner familiarity with WM ICD codes, to better distinguish in respondents' feedback the issues relating to the TM Chapter itself and those due to lack of familiarity with classification/ICD environment; perceived value of TM ICD-11 codes; conceptual and operational issues related to the TM ICD-11 codes. A purposive sample of UK traditionally trained acupuncturists (n = 13) were approached to participate in the piloting of the questionnaire to identify any issues with design and content. The acupuncturists were selected from the British Acupuncture Council register (currently around 3000 members) [5], based on their clinical and academic expertise. The British Acupuncture Council is the largest self-regulatory body for the practice of traditional acupuncture in the UK, with members trained in a variety of traditional theoretical frameworks. The selected acupuncturists were asked to familiarise themselves with the TM ICD-11 codes and the draft questionnaire, and then to provide comments on the questionnaire. Eight acupuncturists provided feedback on the draft questionnaire. No issues pertaining to design or content of the questionnaire were identified and no amendments recommended by participants. Those acupuncturists participating in the piloting stage were reimbursed £140 for their feedback on the draft questionnaire.

Questions pertaining to demographic details and practitioner training/affiliation were added to the questionnaire. The final questionnaire was created using a web-based survey platform. Member organisations of the European Traditional Chinese Medicine Association (an umbrella organisation for professional associations that represent different traditions within the field of 'Traditional Medicine of ancient Chinese origin') were approached to participate and distribute the survey amongst their members. 14 TM associations agreed to distribute the survey link to their members, spanning 12 European countries: Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Netherlands, Romania, Switzerland, and the UK. No incentives were provided to association members to participate. Data from the questionnaires were analysed using descriptive statistics.

2.2. Coding of case study vignettes

Four European Field Trial sites participated in the coding phase. These were: the Royal London Hospital for Integrated Medicine, University College London Hospitals NHS Trust, UK; the Charité University Hospital Berlin, Germany; Tromsø University, Norway; and the Hospital Campo di Marte, Italy.

Case study vignettes were provided to the WHO ICTM project by Ministries of Health of China, Japan, and the Republic of Korea. The case studies were extracted from medical records from these three countries. 5 case study vignettes were selected from the WHO database of case studies to represent TM disorders and patterns frequently seen in clinical practice within Europe (based on the findings from the Europe wide survey) (see Appendix A for example case study vignette). Each field trial site identified 6 traditional acupuncturists to participate in the coding exercise (24 acupuncturists in total). Participating acupuncturists were required to be members of a professional traditional acupuncture association in their country of residence and to have a minimum of 5 years clinical experience. Participating acupuncturists were not required to have any previous experience of using ICD codes,

Table 1
Participant demographics and background (n = 127).

	Number of participants (%)
Gender	
Female	83 (65.4%)
Male	44 (34.6%)
Age	
18-24 years	0 (0%)
25-34 years	10 (7.9%)
35-44 years	29 (22.8%)
45-54 years	52 (40.9%)
55-64 years	29 (22.8%)
65-74 years	6 (4.7%)
75 and older	1 (0.8%)
Ethnicity	
White/Caucasian	117 (92.1%)
Asian/Chinese	6 (4.7%)
Mixed	2 (1.6%)
Other	2 (1.6%)
Country of residence	
Germany	54 (42.5%)
Belgium	17 (13.4%)
Switzerland	17 (13.4%)
Denmark	11 (8.7%)
Greece	6 (4.7%)
UK	6 (4.7%)
Finland	5 (3.9%)
Netherlands	4 (3.1%)
Other	7 (5.5%)
Length of time practicing TM	
< 5 years	29 (22.8%)
5-10 years	34 (26.8%)
10-15 years	28 (22.0%)
15-20 years	16 (12.6%)
20-25 years	9 (7.1%)
> 25 years	11 (8.7%)
Theoretical background predominantly used to guide diagnosis^a	
Traditional Chinese Medicine	113 (89.0%)
Five Element	53 (41.7%)
Western medical	42 (33.1%)
Japanese style	15 (11.8%)
Dr Tans balancing method	3 (2.4%)
Shang han Lun	3 (2.4%)
Korean style	2 (1.6%)
Other	9 (7.1%)
Frequency use ICD in current practice	
Always	10 (7.9%)
Often	22 (17.3%)
Sometimes	20 (15.7%)
Rarely	23 (18.1%)
Never	52 (40.9%)
Current understanding of ICD system^b	
Very good	6 (4.8%)
Good	27 (21.6%)
Moderate	50 (40.0%)
Poor	25 (20.0%)
Very poor	17 (13.6%)

^a Participants were able to select more than one theoretical framework.

^b 2 participants failed to rate their current understanding.

as training material in using ICD codes were provided. The acupuncturists were provided with a copy of the 5 case study vignettes and asked to code the vignettes according to the TM ICD-11 codes using a Code Assignment Form. Responses were received from 15 participants (5 based in the UK; 4 Germany; 4 Italy; and 2 Norway). The acupuncturists participating in the coding of case study vignettes also completed a questionnaire relating to the content of the case study vignettes, as well as issues related to the clinical utility of the TM ICD-11 codes. Participating acupuncturists were provided with £140 to code the case study vignettes and complete the questionnaire. The data from the questionnaires were analysed using descriptive statistics and thematic analysis.

3. Results

3.1. Europe wide survey of practitioner views

See Table 1 for details of participant demographics and background. 171 practitioners accessed the online survey between February and May 2016. Data were excluded from 44 participants who failed to complete any of the questions pertaining to the TM ICD-11 codes. In most cases some demographic details and/or practitioner training/affiliation questions were completed by those which were excluded (these formed the initial questions in the survey). Of the remaining 127 participants, 83 (65.4%) were female, 44 male, with the overwhelming majority being white/Caucasian (n = 117, 92.1%). Participants had a range of ages (mode 45–54 years), lengths of time practising TM (mode 5–10 years), and knowledge and experience of using the current WM ICD system (mode moderate understanding). The theoretical backgrounds (labelled according to common usage in Europe) predominantly used by participating practitioners as a guide for diagnosis in their clinical practice included Traditional Chinese Medicine (113, 89.0%); Five Element (53, 41.7%); western medical (42, 33.1%); and Japanese style (15, 11.8%) (participants were able to select more than one theoretical background).

For details of the perceived usefulness of the TM ICD codes see Table 2. Having examined the draft TM ICD codes, participants were asked whether they agreed that the TM ICD codes overall provide a meaningful way to classify “traditional medicine (of ancient Chinese origin) disorders and patterns”; 108 participants responded, with 51 (47.2%) strongly agreeing or agreeing; 41 (38.0%) neither agreeing or disagreeing; and 16 (14.8%) disagreeing/strongly disagreeing. Of 87 participants who responded, 67 (77.0%) felt the distinction between the TM disorders and patterns was clear, 20 (23.0%) did not. Of 104 participants 43 (41.3%) strongly agreed or agreed that their patients’ diagnoses could be represented within the proposed TM ICD codes; 45 (43.3%) neither agreed nor disagreed; and 16 (15.4%) disagreed or strongly disagreed. With regards to the usefulness of the TM ICD codes, the codes were perceived as being most useful for reporting and health statistics (79.6% of participants perceived them as very useful or useful); conducting TM research (71.2% very useful or useful); and communication with conventional practitioners (66.9% very useful or useful). They were perceived as least useful for communicating with patients (36.5% perceived as of no use; 44.5% as very useful or useful).

For details of perceived frequency of use of TM Chapter sections see Table 3. With regard to which TM Chapter sections participants stated that they would most frequently use in their day to day practice, the TM disorders most frequently seen in clinical practice were, liver system disorders; spleen system disorders; bone, joint and muscle system disorders; qi, blood and fluid disorders; and mental and emotional disorders. The TM patterns most frequently seen in clinical practice were liver system patterns; spleen system patterns; kidney system patterns; and meridian patterns.

67 participants (93.1% of those who responded to the question) felt that there were no categories in the ICD-TM Chapter which were misplaced and should therefore be moved to another section, with 5 participants (6.9%) perceiving categories to be misplaced. 61 participants (74.4% of those who responded to the question) felt that TM disorder codes would be very important or important in their clinical practice; 59 (75.6% of those who answered) felt TM pattern codes would be very important or important in their clinical practice. Finally 40 (47.1%) felt a TM practitioner could easily learn to use the TM ICD codes; 6 (7.1%) felt they wouldn’t be easy to learn; with 39 (45.9%) indicating they didn’t know.

3.2. Coding of case study vignettes

Of the 15 TM acupuncturists participating in the coding phase, 6 (40.0%) felt the case study vignettes contained all the necessary

Table 2
Usefulness of new TM ICD codes^a.

	Very useful N (%)	Useful N (%)	Of no use N (%)	Don't know N (%)
Coding TM diagnosis accurately	19 (15.3%)	61 (49.2%)	24 (19.6%)	20 (16.1%)
Help to guide the diagnosis	9 (7.1%)	62 (49.2%)	31 (24.6%)	24 (19.1%)
Communication with other TM practitioners	20 (15.8%)	63 (49.6%)	27 (21.3%)	17 (13.4%)
Communication with conventional practitioners	31 (24.4%)	54 (42.5%)	21 (16.5%)	21 (16.5%)
Communication with patients	5 (4.0%)	51 (40.5%)	46 (36.5%)	24 (19.1%)
Reporting and health statistics	36 (28.4%)	65 (51.2%)	10 (7.9%)	16 (12.6%)
Reimbursement of TM services	23 (18.3%)	57 (45.2%)	13 (10.3%)	33 (26.2%)
Conducting TM research	33 (26.4%)	56 (44.8%)	16 (12.8%)	20 (16.0%)

^a 3 participants failed to rank 1 or more items.

information to make an accurate diagnosis, 9 (60.0%) felt additional information would have enabled a more accurate diagnosis. The main additional information which participants would have liked were: more detailed medical history/general information (n = 3); more details on tongue and pulse diagnosis (n = 2); instrumental diagnostic exams (n = 1); and, more details on the chronological time of symptom onset (n = 1). A number of participants used the free response sections to highlight the fact that they perceive patients presenting in clinical practice as frequently having more than one underlying TM pattern, making assigning one TM code problematic (n = 5).

In total for the 150 codes assigned by participants (each of the 15 coding acupuncturists assigned a disorder and pattern code for 5 case study vignettes), participating coding acupuncturists took between 1 min and 30 min to assign a TM ICD-11 disorder or pattern code (median 5 min; mode 5 min). 52% of participating acupuncturists experienced difficulties assigning a TM ICD-11 disorder code; 45% experienced difficulties assigning a TM ICD-11 pattern code. The main reason provided for experiencing difficulties assigning TM ICD-11 codes was a perceived difficulty assigning a single disorder and pattern code when multiple codes were viewed as being appropriate for the case

study (n = 30, 41% of all specified reasons). Other reasons for difficulties assigning codes included, the appropriate diagnosis not being present within the TM ICD-11 codes (n = 20, 27%); a lack of familiarity with the TM ICD-11 codes/terms (n = 9, 12%); further patient details required to make an accurate diagnosis (n = 5, 7%); reason for difficulty not specified (n = 3, 4%); other (n = 4, 5%).

Participating acupuncturists were asked whether the level of specificity of the assigned codes (both disorder and pattern) were appropriate. In 91 (60.7%) of cases the specificity of the assigned code was perceived as 'just right (neither too detailed nor not detailed enough)'; in 53 (35.3%) of cases the specificity was perceived as 'not detailed enough'; and 0 (0%) as 'too detailed' (note: in 6 cases (4.0%) the coding acupuncturist either failed to allocate a TM ICD-11 code or failed to indicate the specificity of the assigned code).

Participating acupuncturists were asked if they experienced any ambiguity in making the code assignment. Responses were recorded for each disorder and pattern coded for each of the five case study vignettes (150 responses), with participants able to select more than one option. In 50.7% of cases participants indicated that the assignment of the TM ICD-11 code was unambiguous (see Table 4 for details on ambiguity in

Table 3
TM Chapter sections participants perceived they would most frequently use in their day to day practice^a.

	High usage N (%)	Average usage N (%)	Low usage N (%)	No usage N (%)
TM Disorders				
Bone, joint and muscle system disorders	38 (45.2%)	33 (39.3%)	7 (8.3%)	6 (7.1%)
Brain system disorders	2 (2.6%)	22 (28.2%)	39 (50.0%)	15 (19.2%)
Childhood and adolescence associated disorders	3 (3.8%)	18 (22.8%)	38 (48.1%)	20 (25.3%)
External contraction disorders	4 (5.1%)	37 (46.8%)	27 (34.2%)	11 (13.9%)
Eye, ear, nose and throat system disorders	6 (7.4%)	36 (44.4%)	31 (38.3%)	8 (9.9%)
Female reproductive system disorders (including childbirth)	22 (26.5%)	32 (38.6%)	21 (25.3%)	8 (9.6%)
Heart system disorders	5 (6.3%)	44 (55.0%)	24 (30.0%)	7 (8.8%)
Kidney system disorders	30 (36.6%)	39 (47.6%)	6 (7.3%)	7 (8.5%)
Liver system disorders	38 (46.9%)	29 (35.8%)	7 (8.6%)	7 (8.6%)
Lung system disorders	12 (14.6%)	49 (59.8%)	14 (17.1%)	7 (8.5%)
Mental and emotional disorders	30 (34.9%)	36 (41.9%)	12 (14.0%)	8 (9.3%)
Qi, blood and fluid system disorders	45 (53.6%)	27 (32.1%)	5 (6.0%)	7 (8.3%)
Skin and mucosa system disorders	5 (6.2%)	33 (40.7%)	37 (45.7%)	6 (7.4%)
Spleen system disorders	42 (51.2%)	25 (30.5%)	8 (9.8%)	7 (8.5%)
TM Patterns				
Body constituents patterns	15 (19.2%)	33 (42.3%)	21 (26.9%)	9 (11.5%)
Environmental factor patterns	16 (20.5%)	32 (41.0%)	21 (26.9%)	9 (11.5%)
Four constitution medicine patterns	6 (8.0%)	20 (26.7%)	31 (41.3%)	18 (24.0%)
Four phase patterns	6 (8.0%)	17 (22.7%)	37 (49.3%)	15 (20.0%)
Heart system patterns	14 (18.0%)	45 (57.7%)	8 (10.3%)	11 (14.1%)
Kidney system patterns	33 (42.3%)	33 (42.3%)	5 (6.4%)	7 (9.0%)
Liver system patterns	45 (57.7%)	22 (28.2%)	3 (3.9%)	8 (10.3%)
Lung system patterns	21 (26.6%)	39 (49.4%)	12 (15.2%)	7 (8.9%)
Meridian patterns	34 (42.5%)	29 (36.3%)	10 (12.5%)	7 (8.8%)
Principle-based patterns	14 (19.2%)	30 (41.1%)	19 (26.0%)	10 (13.7%)
Six stage patterns	17 (22.1%)	21 (27.3%)	27 (35.1%)	12 (15.6%)
Spleen system patterns	44 (55.7%)	25 (31.7%)	3 (3.8%)	7 (8.9%)
Triple energizer stage patterns	7 (9.3%)	26 (34.7%)	31 (41.3%)	11 (14.7%)

^a 87 participants completed all or some of the items.

Table 4
Ambiguity in making the code assignment.

	Number	Percentage
No, the assignment of the TM ICD-11 code(s) is unambiguous	76	50.7%
Yes, because the diagnostic term / statement is ambiguous	18	12.0%
Yes, because the inclusion term is lacking	16	10.7%
Yes, because code title is ambiguous	13	8.7%
Yes, because my knowledge coding this particular diagnosis is insufficient	13	8.7%
Yes, because the code title was not distinguishable from other code(s)	10	6.7%
Yes, because coding guidance is lacking or unclear	8	5.3%
Yes, because of other reasons ^a	20	13.3%
Did not assign a code/complete section	4	2.7%

^a Participating acupuncturists typically stated that there was ambiguity due to the fact they perceived there being more than one viable code for the case study, or that their preferred diagnosis was not contained with the TM ICD-11 codes.

making the code assignment).

Participating acupuncturists rated aspects of the clinical utility of the TM ICD codes as applied to the case study vignettes. The majority of participants (n = 8, 53.4%) rated the accuracy of the TM ICD-11 codes as applied to the case study vignettes as quite or very accurate; 66.6% (n = 10) rated the TM ICD codes as either quite or very clear and understandable; while 60.0% (n = 9) rated the ease of use as either very or quite difficult to use (see Table 5 for all responses to the clinical utility of the TM ICD-11 codes).

Those participants familiar with the WM ICD codes were asked what the added value, if any, of the TM ICD codes were in a free response question. 10 participants provided comments. The main perceived benefits were, increases the appreciation, acceptance and integration of TM within conventional medical systems (n = 3); provides a uniform interpretation of TM disorders and patterns (n = 2); would lead to improvements in TM treatment plans (n = 2); would improve reimbursement processes through insurance companies (n = 2); improves the ability to monitor diagnoses and treatment outcomes, and record statistics on patient care (n = 1); improves communication of TM diagnoses (n = 1); improves research (n = 1); improves knowledge of TM amongst western medical doctors (n = 1); and, no added value (n = 1).

4. Discussion

A mixed methods study was conducted to pilot field test the clinical utility of TM ICD-11 codes. The mixed methods study included a European survey of TM practitioner views on the TM ICD-11 codes; and a coding process of case study vignettes to explore coders' experiences of using the TM ICD-11 codes.

Our findings suggest that the TM ICD-11 codes are largely conceptually accurate, and perceived as having the potential to assist European TM practitioners in understanding and communicating TM conditions. The majority of European survey participants perceived the TM ICD-11 codes as providing a meaningful way to classify “traditional medicine (of ancient Chinese origin) disorders and patterns”, and felt the distinction between TM disorders and patterns was clear. Only 15.4% of European survey participants disagreed or strongly disagreed that their patients' diagnoses could be represented within the TM ICD codes, suggesting that the codes largely incorporate the range of TM disorders and TM patterns utilized by European TM practitioners within clinical practice. The findings also indicate that over 90% of European acupuncturists employ at least one of the three theoretical frameworks for acupuncture upon which the TM ICD-11 codes are based (TCM, Japanese, Korean).

Findings on the ease of use of the TM ICD-11 codes are difficult to

Table 5
Participants' ratings of aspects of clinical utility for assigned TM ICD-11 codes.

	Responses n (%)			
Ease of use	very easy to use (1, 6.7%)	quite easy to use (5, 33.3%)	quite difficult to use (8, 53.3%)	very difficult to use (1, 6.7%)
Goodness of fit or Accuracy	very accurate (1, 6.7%)	quite accurate (n = 7, 46.7%)	quite inaccurate (n = 7, 46.7%)	very inaccurate (n = 0, 0%)
Clear and understandable	very clear and understandable (2, 13.3%)	quite clear and understandable (8, 53.3%)	quite unclear and not understandable (5, 33.3%)	very unclear and not understandable (0, 0%)
Level of detail and specificity	about the right amount of detail and specificity (n = 5, 33.3%)	insufficient detail and specificity (n = 9, 60.0%)	too much detail and specificity (n = 1, 6.7%)	
Amount of time to assign diagnosis	longer than their usual clinical practice (n = 10, 66.7%)	about the same as their usual clinical practice (n = 5, 33.3%)	shorter than their usual clinical practice (n = 0, 0%)	
Help you to select a treatment	very useful (n = 3, 20.0%)	quite useful (n = 5, 33.3%)	quite useful (n = 7, 46.7%)	not at all useful (n = 7, 46.7%)
Help you to communicate about the case with a colleague or other TM or WM professional	very useful (n = 5, 33.3%)	quite useful (n = 7, 46.7%)	quite useful (n = 5, 33.3%)	not at all useful (n = 3, 20.0%)
Help you to educate the people presented in the case summaries about their TM condition	very useful (n = 1, 6.7%)	quite useful (n = 4, 26.7%)	quite useful (n = 4, 26.7%)	not at all useful (n = 10, 66.7%)
Boundary between TM disorders and patterns ^a	very useful (n = 5, 33.3%)	quite useful (n = 5, 33.3%)	quite useful (n = 5, 33.3%)	not at all useful (n = 3, 20.0%)
Help to assess the prognosis	very useful (n = 1, 6.7%)	quite useful (n = 6, 40.0%)	quite useful (n = 6, 40.0%)	not at all useful (n = 8, 53.3%)

^a 2 participants (13.3%) failed to answer the question.

interpret, with many survey respondents indicating TM practitioners could easily learn to use the codes, while 60% of acupuncturists participating in the coding phase indicating they were quite or very difficult to use. This suggests that although most practitioners perceive them as likely to be easy to use, in practice they experienced some difficulty using the TM ICD-11 codes. Further research is recommended to explore the clinical utility of TM ICD-11 codes within routine clinical practice.

The findings would appear to indicate that the TM ICD-11 codes would need to be expanded to improve utility with European TM practitioners. Based on the prevalence of usage reported above, it is recommended that any expansion of TM ICD-11 codes should include the Five Element acupuncture system [6], given its relatively high rate of use by European TM practitioners as a theoretical framework for diagnosis (41.7% of survey participants specified they use Five Element as a theoretical background when diagnosing patients, with 3.9% exclusively utilising Five Element to diagnose patients). Although little published data is available on the diagnostic frameworks used by traditional acupuncturists, the frameworks employed by participants when diagnosing patients in the present study are congruent with previous published research. In a survey by Dale 1997 which included 926 members of the British Acupuncture Council in the UK 82% utilised TCM when diagnosing patients, with 43% utilising Five Element, and 17% Japanese style [7]. While a survey by Hopton et al in 2012 including 96 members of the British Acupuncture Council found 90% of respondents utilised TCM, 53% Five Element, 9% Japanese style, and 8% western medical [8].

The findings from the survey of coding acupuncturists indicated that participating acupuncturists frequently experienced difficulties assigning a TM ICD-11 disorder and pattern code. The main reason was the perception that multiple codes were required to adequately code a single case study. This has implications for the utility of TM ICD-11 codes to accurately document and report health statistics, and it is recommended that a multidimensional approach be adopted towards the TM ICD-11 codes, whereby more than one TM disorder and pattern can be applied to a presenting patient. This warrants further research to assess regional variations in TM knowledge and practice, with important feedback for TM Chapter training material and TM education in general.

The study has some limitations which may have impacted on its findings. Although the Europe wide survey achieved a reasonable sample size (n = 127) it should be noted that the membership figures for the TM acupuncture associations who distributed the survey link to their members far exceeds this figure. As an example the British Acupuncture Council currently state their membership is around 3000 [5], yet only 6 members completed the online survey. It should also be noted that the survey sample is skewed by country of residence, with 42.5% of the sample residing in Germany. The reasons for the low completion rates by TM acupuncture association members is unclear, but the low rates of participation may have implications for the generalizability of findings to wider TM acupuncture association members. Even among those who completed the survey, a number of participants failed to answer all of the included questions. Again this potentially has implications for the generalizability of the study findings. 60% of coding participants felt that additional information in the case study vignettes would have enabled a more accurate diagnosis, suggesting

that European TM practitioners may require more detailed information to accurately diagnose.

5. Conclusions

In summary, the European TM practitioners who participated in this study perceive the TM ICD-11 codes as valuable, conceptually accurate, and likely to be easy to learn. The data from the study also identifies areas where the TM ICD-11 codes could be improved for European TM practitioners. These include expanding the scope of the TM ICD-11 codes to incorporate additional traditional medical systems of ancient Chinese origin not currently included within the codes to better reflect the practice of TM within Europe, and adopting a multidimensional approach whereby more than one TM disorder and/or TM pattern code can be applied to a single patient. Further research is required to investigate the clinical utility of the WHO TM ICD-11 codes amongst other practitioner populations, such as elsewhere in Asia and North America, especially given the known differences in acupuncture practice between China and the West [9].

Conflict of interests

The authors declare no conflict of interests.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.eujim.2018.11.009>.

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