

# Using AGREE II Reporting Checklist to Evaluate the Quality of Tuina Clinical Practice Guidelines

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## Research Article

**Keywords:** Traditional Chinese Medicine, Tuina, Evaluation II instrument

**Posted Date:** August 26th, 2021

**DOI:** <https://doi.org/10.21203/rs.3.rs-816522/v1>

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# Abstract

**Objective** To evaluate the methodological quality of Tuina clinical practice guidelines.

**Methods** Computer searches of China National Knowledge Infrastructure (CNKI), Chinese Technical Periodicals (VIP), Wanfang Data Knowledge Service Platform, PubMed, Cochrane Library, Embase, and other databases were conducted to search for published guidelines on Tuina, with a search time frame from database creation to March 2021. Four evaluators independently used the Appraisal of Guidelines for Research and Evaluation II instrument to evaluate the quality of the included guidelines.

**Results** Eight guidelines related to Tuina were included in this study. The quality of reporting was low in all included guidelines. The highest quality report had a total score of 404 and was rated as "highly recommended". The worst guideline had a final score of 241 and was rated as "not recommended". Overall, 25% of the included guidelines were recommended for clinical use, 37.5% were recommended after revision, and 37.5% were not recommended for use.

**Conclusion** The number of existing Tuina clinical practice guidelines is limited. The methodological quality is low, far from the internationally accepted norms of clinical practice guideline development and reporting. In the future development of Tuina guidelines, emphasis should be placed on the reporting specifications of guidelines and the methodology of guideline development, including the rigor of the guideline development process, the clarity, application, and independence of reporting, to improve the quality and applicability of clinical practice guidelines, to guide and standardize the clinical practice of Tuina.

## Introduction

Tuina is a non-pharmacological therapy <sup>[1]</sup>. At present, many studies have demonstrated that Tuina is effective in treating neck pain, shoulder pain, low back pain, and other pain caused by spinal cord disease <sup>[2-5]</sup>. In 2016 guidelines for orthopedic therapy for non-specific low back pain formulated by the American Orthopaedic Association <sup>[6]</sup>, Tuina is recommended as an important treatment method because of its high scientific nature and safety. Chinese orthopedic rehabilitation experts also believe that Tuina is significantly better than conventional treatment in alleviating the pain of lumbar disc herniation <sup>[7]</sup>.

The guidelines basing on the evidence of SR are recommendations that could provide patients with reliable health care services after balancing the pros and cons of various interventions and help clinicians make medical decisions. Only high-quality guidelines can effectively fulfill their role in clinical guidance; however, the uneven quality of the current clinical practice guidelines makes it necessary to conduct a quality evaluation of the guidelines in a timely manner <sup>[8]</sup>. As the world's attention to Tuina is increasing, more and more clinical guidelines become available. However, these guidelines have not yet been standardized, and the definition and use of Tuina vary in China and different countries. In addition, the quality of clinical guidelines in Tuina is uncertain, and the tools currently in use cannot accurately address quality assessment and reporting issues in a single statement.

AGREE <sup>®</sup>, developed by a group of experts, is used for quality assessment and reporting <sup>[9]</sup>. AGREE II has become an international standard for evaluating the methodological quality and transparency of CPGs <sup>[10]</sup>. This study aims to use the international guidelines for quality evaluation tool AGREE II evaluate the published clinical practice guidelines for Tuina, to conduct methodological and report quality evaluation. It provides a reference for the formulation and update of future guidelines, to enhance the quality of domestic and international guidelines, so as to better play its guiding role.

## Methods

### 2.1 Literature search

Guidelines meeting the eligibility criteria were searched in English and Chinese using a computer program to avoid subjective interpretation. Eleven databases, including National Institute for Health and Care Excellence (NICE), Agency for Healthcare Research and Quality (AHRQ), PubMed, Embase, AMED (Allied and Alternative Medicine), Cumulative Index to Nursing and Allied Health Literature (CINAHL), WanFang Data, China National Knowledge Infrastructure (CNKI), Chinese Technical Periodicals (VIP) and Chinese Biomedical Literature Database (CBM), collection of clinical practice guidelines for Tuina at CHINA and abroad, were searched for articles from inception until March 2021. At the same time, the Google Academic and the Yimaitong databases were searched to supplement the acquisition of relevant guidelines. The search adopts a combination of subject terms and free words. The search terms include: 'massage" or 'Tuina" AND 'guideline" or 'guidance" or 'recommendation" or 'consensus" or 'policy'.

## 2.2 Data extraction

Two researchers (Mingwang Qiu and Yue Zhang) used the document management software EndNote X9 to independently screen the documents and extract data. Disagreement between the two parties shall be resolved through the discussion by a third party (Fan Huang).

## 2.3 Quality evaluation

Four researchers (Mingwang Qiu, Yue Zhang, Fan Huang, and Siyi Zhao) used AGREE II to evaluate the quality of the inclusion guidelines, including 23 items in 6 areas and 2 overall assessment items. The minimum score for each item was 1 point and the maximum score was 7 points<sup>[11]</sup>. Calculate the final score of each field according to the formula: each field score = (actual score - minimum possible score) / (maximum possible score - minimum possible score) × 100%<sup>[11]</sup>.

Before the formal evaluation, all investigators were trained, and one guide was independently pre-scored. Then the group discussed and negotiated to ensure that the four evaluators had basically the same understanding of each item and had the same evaluation criteria.

## 2.4 Statistical analysis

Statistical analysis uses IBM SPSS Statistics 25 software to calculate the ICC value to verify the consistency of the evaluators when using the evaluation tool. Uses Excel 2016 to calculate the scores of the AGREE II tool, the mean and standard deviation of the scores in each field, and calculate the proportion of each part.

## 2.5 Patient and public involvement

No patient involved.

# Results

## 3.1 Selection of studies

The initial search detected 239 related publications, and EndNote X9 excluded 160 duplicate records. After reading the title and abstract, 13 records were excluded from the preliminary screening. After further screening, a total of 8 Tuina guidelines were included<sup>[12-19]</sup> for SR through AGREE II. The literature search and screening process is shown in Figure 1.

## 3.2 General characteristics

As shown in Table 1, all the guidelines evaluated in this paper originated from China and were published from 2010 to 2020. Three of the guidelines<sup>[14-16]</sup> were published in 2010 and published in the same journal. However, a major shortcoming of the former three articles is that there is no evidence of the source of the guideline writing. Seven of the eight guidelines<sup>[12-16,18-19]</sup> aimed at clinicians or Tuina practitioners specifically. Seven<sup>[12-17,19]</sup> are from different Chinese Medicine universities or affiliated hospitals, and the remaining one<sup>[18]</sup> is from the China HQCC.

## 3.3 Quality assessment of guidelines and strength of recommendation

Table 2 shows the AGREE II standardization field score for each Tuina CPG and its overall recommendations. The scope and purpose of the field and the clarity and presentation achieved the highest average scores of 70% and 67% (ranges 60-82% and 51-82%, respectively). The average score for stakeholder participation in the domain was 51% (range 33-61%), and only one guide scored more than 60%. The largest score range is editorial independence (17-94%). 3 guides (37.5%) scored 17, and 5 guides (62.5%) scored less than 50%. Editorial independence and applicability produced the lowest average scores of 40% and 47% (ranges 17-94% and 21-64%, respectively). Unexpectedly, the four guidelines (26.7%) had the lowest score due to the failure to describe the criteria for selecting evidence and making recommendations clearly.

In general, the Practical Guidelines for Treating Prophylactic Diseases of Tuina Intervention of Spleen Deficiency<sup>[13]</sup> in Children Guide has high scores in all areas and is listed as "strongly recommended" in clinical practice, "recommendation of 3 types of Tuina CPG (37.5%)", and 3 types (37.5%) "Not recommended". The agreement of the overall reviewer is very good (ICC:0.901, 95% CI).

After a SR by four reviewers, we have obtained the AGREE II scores and total scores in each field of the 8 guides in Table 3. Xiuzhen Chen<sup>[13]</sup> and Lunxue Qin<sup>[17]</sup> served as the first author's guide for the total score of more than 400, therefore, we can strongly recommend using these two Tuina guidelines. The guidelines with Jiangquan Li<sup>[12]</sup>, Yanguo Wang<sup>[18]</sup>, and Feng Liu<sup>[19]</sup> as the first authors have a total score of less than 300, so we do not recommend using these three guides. The guide, led by Longming Lei<sup>[14]</sup>, Deren Sun<sup>[15]</sup>, and Jun Pang<sup>[16]</sup> as the first author, scored between 300 and 400. These three guides can be recommended after upgrading and improving modifications.

The agreement between the four reviewers was measured by the intra-group correlation coefficient (ICC) and 95% confidence interval (CI). The degree of agreement between 0.01 and 0.20 is considered minor, the degree of proportionality between 0.21 and 0.40 is moderate, the degree of proportionality between 0.41 and 0.60, the substantive degree between 0.61 and 0.80, and the agreement between 0.81 and 1.00 is very good.  $P < 0.05$  indicates statistical significance. All tests are double-sided. Use SPSS version 25.0 for statistical analysis. By analyzing the intra-group correlation coefficients of the scores given by the four evaluators, we can see that the ICC value of each field is greater than 0.81 in Table 3. It can be considered that the scores given by the evaluators within the group are highly consistent.

### 3.4 Frequency statistics of disease

A total of 35 diseases were included, as showing in Figure 2, of which 13 diseases were specific to the child. Tuina is mainly used for alleviating pain as infantile Tuina for upper respiratory tract infection with the frequency of 2, 2 respectively.

A total of 35 diseases were included, as showing in Figure 2, of which 13 diseases were specific to the child.

For the Tuina guidelines included in this study, four guides for infantile Tuina, one for Tuina for children, three for adults Tuina.

## Discussion

This study systematically compared the strengths and weaknesses of eight existing guidelines with AGREE II reporting checklist in order to provide a reference for the development of Tuina CPGs.

The results of this study highlighted the poor applicability of current Tuina CPGs. Meanwhile, unclear articulation of the strengths and weaknesses of the recommendations, the lack of supporting tools, potential resources, and monitoring and auditing criteria may be direct causes of the low scores in this area.

CPGs are defined as systematically developed statements to assist practitioner and patient decisions about appropriate healthcare for specific clinical circumstances.<sup>[20]</sup> As the society gradually recognized the therapeutic effect of Tuina, CPGs will be an increasing demand globally. In the present study, systematic research of CPGs for Tuina was performed, and key messages had been summarized. We found it difficult to evaluate the individual and community as the available CPGs for Tuina lack reports on obtaining evidence and reaching recommendations.

The implication of this study is that, as a result of our findings, a careful reassessment of the quality standards of existing Tuina guidelines can be called for, and quality improvements can be made in practice to facilitate the development and reporting of more Tuina guidelines in the future. In this study, the quality of massage guidelines was highly heterogeneous across domains. The level of evidence and strength of recommendations also varied widely across categories of guidelines. With regard to the evidence base for the inclusion of massage guidelines in this study, our findings suggest that many guidelines are based primarily on a low level of evidence or expert opinion, suggesting a lack of quality evidence and guidelines that do not incorporate evidence.

At present, the quality of Chinese domestic guidelines is generally low, and low-quality guidelines not only fail to guide clinical practice, but may even hinder it. In this study, we chose to use the international guideline quality evaluation tool Appraisal of Guidelines for Research and Evaluation II (AGREE II) to evaluate the quality of Chinese domestic journals publishing clinical practice guidelines for Tuina in recent years, to monitor the changes in the quality of Tuina clinical guidelines, and to provide reference for the development and updating of guidelines in the future, in order to improve the quality of domestic guidelines so that they can better play their guiding role. Compared with the international guideline reporting standard (RIGHT) statement completed by the Chinese lead, we use AGREE II to evaluate the guidelines because the international common AGREE II to evaluate the quality of guidelines, AGREE II has been supported and recognized by many health care organizations, which can help Tuina better align with international standards<sup>[22]</sup>. By

comparing the original AGREE with the AGREE II program, we chose the latest AGREE II tool for guideline evaluation because the AGREE II program changes the original 12 entries from the original AGREE to better assess guideline quality as well as provide a methodological strategy for guideline development, informing guideline developers on what to report in the guideline what information to report and how to report it <sup>[9]</sup>.

The following part leads to the limitations of our study. First, due to language limitation, this study only collects guidelines written in Chinese and English, which could not include documents from a few countries and regions. Second, the scores of AGREE II are not weighted, so that the recommendation level of the guideline is only based on the number of fields that meet the standard. There may be cases where the recommended results are not in conformity with the quality of the guideline. Third, the AGREE II score was based on the reports of CPG developers, and low domain scores might be due to poor methodology in the development process of CPGs.

The total quality of CPGs is not high in our country <sup>[21]</sup>, and therefore how to develop a high-required guideline should be an issue that guideline makers need to consider. It is expected that Tuina practitioners can institute high-level CPGs that are suitable for China based on the methodology and normative reports formulated by the guidelines.

## Strengths And Limitations Of This Study:

- ▶ To our knowledge, no studies have assessed the quality of Tuina clinical practice guidelines using the AGREE II checklist.
- ▶ The included guidelines were measured using the AGREE II instrument, which allows for the evaluation from the perspective of guideline development methodology.
- ▶ Eight relevant guidelines were included in this study, which involved targeting different populations.
- ▶ The study showed inadequate reporting quality in some areas.
- ▶ The study suggests that AGREE II may be somewhat difficult to help determine the specificity of recommendations related to Traditional Chinese Medicine or Traditional Chinese Medicine techniques.

## Conclusion

Tuina CPGs have proliferated in recent years, but their average quality is unsatisfactory. In the subsequent development of CPGs, guideline developers need to further improve guideline methodology and reporting specifications. Evaluation tools for guidelines in the field of Tuina and CPGs for Tuina should be developed in accordance with standardized guideline development methods that are consistent with Chinese national conditions. Emphasis should be placed on strengthening the promotion and application of Tuina guidelines.

## Declarations

Ethics and Consent to Participate: No patient involved.

Consent to Publish: Each author involved in the writing of this article agrees to its publication.

Availability of Data and Materials: All data relevant to the study are included in the article.

Competing Interests: There are no financial or other interests with regard to the submitted article that might be construed as a conflict of interest.

Funding: This work was supported by (1) Guangdong Provincial Department of Finance Project [Grant (2016) no. 387]; (2) Innovation and Entrepreneurship Program for College Students of Guangzhou University of Chinese Medicine (Grant No. 201910572001).

Authors' Contributions: Contributors FH and YZ contributed equally to this work. This review was drafted by FH and YZ, and revised by CYH and MWQ. The search strategy was addressed by MWQ, and updated by CYH. FH and YZ screened potential trials, extracted the data and completed the data synthesis independently. MWQ and CYH arbitrated in cases of disagreement and ensured the absence of errors. All authors gave final approval for the version to be published, ZYF and SW gave final approval of the manuscript version to be

published and agreed to be accountable for every step of the work. We confirm that we have read the journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines.

Acknowledgements: We would like to thank Associate Professor Zhiyong Fan (LL) and Professor Shan Wu for their help with the professional knowledge of Tuina.

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Abbreviations: SR: Systematic review; CPGs: clinical practice guidelines; AGREE II: Appraisal of Guidelines for Research and Evaluation II; ICC: Intra-group Correlation Coefficient.

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## Tables

**Table 1. Characteristics of the included guidelines**

First author	Year of publication	Country	Organizational affiliation	Journal	Target	Evidence based
Jiangquan Li <sup>[12]</sup>	2014	China	NUCM	10. <i>PEDIATRICS OF TCM</i>	Physicians	Investigation
Xiuzhen Chen <sup>[13]</sup>	2017	China	CACM-JPHCM	10. <i>PEDIATRICS OF TCM</i>	Physicians	Expert opinion
Longming Lei <sup>[14]</sup>	2010	China	CACM-TAFHGUCM	<i>CATCM</i>	Physicians, Tuina practitioners	NR
Deren Sun <sup>[15]</sup>	2010	China	CACM-SYTCMPTS	<i>CATCM</i>	Physicians, Infantile Tuina practitioners	NR
Jun Pang <sup>[16]</sup>	2010	China	CACM-TAFHGUCM	<i>CATCM</i>	Physicians, Tuina practitioners	NR
Lunxue Qin <sup>[17]</sup>	2018	China	DHBUCCM	<i>Int J TCM</i>	NR	Expert panel
Yanguo Wang <sup>[18]</sup>	2020	China	HQCC-CPTSCCC-SAHTUTCM	<i>Tianjin J TCM</i>	Physicians	Expert panel
Feng Liu <sup>[19]</sup>	2020	China	BHTCM	<i>World J Int Trad West Med</i>	Physicians, Infantile Tuina practitioners	Expert panel

NR: Not reported; NUCM: Nanjing University of Chinese Medicine; CACM: China Association of Chinese Medicine; JPHCM: Jiangsu Province Hospital of Chinese Medicine; TAFHGUCM: The First Affiliated Hospital of Guangxi University of Chinese Medicine; SYTCMPTS: Shanxi Yuncheng Traditional Chinese Medicine Pediatric Tuina School; DHBUCCM: Dongzhimen Hospital Beijing University of Chinese Medicine; HQCC-CPTSCCC: HQCC Chinese Pediatric Tuina of Standardization Construction and Certification

Committee; SAHTUTCM: Second Affiliated Hospital of Tianjin University of TCM; BHTC: Beijing Hospital of Traditional Chinese Hospital; TCM: Traditional Chinese Medicine

**Table 2. AGREE II domain scores of Tuina guidelines and overall assessment**

First author	Scope and Purpose	Stake holder Involvement	Rigour of Development	Clarity of Presentation	Applicability	Editorial Independence	Total Score	Overall Assessment
Jiangquan Li <sup>[12]</sup>	60	33	40	56	35	17	241	Not recommended
Xiuzhen Chen <sup>[13]</sup>	74	61	68	51	56	94	404	Strongly Recommended
Longming Lei <sup>[14]</sup>	64	57	59	65	57	17	319	Recommended with modifications
Deren Sun <sup>[15]</sup>	69	57	52	78	61	17	334	Recommended with modifications
Jun Pang <sup>[16]</sup>	72	56	61	82	58	19	348	Recommended with modifications
Lunxue Qin <sup>[17]</sup>	79	44	59	78	64	77	401	Strongly Recommended
Yanguo Wang <sup>[18]</sup>	60	46	41	71	21	56	295	Not recommended
Feng Liu <sup>[19]</sup>	82	57	36	57	21	23	276	Not recommended

**Table 3. The intra-group correlation coefficients of the scores**

## Figures



Item	Domain	Description	ICC (95% CI)
1	Scope and Purpose	The overall objective(s) of the guideline is (are) specifically described.	0.885
2		The health question(s) covered by the guideline is (are) specifically described.	0.842
3		The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.	0.867
4	Skate holder involvement	The guideline development group includes individuals from all relevant professional groups.	0.862
5		The views and preferences of the target population (patients, public, etc.) have been sought.	1.000
6		The target users of the guideline are clearly defined.	0.907
7	Rigour of development	Systematic methods were used to search for evidence.	0.800
8		The criteria for selecting the evidence are clearly described.	0.938
9		The strengths and limitations of the body of evidence are clearly described.	0.813
10		The methods for formulating the recommendations are clearly described.	0.838
11		The health benefits, side effects, and risks have been considered in formulating the recommendations.	1.000
12		There is an explicit link between the recommendations and the supporting evidence.	0.891
13		The guideline has been externally reviewed by experts prior to its publication.	0.862
14		A procedure for updating the guideline is provided.	0.932
15	Clarity of presentation	The recommendations are specific and unambiguous.	0.828
16		The different options for management of the condition or health issue are clearly presented.	0.806
17		Key recommendations are easily identifiable.	0.886
18	Applicability	The guideline describes facilitators and barriers to its application.	0.887
19		The guideline provides advice and/or tools on how the recommendations can be put into practice.	0.865
20		The potential resource implications of applying the recommendations have been considered.	0.870
21		The guideline presents monitoring and/or auditing criteria.	0.800
22	Editor independence	The views of the funding body have not influenced the content of the guideline.	0.956
23		Competing interests of guideline development group members have been recorded and addressed.	0.938

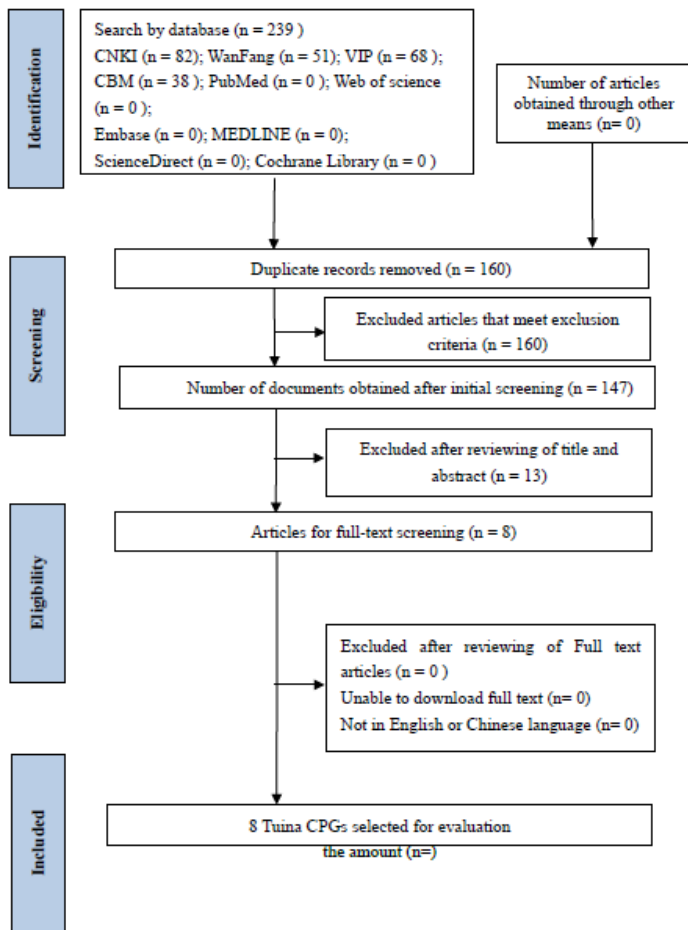
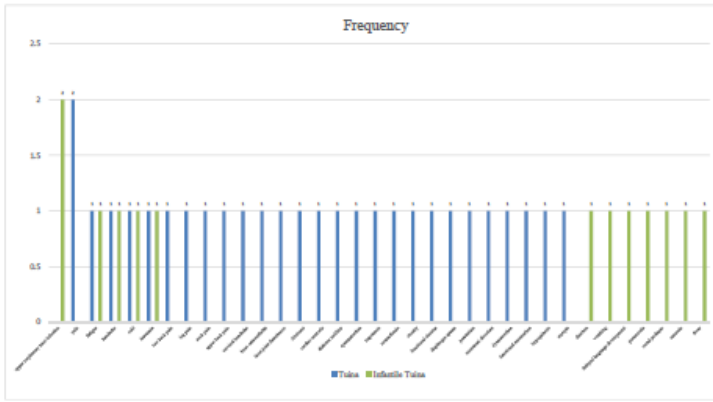


Figure 1

Flowchart of Tuina guidelines searching and selection.



	Tulima	Infantile Tulima
upper respiratory tract infection	2	2
fatigue	1	1
headache	1	1
cold	1	1
insomnia	1	1
low back pain	1	1
leg pain	1	1
neck pain	1	1
upper back pain	1	1
cervical head	1	1
knee osteoarthritis	1	1
flame joint disease	1	1
dizziness	1	1
cardiac neurosis	1	1
diabetes mellitus	1	1
opercularitis	1	1
hypertension	1	1
osteoarthritis	1	1
obesity	1	1
functional tinnitus	1	1
diaphragm spasm	1	1
postmenstrual	1	1
menstrual disorder	1	1
dysmenorrhea	1	1
functional amenorrhea	1	1
hypogalactia	1	1
nyctalopia	1	1
diarrhea	1	1
vomiting	1	1
delayed language development	1	1
psoriasis	1	1
social phobia	1	1
eczema	1	1
fever	1	1

Figure 2

A total of 35 diseases were included, as showing in Figure 2, of which 13 diseases were specific to the child.