Original Contribution

Quality of critical care clinical practice guidelines: Assessment with AGREE II instrument

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ABSTRACT

Study objective: Clinical practice guidelines (CPGs) are cornerstones for the management of critically ill patients. Numerous CPGs have been generated in critical care medicine, but their qualities have never been systematically appraised. The aim of the present study was to systematically assess the quality of critical care CPGs.
Design: A systematic electronic search was performed in PubMed and Scopus. All critical care CPGs were included for analysis.
Setting: Not applicable.
Patients: Not applicable.
Intervention: None.
Measurements: The Appraisal of guidelines for research & evaluation II (AGREE II) instrument was employed to appraise the quality. CPGs were assessed independently by three raters and intraclass correlation coefficient to represent the agreement among raters.
Main results: A total of 89 CPGs were included for quantitative analysis. The results showed that domain 1 (scope and purpose) had the highest scores (0.93, IQR: 0.89–0.98) and domain 2 (stakeholder involvement) had the lowest scores (0.37, IQR: 0.30–0.46). The overall score was 0.83 (IQR: 0.67–0.83). Publication year was not associated with scaled scores in each domain. Domain 2 (stakeholder involvement) was significantly associated with the number of societies (coefficient: 0.702, p = 0.033). Also, greater number of societies were associated with higher scaled scores of domain 3 (coefficient: 0.768, p = 0.027), 4 (coefficient: 0.730, p = 0.029) and 5 (coefficient: 0.995, p = 0.023).
Conclusions: The study showed that the reporting quality of critical care CPGs were suboptimal. The reporting quality varied across the six domains, with the highest quality in domain 1 and lowest quality in domain 2. Strenuous efforts need to be made to improve the reporting of critical care CPGs.

1. Introduction

Clinical practice guidelines (CPGs) are the cornerstones for the management of critically ill patients. Patients treated in the intensive care unit (ICU) are heterogeneous that they are from various departments, thus there is a variety of guidelines being developed for the management of ICU patients. Some of the CPGs are diseases-oriented such as severe acute pancreatitis and sepsis [1,2], whereas others are based on the modality being used for organ support such as guidelines on mechanical ventilation and renal replacement therapy [3,4]. These guidelines include all aspects of the management of critically ill patients such as nutritional support [5], ICU-acquired weakness [6], management of septic shock and sedation [7]. Although guidelines are generally developed with strict protocols under supervision of

renowned academic society, some of them are usually of limited quality [8]. Since the benefits of CPGs can only be as good as the quality of the CPGs themselves, rigorous methodologies are of paramount importance in the development of CPGs.

The Appraisal of guidelines for research & evaluation II (AGREE II) instrument is specifically designed to assess the quality of clinical practice guidelines [9]. The instrument comprises six domains, providing a global vision on the quality of a CPG. The instrument has been widely used in the assessment of guidelines in other clinical disciplines, which is an important step to improve the quality of these guidelines [10–13]. However, this instrument has never been used to systematically appraise critical care guidelines. The aim of the present study was to systematically assess the quality of critical care CPGs by using AGREE II instrument. Since the AGREE II instrument has been

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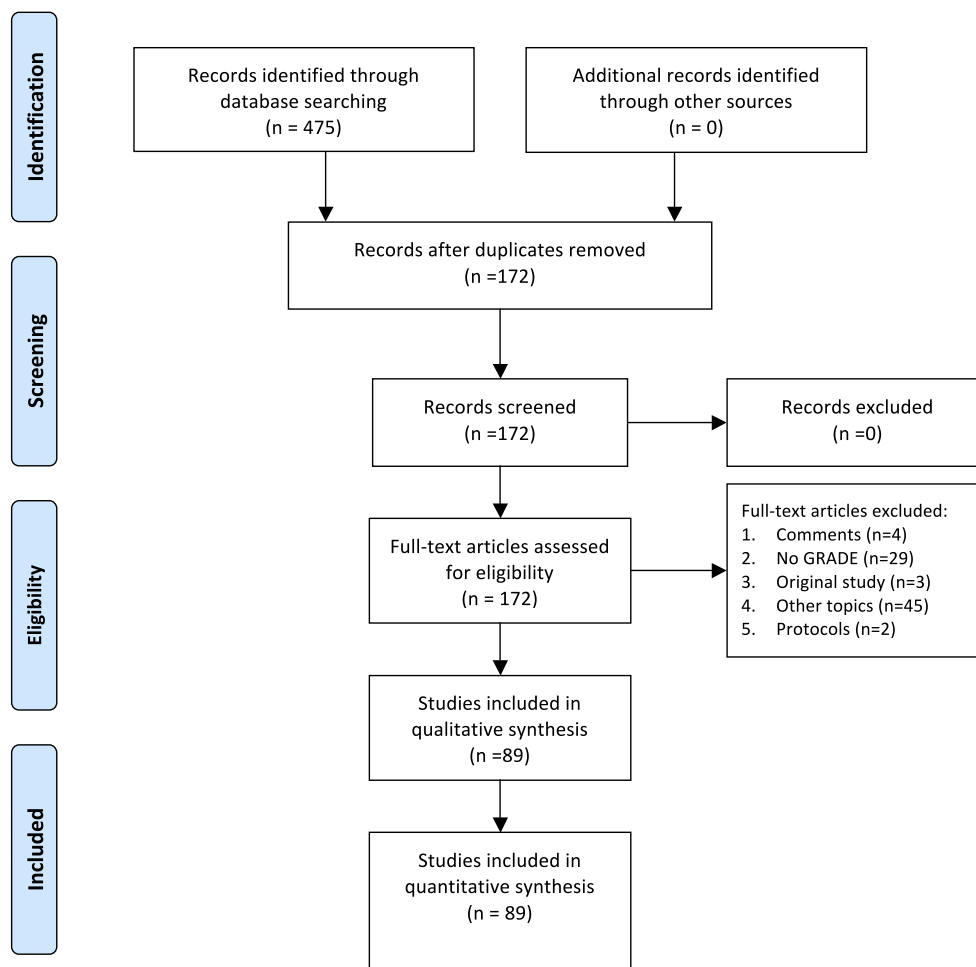 *E-mail address:* zh_zhang1984@zju.edu.cn (Z. Zhang).

Fig. 1. Flowchart of study selection.

increasingly adopted by guideline developers and more number of participating societies representing opinions from different entities might potentially increase the reporting quality, we hypothesized that the quality of critical care CPGs were influenced by publication year and the number of societies included in a guideline development panel board.

2. Methods

2.1. Searching strategy and study inclusion

A systematic electronic search was performed in PubMed and Scopus from inception to May 2017. The core search terms (terms in [ti] or [abs]) were consisted of critical care, guidelines and Grading of Recommendations Assessment, Development, and Evaluation (GRADE). Detailed search strategy was shown in Electronic Supplementary Material 1. All CPGs were screened for potential eligibility. CPGs were excluded if they 1) were original studies investigating the implementation of CPGs; 2) were comments, reviews and editorials; 3) did not use GRADE framework for the formulation of recommendations; 4) were protocols for the development of CPGs, 5) were topics irrelevant to CCM; or 6) duplicated publications. Major critical care societies were reviewed to identify additional guidelines.

2.2. AGREE II instrument

The AGREE II instrument comprised of six domains which were 1) scope and purpose (domain 1), 2) stakeholder involvement (domain 2),

3) rigor of development (domain 3), 4) clarity of presentation (domain 4), 5) applicability (domain 5) and 6) editorial independence (domain 6). There were several items reflecting different aspects within each domain [14]. All AGREE II items were rated on a 7-point scale, with point 1 indicating strongly disagree and point 7 indicating strongly agree. Strongly disagree means that there is no information that is relevant to a specific item. Strongly agree means that the quality of report is exceptional and the full criteria and considerations have been met. The domain scores were calculated by using points assigned to each item by each appraiser (see AGREE II user's manual for more details). Each item was appraised by three independent reviewers in the present study. Suppose there were three items in domain 1 and three appraisers participated in the appraisal. The maximum and minimum possible scores were computed by the following equations:

$$\text{maximum possible socre} = 7(\text{strongly agree}) \times 3(\text{items}) \times 3(\text{appraisers})$$
$$= 63;$$

$$\text{minimum possible socre} = 1(\text{strongly disagree}) \times 3(\text{items})$$
$$\times 3(\text{appraisers}) = 9;$$

then the scaled domain score was computed as:

$$(\text{obtained score} - \text{minimum possible score})$$
$$/(\text{maximum possible score} - \text{minimum possible score})$$

All appraisers participating in the review process received training before utilizing the AGREE II instrument.