Critical appraisal of dyslipidaemia clinical practice guidelines: a scoping review

Flávia Deffert [1], Fernanda Stumpf Tonin[1,2], Roberto Pontarolo[1], Fernando Fernandez-Llimos[3]

(1) Pharmaceutical Sciences Postgraduate Research Program, Federal University of Paraná, Curitiba, Brazil; (2) H&TRC – Health & Technology Research Center, ESTeSL – Escola Superior da Saúde, Instituto Politécnico de Lisboa, Lisbon, Portugal; (3) CINTESIS – Centre for Health Technology and Services Research, Laboratory of Pharmacology, Department of Drug Sciences, Faculty of Pharmacy, University of Porto, Porto, Portugal

Background

Noncommunicable diseases, including heart diseases, stroke, cancer, diabetes, and chronic lung disease, are responsible for most global deaths (increased rates from 60.8% in 2000 to 73.6% in 2019). Dyslipidaemia, the unbalanced level of cholesterol molecules (LDL, HDL, VLDL) and triglycerides, contributes to or aggravates cardiovascular diseases. In 2019, high LDL-c levels were responsible for 5 million deaths million (95% CI 3.30–5.65 million) worldwide and 98.62 million (95% CI 80.34–118.98 million) disability-adjusted years. Figure 1 depicts the death rates of ischemic heart disease exclusively cause by high LDL-plasma levels in this period.

Several clinical practice guidelines (CPG) about dyslipidaemia aiming at guiding healthcare professionals towards more assertive decisions exist. However, previous studies reported low quality of the clinical content and evidence supporting recommendations provided by CPGs in different areas, and a lack of involvement of multi-professional experts and stakeholders, such as pharmacists, into their development. This may lead to inconsistencies and risk of bias in decision-making and negatively impact on patients' outcomes.

The quality of CPG can be assessed through Appraisal of Guidelines, Research and Evaluation (AGREE) tools as the AGREE II (methodological assessment) and AGREE REX (clinical recommendations).

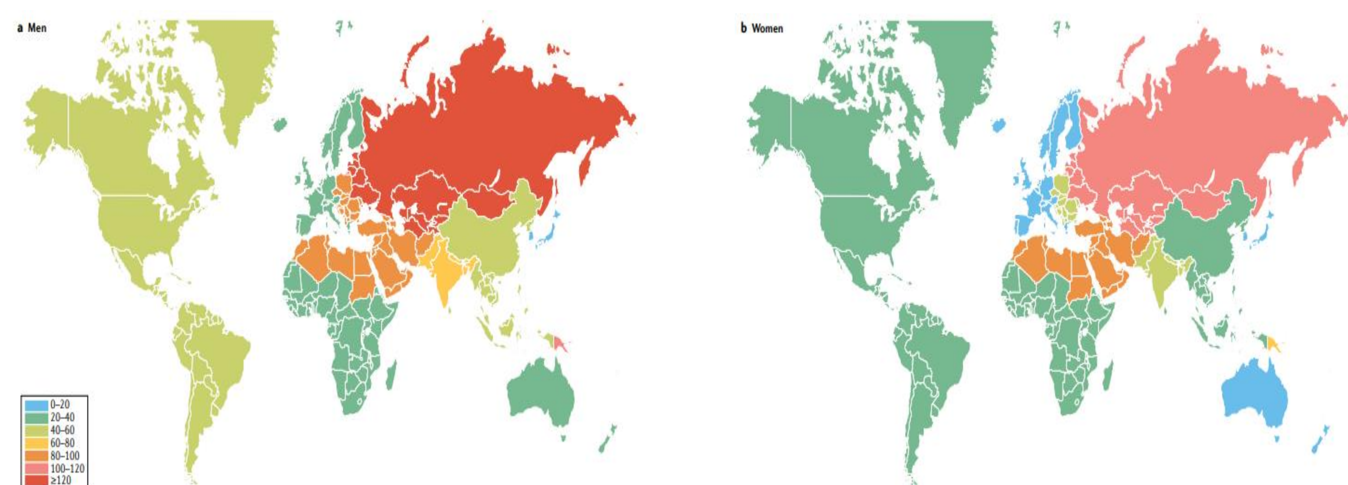

Figure 1. Global death rates from ischaemic heart disease, age-standardized death rates per 100,000 of the general population,) attributable to elevated plasma LDL-cholesterol levels in men (part a) and women (part b) in 2019. Retrieved from Pirillo et al., 2021.

Purpose

We aim to evaluate the quality of available CPG on dyslipidaemia and assess the extent of involvement of stakeholders using AGREE II and AGREE REX tools

Method

A scoping review following Cochrane Collaboration and PRISMA recommendations was performed. Systematic searches to retrieve CPG on the use of pharmacological treatments in adult patients with dyslipidaemia (written in Portuguese, Spanish, English, French, German) were conducted in PubMed and Scopus. The eligible records had their data extracted and were assessed using AGREE II (23 quality items within 6 domains: scope and purpose; stakeholder involvement; rigor of development; clarity of presentation; applicability; editorial independence) and AGREE REX (9 items within 3 domains: clinical applicability; values and preferences; local application and adoption). Both instruments were applied following the original users' manual guide. Grades of dominions were reported as percentages, items as absolute rates (1.0 to 7.0 scale) and final scores as median [minimum-maximum].

Results

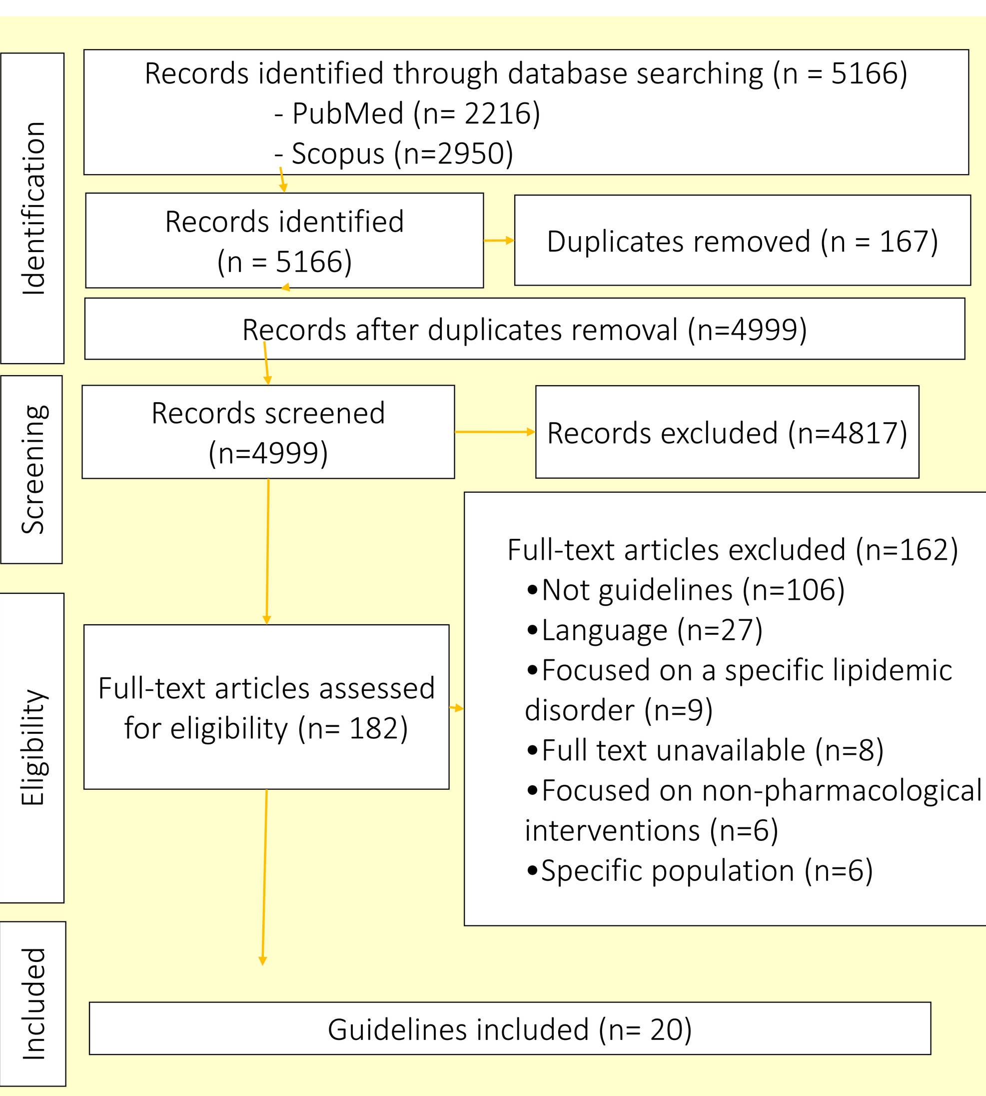

Figure 2. PRISMA Flowchart of scoping review

Twenty guidelines written by professional societies (n=19) of cardiology, atherosclerosis and clinical endocrinology and the Mexican Health Secretary (n=1) were evaluated (Figure 2). They were published between 2010 and 2020 (n=14 CPGs). See Figures 3 and 4. The critical appraisal (AGREE II and AGREE REX tools) revealed a large variety of methodological quality among CPGs: large amplitude boxes (dashed rectangles) within each domain (Figure 5).

All guidelines lack on discussing the role of patients or caretakers on treatment decisions and most of them were methodologically poorly developed (low score on the 'Rigor of Development' domain, <45%). The Domain 1 from AGREE II ('Scope and Purpose') presented the higher rates of compliance (95%).

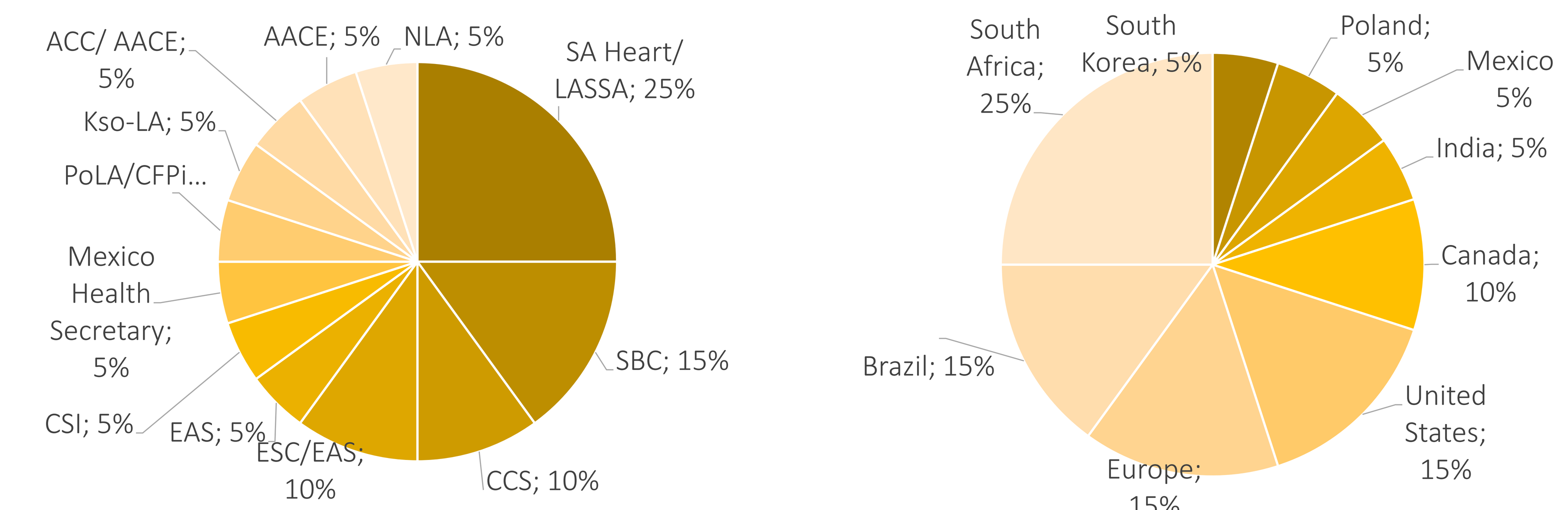

Figure 3. Authored organizations of the 20 selected CPGs

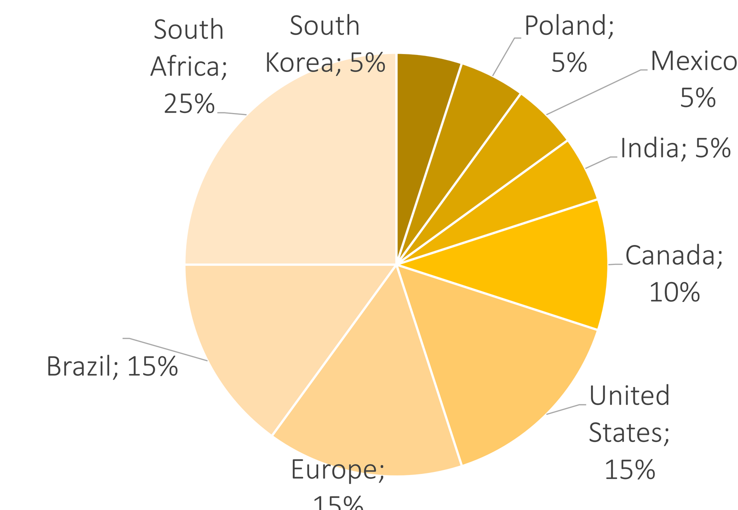

Figure 4. Geographic location of the 20 selected CPGs

Conversely, only half of CPG (56%; [36-74]) comply with the AGREE II Domain 2 ('Stakeholder Involvement'); its three items (participation of all relevant professional groups, patients and caretakers' involvement, definition of the target users) were rated as 4 (1.8-6.3), 2 (1.0-4.0) and 7 (6.0-7.0), respectively. The Domains 1 and 2 of the AGREE REX ('Clinical Applicability' and 'Values and Preferences') were graded as 66% [20-94] and 34% [19-44], respectively. No statistical difference between results of the same dominion were found.

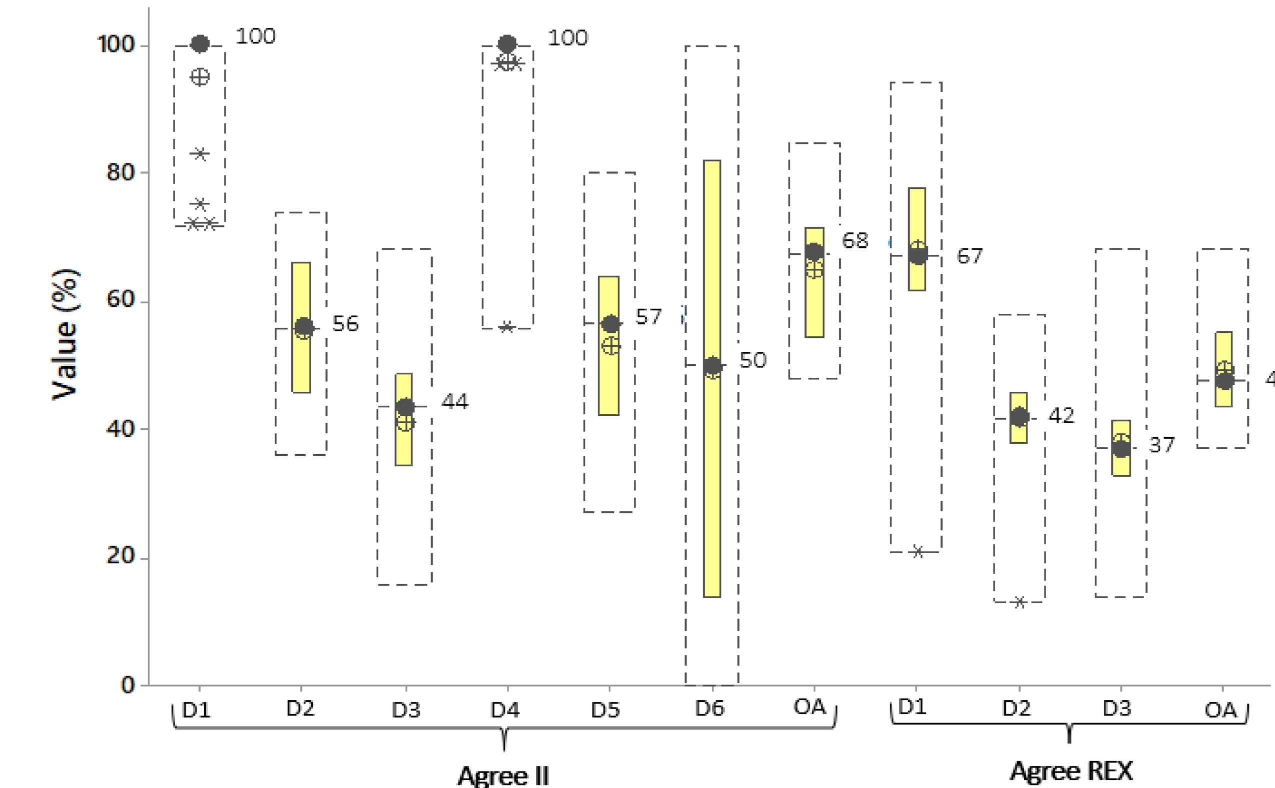

Figure 5. Boxplot representation of AGREE II and AGREE REX results (in percentage) of the 20 selected CPGs. **Dashed box** = Amplitude; **Asterisk** = outliers; **Crossed circle** = Average; **Closed Circle** = Median; **Yellow box**: 95% Confidence Interval for the median. **Agree II's domains**: D1 = Scope and Purpose; D2 = Stakeholder Involvement; D3 = rigor of development; D4 = Clarity of Presentation; D5 = Applicability; D6 = Editorial Independence; OA = Overall Assessment (Average of AGREE II Domains' results). **Agree REX's domains**: D1 = Clinical applicability; D2= Values and preferences; D3= Local application and adoption; OA = Overall Assessment (Average of AGREE REX Domains' results)

Conclusion

Dyslipidaemia's CPG can be improved especially regarding evidence updating, compliance with quality standards for literature search, appraisal and recommendations, and the addition of stakeholders' values and preferences.

Note: These research is on curse: the update of the scoping review is yet to be terminated. The CPGs were evaluated according to the information described in the CPG or in the cited documents available on-line.

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