Scientific Article

Evaluation of Pediatric Dentistry Guidelines using the AGREE instrument

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Abstract: ***Purpose:*** *Guidelines are used to inform clinical practice and improve the quality of health care. Poorly developed guidelines may emphasize the incorrect intervention. The purpose of this paper was to evaluate the quality of pediatric dentistry guidelines using the AGREE instrument.* ***Methods:*** *A search was carried out to identify pediatric dentistry guidelines up to November 2007. Three independent assessors evaluated the guidelines using the AGREE tool.* ***Results:*** *Fifty-seven guidelines produced by 11 organisations were evaluated. Most guidelines assessed were of poor quality, as determined by the AGREE instrument.* ***Conclusions:*** *Consideration should be given to using the AGREE instrument in the development of new guidelines and review of existing guidelines.* *(Pediatr Dent 2011;33:120-9) Received November 4, 2009 / Last Revision July 4, 2010 / Accepted August 6, 2010*

KEYWORDS: PEDIATRIC DENTISTRY, AGREE, GUIDELINE

It is recognized that clinical decisions must be supported by evidence wherever possible to determine the option that suits the patient best. Hence, guidelines are used to inform clinical practice and improve the quality of health care.[1] Guidelines can be defined as "systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances."[2] Clinicians, policy makers, and budget holders see guidelines as a tool for making care more consistent and for closing the gap between what clinicians do and what scientific evidence supports.[3]

The mechanism by which guidelines are developed is crucial. Poorly developed guidelines may emphasize the incorrect intervention. Guidelines in the public domain may not have been developed according to stringent standards, be up-to date, or bear close relation to day-to-day clinical practice.[4] It is important for practitioners to be able to assess the quality of guidelines in order to be confident in their recommendations. In addition, professional and governmental agencies should ensure that guidelines are fit for purpose before recommending them.[5] A good guideline is one that eventually leads to improved patient outcome. There is a need to be scientifically valid, useable, and reliable. This is often very difficult to determine.[6]

To address these issues, the Appraisal of Guideline Research and Evaluation (**AGREE**) Instrument was developed in 2001. It is a tool that has been designed to evaluate the quality of clinical practice guidelines. The collaboration has the participation of 9 European countries: Denmark; Finland; France; Germany; Italy; The Netherlands; Spain; Switzerland; and the United Kingdom (**UK**), as well as Canada, New Zealand, and the United States.

The aim of the project was to provide a framework to create a coordinated international approach to the appraisal of clinical guidelines and to identify potential areas for harmonization of guideline development in order to reduce duplication of efforts and to ensure efficient use of resources. [6] The instrument is available in 23 languages and is a well-established methodology for appraising guidelines.

A rigorous process was used in the development and validation of the guideline, and the instrument was developed through a multi-staged process of item generation, selection, and scaling, field testing, and refinement procedures. A small working party generated an initial list of 82 items that addressed the domains of scope and purpose, stakeholder involvement, rigor of development, clarity, presentation, and applicability. The items were reduced to 34 after examining for coverage, content overlap, and content validity. The list and a user guide describing the items were pretested on 4 guidelines and refinements were made from comments received.[6]

The refined list and user guide were distributed to all AGREE partners and to 15 international experts for their views on the clarity, comprehensiveness, relevance, and ease of use. The instrument was also used by the partners to evaluate 2 guidelines each. The feedback resulted in the first draft of the instrument comprising 24 items in 5 domains. The instrument was then field tested, with each collaborating country appraising at least 7 guidelines. This led to further refinements and the final version of the guideline, with 23 items in 6 domains produced, and this underwent further field testing.[6]

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Reliability was determined by calculating the internal consistency of each domain within the final instrument and assessing agreement between different appraisers. A total of 33 guidelines were produced by 4 appraisers. Internal consistency was measured using Cronbach's α coefficient, and results ranged from 0.64-0.88. The inter-rater reliability was calculated by using intraclass correlations and exhibited a wide range from 0.25-0.91. Reliability was higher with 4 appraisers and the most reliable domain was "rigor of development," which has questions relating to the methodology of developing a clinical guideline. Face, construct, and criterion validity of the AGREE instrument were also assessed. Face validity was determined by surveying the attitude and opinions of the surveyors to the instrument and its associated guide.

Three hypotheses were considered to test construct validity:

1. Guidelines originating from established programs would have higher domain scores than those produced outside an established program.
2. Guidelines with well-documented technical information will have higher domain scores than those without documentation.
3. Guidelines created on a national level should be of a higher quality than regional or local ones.

Testing the first hypothesis showed that guidelines produced as part of an established program had significantly higher scores in the editorial independence category ($P<.05$). Guidelines with technical documentation and those produced at a national level had higher scores in the rigor of development domain ($P<.01$ and $P<.05$). Criterion validity was measured by assessing Kendall's tau B rank correlation between appraisers' domain scores and their overall assessment scores (final item on the AGREE instrument). The correlations were significantly high (0.67-0.88).[6] Other studies have found the AGREE instrument to be reliable and valid in the assessment of clinical practice guidelines.[7]

The AGREE instrument was chosen to evaluate guidelines, as it has been validated and endorsed by the World Health Organization (**WHO**) and is considered by many guideline organizations as the standard in guideline assessment.[8]

A number of organizations also use the AGREE instrument for evaluating guidelines, including the: American College of Surgeons; The National Collaborating Centres in the UK; The Chartered Society of Physiotherapy in UK; All-Russian Association of Evidence-Based Medicine Specialists; European Union Osteoporosis Consultation Panel; National Institute for Clinical Excellence in UK; Norwegian Physiotherapy Association; Directorate for Health and Social Affairs in Norway; Peking University EBM Centre in China; Shriners Hospitals for Children in North America; Maternity Centre Association in Canada; Ontario Medical Association in Canada and Registered Nurses' Association of Ontario in Canada; The National Federation of Cancer Centres in France; The Agency for Quality in Medicine in Germany; and the Scottish Intercollegiate Guidelines Network (**SIGN**).[6,9]

The instrument is also available on the Guidelines International Network (**GIN**) Web site, which seeks to improve the quality of health care by promoting systematic development of clinical practice guidelines and their application into practice through supporting international collaboration.[10]

There are a number of papers in the literature from around the world that use the AGREE instrument to assess the quality of guidelines.[11-15] Most guidelines have been medical ones, with only a few papers using the AGREE instrument to assess clinical dental guidelines.[16]

There are a wide variety of guidelines available on topics relevant to pediatric dentistry produced by numerous groups and organizations, and many of these guidelines cover similar topics. The purpose of this paper was to evaluate the quality of these pediatric dentistry guidelines using the AGREE instrument.

Table 1. THE AGREE INSTRUMENT

Scope and purpose	
1.	The overall objective(s) of the guideline is (are) specifically described.
2.	The clinical question(s) covered by the guideline is (are) specifically described.
3.	The patients to whom the guideline is meant to apply are specifically described.
Stakeholder involvement	
4.	The guideline development group includes individuals from all relevant professional groups.
5.	The patients' views and preferences have been sought.
6.	The target users of the guideline are clearly defined.
7.	The guideline has been piloted among target users.
Rigour of development	
8.	Systematic methods were used to search for evidence.
9.	The criteria for selecting the evidence are clearly described.
10.	The methods for formulating the recommendations are clearly described.
11.	The health benefits, side effects, and risks have been considered in formulating the recommendations.
12.	There is an explicit link between the recommendations and supporting evidence.
13.	The guideline has been externally reviewed by experts prior to its publication.
14.	A procedure for updating the guideline is provided.
Clarity and presentation	
15.	The recommendations are specific and unambiguous.
16.	The different options for management of the condition are clearly described.
17.	Key recommendations are easily identifiable.
18.	The guideline is supported with tools for application.
Applicability	
19.	The potential organizational barriers in applying the recommendations have been discussed.
20.	The potential cost implications of applying the recommendations have been considered.
21.	The guidelines present key review criteria for monitoring and/or audit purposes.
Editorial independence	
22.	The guideline is editorially independent from the funding body.
23.	Conflicts of interest of guideline development members have been recorded.

Methods

Guideline identification. A search was carried out to identify pediatric dentistry guidelines up to November 2007. Guidelines evaluated in this study had to be relevant to pediatric dentistry, that is, children and

adolescents had to be younger than 18-years-old. Guidelines that included adults, were still in draft format or endorsed other guidelines, were excluded. The search was restricted to guidelines published in English.

E-mails were sent to all member societies of the International Association of Pediatric Dentistry (**IAPD**) asking about country-specific guidelines. Where no response was obtained, a second e-mail was sent out a month later. Responses were only obtained from 2 member societies: the Belgian Academy of Pediatric Dentistry, which uses the European Academy of Pediatric Dentistry (**EAPD**) guidelines; and the Argentinean Association of Pediatric Dentistry, whose guidelines were in Spanish. These guidelines were not translated.

The Web sites of pediatric dentistry organizations and other national dental organizations throughout the world were searched for available guidelines. A Medline search was carried out using the keywords "guideline," "dent," "child" or "adolescent," and "pediatric" or "paediatric." Searches using these terms were also undertaken on the Web sites of the WHO, health departments of English-speaking countries, national guideline development groups in England, Scotland, the United States of America, New Zealand, Australia, and Canada and using the Google search engine. The World Dental Federation Web site has a page that lists resources (including guidelines) available for a number of conditions, and this was also searched.

AGREE instrument. The AGREE instrument consists of 23 key items (Table 1) categorized into 6 domains, with each domain measuring a different aspect of guideline quality[6]:

1. Scope and purpose (items 1-3) are concerned with the overall aim of the guideline, the specific clinical questions, and the target patient population.
2. Stakeholder involvement (items 4-7) focuses on the extent to which the guideline represents the views of its intended users, including patient groups.
3. Rigour of development (items 8-14) relates to the process used to gather and synthesize the evidence and the methods used to formulate and update the recommendations and update.
4. Clarity and presentation (items 15-18) deal with the language and format of the guideline.
5. Applicability (items 19-21) covers the likely organizational, behavioural, and cost implications of applying the guideline.
6. Editorial independence (items 22-23) assesses the independence of the recommendations and acknowledgement of possible conflict of interests for the members of the guideline development group.

Each item in the domain is scored on a 4-point Likert scale, from 4=strongly agree to 1=strongly disagree, with 2 midpoints: 3=agree and 2=disagree. Domain scores are then calculated by summing up all the scores of the individual items in a domain. The scores of all the examiners are added for each domain, and the final score is calculated by standardizing the total of the examiners as a percentage of the maximum possible score for that domain (this would be the maximum achievable score in the domain multiplied by the number of assessors). The domain scores are not aggregated

Table 2. LIST OF GUIDELINES

British Society of Paediatric Dentistry (BSPD)–12 guidelines

Prevention of dental caries in children[7]

Treatment of traumatically intruded permanent incisor teeth in children[8]

Stainless steel preformed crowns for primary molars[9]

Management of the stained fissure in the permanent first molar[20]

The pulp treatment of the primary dentition[21]

Diagnosis and prevention of dental erosion in children[22]

Treatment of intrinsic discoloration in permanent anterior teeth in children and adolescents[23]

Extraction of primary teeth–balance and compensation[24]

Managing anxious children: The use of conscious sedation in pediatric dentistry[25]

Continuing oral care–review and recall[26]

Management and root canal treatment of nonvital immature permanent incisor teeth[27]

Treatment of avulsed permanent teeth in children[28]

Royal College of Surgeons of England (RCSEng)–2 guidelines

Permanent first molar extraction in children[29]

The management of the palatally ectopic maxillary canine[30]

American Academy of Pediatric Dentistry (AAPD)–25 guidelines

Oral and dental aspects of child abuse and neglect[31]

Infant oral health care[32]

Adolescent oral health care[33]

Oral health care for the pregnant adolescent[34]

Management of persons with special health care needs[35]

Periodicity of examination, preventive dental services, anticipatory guidance, oral treatment[36]

The role of dental prophylaxis in pediatric dentistry[37]

Fluoride therapy[38]

Behavior guidance for the pediatric dental patient[39]

The appropriate use of local anesthesia for pediatric dental patients[40]

The appropriate use of nitrous oxide for pediatric dental patients[41]

Monitoring and management of pediatric patients during and after sedation[42]

Use of anesthesia personnel for office-based deep sedation/general anesthesia[43]

Pediatric restorative dentistry[44]

Pulp therapy for primary and young permanent teeth[45]

Management of acute dental trauma[46]

Management of the developing dentition and occlusion in pediatric dentistry[47]

Acquired temporomandibular disorders in infants, children, and adolescents[48]

Pediatric oral surgery[49]

Appropriate use of antibiotic therapy for pediatric dental patients[50]

Antibiotic prophylaxis for dental patients at risk for infection[51]

Dental management of pediatric patients receiving chemotherapy/hematopoietic cell transplantation/radiation[52]

Record-keeping[53]

Informed consent[54]

Prescribing dental radiographs for infants, children, adolescents, and persons with special needs[55]

Table continues on next page

Table 2. Continuation

Scottish Intercollegiate Guidelines Network (SIGN)–2 guidelines

Preventing dental caries in children at high caries risk[56]

Prevention and management of dental decay in the preschool child[57]

International Association of Dental Traumatology (IADT)–2 guidelines

Management of traumatic dental injuries[58,59]

Management of traumatic dental injuries in the primary dentition[60]

European Academy of Paediatric Dentistry (EAPD)–5 guidelines

The use of fluoride in children[61]

The use of antibiotics in pediatric dentistry[62]

Guidelines for the use of pit and fissure sealants[63]

EAPD guidelines on sedation in pediatric dentistry[64]

EAPD guidelines for use of radiographs in children[65]

Ministry of Health Malaysia (MOH Malaysia)–5 guidelines

Management of severe early childhood caries[66]

Management of avulsed permanent teeth in children[67]

Management of anterior crossbite in the mixed dentition[68]

Management of the palatally ectopic canine[69]

Management of unerupted maxillary incisor[70]

Haute Autorité de Santé (French National Authority for Health—HAS)–1 guideline

Assessment of caries risk and indications for pit and fissure[71]

Clinical guidelines Program (CGP)–1 guideline

Oral health management in children and adolescents with HIV infection[72]

US Preventive Services Task Force (US PSTF)–1 guideline

Prevention of dental caries in preschool children[73]

UK Children's Cancer and Leukaemia Group (UKCCSG)–1 guideline

Mouth care for children and young people with cancer: Evidence-based guidelines[74]

into a single score. There is no specific scale for the domain scores, whereby a certain percentage would determine that a guideline is acceptable or not. The higher the score, the better the quality of the guideline, as assessed by the instrument. All questions on the domains are given equal weighting, so no one element is more important than another.

There is also an overall rating as to whether the assessors would recommend the use of the guideline. When considering the guideline's overall rating, the assessors take into account the guideline's content.

Evaluation of the guidelines. It is recommended that the guidelines are evaluated by at least 2 assessors. In the current study, 3 independent assessors evaluated the guidelines. Studies have found that the level of clinical experience of the assessor does not impact on the scores in the different AGREE domains.[7] The assessors were a consultant, a lecturer, and a specialist registrar in pediatric dentistry. All 3 categories described are qualified dentists who have already worked a few years in general/hospital dental practice. The consultant and lecturer have specialized in pediatric dentistry and also had further experience and training to get to their current level. The specialist registrar is someone who is currently specializing in pediatric dentistry.

Table 3. EXCLUDED GUIDELINES

Periodontal therapy,[75] published by the American Academy of Pediatric Dentistry (**AAPD**).

Reason for exclusion: it was an endorsement of a guideline produced by the American Academy of Periodontology.

Standards of Care,[76] produced by the Australasian Academy of Pediatric Dentistry.

Reason for exclusion: combined British Society of Paediatric Dentistry (**BSPD**) and AAPD guidelines.

The assessors were instructed on the use of the AGREE instrument and provided with a training manual (as was done in the initial AGREE study) to use as a guide when assessing the guidelines. Pilot assessment was carried out on 5 guidelines produced by different organizations. The results of these were then discussed by the 3 assessors, and any disagreements were resolved. This exercise was used to ensure that the 3 assessors agreed on the criteria of each domain. The assessors were not blinded to the guideline's source. Where a guideline had a separate technical documentation on its development process, this was always looked at. The remaining guidelines were then assessed and the results evaluated using SPSS 14 statistical software (SPSS Inc, Chicago, Ill). No assessment of level of agreement between the assessors was undertaken.

Results

A total of 59 guidelines were identified, 57 of which were evaluated and produced by 11 organizations (see Table 2). Two guidelines were excluded (Table 3).

The overall mean percent with confidence intervals for each domain was calculated for all the guidelines combined (Figure 1) to give a general trend of how pediatric dentistry guidelines scored when evaluated using the AGREE tool. Pediatric dentistry guidelines generally performed very poorly in the applicability and editorial independence domains.

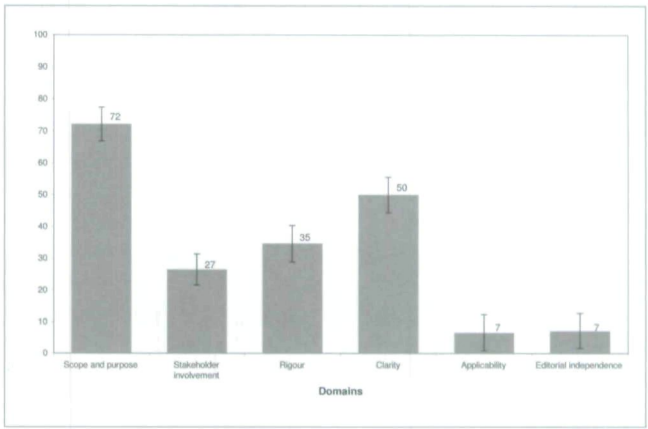

Figure 1. Overall mean of domain scores of all pediatric dentistry guidelines (error bars represent the 95% confidence intervals).

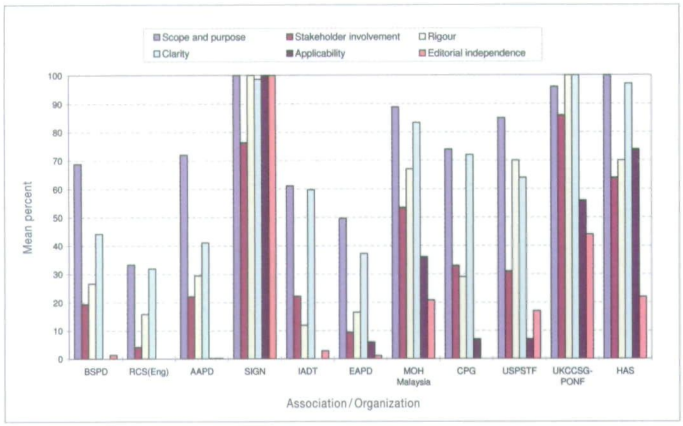

Figure 2. Domain scores of guidelines produced by the different guideline development organizations.

The mean domain scores were then also calculated for guidelines produced by each organization, as shown in Figure 2. These are described in more detail to follow.

Scope and purpose. The SIGN and HAS guidelines had a maximum score of 100% in this domain, with the 3 assessors agreeing that the clinical questions covered by the guidelines were specifically described and that the patients to whom the guidelines are meant to apply were specifically described. The lowest score in this domain was for Royal College of Surgeons of England (**RCSEng**) guidelines (~33%). Apart from these guidelines and those produced by the EAPD (~50%), all the other associations scored over 50% in this domain.

Stakeholder involvement. None of the guidelines scored 100% in this category. The highest score in this domain was approximately 76% (SIGN guidelines), and the lowest score was approximately 4% (RCSEng). Apart from guidelines developed by SIGN, UKCCSG, HAS, and MOH Malaysia, the rest of the guidelines scored well below 50% in this category. All assessors agreed that the guidelines that scored below 50% did not include individuals from all relevant professional groups in the guideline development group; also, patient's views and preferences had not been sought and the guideline had not been piloted amongst target users.

Rigour of development. The SIGN and UKCCSG guidelines scored 100% in this domain. The lowest score was obtained by the IADT guidelines (approximately 12%). Apart from SIGN, UKCCSG, US PSTF, HAS, and MOH Malaysia, guidelines produced by all other organizations scored well below 50%. The assessors agreed that the low scoring guidelines had poorly described criteria for selecting evidence, and methods used for formulating recommendations. Health benefits, side effects, and risks had not necessarily been considered when formulating the guideline. In addition, the assessors agreed that there were not explicit links between the recommendations and supporting evidence, the guidelines had not been externally reviewed, and no process for updating of the guideline was provided.

Clarity and presentation. Only the UKCCSG guideline scored 100% in this domain. The SIGN and HAS guidelines also scored highly, with respective scores of approximately 99% and 97%. The lowest scores were for the RCSEng guidelines (~32%). The EAPD, BSPD, and AAPD guidelines also scored below 50% in this domain. These guidelines did not necessarily have specific and clear recommendations, key recommendations were not easily identifiable, and there were no tools for application such as a summary document, quick reference guide, or patient leaflet.

Application. With the exception of SIGN and HAS guidelines (scoring 100% and 74%, respectively), guidelines developed by the other groups scored poorly in this domain. The BSPD, RCSEng, and IADT guidelines scored 0% in this category, with all 3 assessors in full agreement that potential organizational barriers and cost implications of applying the guideline had not been described. Also, the guidelines did not present key review criteria for audit or monitoring purposes.

Editorial independence. The SIGN guidelines once again scored 100% in this domain, clearly having recorded any conflicts of interest of the guideline development members and being editorially independent from the funding body. Guidelines produced by all the other organizations scored very poorly in this domain, with RCSEng guidelines scoring 0%. The remaining organizations all scored below 50% in this domain.

Overall assessment. The 3 assessors agreed that they would strongly recommend the SIGN and UKCCSG guidelines (Figure 3). Two assessors would strongly recommend the HAS guideline, with the third assessor recommending it with alterations. None of the assessors would recommend any of the guidelines produced by RCSEng and IADT. They were also unlikely to recommend the majority of the guidelines produced by BSPD, AAPD, and EAPD. Two assessors would recommend the CPG guidelines with alterations and would not recommend the US PSTF guidelines. One assessor would not recommend the CPG guidelines, but would recommend the US PSTF guidelines with alterations. All 3 assessors would recommend most of the MOH, Malaysia guidelines with some alterations.

The domain scores of the guidelines were also compared to see if there were any differences pre- and post-AGREE coming into existence. Mann-Whitney tests were

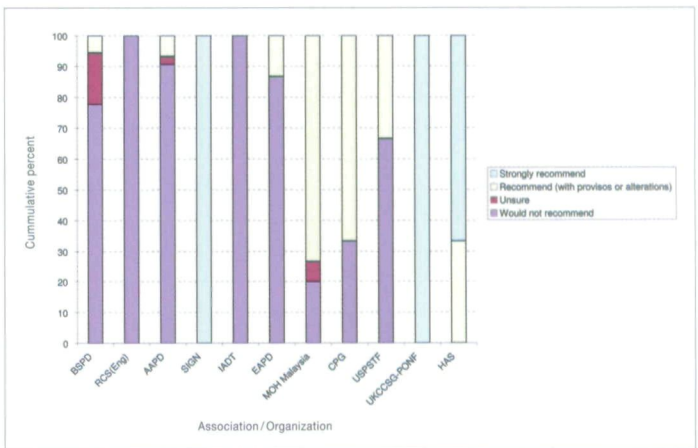

Figure 3. Overall assessment of guidelines (divided according to the guideline development groups).

undertaken, and there were no significant differences found in any of the domain scores published pre- vs post-introduction of AGREE.

Discussion

A comprehensive search yielded 59 guidelines pertaining to pediatric dentistry published in English. Some of the guidelines were easy to locate; however, a few were only found after considerable searching. It is important that guidelines are easily accessible by all if they are to be utilized effectively. The National Health Service (**NHS**) in the UK has a national library of guidelines available in the public domain.[77] Unfortunately, only 3 of the pediatric dentistry guidelines evaluated in this study were available on the NHS site. Furthermore, while this site is obviously specific to the UK, many of the guidelines could be applicable internationally. Organizations like GIN have a guideline database of over 5,500 guidelines, systematic reviews, and evidence reports.[10] They are only available to paying members of the organization, limiting the number of people who might have used this resource if it was freely available in the public domain.

Ideally, there should be one location that has a comprehensive list of all available pediatric dentistry guidelines. International collaboration between pediatric dentistry organizations worldwide would be required to establish a location (preferably in the public domain) where pediatric dentistry guidelines are easy to find and access.

Use of the AGREE instrument indicated that, apart from the guidelines produced by SIGN, HAS, and UKCCSG, guidelines produced by the other organizations generally scored poorly in all domains, especially in the applicability and editorial independence domains. These results are similar to other studies that have evaluated dentistry guidelines.[16]

SIGN is a national guideline organization in Scotland and is funded by the NHS. HAS is an independent public body, set up by the French government in 2004, whose remit includes publication of guidelines.[78] The SIGN guidelines methodology complies with the criteria used by AGREE to identify good quality guidelines.[79] HAS uses a systematic methodology in guideline production. Finally, the UKCCSG guideline on mouth care for children and young people with cancer was produced using methods outlined by SIGN.[79] It is, therefore, not surprising that guidelines produced by these organizations scored highly when evaluated using the AGREE instrument.

The reason for poor performance of the remaining guidelines could be explained by poor reporting of the guideline development process. One of the limitations of the AGREE instrument is that it evaluates the guideline development process and not the quality of the guideline's content and evidence. This is a limitation of most guideline appraisal tools. Even so, guidelines developed using a systematic methodology, such as is described in the AGREE instrument, are more likely to have a more stringent approach to the process, resulting in a guideline of better quality and validity. There is a correlation between guideline quality and good process, but it is theoretically possible to create a guideline with solid evidence-based recommendations, despite a poor development process, or a guideline with poorly supported recommendations, even though the development process was good.[11]

Nevertheless, it is important to include explicit and detailed information about the objectives and content of the guideline development, including the methods used and the people and organizations involved in the development process. Clinical practice guideline users will have more confidence in guidelines with these elements, since they facilitate acceptance and adherence to the guideline.[80-82] If key elements of the development process are not reported, then it is not possible to include these when assessing the guidelines, and this will result in a lower score in that domain. Improved reporting quality of guideline development processes is, therefore, essential to allow the user to assess the ways in which the guideline was formulated.

When the guideline development process is not systematic, important steps can be missed, such as: having patient involvement in the process; involving professionals from all relevant professional groups in the guideline development group; a structured system of searching and selecting evidence; and recording of editorial independence and conflicts of interest. These can result in a clinical guideline of poor quality. These guidelines may recommend ineffective, harmful, or wasteful treatments, which can compromise patient care. This may be that, because scientific evidence is lacking, misleading, or misinterpreted, recommendations have been influenced by the opinions, clinical experience, and composition of the guideline development group. Also, the patient's needs may not have necessarily been taken into account when developing the guideline.[3] If little or no research exists, the methods used for ascertaining an expert opinion should be documented. AGREE suggests that there should be an explicit link between recommendations presented and the evidence upon which they are based, whether that evidence is from high quality systematic reviews, randomized controlled trials, or expert opinion.[16]

In addition, most of the guidelines had not considered the potential organizational and cost barriers in their dissemination. This may result in costly interventions being recommended, which are not feasible for most guideline users. Using the AGREE principles in guideline development would reduce these problems.

There will always be differences in treatment strategies adopted by different countries; this is reflected in the advice given in guidelines that are produced in different countries. To this end, in this study there were a number of guidelines that covered the same subject (ie, trauma or the management of caries). If guidelines produced by international and national organizations have conflicting advice on how to deal with certain dental conditions, it can be very frustrating for the dental practitioner who then has to make a decision on which guideline to follow. Following the AGREE principles in the development of the guidelines would reduce these differences, making it easier for dental practitioners to have confidence in the recommendations that they are putting into practice.It would also reduce the burden on the organizations producing guidelines, as the development procedure could be shared.

Conclusions

1. The majority of guidelines assessed were of poor quality, as determined by the AGREE instrument.
2. Consideration should be given to using the AGREE instrument in the development of new guidelines and review of existing guidelines[82,83, 84]

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