What is the methodological quality of published dental implant guidelines?

Abstracted from

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Question: Do consensus guidelines published in highly ranked implant dentistry journals meet the requirements of the AGREE II instrument?

Data sources Six implant dentistry journals with impact factors (2014) assigned by Journal Citation Reports (*Clinical Oral Implants Research , Clinical Implant Dentistry and Related Research, European Journal of Oral Implants, The International Journal of Oral and Maxillofacial Implants, Journal of Oral Implantology, and Implant Dentistry*) and the Medline database.

Study selection Two reviewers independently selected guidelines published between May 2009 and February 2016.

Data evaluation Following training four reviewers independently applied the Agree II tool (http://www.agreetrust.org/) to the selected guidelines with disagreements being resolved by discussion. Scores for the six domains of the AGREE II tool were presented as median percentages of the maximum possible with their respective interquartile ranges (IQR). Domain scores were divided into consensus guidelines, and consensus guidelines with systematic reviews.

Results Twenty-seven consensus guidelines were included, with 19 contributing to the comparisons between groups. Twenty-six guidelines were developed after meetings in Europe, with the European Association of Osseointergration developing the most guidelines (n=9). The number of authors for the guidelines varied from 2-27 (median, 9). For consensus guidelines only domain four scored highest. Guidelines with systematic review scored higher for all domains with the exception of domain five (Table 1).

Conclusions There is room to improve the quality of consensus guidelines published in highly ranked implant dentistry journals. Clinicians' and researchers' development of consensus guidelines to improve clinical treatment with dental implants is laudable. However, as for primary and secondary research, these guidelines should adhere to high and transparent standards. The AGREE II instrument can be used as a reference for the development of high-quality guidelines to provide unbiased and adequate clinical recommendations to clinicians working with dental implants.

Table 1

AGREE II Domains	Consensus guidelines	Consensus guidelines with systematic reviews
	Median (IQR)	Median (IQR)
Domain 1 (Scope and Purpose)	72.22 (36.11)	83.33 (5.56)
Domain 2 (Stakeholder Involvement)	41.67 (16.67)	48.61 (16.67)
Domain 3 (Rigour of Development)	34.38 (46.35)	50.00 (33.33)
Domain 4 (Clarity of presentation)	75.00 (20.83)	77.78 (15.28)
Domain 5 (Applicability)	26.04 (8.33)	29.17 (18.75)
Domain 6 (Editorial Independence)	41.67 (89.58)	77.08 (77.08)

Commentary

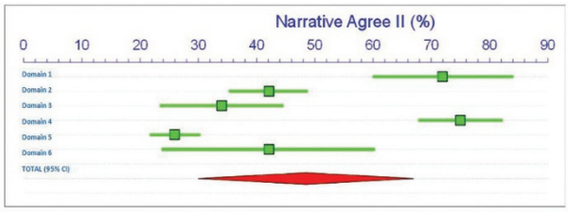
Consensus guidelines are a useful source of information for clinicians when developing treatment protocols for their patients. The idea is that the most experienced clinicians and academics meet and systematically assess the available evidence to develop guidance on what they feel is best practice in their field. Healthcare providers and regulators can then rely on this distillation of knowledge, experience and evidence in their decision making. However, in 1999 Shaneyfelt *et al.*[1] carried out a review of guideline quality in peer-reviewed medical literature, finding only a 43% adherence to reporting standards. In order to create 'common standards to improve the quality process and reporting of guideline development' a generic tool was developed by the AGREE (Appraisal of Guidelines, REsearch and Evaluation) collaboration (http://www.agreetrust.org/).[2] With use the tool has evolved into AGREE II[3] which consists of 23 items in six domains:

1. Scope and Purpose
2. Stakeholder Involvement
3. Rigour of Development
4. Clarity of Presentation
5. Applicability
6. Editorial Independence.

The aim of this review was to assess how current dental implant guidelines match the requirements of the AGREE II tool. To that end they have restricted their search to publications after the revised tool was published. It is worth considering that on average guideline development takes around two years so this should be taken into consideration when assessing the findings. However, it should also be noted that there are only minor changes between the earlier AGREE tool and the current version and, ideally, guideline developers should already have been taking these into consideration.

From the practising clinician's perspective this review is important as it goes a long way to explaining the disjoint between what is presented on the international conference circuit and what we see in day-to-day

AGREE II domain scores for consensus guidelines not using systematic reviews



AGREE II domain scores for consensus guidelines using systematic reviews

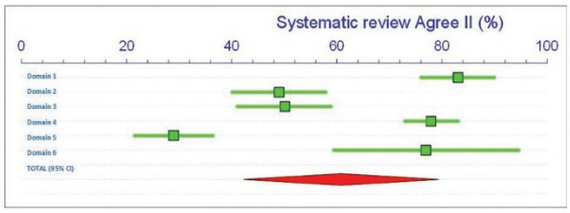


Figure 1. Forest plots for AGREE II domain scores

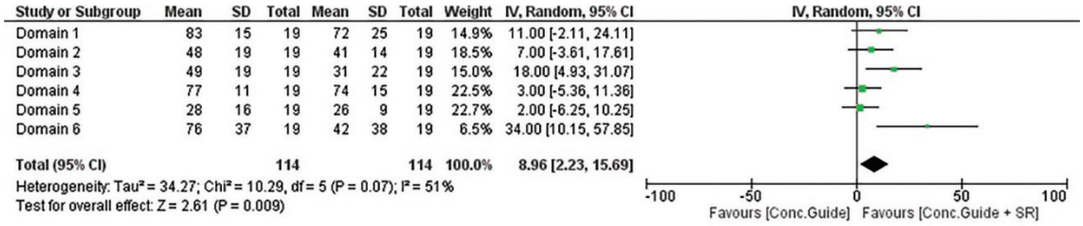


Figure 2. Meta-analysis of guideline scores not using systematic reviews with those using systematic reviews

practice. To assist with interpretation the median domain scores and 95% confidence intervals for those guidelines using and not using systematic reviews have been presented as forest plots (Fig. 1).

For the guidelines not using systematic reviews the highest scoring domains were domain 4 (Clarity of Presentation) and domain 1 (Scope and Purpose), which score in the 70s. There is a gap to the next domains which are in rank order 6, 2, 3 and 5. Overall, these guidelines only fulfil 50% of the AGREE II criteria. For guidelines using systematic reviews domain 1 scores highest closely followed by domains 4 and 6, the remaining domains ranking 3, 2 and finally 5. Overall there is a 9% improvement, bringing the score up to 60% compliance with AGREE II.

Figure 2 shows a meta-analysis comparing the guideline scores not using systematic reviews with those using systematic reviews. This helps highlight the improvements in domains 3 (Rigour of Development) and 6 (Editorial Independence). While an improvement in rigour of development would be expected with those guidelines using systematic reviews, the majority of the improvement is due to improvements in editorial independence.

This review raises a number of important issues both in relation to guidelines in general and those related to dental implants in particular. Resources are needed to produce the evidence base to support guidance development, and then disseminate guidance and encourage adoption of guidance into practice. Good practice at each stage is needed, however, as this review shows, large numbers of guidance documents are available for use, yet much of this is based on limited primary evidence. The availability of multiple guidance documents generates more confusion rather than assisting the clinician. Some of this duplication could be reduced by the adaption of good quality guidance documents for local use using the systematic adaption process as outlined by the Guidelines International Network (http://www.g-i-n.net/working-groups/adaptation)

From a clinician's point of view, what options do we have available to us to improve dental implant consensus guidelines? Based on this review it appears that we are good at knowing what questions to ask and how to present them (domain 1, Scope and Purpose and 4, Clarity of Presentation). Editorial independence (domain 6) is showing improvement but there needs to be greater clarity regarding potential conflicts of interest relating to guideline authors and the role of funding bodies and manufacturers. Related to this is a need to broaden stakeholder involvement (domain 2). Guidance documents are at present dominated by academics and practitioners with strong academic connections. Representatives from the full range of stakeholders is needed including clinicians working outside of specialist practice, healthcare providers, funders and patient groups. The weakest domain in these implant guideline documents was applicability (domain 5) and a broadening of stakeholders on guideline development groups would have an important impact.

Lastly, and by no means least, much work needs to be done on the rigour of development (domain 3) High quality primary research is required and validated systematic methods for assessing and analysing the relevant primary research is needed to provide a solid foundation for guidelines. In addition to effectiveness, analysis needs to include health benefits, side effects and complications. Any guidelines should also undergo external peer review prior to publication and opportunities should be taken for collaboration and adaptation to reduce duplication of effort.

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