Rating the quality of evidence in *Evidence-based Dentistry*

Derek Richards
Centre for Evidence-based Dentistry, School of Dentistry, University of Dundee, Dundee, Scotland
Email: d.richards@dundee.ac.uk

Since 2003 we have been using a system based on the Oxford Centre for Evidence-based Medicine (OCEBM) levels of evidence to indicate the quality of the summary articles we publish in the journal. Although OCEBM introduced an updated version of their level of evidence in 2011 (https://www.cebm.net/category/ebm-resources/loe/) we have continued to use their original one.

In addition to the OCEBM system for grading levels of evidence a plethora of grading systems exist and in 2004 the GRADE (Grading of Recommendations Assessment, Development and Evaluation) working group published a critical appraisal of six of the most prominent systems,[1] and as a result proposed a new system for both rating the quality of evidence and the strength of recommendation.[2,3] Since that time the use of the GRADE approach has increased, and it is now routinely seen in new and updated reviews from the Cochrane Oral Health Group as well as a broad range of other dental systematic reviews. As a consequence, we have decided to move over to GRADE for rating the quality of original studies summarised in the *Evidence-based Dentistry* journal.

GRADE distinguishes between quality assessment as part of a systematic review compared with quality assessment undertaken during guideline development. GRADE recognises four categories of evidence; high, moderate, low and very low that are typically applied to a body of evidence and defined as shown in Table1.

Under the GRADE system a randomised controlled trial is initially assigned to be high quality, this is lowered if there is a risk of bias, inconsistency of results, indirectness of evidence, imprecision or publication bias. If the risks are serious the quality level is lowered by one level or by two levels if the risk is very serious. On the contrary the quality level is raised if there

Table 1 GRADE quality of evidence and definitions

Quality of Evidence	Definition
High	We are very confident that the true effect lies close to that of the estimate of the effect
Moderate	We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low	Our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect
Very low	We have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect

Table 2 A summary of the GRADE approach to rating quality of evidence

Study design	Initial quality of a body of evidence	Lower if	Higher if	Quality of a body of evidence
Randomised trials	High	Risk of Bias 1 Serious 2 Very serious Inconsistency 1 Serious 2 Very serious Indirectness 1 Serious 2 Very serious Imprecision 1 Serious 2 Very serious Publication bias 1 Likely 2 Very likely	Large effect +1 Large 2 Very large Dose response +1 Evidence of a gradient All plausible residual confounding +1 Would reduce a demonstrated effect+ 1 Would suggest a spurious effect if no effect was observed	High (four plus): ++++
				Moderate (three plus): +++
Observational studies	Low			Low (two plus): ++
				Very low (one plus): +

Table 3 Key to GRADE graphic used in the Evidence-based Dentistry journal

GRADE Graphic	Quality of Evidence	Current Definition
●●●●	High	We are very confident that the true effect lies close to that of the estimate of the effect
●●●○	Moderate	We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
●●○○	Low	Our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect
●○○○	Very Low	We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

is a large magnitude of effect or plausible confounding, which would reduce a demonstrated effect or evidence of a dose-response gradient (Table 2).

A majority of the summaries in *Evidence-based Dentistry* are of systematic reviews and a GRADE rating would normally be applied for each important individual outcome. However, for the journal's purposes we will only display the highest GRADE rating for any particular summary article and readers should bear this in mind.

Our revised GRADE graphic will appear on the bottom left hand column of the summary pages of Evidence-based Dentistry (EBD) and will differ from the standard GRADE graphic shown in table two in that we will substitute the plus graphic for a coloured circle as shown in Table 3.

This new approach to identifying the quality of evidence summaries in the journal does to an extent simplify the GRADE approach as for reviews we will only be focusing on one outcome. However, the main intention of the evidence-based journal is to highlight quality evidence to our readers to encourage them to engage with original studies that are summarised in the journal. For those wanting to understand and explore the full details of the GRADE approach a wide range of resources are available in the GRADE Working Group website http://www.gradeworkinggroup.org/.

References

1. Atkins D, Eccles M, Flottorp S, *et al.* Systems for grading the quality of evidence and the strength of recommendations. I. critical appraisal of existing approaches The GRADE Working Group. *BMC Health Serv Res* 2004; **4:** 38.
2. Atkins D, Briss PA, Eccles M, *et al.*; GRADE Working Group. Systems for grading the quality of evidence and the strength of recommendations II. pilot study of a new system. *BMC Health Servs Res* 2005; **5:** 25.
3. Guyatt GH, Oxman AD, Vist GE, *et al.*; GRADE Working Group. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *Br Med J* 2008; **336:** 924-926.

Evidence-Based Dentistry (2019) **20**, 32-33.
doi:10.1038/s41432-019-0008-7