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RANKING THE SYSTEMATIC REVIEW PUBLISHED IN THE FIELD OF DENTAL CARIES- A CRITICAL APPRAISAL BY AMSTAR TOOL

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ABSTRACT

***BACKGROUND**: Amstar grading has been a critical appraisal tool for evaluating systemic review from recent trends. There is a tremendous increase in the growth of researchers in the field of dental caries over the years. Although they are numerous articles which are published every year, few of them provides an important and relevant conceptual advances in that particular field and are found to be influential in the evolution of the field. The number of Citations can always be a reflector as a proxy marker in that particular field.*
***AIM**: The aim of the current bibliometric analysis is to assess the top cited articles (n=100) on herbal medicine as of august 2019.*
***Materials and method**: Google scholar database was searched using freely available software, Publish or Perish. Information related to number of citations, publication title, publication year, and name of the journal was assessed in the current analysis.*
***Result**: Top 100 cited articles were analysed. Nearly 1000 articles were screened in which top 100 were selected according to the citation research. These citation classics provide an important insight into the historical developments.*
***Conclusion**: Herbal medicine has gone its long way from 1900 to the trending topic of today's scenario. Hence this citation analysis will help the further research who works in the field of herbal medicine to get the best obtained result so far.*
KEY WORDS: *Herbal medicine, Citation classics, bibliometric analysis, publications, top-cited articles*

INTRODUCTION

Systematic reviews endeavour to counter a precise interventional question by identifying, selecting, appraising and synthesizing all appropriate primary data using clear and well-distinct methods[1]. They are a constant increase in the published systematic review in our field of dentistry[2]. An estimated 48-86% of published overviews include both Cochrane and non-Cochrane SRs, while the remaining overviews include Cochrane systematic reviews only. Assessment of methodological quality of systematic reviews (*AMSTAR*) is a 16-item assessment tool with good face and constructs validity, this tool has been in recent times validated and is increasingly used by the entire health technologist and health care agencies along with editors of various journals to critical evaluated the systematic review articles published in their journal[4]. The most important use of *AMSTAR* is for the evaluation of reviews of interventions rather than those casing other aspects of health or health care such as diagnosis, prognosis and etiology. Quality assessments of SRs are important in overviews for two main reasons. First, quality assessments should be used by overview authors when making conclusions in overviews (e.g., to help contextualize the evidence by providing insight into whether and to what extent SR methods may have affected the comprehensiveness and results of overviews). However, it is not known whether and how existing quality assessment criteria need to be modified

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for use in overviews assessing the quality of SRs in the context of overviews may pose unique challenges, and decision rules may be helpful to promote consistent assessments both within and across overview topics[5]. Second, results of quality assessments may help inform inclusion decisions. This may be especially relevant when including non-Cochrane SRs in overviews. On average, non-Cochrane SRs have lower methodological rigor than Cochrane SRs, and the methods and reporting of non-Cochrane SRs can vary widely[6]. Researchers conducting overviews have indicated that including lower-quality SRs in overviews can increase the complexity of the overview process because data may be missing, poorly reported, or inconsistently reported in the SRs, and it is unclear what to do in these situations (e.g., should overview authors refer back to the relevant primary studies, or attempt to use the poorly conducted or reported SRs. However, existing methodological guidance on this topic is conflicting[7]. One potential solution proposed by researchers and employed by overview authors is to use the results of methodological quality assessments to identify and exclude SRs with gross deficiencies in conduct and/or reporting that would be difficult to include and use in overviews[8]. However, using results of quality assessments to inform inclusion decisions may introduce bias if the results and conclusions of these SRs differ systematically from other well-conducted and reported SRs.

OBJECTIVE

To assess the methodological quality of systematic reviews published in the field of dental caries using a critical appraisal tool the *AMSTAR*.

INCLUSION AND EXCLUSION CRITERIA

Reports of systematic reviews were considered eligible for inclusion if they met the following criteria: the terms or phrases systematic review, meta-analysis or overviews were used in the title or abstract, or if the main text provided a clear indication that a systematic review had been carried out. In view of the wide and at times indiscriminate use of the terms systematic review, only studies whose overall methods and conduct defined them as a systematic review were included along with the articles available for full text access were included in the study whereas studies which contained for example only a literature search, systematic or otherwise, were excluded.

Electronic search database:

1. Cochrane
2. Pubmed
3. Scopus
4. Embase
5. Web of science
6. Grey literature

ASSESSMENT OF METHODOLOGY QUALITY

AMSTAR was applied independently to each of the included systematic reviews and any differences in their evaluations were discussed and agreed through consensus. Individual items were categorized as yes, no or partially yes and the assessment data were tabulated. Although weights are not attached to any of the individual items in *AMSTAR*, summary quality scores were calculated, in keeping with other assessments that have used *AMSTAR*.

Table 1: Top cited systematic review articles in the field of dental caries

Rank	Author name	Year of publication	Number of citation
1.	Marinho et al[9]	2003	1066
2.	Marinho et al[10]	2013	951
3.	Harris et al[11]	2004	891
4.	Kassebaum et al[12]	2015	723
5.	Walsh et al[13]	2010	670
6.	Moynihan et al[14]	2014	590
7.	Burt et al[15]	2001	455
8.	Marinho et al[16]	2016	418
9.	Marinho et al[17]	2003	379
10	Griffin et al[18]	2008	353
11	Marinho et al[19]	2015	339
12	Bader et al[20]	2001	362
13	Bader et al[21]	2004	356
14	Bader et al[22]	2002	307
15	Hooley et al[23]	2012	273

Table 1 shows the top 15 cited systematic review article in the field of dental caries with highest to lowest citation and found that Cochrane database has been viewed in top cited article frequently with highest citation

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FIGURE 1: TOP CITED SYSTEMATIC REVIEW ARTICLES IN THE FIELD OF DENTAL CARIES

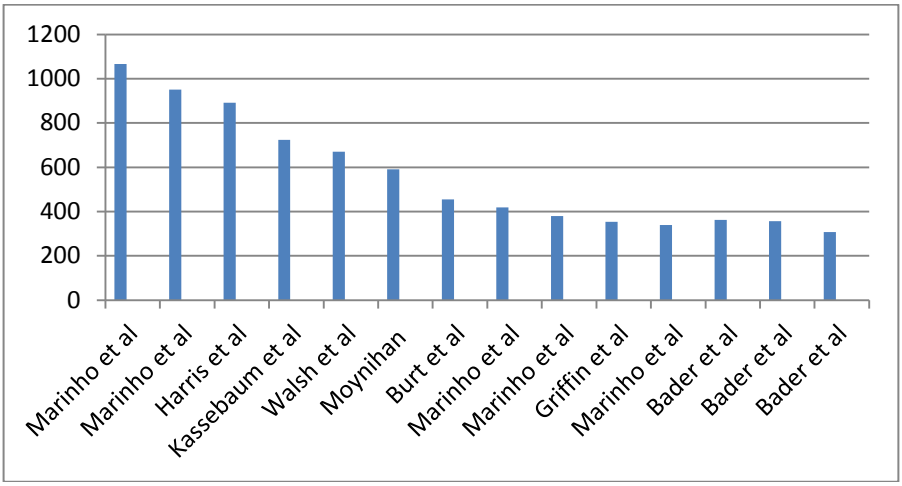

Table 2: Top cited systematic review article in the field of dental caries published in the journal

Rank	Author name	Year of publication	Journal name
1.	Marinho et al	2003	Cochrane database for systematic review
2.	Marinho et al	2013	Cochrane database for systematic review
3.	Harris et al	2004	Journal of community dental health
4.	Kassebaum et al	2015	Journal of dental research
5.	Walsh et al	2010	Cochrane database for systematic review
6.	Moynihan	2014	Journal of dental research
7.	Burt et al	2001	Journal of dental education
8.	Marinho et al	2016	Cochrane database for systematic review
9.	Marinho et al	2003	Cochrane database for systematic review
10.	Griffin et al	2008	Journal of dental research
11.	Marinho et al	2015	Cochrane database for systematic review
12.	Bader et al	2001	Journal of dental education
13.	Bader et al	2004	The journal of American dental association
14.	Bader et al	2002	Journal of public health research
15.	Hooley et al	2012	Journal of dentistry

Table 2 shows the top cited systematic review article published in various database and found that maximum was found in Cochrane database followed by journal of dental research.

Table 3: Amstar rating for top 5 article based on citation published in the field of dental caries

Rank	Question	Marinho et al,2003	Marinho et al, 2013	Moynihan et al, 2014	Marinho et al, 2015	Griffin et al,2008
1.	Did the research questions and inclusion criteria for the review include the components of PICO yes / No	Yes	Yes	Yes	Yes	Yes
2.	Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol? Yes / No	Yes	Yes	No	Yes	No
3.	Did the review authors explain their selection of the study designs for inclusion in the review yes / No	Yes	Yes	Yes	Yes	Yes
4.	Did the review authors use a comprehensive literature search strategy yes / Partially / No	yes	Yes	Partially yes	Yes	Partially yes

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	yes						
5.	Did the review authors perform study selection in duplicate		yes	Yes	No	Yes	No
	Yes	No					
6.	Did the review authors perform data extraction in duplicate		Yes	Yes	No	Yes	No
	yes	No					
7.	Did the review authors provide a list of excluded studies and justify the exclusions		Yes	Yes	Partially yes	Yes	Partially yes
	yes	Partially yes					
8.	Did the review authors describe the included studies in adequate detail		Yes	Yes	Partially yes	Yes	Partially yes
	yes	Partially yes					
9.	Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review		Yes	Yes	No	Yes	No
	Yes	No					
10.	Did the review authors report on the sources of funding for the studies included in the review		yes	Yes	No	Yes	No
	Yes	No					
11.	If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?		No	No	No	No	No
	Yes	No					
12.	If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis		No	No	No	No	No
	Yes	No					
13.	Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review		Yes	Yes	No	Yes	Yes
	Yes	No					
14.	Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review		Yes	Yes	Yes	Yes	Yes
	Yes	No					
15. :	If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review		Yes	Yes	No	Yes	Yes
	Yes	No					
16.	Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review		Yes	Yes	No	Yes	Yes
	Yes	No					

Yes- green, no- red, partially yes- orange

Table 3 shows the Amstar grading questionnaire being evaluated in the articles included for systematic review with full text article

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DISCUSSION

Systematic review being the top most in the evidence hierarchy along with meta- analysis we want to grade the top cited systematic review and used Amstar grading tool. Busy clinicians may believe they do not have the time to assess the quality of published systematic reviews. We disagree with this premise and affirm that they should make strident attempts to critically appraise all relevant research when making decisions about patient care. Healthcare providers need reliable information about the beneficial and harmful effects of healthcare interventions if they are to provide the highest quality care to their patients. Therefore it is crucial that published reviews are of high quality and are well-designed, ensuring that ultimately they provide a balanced and impartial summary of the results reported by taking into account any inconsistencies in the totality of the evidence. A quality assessment using AMSTAR may guide this critical appraisal. Amstar being an important tool for critical appraisal of systematic review was used in this article as an important tool to grade the systematic review published in the field of dental caries, here in this article top cited systematic review were included in the analyses and the full text articles included in the review were Marinho et al in 2003, Marinho et al in 2013, Moynihan et al in 2014, Marinho et al in 2015 and Griffin et al in 2008 were included in the review. In our study results found that all the systematic review satisfied the PICO questions which include population, invention, comparison, outcome, study design was clearly mentioned and all the authors justified satisfactory heterogeneity in discussion. All the systematic review does not included any meta-analysis due to heterogeneity of the articles and statistical analysis was not sufficient to perform. They were a deviation from the original methodology in the Moynihan et al and griffin et al which was published by Moynihan et al and griffin et al in terms of proper literature strategy, justify the excluded studies and describe the included study in detail. Moynihan et al published a quantitative synthesis, errors in the review and results were not elaborately discussed in the discussion part was not discussed in detail in the study published.

CONCLUSION

Systematic reviews endeavour to counter a precise interventional question by identifying, selecting, appraising and synthesizing all appropriate primary data using clear and well-distinct methods[1]. They are a constant increase in the published systematic review in our field of dentistry.

ETHICAL STATEMENT : Not applicable

CONSENT STATEMENT : Not applicable

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