

Study design, primary outcome and reproducibility in randomized controlled trials in periodontology. A methodological systematic review

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ABSTRACT

AIM: The aim of this review is to assess study design and risk of bias related to primary outcome in recently published RCTs in periodontology.

METHOD: An electronic (Medline, EMBASE and Cochrane library) and a manual search were completed to detect RCTs in humans, with an outcome in the field of periodontology and published in English from January 2018 up to April 2020.

RESULTS: Data extraction of 318 publications meeting the inclusion criteria was performed by two reviewers. Most studies adopted a parallel-group superiority design in a university setting. Overall, 54% of papers reported the primary outcome and relative sample size calculation, while only 37% also included reproducibility estimates relative to the primary outcome. Papers published in journals with higher impact factors had better compliance with primary outcome reporting and lower overall risk of bias scores.

CONCLUSION: Improvements in the quality of RCTs in periodontology are still needed. The importance of defining a clinically-relevant study primary outcome and building the study around it needs to be emphasised. Furthermore, RCTs in periodontology should cover the whole breadth of study design options which facilitate application of the principles of personalised medicine.

CLINICAL RELEVANCE:

Scientific rationale for the study: Clinical advances in periodontology need to be supported by robust research studies. We aimed to go beyond simple assessment of risk of bias, to systematically appraise the reporting of primary outcomes and the details of study design.

Principle findings: Only around half of RCTs in periodontology published in the last 2 years clearly report the primary outcome and associated sample size. The overall risk of bias is inversely associated with the journal's impact factor.

Practical implications: RCTs in periodontology, irrespective of the journal in which they are published, should report the primary outcome, associated sample size and reproducibility measures.

INTRODUCTION

Randomised controlled trials (RCTs) comparing the safety, efficacy and effectiveness of different treatment modalities have long been used to determine the gold standard intervention for different phases and types of periodontitis. The CONSORT statement was introduced and updated in 2010 (Schulz et al. 2010) to improve the methodology of clinical trials and it has been adopted as a submission requirement by most international peer-reviewed dental journals. Although the quality of RCTs has clearly improved over the last couple of decades, not all methodological aspects are always adhered to. While a lot of effort has been dedicated to improving methodology of randomisation and allocation concealment, perhaps less attention has been placed on a very important methodological aspect of RCTs, which is the definition of the primary outcome. The primary outcome should be clearly identified and reported, bearing in mind what is clinically relevant. Furthermore, the study sample size calculation should be performed based on the primary outcome, to avoid the risk of carrying out underpowered studies or wasting resources by recruiting too large a sample.

Most RCTs in periodontology are designed as parallel-group superiority studies and a limited breadth of study design options are represented. In other words, non-inferiority, crossover, factorial study designs, which sometimes may be appropriate to answer specific clinically-relevant questions, are perhaps under-used in periodontology. The same probably applies to novel RCT designs now employed in medicine, which facilitate application of the principles of personalised medicine, such as SMART design (Lavori et al. 2004), n-of-1 trials or randomised studies with adaptive design (Antoniou et al. 2016). The aim of this review is to assess study design and risk of bias related to primary outcome in recently-published RCTs in periodontology.

MATERIALS AND METHODS

A systematic review protocol was written in the planning stages and the PRISMA statement (Moher, Liberati, Tetzlaff, Altman, & Group, 2009) was followed both in the planning and reporting of the review (checklist attached as Supplemental Material 1).

Focused questions

- What study designs are employed in human RCTs in periodontology?

- How well is the primary outcome defined in recent human RCTs in periodontology?
- Is the sample size of recent human RCTs in periodontology based on the primary outcome?
- Are reproducibility estimates for the primary outcome carried out in recent human RCTs in periodontology?

Eligibility criteria

In brief, the **PICOS** method was the following:

- **(P) Participants**: Patients included in RCTs in the field of Periodontology
- **(I) Interventions**: Any type of periodontal intervention
- **(C) Comparisons**: Different types/timings of periodontal intervention
- **(O) Outcomes**: Definition of study design, description of primary outcome, sample size calculation and reproducibility estimates
- **(S) Studies**: Randomised controlled trials (RCTs) in Periodontology

The inclusion criteria for studies in this systematic review were: i) randomised controlled trials; ii) with outcomes in the field of periodontology (clinical, radiographic, patient-reported or other). Exclusion criteria: i) animal studies, ii) laboratory studies, iii) studies focusing on implants or peri-implant diseases, iv) systematic reviews and meta-analysis of RCTs.

Information sources and Search

The search included papers published from January 2018 to 31st March 2020 in Medline, EMBASE and Cochrane library and was complemented by a manual search on *Journal of Dental Research*, *Journal of Clinical Periodontology*, *Journal of Periodontology* and *Journal of Periodontal Research* and by a search on Open Grey.

Key words used for the search were: "periodontal" OR "periodontology" AND "randomized controlled trial" OR "randomised controlled trial" OR "randomised clinical trial" OR "randomized clinical trial" OR "RCT"

Study characteristics

Study selection was conducted in duplicate by two independent reviewers (M.A., J.M.), who assessed all papers identified in the search to define those suitable according to the inclusion criteria. In case of doubts or disagreements between reviewers for study inclusion, the decision

about study eligibility was made by trying to reach a consensus between the two reviewers or by consulting a third reviewer or arbitrator (author L.N.). Data extraction was carried out upon study inclusion. Owing to the very large number of papers to screen, studies were divided between the two reviewers and a subset of studies were assessed in duplicate for calibration purposes. The agreement value between reviewers was calculated in the subset of papers for which data were extracted by both reviewers.

This systematic review focused specifically on trial design and methodology. A standardised data extraction spreadsheet was used, where data from eligible studies was recorded. In particular, the specific items below were recorded:

- o Study design:
 - Superiority/non-inferiority/unclear
 - Explanatory/pragmatic/unclear
 - Phase I/II/III/IV
 - Parallel/crossover
 - Open/single-, double-, triple-blinded or unclear
 - Factorial design or not
- o Primary outcome:
 - Described/unclear
 - Description of method for primary outcome measure reproducibility provided or not
 - Description of sample size calculation for primary outcome provided or not

Risk of bias analysis

The quality of the included studies was assessed using the Cochrane Collaboration's Tool for assessing risk of bias for RCTs. The checklist described by Higgins and co-workers (Higgins et al. 2011) was used.

Summary measures and planned method of analysis

Studies were analysed descriptively but no meta-analysis for quantitative data synthesis was possible due to the nature of this review. Statistical analysis (Chi-square with p value for statistical significance < 0.05) was carried out to test associations between both complete

reporting of primary outcome and overall risk of bias with journal impact factor (IF), based on 2019 IF (accessed on website www.bioxbio.com on 1st October 2020).

RESULTS

The study flowchart is presented in figure 1. A total 642 papers were identified by the electronic search, and an additional 6 were identified through manual search, for a combined total of 648. Following screening, 318 papers were found to be suitable. Reasons for exclusions were no periodontal outcomes (n=155), focusing on implants (n= 134), laboratory-based (n=4), on animal models (n= 2), not in English (n=8), not RCT (n=6), duplicate reports (n=7), protocol only (n=1), secondary analysis of previously-published study (n=6), abstract only (n=6), and full text not found (n=1). Inter-reviewer agreement for study inclusion was 0.93. Agreement of 92.4% of data extracted was achieved between examiners in the 28 papers undergoing duplicate data extraction.

The 318 included papers reported studies carried out in 46 different countries and published between 2018 and 2020. The total number of patients included ranged from 7 (Rajendran et al. 2018) to 1877 (Ramsay et al. 2018). A total of 62 papers (19.5%) were published in journals with impact factor <1, 213 papers (66.9%) in journals with IF 1-4 and 43 papers (13.5%) in journals with IF > 4.

Study design

Table 1 reports data relative to study design, including if and what study design was clearly reported in the paper, and how study design was interpreted by the reviewers (if not reported). Overall, 19 studies were described as pilot/feasibility, 7 papers reported if the trial was a superiority/inferiority trial and 3 papers reported the trial 'phase'. One paper reported the study as pragmatic/explanatory (Ramsay et al. 2018). Eighty-six papers reported the study as parallel-groups, 13 defined them as crossover, while the remaining papers did not report this aspect. A total of 70 studies were described as 'split-mouth'. In terms of blinding, 240 studies reported details. Out of these, 111 were described as 'single-blind', 107 as 'double-blind' and 22 as 'triple-blind'.

When the papers were critically reviewed to assess study design, 16 studies were considered 'pilot, 1 was considered 'feasibility', 3 were considered 'non-inferiority' and 8 were considered to have a factorial design. A handful of studies reported other specific study

characteristics, such as clustered randomisation (Ramsay et al. 2018, Al Bardaweel et al. 2018) or Mendelian randomisation (Czesnikiewicz-Guzik et al.). ‘Blinding’ included the examiner (n=213), the therapist (n=49), the patient (n=110) and the statistician (n= 29).

Primary outcome

Out of 318 papers, 212 reported what the primary outcome of the study was, while 106 did not. The primary outcome ranged from a clinical parameter (n=173), a laboratory variable (n=31) and a patient-reported outcome (n=8).

Sample size calculation

Overall, 195 papers reported a sample size calculation, while 123 did not. 20 papers reported a sample size calculation despite not defining the primary outcome of the study. Overall, 170 papers (54%) reported primary outcome and relative sample size calculation.

Reproducibility estimates

A total of 154 papers reported reproducibility estimates, while 163 did not. Interestingly, some papers which did not report what the primary outcome was, actually calculated reproducibility estimates (n= 29).

Overall, only 117 papers (37.3% of the total included) clearly reported the primary outcome, relative reproducibility estimates and relative sample size calculation. A strong association was detected between papers reporting all aspects of primary outcome (definition of primary outcome and relative sample size and reproducibility estimate) and journal IF. More specifically, 15.5% of papers in journals with IF <1, 39.0% of papers in journals with IF 1-4 and 58.1% of papers in journals with IF > 4 complied with the primary outcome reporting outlined above (Chi-square $p < 0.001$) (figure 2).

Risk of bias

The overall risk of bias score (see supplemental material 2) revealed that 73 papers (23.0%) were judged to have overall low risk of bias (all domains at low risk of bias). A total of 121 papers (38.1%) were judged to have ‘some concerns’ (unclear bias in at least 1 item, but no domain at high risk of bias), while 123 (39.0%) were judged at high risk of bias (at least 1 item at high risk of bias) (Higgins et al. 2020).

The parameter least likely to be scored as ‘low risk of bias’ (41.3% of papers) was allocation concealment, whilst the most likely to be scored ‘low risk of bias’ was ‘other bias’ (98.4%). A higher number of papers with ‘high risk of bias’ (53.6%) was detected among papers published in journals with IF <1, compared with papers in journals with IF 1-4 (37.5%) and in journals with IF>4 (28.8%) (Chi-square $p=0.022$) (figure 3).

DISCUSSION

We reviewed RCTs published in the field of periodontology in the last 2 years, to assess details of study design and items related to the study primary outcome. The main finding is that just over half of the papers (54%) reported the study primary outcome and the sample size calculation related to that outcome. This is in agreement with 61% of RCTs of pre-term birth intervention found to have a pre-specified primary outcome that was underpinned by a sample size calculation (Meher and Alfirevic 2014). This finding extends beyond original studies, with authors of a publication including 283 Cochrane reviews reporting that more than half did not include data on the primary outcome (Kirkham, Dwan, Altman et al. 2010).

Furthermore, just over a third of the papers included in the present review clearly reported what the primary outcome of the study was, calculated the sample size based on the primary outcome and presented reproducibility estimates for the primary outcome. Interestingly, many authors of the ‘primary outcome non-compliant’ studies had reported the primary outcome at the time of clinicaltrials.gov registration, but subsequently failed to report it in the publication. These findings should be interpreted in the context of increasing awareness about the importance to select, out of all possible outcomes of the study, the primary outcome. This *a priori* choice avoids cherry-picking significant results (‘switched outcomes’), thus reducing misinterpretation of results and protecting from potential type I error of significant associations found for secondary outcomes. Switching reporting of outcomes can also lead to ‘spin’, which is a misleading emphasis placed on the study results with the aim to present positive findings (Heneghan et al. 2017). Presenting a clear primary outcome also allows the calculation of the required sample size, based on the main research question (selected out of several possible questions to be tested) (Andrade 2015). The correct sample size avoids wasting resources of recruiting too few patients (not enough to show a difference between groups), or too many patients (over and above the number sufficient to show a difference).

So, how should we interpret the large number of studies with no defined primary outcome? It has been suggested that they should be viewed with caution, as they may emphasise results not in line with the actual objectives of the study (Andrade 2015). The interpretation is of course different for exploratory studies, which have a recognised inherent higher risk of false positive findings.

The great majority (82%) of reported primary outcomes were clinical, the most common being centred on CAL (43 papers), followed by probing pocket depths (PPD), bleeding on probing (BOP) and Gingival Index (GI). Only a small proportion of studies (4%) had patient-reported primary outcomes outcome (usually measured in a visual-analogue scale), while the remainder of primary outcomes (15%) were laboratory-based, such as HbA1c and microbial biomarkers. Therefore, the proportion of studies focusing mainly on patient-reported outcomes in the periodontal literature is still relatively small, and researchers tend to concentrate their attention on clinical parameters. It has been stressed that clinical trials need to select outcomes that have real importance in clinical settings, thus making the findings of the study translational (Heneghan et al. 2017). For practical reasons, this often involves the choice of surrogate outcomes, such as CAL and PPD. In this case, one must question whether surrogate outcomes really correlate with important long-term disease outcomes. Furthermore, primary outcomes should not be subjective, should use validated scales and, of paramount importance, should be relevant to patients and decision-makers. Hence the recent effort to increase patient and public involvement in research, to ensure studies are conceived and designed with greater input from end users (Heneghan et al. 2017). For example, the choice of primary outcome was recently provided in studies on rheumatoid arthritis, based on a discrete choice experiment used to assess affected people's preferences (Stamuli, Torgerson, Northgraves et al. 2017). Using composite end points (Trombelli et al. 2020) is another common strategy, although selection of the correct combination of clinically-relevant outcomes is not straightforward.

Another important finding of this review is that the great majority of RCTs were phase-3 superiority parallel-group studies with some form of blinding reported (usually examiner-blinding and often patient-blinding). A few studies had a factorial design (i.e. when two or more experimental interventions are not only evaluated separately, but also in combination and against a control), although it was not always reported as such. Approximately 4% of studies employed a crossover design, which allows each patient to receive different treatments during different time periods. A fairly sizeable proportion (22 %) of the reviewed RCTs in

periodontology used a split-mouth design, which offers the clear advantage of requiring smaller sample sizes, since this design removes inter-subject variability from the estimated treatment effect (Zhu et al. 2017) , while at the same time introducing a potential ‘carry-over effect’ to the contralateral side (Pozos-Giullén et al. 2017). An example of an innovative study design was provided by Ramsay and co-workers, who conducted a multicentre, pragmatic split-plot, randomised open trial with a cluster factorial design. In this study, each practice was randomised to provide routine or personalised oral hygiene advice. Within each practice, participants were then randomised to different frequencies of periodontal instrumentation (Ramsay et al. 2018). In the era of personalised medicine, it is striking that studies in periodontology in the last 2 years have not ventured towards innovative study designs such as SMART design (Lavori et al. 2004) and adaptive design (Antoniou et al. 2016). In contrast with traditional RCTs, SMARTs offer the possibility of studying treatment sequences (Moodie et al. 2016). Studies with adaptive design break the traditional ‘rigidity’ of RCTs, opening to the possibility of adapting the study to initial results, leading to augmenting or reducing a certain intervention or modifying its frequency. Although these types of studies are becoming increasingly popular in medicine, particularly for cancer (Wang et al. 2012, Kidwell 2014), their application to periodontology is still limited (Xu et al. 2020). We can speculate that this is due to investigators not being fully aware of these alternative study designs, to difficulties in obtaining approvals and funding with unconventional study designs or alternatively to authors deeming that adaptive or SMART design studies may not be appropriate in periodontal research.

Based on the reviewers’ judgment using the Cochrane Collaboration’s Tool, 39% of papers had at least one item at high risk of bias, while 23% were judged to have overall low risk of bias. This highlights the fact that certain aspects of study design, particularly allocation concealment, should be better reported in RCTs in periodontology. Publications in journals with higher impact factor had lower overall RoB scores and better compliance with ‘primary outcome’ reporting, compared with papers published in lower IF journals. This association may be testament to the stricter review process and scrutiny required in higher IF journals in periodontology but is controversial in other fields (Macleod et al. 2015, Cramer et al. 2015, Saginur et al. 2020). In fact, it has been suggested that journal impact factor is a poor measure of research quality (Tressoldi et al. 2013).

The novelty of this study is the aim to assess study design and aspects related to primary outcome of recent RCTs published in periodontology, extending beyond a simple assessment of risk of bias. Limitations are the assessment of papers published in a relatively short timeframe and the exclusion of studies covering other aspects related to periodontology such as implants.

CONCLUSION

In summary, this study clearly shows that improvements in the quality of RCTs in periodontology are still needed. The importance of defining a clinically-relevant study primary outcome and ‘building’ the study around it needs to be emphasised. All stakeholders, particularly patients, should be involved in the choice of relevant primary outcomes. This could be a positive step towards the reduction of bias. Editors and reviewers of periodontal scientific journals, especially those with lower IF, should give sufficient attention to experimental design as well as to the novelty of findings, and should put in place measures to improve the reporting of primary outcomes and reduction of bias (Macleod et al. 2015). Periodontal researchers could also consider being perhaps a bit more adventurous and attempt other study designs, which could be more useful for answering clinical questions and more relevant in the era of personalised medicine.

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TABLES

		Described in the publication	Identified by the reviewers	
Phase	Pilot/feasibility	19	Pilot/feasibility	16
	II	2	II	2
	III	1	III	311
	Not reported	315	Not identifiable	5
Parallel/cross- over	Parallel	86	Parallel	273
	Cross-over	13	Cross-over	14
	Not reported	219	Not identifiable	1
Split-mouth or not	Split-mouth	70	Split-mouth	70
	Not split-mouth	248	Not split-mouth	248

Table 1. Breakdown of details of study design as reported in the papers and as identified by the reviewers

FIGURE LEGENDS

Figure 1. Flowchart of study inclusion

Figure 2. Compliance with outcome reporting for studies divided by Journal Impact Factor (IF)

Figure 3. Risk of Bias (RoB) of studies divided by Journal Impact Factor (IF)

FIGURE 1

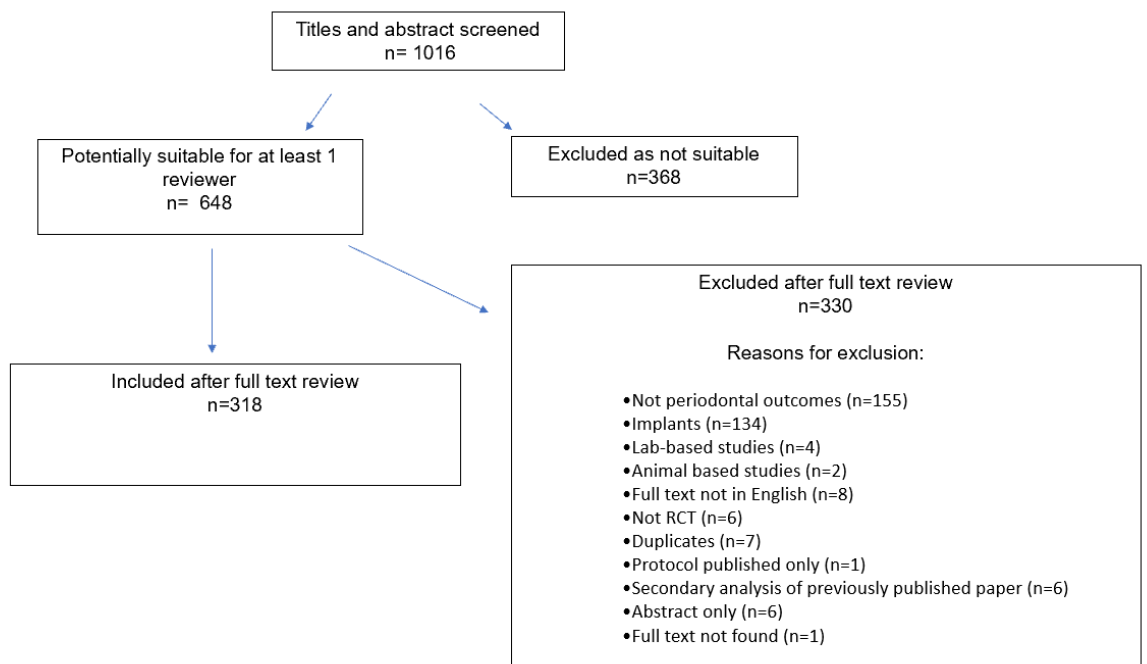


FIGURE 2

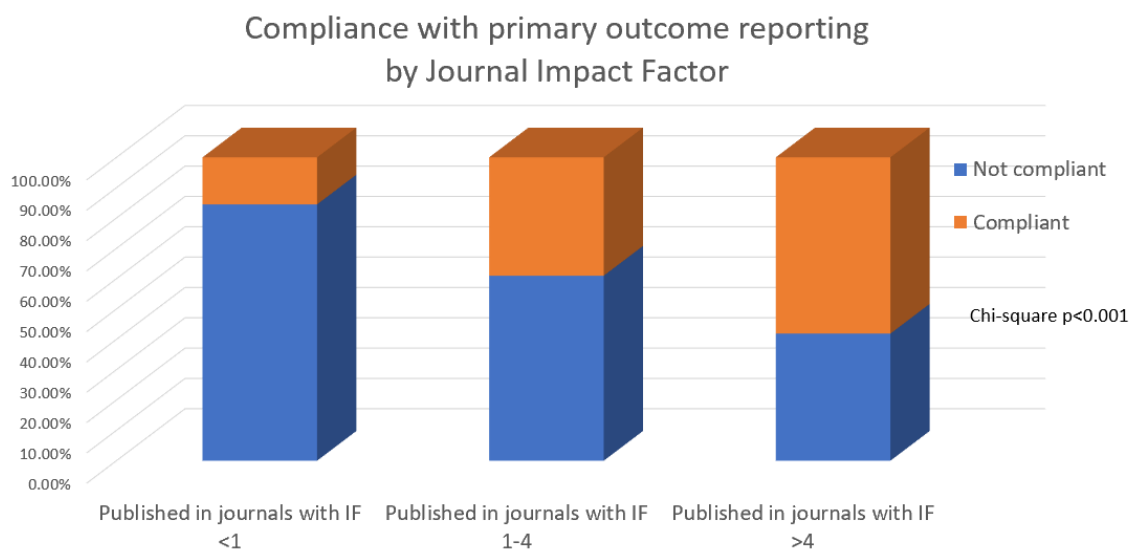
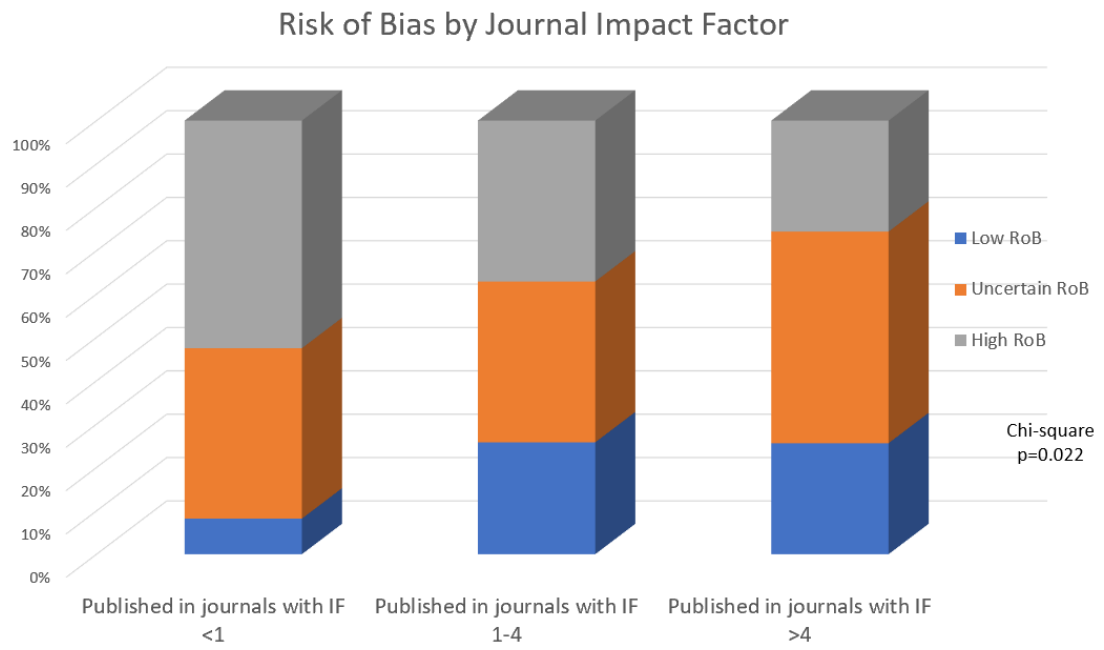


FIGURE 3



SUPPLEMENTAL MATERIAL 1.

PRISMA Checklist

Section	#	Checklist item	Reported on page
TITLE	1	Identify the report as systematic review, meta-analysis or both	1
ABSTRACT	2	Structured summary	2
INRODUCTION	3	Rationale	2
	4	Objectives	3
METHODS	5	Protocol and registration	3
	6	Eligibility criteria	5
	7	Information sources	5
	8	Search	5
	9	Study selection	5, 6
	10	Data collection process	5,6
	11	Data items	5,6
	12	Risk of bias in individual studies	5
	13	Summary measures	5,6
	14	Synthesis of results	5,6
	15	Risk of bias across studies	5,6
	16	Additional analyses	n/a
RESULTS	17	Study selection	6
	18	Study characteristics	6,7
	19	Risk of bias within studies	7
	20	Results of individual studies	7
	21	Synthesis of results	7
	22	Risk of bias across studies	7,8
	23	Additional analysis	n/a
DISCUSSION	24	Summary of evidence	8,9,10,11
	25	Limitations	11
	26	Conclusions	11
FUNDING	27	Sources of funding	1

SUPPLEMENTAL
MATERIAL 2.
Overall RoB Scores

+	Low risk
-	High risk
?	Unclear risk?

			Randomisation sequence generation	Allocation concealment	Selective reporting	Blinding of participants and personnel	Blinding of outcome assessment	Incomplete outcome data	Overall
Abellán et al.	<i>Lasers in Surgery and Medicine</i>	2019	-	?	-	+	+	+	-
Acar et al.	<i>Clin Oral Investig</i>	2019	+	?	-	?	?	+	-
Afacan et al.	<i>J Periodontol</i>	2019	+	+	+	+	?	+	?
Agarwal et al.	<i>Singapore Dent J</i>	2020	+	?	+	+	?	+	?
Ahmedbeyli et al.	<i>Clin Oral Investig</i>	2019	+	-	+	+	?	+	-
Ahmedbeyli et al.	<i>J Clin Periodontol</i>	2019	+	+	+	+	?	+	?
Aimetti, Mariani et al.	<i>J Clin Periodontol</i>	2018	+	+	+	+	?	+	?
Aimetti, Manavella et al.	<i>J Clin Periodontol</i>	2018	+	+	+	+	+	+	+
Akwagyiram et al.	<i>Oral Health Prev Dent</i>	2018	+	+	+	+	+	+	+
Al Asmari et al.	<i>Photodiagnosis Photodyn Ther</i>	2020	+	?	+	?	?	+	?
Al Bardaweel et al.	<i>BMC Oral Health</i>	2018	?	?	-	?	?	+	-
Aladmawy et al.	<i>BioMed Research International</i>	2019	+	?	+	+	+	+	?
AlAhmari et al.	<i>Photodiagnosis Photodyn Ther</i>	2019	+	?	+	+	+	+	?
Alanzi et al.	<i>Benef Microbes</i>	2018	+	+	+	+	+	+	+
Al-Qahtani et al.	<i>Macedonian Journal of Medical Sciences</i>	2019	?	?	-	+	+	+	-
Al-Shammari et al.	<i>J Contemp Dent Practice</i>	2018	?	?	-	?	?	+	-

Alvarenga et al.	<i>Photodiagnosis Photodyn Ther</i>	2019	?	+	+	?	?	?	?
Angiero et al.	<i>Lasers in Medical Science</i>	2019	+	?	+	+	+	+	?
Angst et al.	<i>J Clin Periodontol</i>	2019	+	+	+	+	+	+	+
Anil et al.	<i>J Indian Soc Periodontol</i>	2019	+	?	-	+	+	+	-
Anselmo et al.	<i>Medicine</i>	2020	+	+	-	+	+	+	-
Anusha et al.	<i>Indian J Dent Res</i>	2019	+	+	+	+	+	+	+
Arabaci et al.	<i>J Periodontol</i>	2018	+	?	-	?	+	?	-
Araújo et al.	<i>J Periodontol</i>	2019	+	+	+	+	+	+	+
Araújo et al.	<i>Int J for Dental Hygiene</i>	2019	+	?	-	+	+	+	-
Asher et al.	<i>Clin Oral Investig</i>	2019	+	+	+	+	+	+	+
Ashwath et al.	<i>J Anaesthesiol Clin Pharmacol</i>	2018	+	?	+	+	+	+	?
Asimakopoulou et al.	<i>J Clin Periodontol</i>	2019	+	+	-	+	+	+	-
Ausenda et al.	<i>Journal of Evidence Based Dentistry</i>	2019	+	+	-	?	+	+	-
Aydinyurt et al.	<i>Braz Oral Res</i>	2019	+	-	-	+	+	+	-
Babaei et al.	<i>J Anaesthesiol Clin Pharmacol</i>	2018	+	+	+	+	+	+	+
Badar et al.	<i>Int J for Surgery Protocol</i>	2019	+	?	-	+	+	+	-
Barbosa et al.	<i>Photodiagnosis Photodyn Ther</i>	2018	+	?	+	+	+	+	?
Barootchi et al.	<i>J Clin Periodontol</i>	2019	+	?	+	+	+	+	?
Bazyar et al.	<i>Diabetes Metab Syndr</i>	2020	+	+	+	+	+	+	+
Bazyar et al.	<i>Inflammopharmacology</i>	2019	+	?	-	+	+	+	-
Bechara et al.	<i>Photodiagnosis Photodyn Ther</i>	2018	+	+	-	+	+	+	-
Bodhare et al.	<i>J Periodontol</i>	2019	+	?	+	?	+	+	?
Boia et al.	<i>Experimental and Therapeutic Medicine</i>	2019	+	?	+	+	+	+	?
Boia et al.	<i>Rom J Morphol Embryol</i>	2019	?	?	-	?	+	+	-
Borekei et al.	<i>Lasers in Surgery and Medicine</i>	2018	+	?	+	-	+	+	-
Bourgeois et al.	<i>Scientific Reports</i>	2019	?	?	+	?	+	+	?
Boyeena et al.	<i>Indian Society of Perio</i>	2019	-	?	+	?	?	+	-
Bozbay et al.	<i>Int J for Dental Hygiene</i>	2018	+	?	-	?	?	+	-
Bukleta et al.	<i>BioMed Research International</i>	2018	-	?	-	?	?	+	-
Bundidpun et al.	<i>Laser Therapy</i>	2018	+	?	-	?	?	+	-
Cadore et al.	<i>J Periodontol</i>	2019	+	+	+	+	+	+	+
Caneiro-Queija et al.	<i>Int J of Environmental Res & Public Health</i>	2019	+	+	+	-	+	+	-
Çankaya et al.	<i>Int J Periodontics Restorative Dent</i>	2020	+	?	+	?	?	+	?
Çankaya et al.	<i>J Am Coll Nutr</i>	2020	+	?	-	?	?	+	-
Carvalho et al.	<i>Int J Periodontics Restorative Dent</i>	2018	?	?	-	?	?	+	-
Carvalho Dutra et al.	<i>J Periodontol</i>	2019	+	+	+	+	+	+	+

Casarin et al.	<i>Braz Oral Res</i>	2019	+	+	+	+	+	+	+
Castro dos Santos et al.	<i>Lasers in Medical Science</i>	2019	+	?	+	+	+	+	?
Ccahuana-Vasquez et al.	<i>Oral Health Prev Dent</i>	2018	?	?	+	+	+	+	?
Cevallos et al.	<i>Clin Oral Investig</i>	2020	+	+	-	+	+	+	-
Chen et al.	<i>Journal of the Formasan Medical Ass</i>	2019	+	+	-	+	?	+	-
Cheng et al.	<i>Journal of Ethnopharmacology</i>	2019	+	+	-	+	+	+	-
Chiang et al.	<i>Journal of the Formasan Medical Ass</i>	2019	?	?	+	?	+	+	?
Cieplik et al.	<i>J Clin Periodontol</i>	2018	+	?	+	+	+	+	?
Cirino et al.	<i>Braz Dent J</i>	2019	+	?	-	?	+	?	-
Ciurescu et al.	<i>J Clin Dent</i>	2019	+	+	+	+	+	+	+
Clementini et al.	<i>J Clin Periodontol</i>	2018	+	+	+	+	+	+	+
Cortelli et al.	<i>Archives of Oral Biology</i>	2018	?	?	+	?	?	+	?
Culhaoglu et al.	<i>Journal of Applied Oral Science</i>	2018	+	+	-	?	+	+	-
Cunha et al.	<i>Int J for Dental Hygiene</i>	2018	+	?	-	+	+	+	-
Czesnikiewicz-Guzik et al.	<i>European Heart Journal</i>	2019	+	?	+	+	+	+	?
D'Aiuto et al.	<i>Int J Periodontics Restorative Dent</i>	2018	+	+	+	?	?	+	?
Dalvi et al.	<i>Photodiagnosis Photodyn Ther</i>	2019	+	?	+	+	+	+	?
Daly et al.	<i>Journal of Dentistry</i>	2020	+	?	-	-	+	+	-
Damante et al.	<i>Journal of Photochemistry & Photobiology</i>	2019	+	?	+	+	+	+	?
Das et al.	<i>J Indian Soc Periodontol</i>	2019	?	?	+	?	+	+	?
de Carvalho Dutra et al.	<i>J Clin Periodontol</i>	2019	+	?	+	+	+	+	?
de David et al.	<i>Clin Oral Investig</i>	2018	+	+	+	+	+	+	+
de Melo Soares et al.	<i>Clin Oral Investig</i>	2019	+	+	+	+	+	+	+
de Resende et al.	<i>Clin Oral Investig</i>	2019	+	+	+	+	+	+	+
de Santana et al.	<i>J Periodontol</i>	2019	+	?	-	+	+	+	-
Delgado et al.	<i>J Biol Regul Homeost Agents</i>	2018	+	-	-	+	+	+	-
Diwan et al.	<i>J Clin Dent</i>	2019	+	?	+	?	?	+	?
Djurkin et al.	<i>Indian J Dent Res</i>	2019	+	+	+	?	?	+	?
El Kilani et al.	<i>Journal of International Academy of Perio</i>	2019	+	?	+	?	+	+	?
Elgendy et al.	<i>Journal of Mazandaran Uni of Medical Sci</i>	2018	+	+	-	+	+	+	-
El-Makaky et al.	<i>Oral Diseases</i>	2019	+	+	+	+	+	+	+
El-Sharkawy et al.	<i>Journal of Periodontal Research</i>	2019	+	+	+	+	+	+	+
Emecen-Huja et al.	<i>J Clin Periodontol</i>	2019	+	?	+	?	?	?	?
Erbe et al.	<i>American J of Orthodontics & Dent Ortho</i>	2019	+	?	+	+	+	+	?
Farooqui et al.	<i>J Contemp Dent Practice</i>	2019	+	?	-	?	+	+	-
Feres et al.	<i>Trials</i>	2018	+	+	+	+	?	?	?

Ferrarotti et al.	<i>J Clin Periodontol</i>	2018	+	+	+	+	+	+	+
Ferraz et al.	<i>Journal of Periodontal Research</i>	2019	+	+	+	+	+	+	+
Fjeld et al.	<i>Int J Periodontics Restorative Dent</i>	2018	?	?	+	?	+	+	?
Fons-Badal et al.	<i>Oral Medicine and Pathology</i>	2019	+	+	-	+	+	+	-
França-Grohmann et al.	<i>Clin Oral Investig</i>	2019	+	+	+	+	+	+	+
Gandhi et al.	<i>Acta Odontol Scand</i>	2019	+	?	-	?	+	+	-
Gao et al.	<i>Journal of Periodontal Research</i>	2020	+	+	+	+	+	+	+
Garyga et al.	<i>Trials</i>	2019	+	+	+	+	+	?	?
Gasparro et al.	<i>Int J Periodontics Restorative Dent</i>	2020	+	+	+	+	+	+	+
George et al.	<i>J Investig Clin Dent</i>	2018	+	?	-	+	+	+	-
Gholinezhad et al.	<i>Journal of Herbal Medicine</i>	2019	+	+	+	+	+	+	+
Giammarinaro et al.	<i>Minerva Endocrinologica</i>	2018	+	?	-	?	+	+	-
Giannelli et al.	<i>Lasers in Medical Science</i>	2018	+	+	+	+	+	+	+
Giorgetti et al.	<i>Braz Dent J</i>	2018	+	?	+	+	+	+	?
Gizligoz et al.	<i>Quintessence Int</i>	2020	+	+	+	+	+	+	+
Gkatzonis et al.	<i>Clin Oral Investig</i>	2018	+	+	+	+	+	+	+
Gómez et al.	<i>Photodiagnosis Photodyn Ther</i>	2018	+	?	+	-	+	+	-
Górski et al.	<i>Clin Oral Investig</i>	2018	+	+	+	+	+	+	+
Górski et al.	<i>Clin Oral Investig</i>	2019	+	+	+	+	+	+	+
Górski et al.	<i>Clin Oral Investig</i>	2020	+	+	+	+	+	+	+
Goyal et al.	<i>Oral Health Prev Dent</i>	2018	?	?	+	+	+	+	?
Goyal et al.	<i>J Clin Dent</i>	2019	-	?	-	?	?	+	-
Graziani et al.	<i>Int J for Dental Hygiene</i>	2018	+	+	+	?	+	+	?
Graziani et al.	<i>J Clin Periodontol</i>	2019	+	+	+	?	+	+	?
Graziani et al.	<i>J Clin Periodontol</i>	2018	+	+	+	+	+	+	+
Grubbs et al.	<i>Kidney medicine journal</i>	2019	+	?	+	?	?	?	?
Grusovin et al.	<i>Clin Oral Investig</i>	2019	+	+	+	+	+	+	+
Grzech-Leśniak et al.	<i>Advances in Clinical & Experimental Med</i>	2018	+	?	+	?	+	+	?
Grzech-Leśniak et al.	<i>Lasers in Medical Science</i>	2018	+	?	+	?	+	+	?
Grzech-Leśniak et al.	<i>Photodiagnosis Photodyn Ther</i>	2019	+	?	-	?	+	+	-
Gupta et al.	<i>Journal of Clinical and Diagnostic Research</i>	2018	?	?	-	?	?	+	-
Hagenfeld et al.	<i>Journal of Periodontal Research</i>	2019	+	?	-	+	+	+	-
Hagenfeld et al.	<i>PLOS ONE</i>	2018	+	+	-	+	+	+	-
Harmouche et al.	<i>Photodiagnosis Photodyn Ther</i>	2019	+	+	+	+	+	+	+
Hasan et al.	<i>Pakistan Journal of Pharma</i>	2019	?	?	-	+	+	+	-
Heidari et al.	<i>Lasers in Medical Science</i>	2018	+	+	-	+	+	+	-

Hennequin-Hoenderdos et al.	<i>Int J for Dental Hygiene</i>	2018	+	+	+	+	+	+	+
Herrera et al.	<i>Eur J Ortho</i>	2018	+	+	+	+	+	+	+
Hill et al.	<i>Photodiagnosis Photodyn Ther</i>	2019	+	?	+	+	+	+	?
Hong et al.	<i>BMC Oral Health</i>	2019	+	?	+	+	+	+	?
Hu et al.	<i>Journal of American Dental Association</i>	2019	+	+	-	+	+	+	-
Husejnagic et al.	<i>J Clin Periodontol</i>	2019	+	+	-	+	+	+	-
Invernici et al.	<i>J Clin Periodontol</i>	2018	+	+	+	+	+	+	+
Ipshita et al.	<i>Journal of investigative & Clinical Dentistry</i>	2018	+	?	+	+	+	+	?
Isler et al.	<i>J Periodontol</i>	2018	+	+	+	+	+	+	+
Isola et al.	<i>Clin Oral Investig</i>	2018	+	+	+	?	+	+	?
Issa et al.	<i>Journal of Periodontal Research</i>	2020	+	?	+	?	+	+	?
Ivanaga et al.	<i>Photodiagnosis Photodyn Ther</i>	2019	+	+	+	+	+	+	+
Jalaluddin et al.	<i>J Contemp Dent Practice</i>	2019	+	?	-	?	+	+	-
Javid et al.	<i>Diabetes Metab Syndr</i>	2019	+	?	+	+	+	+	?
Javid et al.	<i>Diabetes Metab Syndr</i>	2019	+	+	-	+	+	+	-
Jentsch et al.	<i>J Periodontol</i>	2019	+	+	+	?	+	+	?
Jose et al.	<i>J Clin Dent</i>	2018	+	+	+	+	+	+	+
Joshi et al.	<i>J Periodontol</i>	2019	+	?	-	?	+	+	-
Joshi et al.	<i>Photodiagnosis Photodyn Ther</i>	2020	+	?	-	?	+	+	-
Ju et al.	<i>Applied Nursing Research</i>	2019	+	+	+	?	+	?	?
Jurišić et al.	<i>Int J Dent Hyg</i>	2018	?	?	-	?	?	+	-
Kanoriya et al.	<i>Clin Oral Investig</i>	2018	+	+	+	+	+	+	+
Kara et al.	<i>Journal of Pakistani Med Association</i>	2018	+	?	-	?	+	+	-
Kareem et al.	<i>Drug Invention Today</i>	2019	+	?	-	+	+	+	-
Karthikeyan et al.	<i>Photobiomodul Photomed Laser Surg</i>	2019	+	?	-	+	+	+	-
Katsaros et al.	<i>Clin Oral Investig</i>	2020	+	+	+	+	+	+	+
Kaur et al.	<i>Infect Disord Drug Targets</i>	2019	+	?	-	+	+	+	-
Kavyamala et al.	<i>Int J Periodontics Restorative Dent</i>	2019	+	?	-	?	?	+	-
Kerdar et al.	<i>Journal of Ethnopharmacology</i>	2019	+	?	-	?	+	+	-
Killeen et al.	<i>J Clin Dent</i>	2018	+	?	+	+	+	+	?
Kim et al.	<i>Oral Health Prev Dent</i>	2019	+	+	+	+	+	+	+
Kini et al.	<i>J Contemp Dent Practice</i>	2019	+	?	-	?	+	+	-
Kizildağ et al.	<i>Growth Factors</i>	2018	+	?	-	-	?	+	-
Kruse et al.	<i>J Periodontol</i>	2018	+	+	+	?	+	+	?
Kucuk et al.	<i>Clin Oral Investig</i>	2020	+	+	+	+	+	+	+
Kumar et al.	<i>J Contemp Dent Practice</i>	2019	+	?	-	?	+	+	-

Kumar et al.	<i>Quintessence Int</i>	2019	+	+	+	+	?	+	?
Kurian et al.	<i>Clin Oral Investig</i>	2018	+	?	-	+	+	+	-
Laky et al.	<i>J Clin Periodontol</i>	2018	+	?	+	?	+	+	?
Laleman et al.	<i>J Clin Periodontol</i>	2019	+	+	+	+	+	+	+
Laleman et al.	<i>Journal of Periodontal Research</i>	2018	+	?	+	?	+	+	?
Lecio et al.	<i>Clin Oral Investig</i>	2019	+	+	+	+	+	+	+
Lee et al.	<i>Clin Implant Dent Relat Res</i>	2018	+	+	+	+	+	+	+
Letícia et al.	<i>Photodiagnosis Photodyn Ther</i>	2019	+	+	+	?	+	+	?
Li et al.	<i>J Clin Dent</i>	2019	+	+	+	?	+	+	?
Liaw et al.	<i>Australian Dental Journal</i>	2019	+	+	+	?	+	+	?
Lin et al.	<i>Int J Environ Res Public Health</i>	2019	+	?	-	?	+	+	-
Lione et al.	<i>Eur J Ortho</i>	2019	+	+	+	+	+	+	+
Lobato et al.	<i>J Indian Soc Periodontol</i>	2019	+	?	-	+	+	+	-
Lobo et al.	<i>European Journal of Internal Medicine</i>	2019	+	?	+	+	+	+	?
Lorenz et al.	<i>Clin Oral Investig</i>	2018	+	?	+	+	+	+	?
Lu et al.	<i>J Clin Periodontol</i>	2019	+	?	+	?	?	+	?
Lu et al.	<i>PeerJ</i>	2018	+	?	+	+	+	+	?
Luis et al.	<i>Int J Dent Hyg</i>	2018	-	+	+	+	+	+	-
Lv et al.	<i>Am J Dental</i>	2018	+	?	+	+	+	+	?
Lynch et al.	<i>BMC Oral Health</i>	2018	+	+	+	+	+	?	?
Magaz et al.	<i>J Contemp Dent Practice</i>	2018	?	+	-	?	?	+	-
Marconcini et al.	<i>J Investig Clin Dent</i>	2019	+	?	-	?	?	+	-
Masi et al.	<i>Int J Cardiol</i>	2018	+	+	+	+	+	+	+
Mastrangelo et al.	<i>J Biol Regul Homeost Agents</i>	2018	?	?	-	?	?	+	-
Mauri-Obradors et al.	<i>J Clin Periodontol</i>	2018	+	?	+	+	+	+	?
Mazhari et al.	<i>J Periodontol</i>	2018	+	+	+	+	+	+	+
Megally et al.	<i>Clin Oral Investig</i>	2020	+	?	+	+	+	+	?
Meghil et al.	<i>Oral Diseases</i>	2019	?	?	-	+	+	?	-
Mercado et al.	<i>J Periodontol</i>	2019	+	+	+	+	+	+	+
Miley et al.	<i>Oral Health Prev Dent</i>	2019	+	+	-	+	+	+	-
Mirza et al.	<i>J Clin Dent</i>	2019	?	?	+	+	+	+	?
Mirza et al.	<i>Photodiagnosis Photodyn Ther</i>	2019	+	?	+	+	+	+	?
Mitra et al.	<i>J Indian Soc Periodontol</i>	2019	?	?	-	?	?	+	-
Moisa et al.	<i>J Periodontol</i>	2019	+	?	+	?	-	+	-
Monsarrat et al.	<i>Joint Bone Spine</i>	2019	+	+	+	+	+	+	+
Monteiro et al.	<i>Clin Oral Investig</i>	2020	?	-	-	+	+	+	-

Montenegro et al.	<i>J Clin Periodontol</i>	2019	+	+	+	+	+	?	?
Morales et al.	<i>Journal of Applied Oral Science</i>	2018	+	+	+	+	+	+	+
Moretti et al.	<i>J Clin Dent</i>	2020	?	?	+	+	+	+	?
Mummolo et al.	<i>J Biol Regul Homeost Agents</i>	2019	?	?	-	?	?	+	-
Muniz et al.	<i>J Investig Clin Dent</i>	2018	+	+	+	+	+	+	+
Musskopf et al.	<i>Braz Oral Res</i>	2018	+	+	+	?	?	-	-
Nagappa et al.	<i>Int J of Research in Ayurveda & Pharmacy</i>	2018	?	?	-	?	?	+	-
Naik et al.	<i>J Contemp Dent Practice</i>	2018	+	?	-	?	?	+	-
Naira et al.	<i>Photodiagnosis Photodyn Ther</i>	2018	+	+	+	+	+	+	+
Nakano et al.	<i>Journal of Periodontal Research</i>	2019	+	+	+	?	?	?	?
Nammi et al.	<i>Journal of Clinical Dentistry</i>	2019	?	?	+	+	+	+	?
Nayak et al.	<i>BMC Complementary & Alternative Med</i>	2019	+	+	+	+	+	+	+
Nelwan et al.	<i>Singapore Dent J</i>	2020	+	?	+	+	+	+	?
Nguyen et al.	<i>J Periodontol</i>	2018	?	-	+	+	+	+	-
Niazi et al.	<i>Oral Health Prev Dent</i>	2018	+	+	+	+	+	-	-
Niazi et al.	<i>Photodiagnosis Photodyn Ther</i>	2020	+	+	-	?	?	+	-
Nishioka et al.	<i>Journal of Dentistry</i>	2019	+	?	+	+	-	+	-
Oduncuoglu et al.	<i>Nigerian Journal of Clinical Practice</i>	2018	+	?	-	+	?	?	-
Oliveira et al.	<i>Braz Dent J</i>	2019	+	+	+	+	+	+	+
Ozberk et al.	<i>Lasers in Medical Science</i>	2019	+	?	+	+	+	+	?
Ozsagir et al.	<i>J Clin Periodontol</i>	2020	+	+	+	+	+	+	+
Pankaj et al.	<i>J Periodontol</i>	2018	+	?	-	+	+	+	-
Pappu et al.	<i>Journal of Herbal Medicine</i>	2018	?	?	-	?	?	+	-
Parkinson et al.	<i>BMC Oral Health</i>	2020	?	?	+	+	+	+	?
Parween et al.	<i>Int J Periodontics Restorative Dent</i>	2020	+	+	+	?	?	+	?
Patel et al.	<i>Int J of Pharmaceutical Sciences & Re</i>	2018	?	?	-	?	?	?	-
Patil et al.	<i>Journal of Ayurveda & Integrative Medicine</i>	2018	?	?	-	+	+	+	-
Pelekos, Ho et al.	<i>J Clin Periodontol</i>	2019	+	+	+	+	+	+	+
Pelekos, Lu et al.	<i>J Clin Periodontol</i>	2019	+	?	+	+	+	+	?
Petrović et al.	<i>Int J for Dental Hygiene</i>	2018	?	?	+	?	?	+	?
Petsos et al.	<i>J Clin Periodontol</i>	2019	?	+	+	?	?	+	?
Pilloni et al.	<i>Clin Oral Investig</i>	2019	+	+	+	+	+	+	+
Pilloni et al.	<i>Minerva Stomatologica</i>	2018	+	-	+	+	+	+	-
Pirebas et al.	<i>Nigerian Journal of Clinical Practice</i>	2019	+	?	-	+	?	+	-
Prabhu et al.	<i>J Indian Soc Pedod Prev Dent</i>	2018	?	?	+	?	?	+	?
Preus et al.	<i>J Clin Periodontol</i>	2019	+	?	+	?	?	+	?

Quaranta et al.	<i>Minerva Stomatologica</i>	2018	+	?	+	?	?	+	?
Quintero et al.	<i>J Clin Periodontol</i>	2018	+	?	-	+	+	+	-
Raghava et al.	<i>J Contemp Dent Practice</i>	2019	+	?	+	?	?	+	?
Rai et al.	<i>Special Care in Dentistry</i>	2018	+	?	-	+	+	+	-
Rajendran et al.	<i>Journal of Esthetic and Restorative Dentistry</i>	2018	+	?	+	+	+	+	?
Rajendran et al.	<i>Journal of Immunology</i>	2019	?	?	+	?	?	+	?
Ramsay et al.	<i>Health Technol Assess</i>	2018	+	+	+	+	+	+	+
Rasperini et al.	<i>J Clin Periodontol</i>	2018	+	+	-	?	+	+	-
Rayyan et al.	<i>Journal of Investigative & Clinical Dentistry</i>	2018	?	?	+	+	?	+	?
Reinhardt et al.	<i>Clin Oral Investig</i>	2019	+	?	-	?	?	+	-
Ren et al.	<i>Lasers in Medical Science</i>	2020	+	+	+	+	+	+	+
Roozegar et al.	<i>Archives of Oral Biology</i>	2019	+	?	+	+	+	+	?
Saffi et al.	<i>Oral Diseases</i>	2018	+	+	+	+	+	+	+
Saito et al.	<i>J Clin Periodontol</i>	2019	?	+	+	+	+	+	?
Saliasi et al.	<i>Int J of Enviromental Res & Public Health</i>	2018	+	?	+	+	+	+	?
Sameera et al.	<i>Lasers in Medical Science</i>	2018	+	?	+	+	+	+	?
Santamaria et al.	<i>J Clin Periodontol</i>	2018	+	+	+	+	+	+	+
Schlagenhauf et al.	<i>J Periodontol</i>	2020	+	?	+	+	+	+	?
Schmalz et al.	<i>Clin Oral Investig</i>	2018	?	?	+	+	+	?	?
Schnabl et al.	<i>J Clin Periodontol</i>	2019	+	?	-	+	+	+	-
Sekino et al.	<i>Odontology</i>	2020	+	?	+	?	?	+	?
Sethi et al.	<i>Indian J Dent Res</i>	2019	?	?	-	?	?	+	-
Seydanur Dengizek et al.	<i>Journal of Applied Oral Science</i>	2019	?	?	-	+	+	+	-
Seyed Hashemi et al.	<i>European Journal of Integrative Medicine</i>	2019	+	+	-	+	+	+	-
Shah et al.	<i>Int J Periodontics Restorative Dent</i>	2019	+	?	-	+	-	?	-
Shilpa et al.	<i>J Pharm Bioallied Science</i>	2019	+	?	+	?	+	?	?
Siddeshappa et al.	<i>Indian J Dent Res</i>	2018	+	?	-	+	+	+	-
Sijari et al.	<i>Int J for Dental Hygiene</i>	2019	+	+	+	+	+	+	+
Singh et al.	<i>J of Alternative & Complementary Med</i>	2018	+	?	+	?	?	?	?
Singhal et al.	<i>Journal of Investigative & Clinical Dentistry</i>	2018	+	?	-	+	+	?	-
Singhal et al.	<i>Saudi Dental Journal</i>	2018	?	+	-	+	?	-	-
Soares et al.	<i>Am J Dental</i>	2019	+	?	+	?	?	+	?
Sparabombe et al.	<i>Frontiers in Physiology</i>	2019	+	+	-	?	?	+	-
Sravya et al.	<i>J Indian Soc Periodontol</i>	2019	?	?	+	+	+	+	?
Sriwil et al.	<i>Int J Periodontics Restorative Dent</i>	2020	+	?	+	?	?	+	?
Starke et al.	<i>J Clin Dent</i>	2019	?	?	-	+	+	+	-

Stavropoulou et al.	<i>J Periodontol</i>	2019	+	?	+	+	-	+	-
Stein et al.	<i>Photomed laser surg</i>	2018	+	?	-	+	+	?	-
Stenman et al.	<i>Int J for Dental Hygiene</i>	2018	?	?	+	+	+	-	-
Subramaniam et al.	<i>Journal of Pharmaceutical Sciences & Res</i>	2019	?	?	-	?	?	?	-
Surapaneni et al.	<i>Journal of Clinical and Diagnostic Research</i>	2018	+	?	-	+	+	+	-
Suriamah et al.	<i>Int J of Applied Pharmaceutics</i>	2019	?	?	-	?	?	+	-
Taguchi et al.	<i>J of the North American Menopause Soc</i>	2019	?	?	-	?	?	-	-
Takenouchi et al.	<i>Bulletin Tokyo Dental College</i>	2018	?	?	-	?	?	+	-
Taleghani et al.	<i>J Stomatol Oral Maxillofac Surg</i>	2018	?	?	-	?	?	?	-
Tasdemir et al.	<i>Oral Diseases</i>	2019	+	?	+	+	+	+	?
Tavelli et al.	<i>Clin Oral Investig</i>	2019	+	?	+	+	?	+	?
Tavelli et al.	<i>J Clin Periodontol</i>	2019	+	+	+	+	+	+	+
Tavelli et al.	<i>Int J of Periodontics & Restorative Dentistry</i>	2018	+	?	+	+	+	+	?
Tawfik et al.	<i>Journal of Liposome Research</i>	2019	+	?	+	+	+	+	?
Temraz et al.	<i>Cell Tissue Bank</i>	2019	+	+	+	+	+	+	+
Tewari et al.	<i>Journal of Oral Biology & Craniofacial Res</i>	2018	+	?	+	+	+	+	?
Theodoro et al.	<i>Benef Microbes</i>	2019	+	?	+	+	+	+	?
Theodoro et al.	<i>Photodiagnosis Photodyn Ther</i>	2018	+	?	-	+	+	+	-
Tinto et al.	<i>Journal of Periodontal Research</i>	2020	?	+	+	+	+	+	?
Tongtawee et al.	<i>Journal of International Medical Research</i>	2019	+	?	+	?	?	+	?
Trajano et al.	<i>Braz Oral Res</i>	2020	?	+	-	+	+	+	-
Trombelli et al.	<i>Int J for Dental Hygiene</i>	2018	+	+	+	+	+	+	+
Tsang et al.	<i>Journal of Periodontal Research</i>	2018	+	?	-	+	?	+	-
Tsobgny-Tsague et al.	<i>BMC Oral Health</i>	2018	+	?	+	+	+	+	?
Turketkin et al.	<i>Australian Dental Journal</i>	2018	+	?	+	?	+	+	?
Ucan Yarkac et al.	<i>J Clin Periodontol</i>	2019	+	+	-	+	+	+	-
Ustaoğlu et al.	<i>Med Oral Patol Oral Cir Bucal</i>	2020	?	?	+	+	+	+	?
Uzun et al.	<i>Clin Oral Investig</i>	2018	+	?	-	+	+	+	-
Van Dijk et al.	<i>Int J for Dental Hygiene</i>	2018	+	+	+	+	+	+	+
Vara Prasad et al.	<i>Journal of Clinical and Diagnostic Research</i>	2018	?	+	+	+	+	+	?
Vergnes et al.	<i>J Clin Periodontol</i>	2018	?	?	+	+	+	+	?
Villa et al.	<i>Clin Oral Investig</i>	2018	+	+	+	+	?	?	?
Vitt et al.	<i>Acta Odontol Scand</i>	2019	+	+	-	+	?	+	-
Vohra et al.	<i>Photodiagnosis Photodyn Ther</i>	2018	+	?	+	+	+	?	?
Wang et al.	<i>BioMed Research International</i>	2018	?	?	+	+	?	?	?
Wanikar et al.	<i>J Periodontol</i>	2019	+	?	+	+	?	?	?

Woelber et al.	<i>J Clin Periodontol</i>	2019	+	?	-	+	+	+	-
Woźniewicz et al.	<i>Nutrition research</i>	2018	+	+	-	?	?	+	-
Xu et al.	<i>Am J Dental</i>	2019	+	?	+	+	+	+	?
Yaghobee et al.	<i>Braz Oral Res</i>	2018	+	+	+	+	+	+	+
Yarkac et al.	<i>Journal of Applied Oral Science</i>	2018	?	?	+	?	?	?	?
Yashima et al.	<i>Journal of Periodontal Research</i>	2019	+	+	-	?	?	+	-
Yıldırım et al.	<i>J Periodontol</i>	2018	+	?	+	+	+	+	?
Yuki et al.	<i>Journal of Applied Oral Science</i>	2019	+	+	+	+	+	+	+
Zare et al.	<i>Journal of the American College of Nutrition</i>	2018	?	?	+	?	?	+	?
Zasčiurinskienė et al.	<i>J Clin Periodontol</i>	2018	+	?	+	+	?	+	?
Zengin Celik et al.	<i>Photobiomodul Photomed Laser Surg</i>	2019	+	+	+	+	+	+	+
Zhang et al.	<i>Patient Prefer Adherence</i>	2018	?	?	-	?	?	?	-
Zini, Timm et al.	<i>J Clin Dent</i>	2018	?	?	+	+	+	+	?
Zini, Mann et al.	<i>J Clin Dent</i>	2018	+	?	+	+	+	+	?