

BMJ Open Analysis of conference abstracts of prosthodontic randomised-controlled trials presented at IADR general sessions (2002–2015): a cross-sectional study of the relationship between demographic characteristics, reporting quality and final publication

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To cite: Chen J, Cao Y, Wang M, *et al*. Analysis of conference abstracts of prosthodontic randomised-controlled trials presented at IADR general sessions (2002–2015): a cross-sectional study of the relationship between demographic characteristics, reporting quality and final publication. *BMJ Open* 2020;**10**:e034635. doi:10.1136/bmjopen-2019-034635

► Prepublication history and additional material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2019-034635>).

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Received 29 September 2019

Revised 30 December 2019

Accepted 30 January 2020



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ABSTRACT

Objectives To analyse the relationship between demographic characteristics, reporting quality and final publication rate of conference abstracts of prosthodontic randomised-controlled trials (RCTs) presented at International Association for Dental Research (IADR) general sessions (2002–2015).

Design A cross-sectional study on conference abstracts.

Methods Conference abstracts of prosthodontic RCTs presented at IADR general sessions (2002–2015) were obtained. Literature search was performed in multiple databases to confirm the final publication status of conference abstracts. Two investigators independently extracted the data including conference date, origin, presentation type, exact p value, number of centres, institution type, overall conclusion, subspecialty, publication time and journal. The reporting quality of abstracts was assessed by two investigators according to the Consolidated Standards of Reporting Trials statement. The relationship between demographic characteristics, reporting quality and final publication was analysed by χ^2 test.

Setting, participants and interventions Not applicable.

Primary and secondary outcome measures Final publication rate, demographic characteristics and reporting quality of conference abstracts of prosthodontic RCTs presented at IADR general sessions (2002–2015).

Results Of the 340 prosthodontic RCT abstracts, 43.24% were published. The mean time to final publication was 22.86 months. Europe contributed the most number of abstracts but Asia and Australia had the highest publication rate. Oral presentation, multicentre trial and complete denture and overdenture subspecialty were associated with a higher publication rate. Reporting quality of eligibility criteria of participants, random assignment and primary outcome results for each group correlated with a higher final publication rate.

Conclusions Over half of conference abstracts of prosthodontic RCTs presented at IADR general sessions

Strengths and limitations of this study

- This study collected 14 years' worth of conference abstracts, which improved the credibility of results.
- This study searched multiple electronic databases to make the final publication judgement of conference abstracts more precise.
- The assessment of reporting quality adhered to the Consolidated Standards of Reporting Trials statement and assessors were blinded to author names and affiliations, which reduced the bias of assessment process.
- The study only included one major conference, thus the applicability to other conferences remained unclear.

(2002–2015) were unpublished. Oral presentation and multiple centres were associated with higher publication rates. Abstracts' reporting quality addressing participant recruitment, assignment and primary results correlated with trials' validity and applicability. Conference attendees may refer to this research to identify valid and applicable prosthodontic trials but should treat and apply results cautiously.

INTRODUCTION

Large, multicenter randomised-controlled trials (RCTs) are the 'gold standard' of evidence-based practice and there is a clear need for more of these trials in oral health research.^{1,2} If properly designed and executed, controlled clinical trials and translation of their results into clinical practice will result in improved patient care and public health.¹ To disseminate the knowledge and communicate with peers, many researches

present their scientific findings at various conferences. Conference abstracts are often the first place where new RCTs are presented, and feedback is received prior to proceeding towards full-paper publication.³ When it is not possible to access the full reports, the conference abstracts could provide preliminary information about the study of interest.

For a conference abstract, final publication in a peer-reviewed journal may increase the scientific value of the study and permanently include it in the scientific literature.^{4–6} However, not all the abstracts could be successfully published as full-text articles. To the best of our knowledge, it cannot be guaranteed that the reported data are complete and in some cases, the final results will be altered but not published.^{7–12} In a recent Cochrane Library review, the overall full publication rate of meeting abstracts was 37.3%,¹³ which was lower than the 44.5% found in their 2007 review.¹⁴ However, the final publication rate of conference abstracts of RCTs in prosthodontics remained unclear.

Lee *et al* have found that the publication of conference abstracts in prosthodontics was significantly associated with neutral study outcomes, studies with funding, abstracts from Europe and sub-specialty of fixed prosthodontics.¹⁵ However, the data could not indicate the proportion of credible conference abstracts of prosthodontic RCTs. In addition, although the Consolidated Standards of Reporting Trials (CONSORT) statement extension for RCT abstracts is available for both journal articles and conference abstracts,¹⁶ the compliance of conference abstracts of RCTs was not always optimal.¹⁷ Hence, further enquiry was necessary into whether the reporting quality of conference abstracts could help identify the RCTs with potentially higher scientific validity.

The International Association for Dental Research (IADR) is the leading organisation in the dental research community¹⁸ and provides researchers with an opportunity to present novel work and communicate research findings to the scientific community.^{19,20} The IADR Prosthodontics Group is one of the oldest groups in IADR and has presented abstracts on every aspect of prosthodontics research. Around 60 to 220 abstracts are received every year for the annual IADR meeting.²¹ Therefore, the purpose of this study is (1) to describe the demographic characteristics and final publication rate of IADR conference abstracts of prosthodontic RCTs presented between 2002 and 2015; (2) to identify the characteristics associated with the final publication of conference abstracts of prosthodontic RCTs and (3) to analyse the relationship between the reporting quality and the final publication of conference abstracts of prosthodontic RCTs.

METHODS

This study follows the instruction of the Strengthening the Reporting of Observational Studies in Epidemiology Statement for cross-sectional studies.²² The study protocol

translated from Chinese language was provided in online supplementary eMethod.

Selection of conference Abstracts

RCT abstracts in prosthodontics that were presented at the IADR General Sessions (2002–2015) were obtained directly from the official website (<https://iadr.abstractarchives.com/home>). A Cochrane review demonstrated that the median time for final publication of RCTs was 18 months and the publication rate substantially slowed down after 3 years.¹⁴ Since the final search was in January 2019, the year of 2015 was selected as the cut-off year for selection of conference abstracts, allowing a minimum of 3 years for the publication process to occur. Comprehensive literature searches were performed with the Cochrane highly sensitive search strategy.²³

Identification of full-paper publication

To determine whether the abstract was later published in a peer-reviewed journal, two investigators independently performed electronic searches of the following databases: MEDLINE (via PubMed), EMBASE (via OVID), Cochrane Library and Google Scholar. An arbitrator participated in the discussion when conflict or uncertainty arose. No language restrictions were applied. First, the authors' names were entered individually. If multiple publications existed by a single author, probable keywords in the abstract were combined in the search. A potential match was considered when the conference abstract and the corresponding manuscript had at least one author in common. Then a further comparison was processed if the study hypothesis, intervention and conclusion contained substantial similarities. The abstract was then treated as 'published'. This study included the publications with dates that were the closest to the conference. If a relevant citation was not found in any of the databases, the study was regarded as unpublished.

Inter-reviewer consistency

To ensure uniformity during the publication identification process, a pilot study of reviewers' performance was executed in a standardised manner. Two investigators evaluated the same 30 conference abstracts, which were randomly selected among the included items using the online randomisation software (<https://www.randomizer.org>). The Cohen's κ statistic was used to determine the extent of inter-reviewer agreement, which was regarded as excellent with $\kappa > 0.75$, fair to good with $\kappa 0.40–0.75$ and poor with $\kappa < 0.40$. In this study, the overall κ statistic was 0.93, indicating that the concordance was excellent.

Data extraction

Data extraction was performed by two investigators independently. All discrepancies were resolved by consensus. The following data were extracted and tabulated:

1. Time interval between conference abstract and full-paper publication and journals of final publication: the journal of final publication was recorded first. The in-print publication date was regarded as the full-paper

publication time and the time interval between the abstract presentation and full-paper publication was calculated in full months.

- Demographic characteristics of the included abstracts: date of presentation, continent of origin, presentation type (oral vs poster), exact p value, centre (single-centre vs multicenter), type of institution (universities vs other institutions), overall conclusion and subspecialty focus.
- Reporting quality assessment: all the included abstracts were assessed by two reviewers independently using the CONSORT statement for evaluating RCTs in journal and conference abstracts.¹⁶ Additionally, the author names and affiliations were blinded to the reviewers. The subitems of applicable CONSORT items were recorded as complementary to the details.

Data analysis

The relationship between demographic characteristics, reporting quality and final publication was analysed by the χ^2 test. OR and 95% CI were adopted to indicate the publication possibility of abstracts. The Kaplan-Meier curve was adopted to show the relationship between the publication time and factors associated with higher final publication rates. Statistical analyses were conducted with STATA (V.14.0; StataCorp, Texas, USA).

Patient and public involvement

No patients involved.

RESULTS

Three hundred and forty prosthodontic RCTs' abstracts were included and 147 were subsequently published in peer-reviewed journals, leading to a final publication rate of 43.24%. The flow chart of identified abstracts and publications is shown in online supplementary figure S1. The mean time to final publication was 22.86 months (95% CI: 19.78 to 26.10) (figure 1A). Most abstracts (n=120, 81.63%) were published within the first 3 years after the conference. Five abstracts had already been published

within 1 month prior to the conference. The conference abstracts of prosthodontic RCTs were published in 49 journals (figure 1B). The most frequent journals were *Journal of Dentistry* (n=15, 10.20%), followed by *Journal of Dental Research* (n=12, 8.16%), *Journal of Oral Rehabilitation* (n=10, 6.80%), *Clinical Oral Implants Research* (n=9, 6.12%) and *International Journal of Prosthodontics* (n=8, 5.44%). The number of published prosthodontic RCTs ranged from 8 to 37 in each year while the publication rate ranged from 20% to 62% (figure 2). The publication rate in 2004 was significantly lower than those in 2005 and 2012 ($p<0.05$). Neither the number of presented conference abstracts nor the publication rate appeared to be influenced by time. More than one-third (35.59%) came from Europe, and the second contributor was North America (29.71%). Although Asia and Australia contributed the least abstracts, the highest final publication rate was observed for these presented abstracts (54.76%) (figure 3). The publication rate in Asia and Australia was significantly higher than that in North America ($p<0.05$).

The majority (64.71%) of RCT abstracts were presented in poster sessions, whereas oral presentations were more likely to be published ($p<0.05$) (table 1). However, no difference in publication time was observed ($p>0.05$). Only an extreme minority (5.88%) of studies were conducted in multiple centres, and they were more published than those conducted in a single centre ($p<0.02$) (table 1). However, no significant difference of publication time was observed ($p>0.05$). There was no evidence of variation whether the p value was reported in the abstract; the study was conducted in a university or another institutions or the conclusion was positive or negative ($p>0.05$).

For the reporting quality (table 2), most abstracts performed well in the areas including interventions intended for each group, specific objectives or hypotheses, and general interpretation of the results. The published abstracts did not perform significantly better than unpublished abstracts in conformance to the CONSORT statement overall. The published abstracts had significantly better performance on three subitems

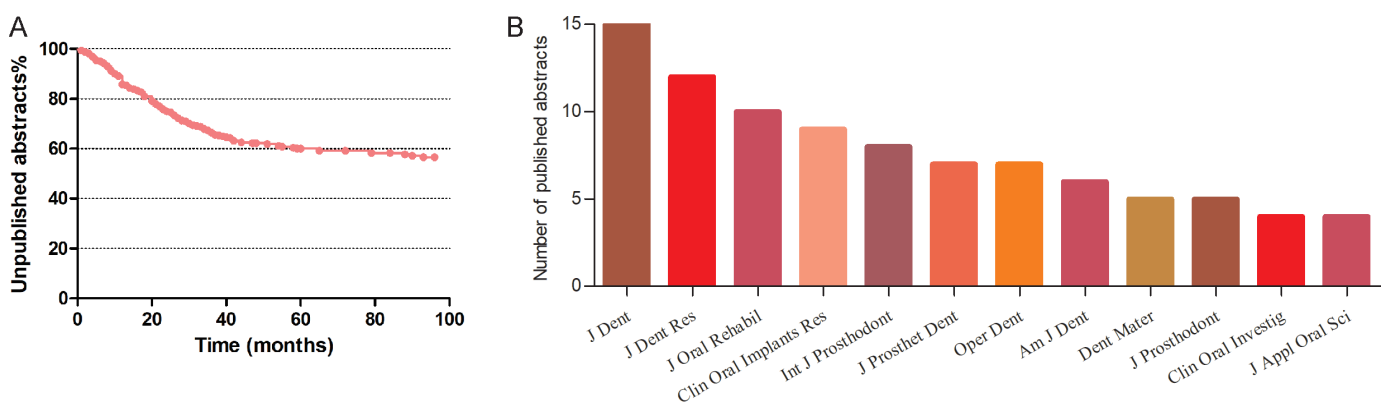


Figure 1 Final publication of conference abstracts of prosthodontic RCTs presented at IADR general sessions (2002–2015). (A) Cumulative publication rate. The proportion of unpublished conference abstracts decreased with time. (B) Journals published on. Only journals with more than three publications were listed in the figure. The journals were ranked from the left by the higher number of published abstracts. IADR, International Association for Dental Research; RCT, randomised-controlled trial.

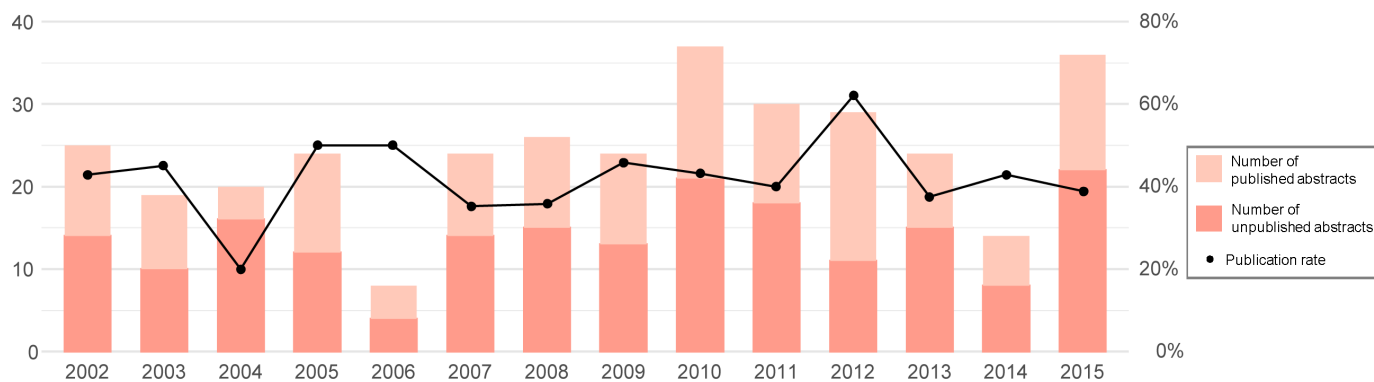


Figure 2 The number of abstracts and publication rate of prosthodontic RCTs presented at IADR general sessions of each year (2002–2015). The histogram showed the number of published (light red) and unpublished abstracts (deep red) in each year (the number was labelled on the left). The line chart showed the publication rates (black point) in each year (the number was labelled on the right). IADR, International Association for Dental Research; RCT, randomised-controlled trial.

including eligibility criteria of participants, random assignment, primary outcome result for each group, important adverse events or side effects and trial registration ($p < 0.05$). However, the unpublished abstracts performed better on the number of participants analysed in each group, estimated effect size, and its precision and source of funding ($p < 0.05$).

DISCUSSION

In the domain of prosthodontics, the publication rate of RCT conference abstracts was 43%, slightly higher than the overall publication rate.¹⁵ As the gold standard of prosthodontic clinical practice, RCTs might obtain more attention from journals. However, over half of the conference abstracts did not proceed to full publication. Conference attendees had a high chance of accessing the clinical trials which were not later validated through publication. Prosthodontists might not fully trust these yet unpublished RCTs and therefore fail to apply the results in clinical practice until publication occurs. However, the average time interval from the conference presentation to publication was found to be approximately 2 years for prosthodontic RCTs, and sometimes was extended to

over 5 years. To await publication of full articles may delay problem-solving or seeking novel approaches. It may be important to attempt differentiation between more and less credible RCTs in the prosthodontic conferences.

The previous study speculated that lack of time might be a principal reason to explain the failed publication of full paper.²⁰ The results presented in abstracts were usually preliminary results of an ongoing study, and considerable time may be needed to complete the whole study. Sometimes, quite a long time period is required if the review process is extended or delayed.²⁴ However, this hypothesis could not explain the unpublished abstracts in this study. All the conference abstracts were followed up for at least 3 years, and some for up to 15 years. It was concluded that other reasons were influencing the conversion of conference abstracts to published articles for prosthodontic RCTs.

All high-quality studies are essential to maintain variety and interest within the field.²⁵ Studies may not be accepted for publication without a topic priority. The editorial's selection may affect the final publication of prosthodontic RCTs. It was noticed that complete denture and overdenture was the subspecialty with the highest publication, followed by the implant-based prosthetics and

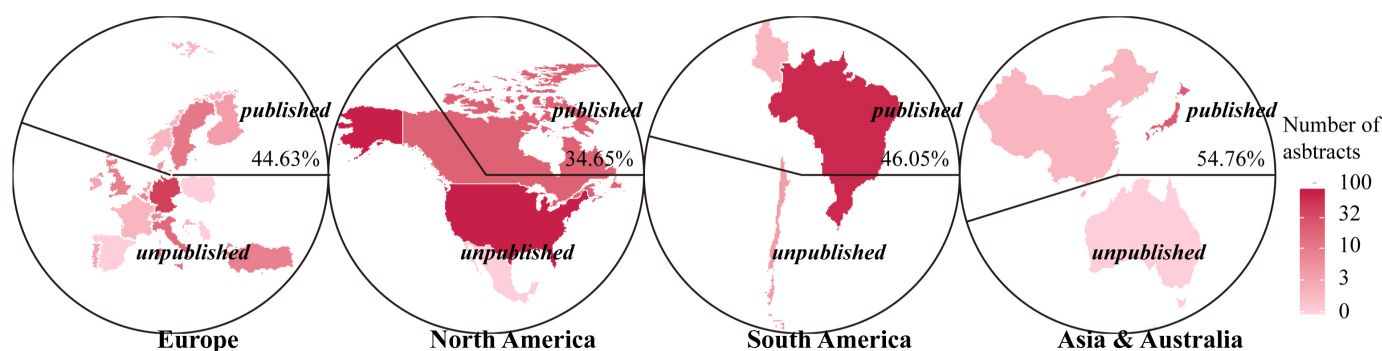


Figure 3 The origin distribution of prosthodontic RCTs presented at IADR general sessions (2002–2015). The shade of red colour correlated with the number of abstracts originated from the country while blank indicated no abstracts. The pie chart showed the overall publication rate of abstracts in the continent. The size of countries was not proportional to the national territorial area. And due to the limited number of abstracts, Asia and Australia were illustrated together. IADR, International Association for Dental Research; RCT, randomised-controlled trial.

Table 1 The relationship between characteristics and publication rate of prosthodontic RCTs presented at IADR general sessions of each year (2002–2015)

Characteristics	Classification	Abstracts		Publication rate (%)	OR (95% CI)	P value
		Number	Ratio (%)			
Presentation type	Poster	220	64.71	38.18	1	
	Oral	120	35.29	52.5	1.79 (1.14 to 2.81)	0.01
Exact p value	No	110	32.35	40	1	
	Yes	230	67.65	44.78	1.22 (0.77 to 1.93)	0.41
Centre	Single centre	320	94.12	41.56	1	
	Multicentre	20	5.88	70	3.28 (1.23 to 8.76)	0.02
Type of institution	Universities	332	97.65	43.37	1	
	Other institutions	8	2.35	37.5	0.78 (0.18 to 3.33)	0.74
Overall conclusion	Positive	188	55.29	45.21	1	
	Negative	46	13.53	39.13	0.78 (0.40 to 1.50)	0.46
	Neutral	106	31.18	41.51	0.86 (0.53 to 1.39)	0.54
Subspecialty	Fixed prosthodontics	32	9.41	31.25	1	
	Removable partial dentures	11	3.24	45.45	1.83 (0.45 to 7.45)	0.4
	Complete denture and overdenture	60	17.65	61.67	3.54 (1.42 to 8.80)	0.01
	Implant-based prosthetics	46	13.53	52.17	2.4 (0.93 to 2.18)	0.07
	Dental composites and adhesives	114	33.53	32.46	1.06 (0.45 to 2.46)	0.9
	Temporomandibular disorders	44	12.94	52.27	2.41 (0.96 to 6.25)	0.07
	Others	33	9.71	33.33	1.1 (0.39 to 3.11)	0.86

IADR, International Association for Dental Research; RCT, randomised-controlled trial.

then temporomandibular disorders. Although positive conclusions were published more often compared with negative or neutral conclusions, the difference was not statistically significant. The editorial's selection was not associated with the publication bias of positive results.

The demographic characteristics of conference abstracts may also impact the final publication. Oral presentation had a higher publication probability for prosthodontic RCTs, but no association between presentation type and publication time was found. This conclusion was consistent with the study by Imani *et al* in gynaecological oncology conferences.²⁶ However, similar statistics was not observed in the domain of oral and maxillofacial surgery.²⁷ The IADR abstract reviewers of the prosthodontic section may be inclined to select credible studies or well-recognised speakers for oral presentation, to promote continued professional development and positively impact clinical practice. Moreover, multi-center RCTs have an evidently higher publication rate, although the number of multicentre RCTs was comparatively limited. Spencer *et al* also suggested that abstracts with authors from multiple institutions have a comparatively higher publication rate, confirming the findings in this study.²⁸ The cooperation of multiple research institutes may have a positive influence on the study quality and lead to the higher publication rate.

This study may also suggest how to identify more credible prosthodontic trials from the reporting quality of

conference abstracts. It will help RCTs' abstracts to provide the detail and clarity required by readers wishing to assess a trial's validity and the applicability of results.¹⁶ It was found that the reporting quality of some subitems in the prosthodontic conference abstracts impacted the publication. However, there was no evident association between overall reporting quality and the final publication. The hypothesis may be established that authors of high-quality prosthodontic RCTs may provide more details about the participant recruitment, assignment and primary results in the conference abstracts. In addition, it was difficult to fully explain why the published abstracts performed worse than the unpublished abstracts in the reporting of number of participants analysed in each group, estimated effect size and its precision, and source of funding. A possible explanation was that authors omitted content that they considered less vital when the space was limited.

Strengths and limitations

This study described the publication rate and demographic characteristics of prosthodontic conference RCT's abstracts, and analysed the relationship between the abstracts' demographic characteristics, reporting quality and the final publication. This provided a reference for the prosthodontic conference attendees to identify valid and applicable trials prior to final publication. However, this study has some limitations. First, only the prosthodontic RCTs' abstracts in IADR were included and

Table 2 The relationship between reporting quality and final publication rate of prosthodontic RCTs presented at IADR general sessions of each year (2002–2015)

Items	Description	Number of published abstracts (%)	Number of unpublished abstracts (%)	OR (95% CI)	P value
Title	Identification of the study as randomised.	21 (14.29)	24 (12.4)	1.15 (0.67 to 1.98)	0.62
Trial design	Description of the trial design	31 (21.09)	34 (17.6)	1.2 (0.77 to 1.85)	0.42
Methods					
Participant	Eligibility criteria for participants and the settings where the data were collected	16 (10.88)	13 (6.74)	1.62 (0.80 to 3.25)	0.18
	Eligibility criteria	127 (86.39)	131 (67.9)	1.27 (1.13 to 1.43)	<0.0001
	Settings	16 (10.88)	17 (8.81)	1.24 (0.65 to 2.36)	0.52
Interventions	Interventions intended for each group	147 (100.00)	193 (100.00)	1 (0.99 to 1.01)	1
Objective	Specific objective or hypothesis	147 (100.00)	193 (100.00)	1 (0.99 to 1.01)	1
Outcome	Clearly defined primary outcome for this report	6 (4.08)	12 (6.22)	0.66 (0.25 to 1.71)	0.39
Randomisation	How participants were allocated to interventions	1 (0.68)	1 (0.52)	1.31 (0.08 to 20.82)	0.85
	Random assignment	140 (95.24)	167 (86.53)	1.1 (1.03 to 1.18)	0.005
	Sequence generation	5 (3.40)	4 (2.07)	1.64 (0.45 to 6.00)	0.45
	Allocation concealment	1 (0.68)	3 (1.55)	0.44 (0.05 to 4.16)	0.47
Blinding (masking)	Whether or not participants, caregivers and those assessing the outcomes were blinded to group assignment	7 (4.76)	18 (9.33)	0.51 (0.22 to 1.19)	0.12
	Only described single-blind or double-blind	21 (14.29)	22 (11.40)	1.25 (0.72 to 2.19)	0.43
Results					
Numbers randomised	Number of participants randomly assigned to each group	146 (99.32)	191 (98.96)	1 (0.98 to 1.02)	0.72
	Only definite total sample size	67 (45.58)	95 (44.04)	0.93 (0.74 to 1.16)	0.51
Recruitment	Trial status	0 (0.00)	4 (2.07)	0.15 (0.01 to 2.68)	0.2
Numbers analysed	Number of participants analysed in each group	38 (25.85)	79 (40.93)	0.63 (0.46 to 0.87)	0.005
	Intention-to-treat analysis	3 (2.04)	0 (0.00)	9.18 (0.48 to 176.27)	0.14
Outcome	For the primary outcome, a result for each group and the estimated effect size and its precision	10 (6.80)	6 (3.11)	2.19 (0.81 to 5.88)	0.12
	Primary outcome result for each group	141 (95.92)	160 (82.90)	1.16 (1.08 to 1.24)	<0.0001
	Estimated effect size and its precision	63 (42.86)	125 (64.77)	0.66 (0.53 to 0.82)	0.0002
	Precision of the estimate	10 (6.80)	6 (3.11)	2.19 (0.81 to 5.88)	0.12
Harms	Important adverse events or side effects	11 (7.48)	5 (2.59)	2.89 (1.03 to 8.13)	0.04
Conclusions	General interpretation of the results	147 (100.00)	193 (100.00)	1 (0.99 to 1.01)	1
Trial registration	Registration number and name of trial register	10 (6.80)	3 (1.55)	4.38 (1.23 to 15.62)	0.02
Funding	Source of funding	37 (25.17)	74 (38.34)	0.66 (0.47 to 0.91)	0.01

IADR, International Association for Dental Research; RCT, randomised-controlled trial.

the findings from other conferences were not considered. However, the standard of assessment for different conferences may vary largely while IADR is a well-recognised high-quality conference. These results may be verified in further follow-up of more IADR abstracts. Second, these results remain a preliminary conclusion about the correlation between publication and reporting quality of participant recruitment, assignment and primary results. However, 14 years' worth of abstracts of prosthodontic RCTs were collected, with an adequate sample size to establish statistically significant results. The application

values of preliminary results may need further observation. Third, the searched electronic databases may not cover all the publications; thus, it is possible that some abstracts classified as unpublished were misjudged. The publications in non-English languages and non-indexed journals may be not well identified. However, the search strategy fully addressed the altered titles, authors and descriptions, reducing the proportion of misjudgement. Fourth, it remained unclear whether it was flexible to assess abstracts before 2008 by CONSORT statement, further exploration may be needed.

CONCLUSION

Over half of conference abstracts of prosthodontic RCTs presented at IADR general sessions (2002–2015) were unpublished. Conference abstracts of prosthodontic RCTs may have a higher final publication rate if they are presented orally, conducted by multiple centres and are reported as superior in participant recruitment, assignment and primary results. These findings may correlate with trials' validity and applicability. Conference attendees may refer to the results of conference abstracts to identify valid and applicable prosthodontic trials, but should treat and apply these results with appropriate caution.

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Acknowledgements We appreciated Editage for the help of English language editing.

Contributors JC and YC contributed for the concept, data extraction, data analysis and manuscript approval. MW performed data extraction and manuscript approval. XG did manuscript revision and manuscript approval. CL and HY contributed to the concept, manuscript revision and manuscript approval.

Funding The study was supported by 2018 Sichuan University-Luzhou Municipal Government Strategic Cooperation Research (CDLZ201812) and Miaozhi Project in Science and Technology Innovation Program of Sichuan Province (Miaozhi 2019038).

Disclaimer We declare that the research funding only provides financial support without influencing procedure and result of this study.

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Competing interests None declared.

Patient consent for publication Not required.

Ethics approval The study did not involve any animal or patient data.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information.

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