

REVIEW ARTICLE

Reporting quality of scoping reviews in endodontics: A meta-research study

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Abstract

Objectives: To evaluate the reporting quality of Scoping Reviews (ScRs) in endodontics according to the PRISMA Extension Checklist for Scoping Reviews (PRISMA-ScR) and to analyse their association with a range of publication and methodological/reporting characteristics.

Methods: Pubmed, Scopus, and Web of Science databases were searched up to 31 January 2024 to identify scoping reviews in the field of endodontics. An additional search was performed in three leading endodontic journals. Study selection and appraising the quality of the studies was carried out independently by two reviewers. Each of the 20 PRISMA-ScR items were allocated a score of either 0, 0.5 or 1 to reflect the completeness of the reporting. An item-specific and overall percentage reporting quality score was calculated and reported through descriptive statistics across a range of publication, as well as methodological/reporting characteristics. A univariable and multivariable quantile regression was performed to identify the effect of publication and methodological/reporting characteristics (year of publication, journal, inclusion of an appropriate reporting guideline, and study registration) on the overall percentage reporting quality score. Association of reporting quality score with publication characteristics was then investigated.

Results: A total of 40 ScRs were identified and included for appraisal. Most of the studies were published from 2021 onwards. The overall median reporting quality score was 86%. The most frequent items not included in the studies were: *a priori* protocol registration (22/40 compliant; 55%), and reporting of funding (16/40 compliant; 40%). Other key elements that were inadequately reported were the abstract (7/40 compliant; 18%), the rationale and justification of the ScR (21/40 compliant; 52%) and the objectives of the study (18/40 compliant; 45%). Studies that adhered to appropriate reporting guidelines were associated with greater reporting quality scores (β -coefficient: 10; 95%CI: 1.1, 18.9; $p = .03$). ScRs with protocols registered *a priori* had significantly greater reporting quality scores (β -coefficient: 12.5; 95%CI: 6.1, 18.9; $p < .001$), compared with non-registered reviews.

Conclusions: The reporting quality of the ScRs in endodontics varied and was greater when the ScR protocols were registered *a priori* and when the authors adhered to reporting guidelines.

KEYWORDS

endodontics, meta-research study, registration practices, reporting quality, Scoping review

INTRODUCTION

In the era of patient-centred clinical outcomes, the need to provide clinicians with evidence-based information through methodologically robust guidelines is critical for ethical clinical decision-making (Azarpazhooh et al., 2022; De-Deus & Canabarro, 2017). In general, the available clinical evidence is systematically scrutinized, analysed and subsequently reported through systematic reviews (SRs) with or without meta-analyses. Systematic Reviews of interventions should follow the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (PRISMA) guidelines to ensure they are reported adequately (Page et al., 2021). PRISMA 2020 consists of 27 items including a variety of key domains, with extensions to PRISMA and other reporting guidelines also being proposed in an attempt to incorporate research questions relevant for observational or diagnostic accuracy studies (McInnes et al., 2018; Page et al., 2021; Stroup et al., 2000). In this context, SRs within endodontics have been studied extensively with substantial variability in both their methodologic and reporting quality being identified (Nagendrababu et al., 2018, 2022).

Scoping reviews (ScRs) are a category of literature reviews that have emerged in the literature, including the field of endodontics. They were initially described by Grant and Booth (2009) as a “preliminary assessment of potential size and scope of available research literature,” with the aim to “identify the nature and extent of research evidence (usually including ongoing research)” (Grant & Booth, 2009). They differ substantially from systematic reviews of the literature in two main ways. First, the ScR research question is formulated in a less formalized manner compared with systematic reviews (PICO-framed focused research questions), as they intend to provide an overview of the available literature rather than a focused summary of the best available evidence on a topic of interest. Second and more important is that ScRs generally do not assess the risk of bias of the included studies. This allows for the assessment of the maximum number of broadly relevant studies, irrespective of their design and the presence of any bias in their methodology.

As a consequence of their methodology, ScRs collate data from a heterogeneous and diverse body of literature,

including studies holding traditionally low positions in the evidence pyramid, such as case reports, case series or single-arm intervention studies (Munn et al., 2018). Mapping all available evidence to address a broad research question can result in the identification of gaps in existing knowledge and aid the construction of more relevant and focused research questions, that can be addressed subsequently by SRs (Peters et al., 2020).

Nevertheless, as with SRs, ScRs should be characterized by optimum reporting quality as they should provide all the important key elements of the methodology. For this reason, the use of the PRISMA guidelines were extended to ScRs (PRISMA-ScR) to increase transparency and completeness, thereby improving their reporting quality (Tricco et al., 2018).

Meta-research studies, mostly specialty-oriented, have been conducted to evaluate the reporting quality of ScRs in dentistry with the conclusion that they contained reporting deficiencies that could be improved by closer adherence to the PRISMA-ScR reporting checklist (Dotto et al., 2023; Mikelis & Koletsi, 2022, 2023; Zauza et al., 2022). Besides shortcomings in reporting quality, two more important issues have been identified in relation to the rigour of ScRs in orthodontics; that is, misreporting of certain reporting checklist items and lack of justification for the conduct of many ScRs (Mikelis & Koletsi, 2022, 2023).

Several ScRs have been published in the field of endodontics. In view of the findings from meta-research studies that ScRs in dentistry often fall short of the standard methodological and reporting quality that they should meet, a formal appraisal of the incentives and compliance of ScRs in endodontics to the methodological and reporting guidelines is essential. Therefore, the overarching aim of the present study was to evaluate the reporting quality of ScRs in endodontics and identify whether a justification of the rationale to undertake the ScRs was provided. The items of the checklist of PRISMA Extension guidelines for ScRs (PRISMA-ScR) were the reference standard for the assessment of the reporting quality of the included ScRs. In addition, publication characteristics (year and journal of publication, continent authorship characteristics) as well as methodological/ reporting characteristics (presence of a methodologist, protocol registration practices, compliance with an appropriate reporting guideline) were also identified and analysed.

METHODS

Registration

The protocol of the study was registered with the Open Science Framework platform with a unique identifier DOI [10.17605/OSF.IO/RSN4B](https://doi.org/10.17605/OSF.IO/RSN4B).

Eligibility criteria

Studies were assessed for eligibility on two levels (a. initial screening phase, and b. full text assessment), based on the following eligibility criteria:

Initial screening phase

Inclusion criteria:

1. Studies including the terms “scoping review,” or “mapping review” in the Title or the Abstract and seem relevant to endodontics on the basis of the contents of the Abstract and the keywords provided.

Exclusion criteria:

1. Studies defined as narrative/literature reviews, systematic reviews, umbrella reviews, consensus reports, overviews assessing reporting quality or studies reporting ScR protocols.
2. Title/Abstract in languages other than English.

Full text assessment

Inclusion criteria:

1. ScRs related to the endodontics.
2. ScRs with a research question/aim not entirely focusing on, but aimed at mapping evidence and identifying gaps related to the disciplines of endodontics.

Exclusion criteria:

1. Studies identified as narrative/literature reviews, systematic reviews, umbrella reviews, consensus reports, overviews assessing reporting quality or studies reporting ScR protocols.
2. ScRs with a research question/aim not related to the discipline of endodontics.
3. ScRs that did not frame *a priori* a research question/aim related to the disciplines of endodontics and with

evidence synthesis related to endodontics only construed as relevant to the review *post hoc*.

4. Full text in languages other than English.

Search strategy

An electronic search was conducted within PubMed (MEDLINE), Scopus and Web of Science from 1 January 2010, to 31 January 2024. The full search strategy is presented in Supplementary [file 1](#).

Screening

Studies were screened after the full search strategy had been undertaken. To assure that all relevant reports had been identified, an electronic search of the contents of the three major journals in the field of endodontics (*International Endodontic Journal*, *Journal of Endodontics* and *Australian Endodontic Journal*) was also carried out independently starting from 1st January 2010.

All studies were uploaded to Endnote software (version 21, Clarivate, Philadelphia, PA, USA) and duplicates were removed. Two reviewers independently screened the title and abstract of each article and classified them according to the eligibility criteria into three major categories: included, excluded and studies without adequate information. The latter were further screened through full text assessment until a decision on their inclusion or exclusion could be made. Disagreements between the two reviewers were resolved after discussion with a third reviewer until consensus was reached.

Data extraction/appraisal of included ScRs

Calibration process

A calibration procedure on 10 randomly selected ScRs was performed between the two reviewers (GT, XP). Calibration consisted of extraction of the appropriate information, and appraisal of the reporting quality.

Data extraction

Data extraction was performed independently by two of the authors (GT, XP), on pre-defined standardized piloted forms. During data extraction, general study characteristics were identified: the journal (endodontic

specialty or not), year of publication, continent of the authorship based on the affiliation of the corresponding author, total number of authors, whether a methodologist was involved in the author list (according to authors' affiliations, for example affiliations related to Biostatistics, Epidemiology or a Meta-research department), whether the protocol of the review had been registered, and whether specific reporting guidelines were followed. At this stage, the two reviewers examined whether a clear justification and rationale to perform the ScR was provided by the authors.

Reporting quality

Two independent reviewers participated in assessing the reporting quality of the included reviews. The PRISMA-ScR checklist with 20 items was utilized to evaluate the reporting quality of each scoping review. Each of the 20 items were allocated a score of 0, 0.5 or 1. A score of "0" was allocated when the item was not reported; a score of "0.5" when the item was included but inadequately described; and a score of "1" when the item was reported adequately. The final outcome of the analysis for each scoping review was converted into an overall percentage score. Thus, a score of 20 (the maximum) corresponded to 100 per cent. Two additional but not mandatory items related to the methodology and results of the critical appraisal of individual sources of evidence, pertaining to risk of bias or quality assessment, were also recorded; however, since these items are considered optional items in the PRISMA-ScR checklist, they did not contribute to the overall percentage score. The final results were agreed between the two reviewers for all the studies included.

Statistical analyses

Descriptive statistics were performed for the overall percentage reporting scores according to PRISMA-ScR, across the publication and methodological/reporting characteristics examined. Frequency distributions of the scores per item of the PRISMA ScRs checklist were also undertaken.

In view of the data distribution, univariable and multivariable quantile regression analyses were performed, with β -coefficients and respective 95 per cent confidence intervals (CIs) for the effect of year, journal, appropriateness of reporting guidelines used and registration practices, on the percentage PRISMA-ScR score awarded.

A forward stepwise selection ($p < .10$) model was used, for the selection of variables in the adjusted model. The predefined level of significance was set at $p < .05$

(two-sided). All analyses were conducted with Stata version 15.1 (Stata Corporation, College Station, TX, USA).

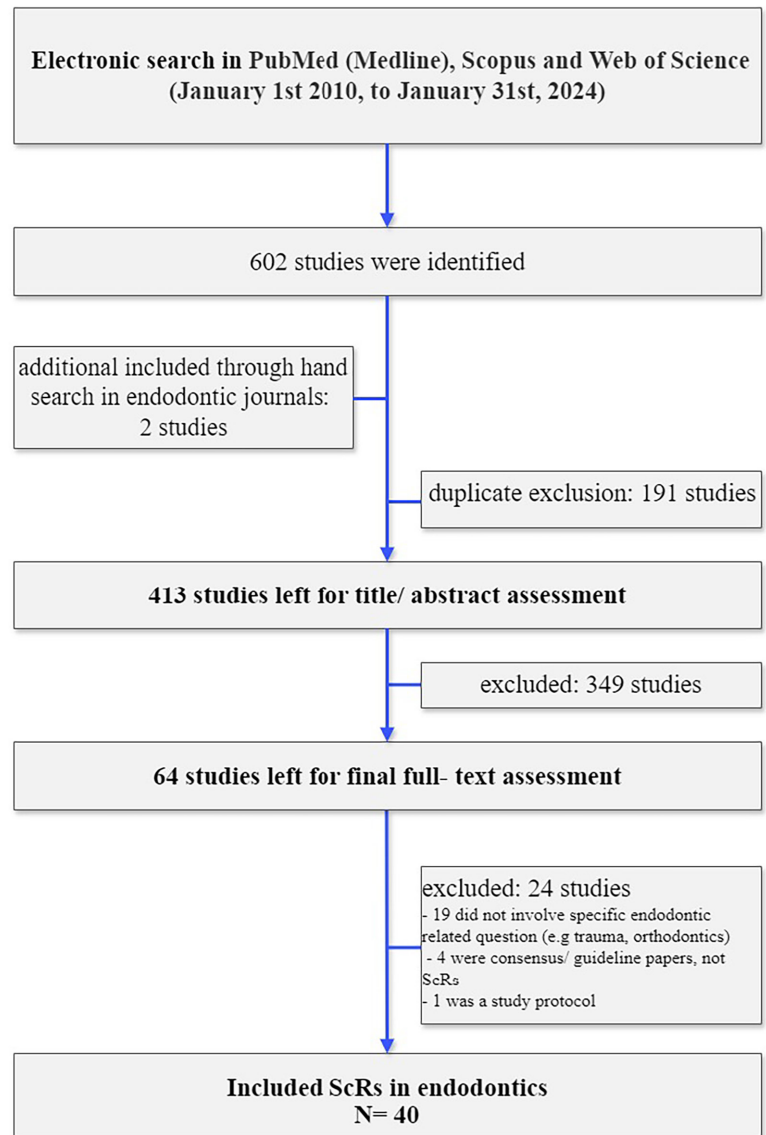
RESULTS

A total of 602 reports of studies were initially identified by the search strategy and hand searching within the journals. Following duplicate removal and assessment, 40 ScRs were considered eligible for inclusion (Figure 1, Supplementary Table 1). Eighty five per cent of the ScRs were published in the 3 years from 2021 onwards, with more reports being published in non-endodontic journals (24/40; 60%) (Table 1). Half of the reviews were published by corresponding authors affiliated with American Institutions (21/40; 52%), with the majority co-authored by 6 or more individuals (16/40; 60%), while the contribution of a methodologist in the design and reporting of the ScR was not common (9/40; 22%). The majority of ScRs followed appropriate guidelines to report their work (34/40; 85%); however, less than half were registered *a priori* (18/40; 45%). A clear justification for their conduct toward registration was given in 19 of 40 ScRs (47%) (Supplementary file 2). The overall median reporting quality score was 86%, with an interquartile range (IQR) of 80 to 93%. The overall median percentage score across several examined variables is presented in Table 1. The interrater agreement kappa values during the calibration phase between the assessors, for all items assessed, ranged between 0.62 (95% CI: 0.58–0.78) and 1.00 (95% CI: 0.58–0.78), denoting at least substantial initial agreement.

The frequency distribution of reporting quality scores across the sample of ScRs (3-level category: no description, inadequate description, adequate description), per item of the PRISMA ScR checklist is presented in Table 2. Overall, the most frequently adequately reported items, in at least 85% of the sample were: title (100% adequately reported), all items pertaining to Results of the studies (selection of sources of evidence: 34/40, 85%; characteristics of sources of evidence: 38/40, 95%; results of individual sources of evidence: 37/40, 92%; synthesis of results: 35/40, 87%), as well as the summary of the evidence in the Discussion sections (39/40, 97%).

The most frequently missed items by the authors of the ScRs, rated as "no description" were the protocol registration in the Methodology sections (22/40; 55% not described), and also reporting of funding (16/40; 40% not described) (Table 2; Figure 2). In addition, several studies inadequately reported key elements of the abstract and introduction section in close to or even above 50 percent of occasions. These were the abstract (33/40; 82% inadequate reporting), the rationale and

FIGURE 1 Flowchart of study selection process.



justification of the ScR (21/40; 52% inadequate reporting) and the objectives of the study (18/40; 45% inadequately reported). Furthermore, for the two optional items included in the PRISMA ScRs checklist, only 10 out of 40 studies (25%) reported on the critical appraisal of the individual sources of evidence both in the Methodology and the Results sections; in all cases, the description of both items was adequate.

According to the results of the multivariable quantile regression, there was evidence that adherence to appropriate reporting guidelines during the development of the report of the ScR, was associated with 10% greater reporting quality scores (β -coefficient: 10; 95%CI: 1.1, 18.9; $p = .03$). In addition, ScRs with registered protocols had significantly greater reporting quality scores by a median of 12.5 percentage units (β -coefficient: 12.5; 95%CI: 6.1, 18.9; $p < .001$), compared to non-registered reports (Table 3).

DISCUSSION

In recent years, ScRs in the field of endodontics have been published in increasing numbers. In fact, three quarters of the ScRs included in the present study were published within the last 3 years. This rapid increase is quite remarkable since the first scoping review in endodontics was conducted in only in 2017 (Ferrua et al., 2017). Since then and according to the results of the present study, a total of 40 ScRs have been published with a research question entirely focused on endodontics. On average, this equates to a ScR in endodontics being published every 2 months, which raises doubts on the justification and value of so many reviews in the field. This finding aligns with other similar studies in various disciplines of Dentistry such as Orthodontics and Dental Public Health, which confirms their exponential growth across Oral Health (Dotto et al., 2023; Mikelis & Koletsi, 2023).

TABLE 1 Descriptive statistics for the distribution of ScRs across predictor variables, and median percentage (%) reporting score (and IQR) according to PRISMA-ScR ($n=40$).

	Descriptive statistics and reporting score of the ScRs			
	N	%	Median	IQR
Year				
2017	2	5.0	68	55–80
2018	–	–	–	–
2019	1	2.5	65	–
2020	3	7.5	82	65–90
2021	6	15.0	89	80–93
2022	15	37.5	93	90–93
2023	13	32.5	82	75–88
Journal				
Endodontic	16	40.0	91	82–93
Non- specialty	24	60.0	84	72–90
Continent				
America	21	52.5	88	80–93
Europe	10	25.0	89	82–93
Asia/other	9	22.5	80	65–90
No. authors				
1–3	9	22.5	82	70–85
4–5	15	37.5	88	80–93
≥6	16	40.0	90	81–93
Methodologist				
No	31	77.5	82	75–90
Yes	9	22.5	93	93–93
Appropriate Reporting Guidelines				
No	6	15.0	67	55–82
Yes	34	85.0	89	80–93
Registration				
No	22	55.0	80	70–82
Yes	18	45.0	93	90–93
Overall	40	100	86	80–93

Abbreviation: IQR, interquartile range.

Based on the results of the present study, only half of the appraised reviews appropriately justified their conduct. This finding corroborates the findings of similar studies which reported severe deficiencies in terms of justification of ScRs conducted in other dental specialties (Mikelis & Koletsi, 2022) or across Dentistry in general (Zauza et al., 2022). The representation of endodontic-related ScRs in the study by Zauza et al. (2022) was limited, comprising only ~2% (ie, 4 ScRs in absolute number) of the sample under evaluation. This documented lack of justification overall, raises questions about the value of

this type of review whose initial emergence in the literature was directly related to the identification of possible gaps in the broad evidence base (Arksey & O'Malley, 2005; Levac et al., 2010).

The present meta-epidemiologic study was conducted to investigate the reporting quality of ScRs in the discipline of endodontics. The results revealed that the overall reporting quality scores were satisfactory, probably because the majority of the studies adhered adequately to appropriate reporting guidelines. In particular, items in the Materials and Methods sections and in all of the Results sections, which comprise a substantial proportion of the overall reporting quality score, were reported adequately. More specifically, the selection and characteristics of sources of evidence including the presentation of a flow diagram, or the synthesis of the results of individual studies were mostly adequately reported. This reveals that the authors are possibly selective regarding what they perceive as important to report in a transparent way. Findings from similar studies corroborate the present results (Dotto et al., 2023; Mikelis & Koletsi, 2023).

On the other hand, several items were not adequately reported. The abstract was one of those items where information was often missing, despite the fact that items pertaining to the main text were more adequately reported. This is a fundamental and critical issue, if one considers that abstracts are usually the sole or the most frequently read part of a manuscript, especially by clinicians, and especially when access to publications are not always easy (Pitkin & Branagan, 1998). An interpretation of such a finding may be related to two possible reasons. First, the authors may not focus their attention on the abstract as they perceive it to be a less important element of the manuscript, and second, the strict word limit rules for abstracts in some journals may prove difficult for authors to adequately report essential information. However, it should be noted that the present study did not take into consideration possible restrictions in word count related to the journals where the ScRs were published. This might be considered a limitation, albeit the appraisal of the reporting quality of the abstract of each ScR accounted only for one out of the 20 items examined in total. In addition, it is the authors' opinion that the Editorial Board of each journal should ensure that the journal is aligned with the well-established checklists and reporting guidelines, especially when it comes to systematic and scoping review papers. That could give to authors the opportunity to report adequately all the required items by the established guidelines.

Another significant aspect of the present empirical report was that in almost half of the appraised ScRs, the authors failed to provide an explicit statement for the research question under assessment. This finding is

TABLE 2 Frequency distribution of reporting quality scores in the ScRs for each item of the PRISMA-ScR checklist.

PRISMA ScR item	No description		Inadequate		Adequate		Total (100%)
	N	%	N	%	N	%	N
1. Title (T-1)	0	0.0	0	0.0	40	100.0	40
2. Abstract (A-2)	0	0.0	33	82.5	7	17.5	40
3. Introduction—Rationale (I-3)	0	0.0	21	52.5	19	47.5	40
4. Introduction—Objectives (I-4)	0	0.0	18	45.0	22	55.0	40
5. Methods—Protocol and Registration (M-5)	22	55.0	0	0.0	18	45.0	40
6. Methods—Eligibility Criteria (M-6)	0	0.0	7	17.5	33	82.5	40
7. Methods—Information Sources (M-7)	0	0.0	15	37.5	25	62.5	40
8. Methods—Search (M-8)	4	10.0	8	20.0	28	70.0	40
9. Methods—Selection of Sources of Evidence (M-9)	0	0.0	7	17.5	33	82.5	40
10. Methods—Data Charting Process (M-10)	1	2.5	10	25.0	29	72.5	40
11. Methods—Data Items (M-11)	1	2.5	6	15.0	33	82.5	40
14. Methods—Synthesis of Results (M-14)	1	2.5	12	30.0	27	67.5	40
17. Results—Selection of Sources of Evidence (R-17)	0	0.0	6	15.0	34	85.0	40
18. Results—Characteristics of Sources of Evidence (R-18)	0	0.0	2	5.0	38	95.0	40
20. Results—Results of Individual Sources of Evidence (R-20)	0	0.0	3	7.5	37	92.5	40
21. Results—Synthesis of Results (R-21)	0	0.0	5	12.5	35	87.5	40
24. Discussion—Summary of Evidence (D-24)	0	0.0	1	2.5	39	97.5	40
25. Discussion—Limitations (D-25)	4	10.0	9	22.5	27	67.5	40
26. Discussion—Conclusions (D-26)	0	0.0	11	27.5	29	72.5	40
27. Funding (F-27)	16	40.0	1	2.5	23	57.5	40

common with similar studies (Dotto et al., 2023; Mikelis & Koletsis, 2023; Zauza et al., 2022), and is coupled with the lack of justification and rationale for the conduct of

studies, as mentioned above. Apparently, when a clear justification is not provided, then the research question(s) may be vague or may be nonexistent.

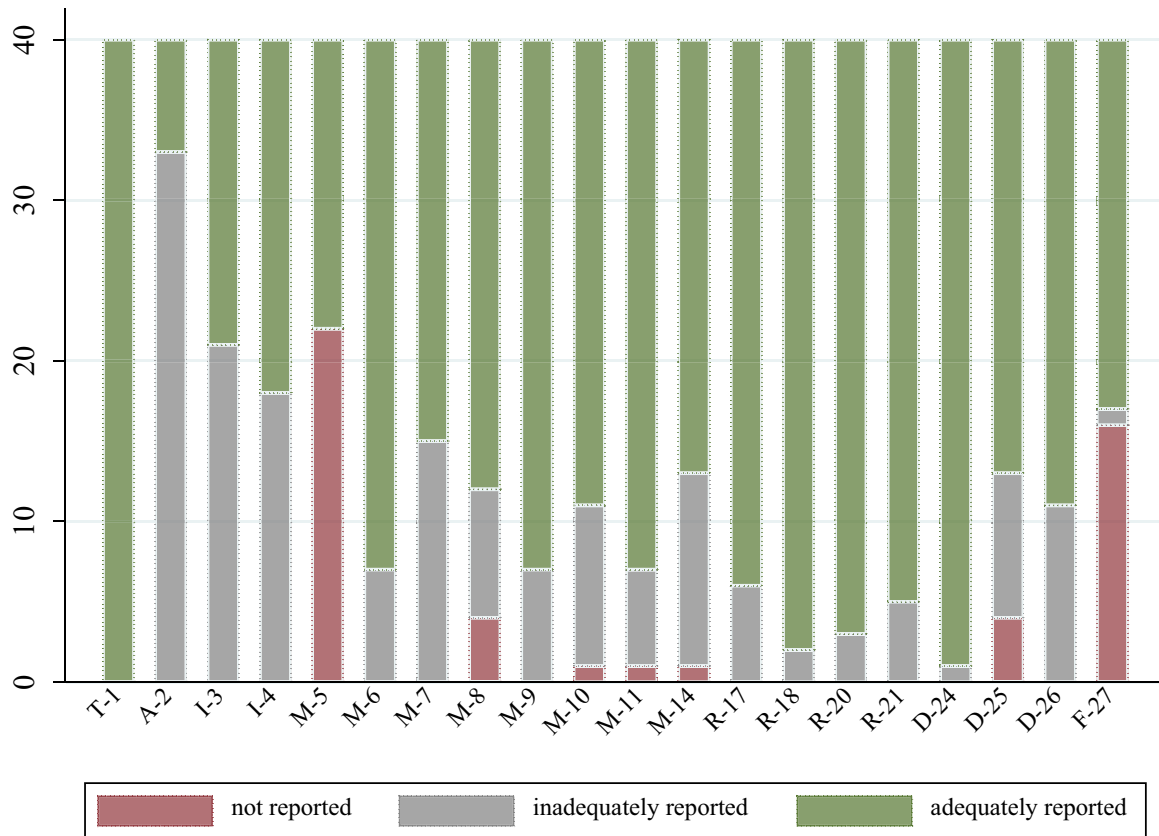


FIGURE 2 Bar chart of frequency distribution of non-reported, inadequately reported and adequately reported items according to the PRISMA scoping review checklist. Abbreviations in the horizontal axis are acronyms derived from the PRISMA-ScR checklist items and are listed in Table 2.

One of the most poorly reported domains, was the protocol development and registration for the ScRs. More than half of the appraised reviews did not provide any information on whether the protocol was registered in a database. This lack of registration is of increased importance on this occasion, since registered ScRs were characterized by greater reporting quality scores, compared to those that were not registered. This finding is reported for first time across similar empirical reports in ScRs in dentistry (Dotto et al., 2023; Mikelis & Koletsi, 2023). It is well known that registration practices have been identified as a crucial element for reproducible, transparent and improved reporting of research (Ge et al., 2018; Mei et al., 2022; Tzanetakis & Koletsi, 2021). Based on this result, it is most likely that the development of the protocol and its registration in advance provides authors with the opportunity to prepare the framework of their study appropriately, thus decreasing the likelihood for *post-hoc* changes or deviations from the protocol during the conduct of the study. The participation of a methodologist is likely to assist the coordination and control of these crucial elements of a ScR, ensuring an adequate level of reporting. The present results demonstrated that a methodologist was involved in only nine of the appraised

reviews. This finding is likely to demonstrate the lack of awareness of aspiring investigators on the value and level of contribution of a co-author knowledgeable on the appropriate methodology to follow, when critically appraising the evidence base. As anticipated, the reporting quality scores awarded for the ScRs were greater when relevant guidelines had been followed, which is consistent with previous findings (Mikelis & Koletsi, 2023), and aligned with efforts to increase adherence to relevant reporting guidelines in dentistry, and across study designs (Koletsi et al., 2017).

Only 16 of the 40 appraised reviews were published in endodontic journals. Although it is unknown whether the remaining 24 reviews had attempted publication in endodontic journals before their final acceptance, this finding probably reflects the fact that journals within the specialty might critically evaluate the content of such reviews more carefully, in terms of a strong justification and rationale, upon a clearly formulated research question.

Variations existed in authorship characteristics were identified in the study, namely continent of authorship and number of participating authors in the ScRs. ScRs with authors affiliated with non-US and non-European

TABLE 3 Univariable and multivariable quantile regression with β -coefficients and respective CIs for the effect of year, journal, appropriateness of reporting guidelines used and registration, on the median percentage (%) reporting the PRISMA ScR score.

Category	Univariable			Multivariable ^a		
	β -coefficient	95% CI	p-value	β -coefficient	95% CI	p-value
Year						
2017–2021	Reference		.15			
2022–2023	7.5	–2.9, 17.9				
Journal						
Non-specialty	Reference		.11			
Endodontic	7.5	–1.7, 16.7				
Appropriate Reporting guidelines						
No	Reference		.004	Reference		.03
Yes	17.5	5.9, 29.1		10.0	1.1, 18.9	
Registration						
No	Reference		.002	Reference		<.001
Yes	12.5	5.0, 20.0		12.5	6.1, 18.9	

^aThe model used forward stepwise selection ($p < .10$), for the selection of variables in the adjusted model.

institutions and when up to three authors were involved, had lower overall reporting quality percentage scores; however, this finding should be interpreted with caution as there were only a small number of observations in the aforementioned categories of both characteristics and wider IQR was also documented.

The present study is the first attempt to critically appraise the reporting quality of several items derived from endodontic ScRs according to the PRISMA extension guidelines for ScRs. Considering the fact that the majority of these reviews were published during the last 3 years, the study provides the first empirical data to assist authors, reviewers, and editors to increase their awareness and critical appraisal of submissions in the field, especially since publication of ScRs in endodontics is increasing rapidly.

A potential limitation of the present study is the subjectivity inherent in the assessment of the reviewers who appraised the included ScRs, especially since this was the first time ScRs in endodontics have been critically assessed. A pilot appraisal of the first 10 reviews was carried out initially and after the completion of the appraisal, a consensus was reached following discussion with a third evaluator on all the disagreements that were identified. This was especially important when the boundaries between neighbouring scoring categories (for example, 0.5 and 1) were not easily discernible.

CONCLUSION

The present meta-research study revealed that the reporting quality of ScRs in endodontics needs to be

improved. Several items were reported adequately but many were insufficiently reported or not reported at all. The justification of the implementation of a ScRs followed by protocol registration and strict adherence to appropriate guidelines were associated with optimum reporting quality.

AUTHOR CONTRIBUTIONS

G.N.T., D.K. conceptualization; G.N.T., X.P., D.K. data procurement; D.K. data analysis; G.N.T., X.P., D.K. data interpretation; G.N.T., X.P., D.K. drafted the manuscript. A.J., V.N., H.D., P.M.H.D supervising, review and editing. All authors contributed to reviewing and editing the manuscript. All authors have read and approved the final manuscript.

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No funding was associated with this study.

CONFLICT OF INTEREST STATEMENT

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

Not required. This is a meta-research study. No patients, patients' records or material, animals, living tissues and cells were involved and/or used.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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