A systematic assessment of the reporting quality of randomized controlled trials of surgical interventions for nephrolithiasis (2002−2023)

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Cite as: Vogel K, Arden E, Turin D, et al. A systematic assessment of the reporting quality of randomized controlled trials of surgical interventions for nephrolithiasis (2002−2023). *Can Urol Assoc J* 2026 November 20; Epub ahead of print http://dx.doi.org/10.5489/cuaj.9727

Published online November 20, 2026

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KEY MESSAGES

- Reporting quality of nephrolithiasis surgical RCTs has improved from 2002−2023, with the highest CONSORT adherence observed in the most recent cohort (2018−2023).
- Blinding, allocation concealment, and details of randomization implementation remain the most underreported CONSORT items across all time periods.
- Ancillary analyses and harms reporting continue to be inadequately addressed, limiting the clinical interpretability of trial findings.
- Journal endorsement of reporting guidelines and mandatory trial registration are associated with improved reporting completeness.
- The newly released CONSORT 2025 statement provides an opportunity to further strengthen the quality and transparency of future surgical RCTs in stone disease.

ABSTRACT

Introduction: We aimed to evaluate the reporting quality of randomized controlled trials (RCTs) for surgical interventions in stone disease across 2002–2023, extending two earlier reviews of the literature with a new 2018–2023 cohort. Previous assessments of the reporting quality of RCTs in nephrolithiasis have shown suboptimal adherence.

Methods: Building on two prior studies, we conducted a comprehensive literature search for RCTs assessing surgical stone interventions. Four independent reviewers performed data abstraction in duplicate. Reporting quality was assessed using the 25-item Consolidated Standards of Reporting Trials (CONSORT) checklist, with each study scored from 0−25; the primary outcome was the mean score. Scores were compared across four time periods (2002–2006, 2007−2011, 2012–2017, and 2018–2023) using ANOVA in SPSS version 29.

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Results: Three hundred and thirty-one studies met inclusion criteria (2002−2006: 38, 2007−2011: 64, 2012−2017: 101, and 2018−2023: 128). The mean ± standard deviation CONSORT summary scores for the four time periods were 11.4±2.3, 12.1±2.4, 12.7±2.9, and 16.1±3.2, respectively ($p<0.001$). Reporting rates were lowest for reporting ancillary analyses (10.9%) and implementation of randomization (14.0%). Notable improvements over time (2002−2006 vs. 2007−2011 vs. 2012−2017 vs. 2018−2023) were seen for trial registration (0% vs. 0% vs. 13.9% vs. 40.6%, $p<0.001$) and funding source (5.1% vs. 9.2% vs. 13.9% vs. 62.5%, $p<0.001$), respectively.
Conclusions: The reporting quality of RCTs of surgical interventions for nephrolithiasis has improved, but critical methodologic domains remain underreported. Greater awareness of transparent trial reporting is needed.

INTRODUCTION

Nephrolithiasis is a common urologic condition with increasing global prevalence and a significant burden on healthcare systems. In the United States alone, the lifetime risk of developing nephrolithiasis is estimated at 10–15%, with recurrence rates approaching 50% within 10 years.1 Over the past two decades, the management of kidney stones has evolved substantially, with a shift toward minimally invasive surgical techniques such as ureteroscopy (URS), percutaneous nephrolithotomy (PCNL), and extracorporeal shock wave lithotripsy (SWL).2,3 These interventions differ in indications, effectiveness, and morbidity, and, as such, randomized controlled trials (RCTs) remain essential for guiding evidence-based clinical decision-making.

RCTs are considered the gold standard in evaluating the efficacy and safety of surgical interventions. However, their reliability depends not only on robust design and execution but also on transparent and comprehensive reporting. Incomplete or biased reporting undermines the interpretability of findings, hampers reproducibility, and can lead to erroneous conclusions in meta-analyses and guideline development.4 To address this issue, the Consolidated Standards of Reporting Trials (CONSORT) statement was developed in 1996 and has since become the internationally recognized benchmark for reporting RCTs. The subsequent update, CONSORT 2010, includes a 25-item checklist aimed at improving the clarity and completeness of trial reports.5 In 2025, a further revised version was published that added seven new checklist items and revised three items, emphasizing the continued relevance of effort to improve transparent reporting.6

Despite the availability of these guidelines, prior investigations have demonstrated suboptimal adherence to CONSORT standards in surgical RCTs. In nephrolithiasis literature specifically, previous assessments by Zavitsanos et al. and Thompson et al. found that many studies failed to adequately report key methodological elements such as allocation concealment,

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blinding, and trial registration.7,8 Given the continual evolution of surgical techniques and the growing emphasis on methodological rigor, an updated evaluation of reporting quality is warranted.

The aim of this study was to systematically assess the reporting quality of RCTs investigating surgical interventions for nephrolithiasis published between 2018 and 2023. Building on the framework established by prior studies, we applied a standardized CONSORT-based scoring system to evaluate trends over time and identify persistent gaps in reporting. Our findings have implications for researchers, clinicians, and journal editors aiming to improve the transparency and credibility of urological surgical literature.

It is worth noting the historical context of CONSORT and trial-registration norms over the study window. The earliest cohort (2002–2006) predates both the International Committee of Medical Journal Editors (ICMJE) prospective trial-registration mandate (2005) and the launch of the World Health Organization (WHO) International Clinical Trials Registry Platform (2007). CONSORT 2010, applied uniformly in this study, retained the core 25-item structure introduced in CONSORT 2001 with clarifying revisions to items on randomization, blinding, and trial registration. Accordingly, the very low rates of registration and protocol reporting in the earliest cohort reflect, in part, the absence of established public registries and editorial requirements rather than a failure to report against an extant standard.

METHODS

This study is an extension of previously published assessments by Zavitsanos et al. and Thompson et al.7,8 A comprehensive literature search was conducted in MEDLINE, Embase, and Cochrane Central Register of Controlled Trials for RCTs published between January 1, 2018, and December 31, 2023, investigating surgical interventions for nephrolithiasis.

For the 2002–2017 cohorts, included-study sets were carried forward directly from Zavitsanos et al. and Thompson et al., applying their original search strategies (available in those publications); a new search, depicted in Supplemental Figure 2, was performed for the 2018–2023 cohort. The search strategy included terms related to “randomized controlled trial,” “kidney stones,” “ureteroscopy,” “shockwave lithotripsy,” and “percutaneous nephrolithotomy” (Supplemental Figure 2). Duplicate removal and study screening followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Studies were included if they were English-language RCTs evaluating surgical interventions for stone disease in human subjects.

Data abstraction was performed by four independent reviewers, working in duplicate with consensus resolution. Each study was scored using a standardized checklist based on the 25-item CONSORT 2010 statement.5 Each checklist item was scored as 1 (reported) or 0 (not reported), yielding a maximum score of 25 per study.

To ensure consistency across all four cohorts, the four reviewers re-adjudicated borderline items (most often items 8b, 9, and 12b) using a harmonized scoring guide that required explicit description of an item (for example, the specific allocation-concealment mechanism rather than

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the word "randomized" alone) before crediting it as reported. This produces small numerical differences relative to the originally reported scores in Zavitsanos et al. and Thompson et al. Extracted metadata included year of publication, country of origin, journal, procedure studied, and presence of trial registration, funding source, and intention-to-treat analysis.

For the journal-level comparison, six dedicated urology journals that account for the majority of nephrolithiasis-RCT publications (Urology, Journal of Urology, Journal of Endourology, European Urology, World Journal of Urology, and BJU International) were grouped a priori as "core journals"; the remaining publication venues were grouped as "other journals."

The primary outcome was the mean CONSORT score per study (Figure 1). Studies were stratified by publication period: 2002–2006, 2007-2011, 2012–2017, and 2018–2023. Descriptive statistics were calculated for study characteristics. One-way analysis of variance (ANOVA) was used to compare mean CONSORT scores between the four time periods. Categorical variables were compared using chi-square testing. A p-value <0.05 was considered statistically significant.

This study was exempt from institutional review board (IRB) approval as it involved analysis of previously published data and did not involve human subjects.

RESULTS

We identified 331 randomized controlled trials (RCTs) on surgical interventions for nephrolithiasis across three time periods: 38 published between 2002 and 2006, 64 between 2007 and 2011, 101 between 2012 and 2017, and 128 between 2018 and 2023 (Supplemental Figure 1). Table 1 demonstrates characteristics of the 331 included studies stratified by time period. The volume of RCTs increased over time, with a noticeable diversification in regional contribution. Asian countries remained major contributors, accounting for 39.8% of the most recent cohort. Across all timeframes, ureteroscopy was the most frequently evaluated procedure in the latest cohort (53.9%), followed by percutaneous nephrolithotomy (41.4%) and shock wave lithotripsy (18.8%). The most common publication venues were the World Journal of Urology (21.1%), Journal of Endourology (20.3%), and BJU International (7.0%).

The quality of reporting, measured using a 25-point CONSORT checklist, demonstrated a statistically significant improvement over time (Figure 1). Specific improvements were noted in reporting of trial registration, which rose from 0% in 2002–2006 to 13.9% in 2012–2017 and 40.6% in 2018–2023. Disclosure of funding sources improved even more markedly, from 5.1% and 13.9% to 62.5%. Table 2 demonstrates the frequency of each CONSORT criterion by time period.

Despite these gains, several CONSORT items remain poorly reported. Though blinding of any type increased in 2018-2023 compared to prior decades only half of journals described any of these procedures amongst participants, interventions, and assessors. Furthermore, implementation details of randomization and reporting of ancillary analyses remained limited, at 14.1% and 10.9%, respectively.

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Reporting quality was modestly but consistently higher in core journals than in other journals across all four time periods (mean CONSORT score 11.4 vs 8.1 in 2002–2006, 12.5 vs 10.4 in 2007–2011, 13.7 vs 11.7 in 2012–2017, and 16.0 ± 3.2 vs 14.6 ± 3.2 in 2018–2023; Welch t-test p=0.01 for the most recent cohort). For the 2018–2023 cohort, mean CONSORT scores stratified by continent of the lead author were: North America 16.3 ± 3.4 (n=14), Europe 15.6 ± 3.6 (n=38), Asia 15.3 ± 3.2 (n=51), and Africa 14.8 ± 2.7 (n=25), with no statistically significant difference between regions (one-way ANOVA F(3,124)=0.63, p=0.60).

DISCUSSION

Statement of principal findings

This updated review assessed the reporting quality of RCTs evaluating surgical interventions for nephrolithiasis published between 2018 and 2023. We found that the overall quality of reporting, as measured by adherence to CONSORT criteria, has improved modestly over the past two decades. The mean CONSORT score increased from 11.4 in the 2002–2006 period to 16.1 in the 2018–2023 period, representing a meaningful improvement. Key areas of progress included increased reporting of trial registration (from 0% to 40.6%), disclosure of funding sources (from 5.1% to 62.5%), and accessibility of trial protocol (from 0% to 40.6%). However, substantial gaps persist in the reporting of blinding (53.9%), randomization implementation (14.1%), and ancillary analyses (10.9%), which are critical to assessing the internal validity of surgical trials. These findings suggest that while there is growing awareness of reporting standards, methodological transparency remains an unmet need in endourological RCTs.

Meaning of the study: implications for clinicians, researchers, and policymakers

The results of this study have important implications for the design, interpretation, and dissemination of evidence in urological surgery. For clinicians, underreported methods can obscure the internal validity of trials, making it difficult to gauge how much confidence to place in results. For example, failure to describe allocation concealment or the conduct of intention-to-treat analysis introduces uncertainty about the presence of selection bias or attrition bias, respectively. In turn, this undermines the reliability of clinical guidelines or systematic reviews that depend on such trials.12

For researchers, this study underscores the need for methodological training and better integration of CONSORT principles early in the design phase of RCTs. Study protocols, often overlooked in surgical research, should be developed in parallel with plans for transparent reporting. Trial registration, while increasing, should become a non-negotiable standard to safeguard against selective reporting.

Policymakers and journal editors can play a pivotal role. The introduction of automated manuscript screening tools, mandatory trial registration numbers, and structured CONSORT checklists during submission could enhance reporting fidelity. Moreover, peer reviewers—who

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often operate under time constraints—may benefit from standardized rubrics that highlight common reporting omissions.

Unanswered questions and future research

Advancing the quality of reporting in nephrolithiasis randomized controlled trials will require a multifaceted approach that addresses both structural and cultural barriers within surgical research. Despite incremental gains in CONSORT adherence over time, several critical elements—such as blinding, implementation of randomization, and reporting of ancillary analyses—remain underreported. This persistent gap highlights the need for deeper engagement with the principles of transparent trial design and dissemination.

Future work should aim to characterize the specific challenges that hinder full reporting compliance. These may include limited awareness of reporting standards, misconceptions about the applicability of certain methodological elements in surgical contexts, or a lack of institutional emphasis on research transparency. Enhancing training in trial methodology and reporting—particularly for investigators in low- and middle-income regions where much of the nephrolithiasis research is now concentrated—will be crucial.

Concrete steps that could accelerate awareness within urology include: (1) inclusion of dedicated trial-methodology and reporting-quality sessions in the annual meetings of major urological societies, such as the American Urological Association (AUA), the European Association of Urology (EAU), the Canadian Urological Association (CUA), the Société Internationale d'Urologie (SIU), and the Urological Society of Australia and New Zealand (USANZ); (2) free Continuing Medical Education (CME) eligible micro-courses on CONSORT, Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT), and trial registration distributed via society e-learning platforms; and (3) editorial adoption of automated CONSORT-checklist screening at submission, paired with structured reviewer prompts for items historically poorly reported (allocation concealment, blinding, randomization implementation, and ancillary analyses).

Efforts to strengthen editorial policies and peer review practices may also yield improvements. Journals could consider more stringent enforcement of reporting guidelines, such as requiring completed CONSORT checklists and providing reviewer checklists to identify omissions using the recently updated CONSORT 2025 criteria.6 Additionally, funding agencies and academic institutions may play a supportive role by incentivizing rigorous reporting as part of research evaluation metrics.

Looking ahead, it will be important to expand the scope of assessment beyond manuscript text to include related elements of trial transparency. These include the availability of trial protocols, consistency between registered and reported outcomes, and access to underlying datasets. As the research community increasingly embraces open science principles, integrating these components into future evaluations will provide a more holistic view of trial integrity and reproducibility.

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Ultimately, the ongoing refinement of reporting practices is not only a methodological imperative but also a clinical one. Improving the clarity and completeness of trial reporting will enhance the interpretability of evidence, facilitate meta-analyses, and support the development of robust, patient-centered guidelines in the surgical management of stone disease.

Strengths and weaknesses of the study

One of the principal strengths of this study is its continuity with previously published work using comparable methods, allowing for robust longitudinal assessment. By applying a consistent 25-point CONSORT-derived scoring rubric across four time periods (2002–2006, 2007-2011, 2012–2017, and 2018–2023), we ensured methodological fidelity and enabled meaningful comparison of trends. The use of duplicate data abstraction by four independent reviewers enhances the validity and reliability of scoring.

This study also has limitations. First, it assesses only published reports and not the underlying trial protocols or full datasets. As such, it is possible that some studies implemented high-quality methodological procedures but failed to describe them adequately in the manuscript, resulting in underestimation of true adherence. Therefore, these results should be interpreted as mainly reflecting reporting rather than methodological quality. Second, the CONSORT scoring system assigns equal weight to all 25 items, though some items (e.g., allocation concealment, blinding) may exert a greater influence on trial validity than others (e.g., description of baseline demographics). Third, we excluded non-English language publications, potentially limiting global generalizability. Furthermore, while we provide descriptive data on publication venues and geographic trends, we did not evaluate the relationship between journal impact factor or editorial policy and CONSORT adherence—a topic that warrants future inquiry.9 Lastly, blinding of reviewers to authors and journal sources was not feasible, potentially introducing a bias of judgment.

Finally, we applied the CONSORT 2010 checklist for direct comparability with the two prior studies in this series; future surveillance will need to score trials against the recently published CONSORT 2025 statement as it becomes the operative reporting standard.

Strengths and weaknesses in relation to other studies

Our findings are consistent with and build upon the foundational work by Zavitsanos et al. and Thompson et al., who documented historically poor reporting quality in nephrolithiasis RCTs.7,8 The increasing number of trials reporting trial registration and funding sources mirrors broader shifts in medical publishing driven by mandates from organizations such as the ICMJE.4,5 Since 2005, the ICMJE has required prospective trial registration as a condition for publication, a policy that has significantly shaped reporting practices across medicine.10 These observations are also in line with the broader assessment by Narayan et al., who examined RCT reporting in four leading urology journals across multiple subspecialties. They reported significant improvements in mean CONSORT scores between 1996 and 2013 (10.2 to 15.6) yet noted persistent shortcomings in allocation concealment and blinding.11 Compared with their work,

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our study is narrower in scope, focusing exclusively on nephrolithiasis interventions, which allows for a more granular understanding of trends within endourology. Together, these complementary findings reinforce the conclusion that while urological RCT reporting has improved over time, critical methodological domains—particularly randomization procedures and blinding—remain underreported across both general and subspecialty contexts.

Importantly, neither public trial registries nor structured protocol-sharing platforms were broadly available during the earliest cohort, which contextualizes the near-absent reporting of CONSORT items 23 and 24 in 2002–2011 and supports the interpretation that the trajectory observed reflects, in part, the maturation of the reporting ecosystem itself. All six core journals currently endorse or require CONSORT-compliant reporting for randomized trials, either directly or via reference to the Enhancing the QUAlity and Transparency Of health Research (EQUATOR) Network; the persistent gap between editorial policy and observed reporting argues for active enforcement at submission rather than passive endorsement.

Nevertheless, our findings also highlight areas where little progress has occurred, mirroring similar observations in other surgical fields.4 Blinding in any form, a key safeguard against detection and performance bias, was reported in only about half of the nephrolithiasis trials and, when present, was often applied inconsistently. While some aspects of surgical research pose inherent challenges to blinding (e.g., patients or surgeons cannot be blinded to operative approach), other forms—such as blinded outcome assessors or data analysts—are often feasible and underutilized. In this respect, nephrolithiasis RCTs lag behind other disciplines where creative strategies for partial or single blinding are increasingly more common. Moreover, despite increasing use of online trial registries and open-access platforms, only 40.6% of trials from 2018–2023 reported registration—a notable deficiency in a post-ICMJE mandate era.

CONCLUSIONS

The volume and reporting quality of RCTs evaluating surgical interventions for nephrolithiasis have steadily improved over the past two decades. However, major deficiencies in certain domains such as reporting of allocation methods, blinding and ancillary analyses persist. Enhanced enforcement of CONSORT adherence, education on methodological standards, and increased transparency in reporting are vital to ensure that future trials provide high-quality, actionable evidence to guide urological care.

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REFERENCES

1. Scales CD Jr, Smith AC, Hanley JM, et al. Prevalence of kidney stones in the United States. *Eur Urol* 2012;62:160-5. https://doi.org/10.1016/j.eururo.2012.03.052
2. European Association of Urology. EAU guidelines on urolithiasis. Arnhem, The Netherlands: European Association of Urology; 2023. Available at: https://uroweb.org/guidelines/urolithiasis. Accessed May 2, 2024.
3. Assimos D, Krambeck A, Miller NL, et al. Surgical management of stones: American Urological Association/Endourological Society guideline, PART I. *J Urol* 2016;196:1153-60. https://doi.org/10.1016/j.juro.2016.05.090
4. Glasziou P, Altman DG, Bossuyt P, et al. Reducing waste from incomplete or unusable reports of biomedical research. *Lancet* 2014;383:267-76. https://doi.org/10.1016/S0140-6736(13)62228-X
5. Schulz KF, Altman DG, Moher D. CONSORT 2010 statement: Updated guidelines for reporting parallel group randomised trials. *BMJ* 2010;340:c332. https://doi.org/10.1136/bmj.c332
6. Hopewell S, Chan AW, Collins GS, et al. CONSORT 2025 statement: Updated guideline for reporting randomised trials. *BMJ* 2025;389:e081123. https://doi.org/10.1136/bmj-2024-081123
7. Zavitsanos PJ, Bird VG, Mince KA, et al. Low methodological and reporting quality of randomized, controlled trials of devices to treat urolithiasis. *J Urol* 2014;191:988-93. https://doi.org/10.1016/j.juro.2013.10.067
8. Thompson E, Lai A, Morrey L, et al. A longitudinal assessment of the reporting quality of randomized controlled trials for surgical interventions to treat nephrolithiasis over 16 years (2002 to 2017). *J Endourol* 2020;34:502-8. https://doi.org/10.1089/end.2019.0649
9. Hopewell S, Ravaud P, Baron G, et al. Effect of editors' implementation of CONSORT guidelines on the reporting of abstracts in high impact medical journals: Interrupted time series analysis. *BMJ* 2012;344:e4178. https://doi.org/10.1136/bmj.e4178
10. De Angelis C, Drazen JM, Frizelle FA, et al. Clinical trial registration: A statement from the International Committee of Medical Journal Editors. *N Engl J Med* 2004;351:1250-1. https://doi.org/10.1056/NEJMe048225
11. Narayan VM, Cone EB, Smith D, et al. Improved reporting of randomized controlled trials in the urologic literature. *Eur Urol* 2016;70:1044-9. https://doi.org/10.1016/j.eururo.2016.07.042
12. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. https://doi.org/10.1136/bmj.n71

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FIGURES AND TABLES

Table 1. Characteristics of 331 published randomized controlled trials of surgical interventions for pephrolithiasis

	2002−2006 (%)	2007−2011 (%)	2012−2017 (%)	2018−2023 (%)	Total
Total	38 (11)	64 (19)	101 (31)	128 (39)	331 (100)
Intervention[a]					
PCNL	8 (21)	29 (45)	45 (45)	53 (41)	135 (41)
ESWL	15 (40)	14 (22)	26 (26)	24 (19)	79 (24)
URS	14 (37)	17 (27)	36 (36)	69 (54)	136 (41)
Continent					
North America	10 (26)	10 (16)	4 (4)	14 (11)	38 (11)
South America	0 (0)	2 (3)	3 (3)	0 (0)	5 (2)
Europe	15 (40)	17 (27)	11 (38)	38 (30)	81 (24)
Asia	10 (26)	29 (45)	77 (76)	51 (40)	167 (50)
Africa	3 (8)	6 (9)	6 (6)	25 (20)	40 (12)
Publication journal					
Urology	5 (13)	6 (9)	15 (15)	3 (2)	29 (9)
Journal of Urology	15 (40)	12 (19)	8 (8)	5 (4)	40 (12)
Journal of Endourology	8 (21)	19 (30)	22 (22)	26 (20)	75 (23)
European Urology	3 (8)	2 (3)	1 (1)	4 (3)	10 (3)
World Journal of Urology	0 (0)	1 (2)	5 (5)	27 (21)	30 (9)
BJUI	2 (5)	5 (8)	7 (7)	9 (7)	23 (7)
Other	5 (8)	19 (30)	40 (64)	54 (42)	118 (36)

[a]Numbers and percentages add up to more than total study numbers and 100% per time period due to consideration of both intervention and control arms. *BJUI*: *BJU International*; ESWL: extracorporeal shockwave lithotripsy; PCNL: percutaneous nephrolithotomy; URS: ureteroscopy.

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Table 2. Frequency of reporting of consolidated standards of reporting trials criterion					
Description	**Consort**				
	2002−2005 (%)	**2006−2011 (%)**	**2012−2017 (%)**	**2018−2023 (%)**	**p**
Title and abstract	66.7	70.8	100	100	<0.001
Introduction					
Background and objectives	87.2	84.6	100	100	<0.001
Methods					
Trial design	100	100	89.1	78.9	<0.001
Participants	30.8	30.8	99	98.4	<0.001
Interventions	71.8	81.5	100	94.5	<0.001
Outcomes	100	100	56.4	60.9	<0.001
Sample size	100	100	64.4	76.6	<0.001
Randomization					
Sequence generation	30.8	33.8	78.2	70.3	<0.001
Allocation concealment	15.4	10.8	27.7	70.3	<0.001
Implementation	2.6	1.5	0	14.1	<0.001
Binding	7.7	16.9	27.7	53.9	<0.001
Statistical method	100	100	97	63.3	<0.001
Results					
Participant flow	94.9	100	62.4	63.3	<0.001
Recruitment	100	100	100	96.9	0.093
Baseline data	82.1	86.2	91.1	97.7	0.003

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Numbers analyzed	2.6	7.8	59.4	18	<0.001
Outcomes and estimation	97.4	98.5	9.9	72.7	<0.001
Ancillary analyses	12.8	13.8	1	10.9	0.009
Harms	92.3	98.5	97	89.1	0.028
Discussion					
Limitations	28.2	43.1	64.4	93.8	<0.001
Generalizability	5.1	15.4	12.9	96.0	<0.001
Interpretation	97.4	95.4	95	100	0.093
Other information					
Registration	0	0	13.9	40.6	<0.001
Protocol	0	0	5.9	40.6	<0.001
Funding	5.1	9.2	13.9	62.5	<0.001

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