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META-ANALYSIS

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The prevalence of incivility in hospitals and the effects of incivility on patient safety culture and outcomes: A systematic review and meta-analysis

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Abstract

Aim: Workplace incivility is a barrier to safe and high-quality patient care in nursing workplaces and more broadly in tertiary hospitals. The present study aims to systematically review the existing evidence to provide a comprehensive understanding of the prevalence of co-worker incivility experienced and witnessed by nurses and other healthcare professionals, the effects of incivility on patient safety culture (PSC) and patient outcomes, and the factors which mediate the relationship between incivility and patient safety.

Methods: A systematic review with narrative synthesis and meta-analysis was undertaken to synthesize the data from 41 studies.

Data Sources: Databases searched included MEDLINE, PubMed, SCOPUS, CINAHL, PsycInfo, ProQuest, Emcare and Embase. Searches were conducted on 17 August 2021 and repeated on 15 March 2023.

Results: The pooled prevalence of experienced incivility was 25.0%. The pooled prevalence of witnessed incivility was 30.1%. Workplace incivility was negatively associated with the PSC domains of teamwork, reporting patient safety events, organization learning/improvement, management support for safety, leadership, communication openness and communication about error. The composite pooled effect size of incivility on these domains of PSC was OR = 0.590, 95% CI [0.515, 0.676]. Workplace incivility was associated with a range of patient safety outcomes (PSOs) including near misses, adverse events, reduced procedural and diagnostic performance, medical error and mortality. State depletion, profession, psychological responses to incivility, information sharing, help seeking, workload and satisfaction with organizational communication were found to mediate the relationship between incivility and patient safety.

Conclusion: Experienced and witnessed incivility is prevalent in tertiary hospitals and has a deleterious effect on PSC and PSOs. A better understanding of the mechanisms

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of this relationship will support the development of interventions aimed at reducing both incivility and patient harm.

Implications for the Profession and/or Patient Care Impact: This study quantifies the effect of incivility on PSC and outcomes. It provides support that interventions focusing on incivility are a valuable mechanism for improving patient care. It guides intervention design by highlighting which domains of PSC are most associated with incivility. It explores the profession-specific experiences of workplace incivility.

Reporting Method: This report adheres to PRISMA reporting guidelines.

Patient or Public Contribution: No patient or public contribution. The focus of this study is the nursing and healthcare workforce, therefore, patient or public involvement not required.

KEYWORDS
adverse events, disruptive behaviour, incivility, patient safety culture, patient safety outcomes, quality of care

1 | INTRODUCTION

Emerging as a discrete concept in the late 1990s, 'workplace incivility' is defined as low intensity deviant behaviour with an ambiguous intent to damage the target, which breaks the norms of mutual respect in the workplace (Andersson & Pearson, 1999). Uncivil behaviours are characteristically rude and discourteous, revealing a lack of respect towards others. Incivility is different from bullying. While both are negative interactions, bullying has a clear target, is repeated, and usually with an intent to harm, whereas incivility is characterized by its lower intensity, ambiguous intent to harm and violation of social norms (Cortina et al., 2022). Within the nursing profession, the nature of incivility includes wrongfully blaming others for own errors, gossiping, cursing at others, ignoring, yelling, interrupting, or taking credit for someone else's work (Layne et al., 2019; Phillips et al., 2018). Each of these behaviours violate social norms of respect but may remain ambiguous in their target or intent, and may not be the repeated, high-impact behaviours characteristic of bullying. Despite its lower intensity and ambiguous intent, workplace incivility causes substantial disruption to clinician's well-being, organizational culture and patient care (Martin & Zadinsky, 2022).

Workplace incivility is commonly witnessed and experienced by healthcare professionals, including nurses. For example, Addison & Luparell (2014) reported that the prevalence rate among nurses in acute hospitals who witnessed incivility from other nurses with daily, weekly and monthly frequencies were 18%, 95% CI [0.10, 0.30], 27%, 95% CI [0.17, 0.40] and 31% 95% CI [0.20, 0.44], respectively. According to Rosenstein & O'Daniel (2006), daily and weekly incivility from peers was observed by 15% and 22% of surgeons, respectively, and 8%, 22% and 26% by physicians on a daily, weekly and monthly basis, respectively. As indicated in the definition of incivility, workplace incivility is often difficult to detect and hard to address due to its characteristically ambiguous nature and lower intensity, which may result in its frequent occurrence in healthcare settings being underreported. However, incivility has a deleterious effect on patient safety culture (PSC) and outcomes.

Patient safety culture is defined as the product of individual and group values, attitudes, perceptions and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organization's health and safety management (Halligan & Zecevic, 2011). PSC is an important component, and a valid predictor, of good clinical safety practices and quality improvements in patient safety outcomes (PSOs; Braithwaite et al., 2017; Hodgen et al., 2017). A reliable PSC measurement could assist wards, units, departments and hospitals in understanding and improving their culture of care (Hodgen et al., 2017). There are several PSC measures, including Hospital Survey on Patient Safety Culture survey (Sorra & Dyer, 2010), Safety, Communication, Operational Reliability and Engagement survey (Adair et al., 2022), Safety Attitudes Questionnaire (Sexton et al., 2006), Safety Climate Survey (Kho et al., 2005), Patient Safety Climate in Healthcare Organizations survey (Benzer et al., 2017), Modified Stanford Instrument (Singer et al., 2003) and the Manchester Patient Safety Framework (Parker et al., 2008). These measures cover different areas of PSC. Built upon the HSOPS Hospital Survey, the Australian Commission on Safety and Quality in Health Care (2021) developed the Australian Hospital Survey on Patient Safety Culture 2.0 (A-HSOPS 2.0). According to the A-HSOPS 2.0, PSC consists of nine domains: supervisor/manager/clinical leader support for patient safety; teamwork; communication openness; reporting patient safety events; organizational learning for continuous improvement; communication about error; hospital management support for patient safety; response to error and handovers/information exchange (the Australian Commission on Safety and Quality in Health Care, 2021). The current systematic review employs the nine domains to measure PSC.

Extant literature provides empirical evidence for the negative correlation between workplace incivility and PSC. In a cross-sectional

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survey of acute care nurses in Saudi Arabia exploring incivility and PSC, Alquwez (2022) reported that peer and supervisor incivilities predict 19.9% of the variance of the hospital-level PSC. Alquwez's study also reported that a point rise in 'general incivility' and 'supervisor incivility' caused 0.24 and 0.26 point drops in the hospital-level PSC scores, respectively. Higher levels of experienced and witnessed incivility are reported to be associated with lower scores in several individual domains of PSC, including communication about error (Haines et al., 2007), reduced communication openness (Doo et al., 2021), reduced reporting of safety events (Cho et al., 2020) and reduced teamwork quality (Keller et al., 2019).

Patient safety outcomes in hospitals include iatrogenic harms (or potential harms) and adverse events experienced by patients, such as hospital-acquired infections, falls resulting in patient harm in hospitals, unplanned readmissions following surgery, and other hospital-acquired complications (Eagar et al., 2013). Incivility is reported to be associated with increased patient harm. For example, Laschinger (2014) found that physician incivility had a significant effect on patient care quality and was strongly related to overall frequency of patient adverse events. Incivility is also reported to be positively associated with surgical complications (Cooper, 2019). Veltman (2007) reported that 53% of health professions had witnessed near misses where incivility contributed, and 41.9% had witnessed adverse events where incivility contributed.

Considering the impact of workplace incivility on PSC and PSO and the human and economic costs of lapses in patient safety, it is of significance to tackle workplace incivility in hospitals. Taking Australia as an example of the substantial human and economic costs of lapses in patient safety, in 2019 between 12% and 16.5% of total hospital activity and expenditure was the direct result of adverse events. Hospital-acquired complications were estimated to cost the public healthcare sector $4.1 billion, or 8.9% of total hospital expenditure (Australian Commission on Safety and Quality in Health Care, 2019). Although there has been a proliferation of research about incivility in healthcare workplaces in the past two decades, a search of eight databases (Medline, PubMed, SCOPUS, CINAHL, PsycInfo, Proquest, Emcare and Embase) confirmed that while there is a systematic review and meta-analysis on incivility towards nurses (Shoorideh et al., 2021), no meta-analysis on the prevalence of incivility in hospitals and effects of incivility on PSC and PSO have been published. There is also limited research into the mechanisms underlying the relationship between workplace incivility and PSC and PSO (e.g. moderating and mediating effects). The analysis of the mechanisms and contributing factors through which incivility improves or decreases PSC and PSO will enhance the existing knowledge of this important relationship. Literature searches in preparation for this study found no systematic review on the mechanisms underlying the relationship between incivility and PSC and PSO.

Therefore, the current systematic review aims to build a knowledge base relating to the prevalence of workplace incivility among healthcare professionals and the effects of incivility on PSC and PSO. The healthcare setting targeted in the current review is hospitals, rather than other health workplaces such as primary care or aged care. This is because hospitals are characteristically large, complex organizations where clinical care is reliant on collaboration between different professions, teams or units. This complexity and requirement for collaboration means that incivility and other negative interactions are more likely to have an association with the safety and quality of care in hospital settings. The importance of communication in complex health systems is described in Complex Adaptive Healthcare Systems theories (Freedman, 2018). Considering that interdisciplinary collaboration plays a vital role in PSC and PSO in hospitals, the current systematic review does not narrowly focus on nurses, but all healthcare professionals. This focus will provide nurses with a more comprehensive understanding of incivility in broader context, which is helpful in fostering a collaborative work environment, where all healthcare professionals work together to offer the best possible care for patients. While Shoorideh et al.'s (2021) systematic review includes incivility towards nurses by patients and their families, this review focuses on interprofessional incivility among healthcare professionals towards one and other. This focus is established based on the earlier work of Guidroz et al. (2010) on source-specific impacts of incivility; that is, negative interactions of between professionals are more likely to result in incivility spirals and impact on patient safety, compared with incivility from patients and families.

To achieve the aim of the current study, four research questions (RQs) are proposed:

RQ1. What is the pooled prevalence of experienced and witnessed incivility among healthcare professionals?

RQ2. What is the pooled effect size of workplace incivility on PSC?

RQ3. What is the pooled effect of workplace incivility on PSO?

RQ4. What mechanisms underpin the relationship between incivility and PSC and PSO?

2 | METHODS

2.1 | Design

A systematic review with narrative synthesis and meta-analysis was undertaken to synthesize the data from the included studies.

2.2 | Inclusion and exclusion criteria

The inclusion criteria were empirical papers presenting qualitative and quantitative studies, published in English and in peer-reviewed journals, studying workplace incivility and its relationship with

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patient safety, with a study population involving health professionals in tertiary health settings.

Exclusion criteria are studies published in languages other than English, studies that do not report on original research (letters, editorials, conceptual articles), studies using data from shared databases (for example, systematic reviews) to prevent data duplication and non-peer review studies (e.g. grey literature). No limitations on the timeframes of publication were applied. The subject of workplace incivility receives equal treatment from qualitative and quantitative studies. To best capture the available data, all peer-reviewed research studies were included in the current review, with qualitative studies feeding into the narrative synthesis.

For a study to be included in the meta-analysis the data must have reported on the same categories for each research question (for example, frequency or witnessed incivility, frequency of experienced incivility, etc). Studies that met the inclusion criteria but could not be included in the meta-analysis were included in the narrative synthesis.

2.3 | Information sources

Databases searched included MEDLINE, PubMed, SCOPUS, CINAHL, PsychInfo, ProQuest, Emcare and Embase. Reference lists of relevant studies were scanned during the full text review process to identify any relevant research not identified in the initial literature searches. The search was first conducted between 10 and 17 August 2021 independently by the first two authors and repeated on 15 March 2023 to include the new studies since the last search.

2.4 | Database search strategy

Medical Subject Headings (MeSH) terms and key words of incivility, harassment non-sexual, bullying, hostility, workplace violence, patient harm, patient safety, medical errors, malpractice, clinical competence, interprofessional relations, interdisciplinary communication, physician-nurse relations, clinical governance, quality of health care, intersectoral collaboration, health personnel, hospitals, tertiary health care were used. Table 1 presents the search strategy structured in line with the Cochrane PICO (Participant, Interventions or exposure, Comparisons, Outcomes) framework (Higgins et al., 2022). Key terms were connected using Boolean terms 'AND' or 'OR'. The results of search in each database are presented in S1 of the Online Supplemental Materials. The researchers used Microsoft Excel and Endnote to assist with managing the literature search and findings.

2.5 | Study selection

A blinded title and abstract screen was first completed independently by two authors (B.F. and W.L.), using the following codes: 'yes', 'no' or 'maybe'. Articles that were coded as "yes" or "no" by the two authors were included in or excluded from the second step of study selection, respectively. Articles coded as "maybe" or with divergence in coding were subject to discussion to achieve consensus (Li et al., 2021).

The second step of study selection was methodological appraisal using a Mixed Methods Appraisal Tool (MMAT) Version 2018 (Hong et al., 2018). Four authors (B.F., W.L., Z.L., N.B.) were independently involved in the MMAT assessment. The MMAT contains seven methodology-specific quality appraisal questions applied to each study which are scored 'yes = 1' 'no = 0' or 'can't tell = 0.5'. The quality of studies was assessed employing the inter-rater agreement measure of Fleiss' kappa (k) with $k = .20, .40, .60$ and $.80$ suggesting poor, fair, moderate, substantial and perfect agreements, respectively (Fleiss, 1971). Studies with $k \leq .40$ were discussed among the four reviewers until an agreement was reached for inclusion or exclusion (Astridge et al., 2023; Fisher et al., 2023). No papers were excluded through the MMAT process.

2.6 | Data extraction

A standard data extract form was developed, including the items of (1) name of first author, year of publication, country, (2) sample

TABLE 1 PICO search terms table.

PICO	MESH and keyword search
Participants	anatomist* OR anaesthetist* OR audiologist* OR "case manager*" OR "dental staff" OR dentist* OR doula* OR "emergency medical dispatcher*" OR epidemiologist* OR "health educator*" OR "health facility administrator*" OR "infection control practitioner*" OR "medical laboratory personnel" OR "medical staff" or nurse* or "nursing staff" or nutritionist* or "occupational therapist*" or optometrist* OR pharmacist* OR "physical therapist*" OR "physician executive*" OR physician* OR psychotherapist* OR "health personnel") AND (Hospital OR "tertiary health care").
Exposure	incivility OR rude* OR "uncivil behaviour*" OR discourt* OR "uncivil behaviour*" OR bullying OR "workplace violence" OR harassment OR hostil*
Comparison	NA
Outcome	("patient safet*" OR "patient harm" OR "patient safety culture" OR iatrogen* OR malpractice OR "clinical competence" OR "interprofessional relation*" OR "interdisciplinary communication*" OR "physician-nurse relation*" OR "medical etiquette" OR "adverse health care events" OR "clinical governance" OR "quality of health care" OR "intersectoral collaboration"

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characteristics (number, age, gender, profession, practice setting) (3) study design, (4) prevalence of incivility, (5) measures used and (6) the relationship between incivility and PSC/practices/outcomes. Two authors (B.F. and W.L.) independently assessed the extracted findings using coding of 'unequivocal', 'credible', or 'unsupported' to evaluate the evidence for findings claimed in the articles. An Evaluation Agreement Index for each article was calculated using the equation = $((N_{unequivocal+credible})/N_{reviewers}$; Astridge et al., 2023; Li et al., 2021). The evaluation agreement indexes of the articles included in data extract were higher than 0.80 and thus included for data synthesis.

2.7 | Data synthesis

Where narrative synthesis was employed, Popay et al.'s (2006) and Ryan's (2013) narrative synthesis guidelines were used. First, the A-HSOPS 2.0 and PSO (including two domains: iatrogenic/potential harms and adverse events experienced by patients) were employed as the analytical frameworks to conduct the review. Second, an initial analysis of the data was carried out by interpreting the results of each included study. Third, guided the nine domains of PSC and two domains of PSO, a preliminary synthesis of findings of included studies was developed. The findings from each study were then grouped by the domains of PSC and PSO for both the research questions relating to prevalence and effect size. Fourth, to address RQ4, moderating and mediating variables in the relationship between PSC and PSO were extracted.

Comprehensive Meta-Analysis V3 software was used for the meta-analysis. For studies reporting multiple effect sizes that were non-independent (e.g. the effects of incivility were investigated by several sources of the incivility in a single study), if an overall effect size was available, the overall effect size was used (Fisher et al., 2023). If it was not available, a two-level meta-analysis was employed (Astridge et al., 2023): First, the fixed effect model a meta-analysis was used to synthesize the multiple effect sizes in a single study to one synthetic effect size for the study. The results of this first level analysis are presented in S2, S3 and S4 in the Online Supplemental Materials. Second, this synthetic effect size was used in the main meta-analysis where the random-effects model was employed, to yield the overall pooled effect size across all included studies (Hedges, 2019).

The pooled effect size was reported using odds ratio. In the modelling of the pooled effect size, different types of effect sizes were entered in the modelling, which were odds ratio (OR), log odds ratio (log OR), chi-squared for 2×2 (χ^2) and Pearson correlation coefficient (r). Meta-analysis on PSC was conducted using multiple outcome analysis that generated a composite pooled effect size for overall PSC and individual effect sizes for each of the nine domains of PSC.

Adopting the approach of Borenstein (2019), heterogeneity was evaluated using I squared (I^2). The cut-off I^2 of 25, 50 and over 75 respond to low, medium and high heterogeneity. The Egger's regression test was performed to detect publication bias. Significant p values indicate publication bias was detected. Publication bias occurs when studies with statistically non-significant results are biased the decision to publish the studies (Borenstein, 2019). Because significance is not tested in prevalence studies, publication bias analysis was not performed.

2.8 | Assessing risk of bias in included studies

The assessment of the risk of bias and applicability in the Prediction Model Study Risk of Bias Assessment Tool (PROBAST; Wolff et al., 2019) was used to assess the risk of bias of each included study. In PROBAST, four domains (participants, predictors, outcome and analysis) are employed to examine where bias is detected, and concerns are raised. The risk of bias is assessed by the item of 'risk of bias introduced by selection of participants/predictors or their assessment/the outcome or its determination/the analysis'. The first three domains (participants, predictors, outcome) include an item of concerns: 'Concern that the included participants and setting do not match the review question/that the definition, assessment or timing of predictors in the model do not match the review question/that the outcome, its definition, timing or determination do not match the review question'. The overall judgement of risk of bias is also included in PROBAST. The levels of risk of bias were rated as low, high, or unclear. BF and WL independently rated the levels of risk of bias. The levels of risk of biases of all included articles were rated as low by the two raters across four domains and in the overall judgement. The results of the PROBAST rating are presented in S5 of the Online Supplemental Materials.

3 | RESULTS

The current review is registered in PROSPERO (CRD42021289349). Figure 1 presents the PRISMA flow diagram that mapped out the number of records identified, included, and excluded, and the reasons for exclusions in each step of this review (Page et al., 2021). A total of 41 studies, including 37 quantitative and four qualitative studies, were included in the systematic review and meta-analysis.

Of the 41 studies, 21 were conducted in the USA, five in Canada, three in Israel and two each in Switzerland, Saudi Arabia. There was one study from each of Japan, Egypt, Costa Rica, United Kingdom, Brazil, Singapore and South Korea. The sample size of the individual studies varied ($n = 6$–4530), with 16,199 total participants including at least 11,123 nursing participants. Nurses were predominant participants in 34 of the 41 studies. Table 2 presents a summary of the included studies.

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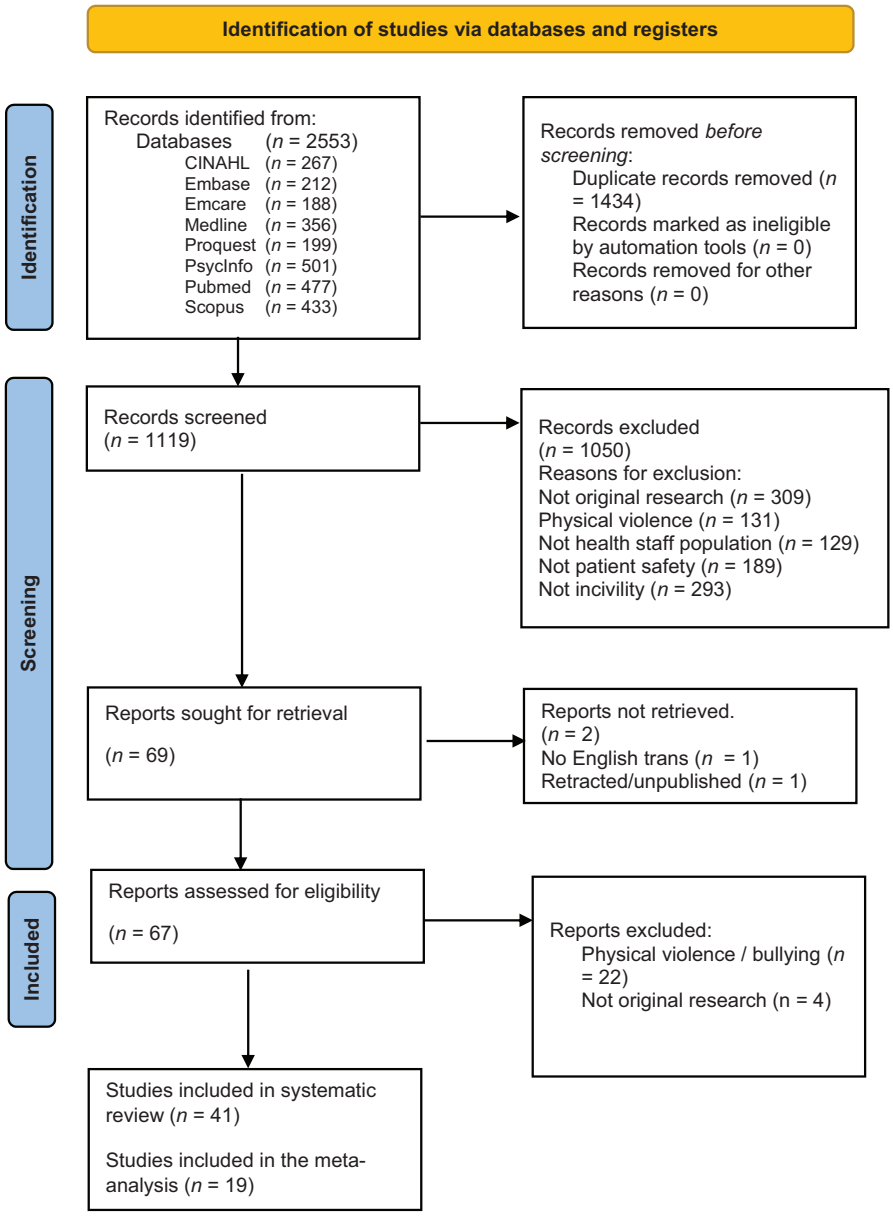

FIGURE 1 PRISMA flowchart.

3.1 | The analysis of RQ1: Prevalence of experienced and witnessed incivility among healthcare professionals

3.1.1 | Prevalence of witnessed incivility

Of the 41 included studies, six reported prevalence of healthcare professionals witnessing workplace incivility with a range from 0.8% to 60% (Addison & Luparell, 2014; Lim et al., 2022; Rosenstein & O'Daniel, 2005, 2008; Veltman, 2007; Wilson & Phelps, 2013). The results of meta-analysis suggested a pooled prevalence of witnessed incivility being 30.1%, 95% CI [0.236, 0.375] (see Figure 2). The heterogeneity test showed that the prevalence of incivility varied substantially with $I^2 = 88.69$. Due to the high level of heterogeneity, meta-regression was warranted to investigate moderators that might contribute to the differences in the observed prevalence. Moderators of, sample size, publishing year, participant type, incivility source and incivility frequency were entered into the meta-regression models. The results showed that the factors of sample size ($Q = 0.00$, $df = 1$, $p = .961$), publishing year ($Q = 1.80$, $df = 1$, $p = .179$) and participant type ($Q = 1.72$, $df = 1$, $p = .190$) were not predictive for the differences in the observed prevalence of witnessed incivility.

A *post-hoc* analysis of prevalence of witnessed incivility was conducted using comparison analysis by its frequency and source. The results indicated that the prevalence of nurses witnessing was 35.4% (95% CI [0.228, 0.503]). The prevalence of witnessed incivility by its sources of physicians, nurses, 'not specified' source and surgeons was 32.5% (95% CI [0.209, 0.468]), 23.2% (95% CI [0.153, 0.336]), 22.4% (95% CI [0.135, 0.346]) and 18.3% (95% CI [0.063, 0.425]), respectively.

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TABLE 2 Summary of the characteristics of the included studies.

References, country	Sample: N age: M(SD) or ranges gender: *n*, % profession: *n*, % practice setting: *n*, %	Patient safety outcome studied	Results	Measures (standardized [S] or non-standardized [NS])
Addison (2014), USA	Age band: 20–29: *n* = 15, 26.8% 30–39: *n* = 19, 33.9% 40–49: *n* = 8, 14.3% 50–59: *n* = 10, 17.9% 60+: *n* = 4, 7.1% *N* = 57 *N*female *n* = 52, 94.5% *N*Male *n* = 5, 5.5% Nursing: *n* = 57, 100%	Adverse events Errors Patient Safety Quality of Care Mortality Nurse Satisfaction Physician Satisfaction Patient Satisfaction Collaboration Information transfer Communication Nurse-physician relations	How often is there a link between incivility and … [never/rarely/sometimes/frequently/constantly]: Quality of Care (0%/9.1%/29.1%/25.5%/36.4%) Nurse Satisfaction (0%/0%/14.5%/38.2%/47.3%) Physician Satisfaction (0%/1.9%/32.2%/37.7%/28.3%) Patient Satisfaction (0%/5.5%/27.3%/21.8%/45.5%) Collaboration (0%/1.9%/18.5%/27.8%/51.9%) Information transfer (0%/1.9%/16.7%/38.9%/44.4%) Communication (0%/1.8%/14.5%/32.7%/50.9%) Nurse-physician relations (0%/1.9%/20.4%/27.8%/51.9%) Adverse events (0%/11.1%/51.9%/14.8%/22.2%) Errors (0%/9.3%/40.7%/18.5%/31.5%) Patient Safety (0%/13%/33.3%/14.8%/38.9%) Mortality (7.4%/27.8%/48.1%/3.7%/14.8%)	Incivility and patient safety: Rosenstein & O'Daniel [NS]
Alquwez (2020), Saudi Arabia	*N* = 261 (all nurses) Age: M = 32.89, [SD 7.90] *N*male = 31, 11.9% *N*female = 230, 88.1%	Patient Safety Competence	A point increase in the general incivility score caused a 0.27-point ($p = .001$, 95% CI = −0.44, −0.11), 0.22-point ($p = .011$, 95% CI = −0.39, −0.05), 0.21-point ($p = .011$, 95% CI = −0.37, −0.05), 0.21-point ($p = .011$,95% CI = −0.38, −0.05) and 0.28-point ($p = .001$, 95%CI = −0.45, −0.12) decrease in communicating effectively, managing safety risks, understanding human and environmental factors, recognizing and responding to immediate risks and culture of safety, respectively. The same relationship was observed between nurse incivility and the dimensions 'working in teams with other health professionals' ($ß = -0.30$, $p = .044$, 95% CI = −0.59, −0.01) and 'understanding human and environmental factors' ($ß = -0.30$, $p = .033$, 95% CI = −0.58, 0.02). In addition, supervisor incivility had a negative association with communicating effectively ($ß = -0.40$, $p = .009$, 95% CI = −0.70, −0.10), managing safety risks ($ß = -0.31$, $p = .044$, 95% CI = −0.62, −0.01), recognizing and responding to immediate risks ($ß = -0.39$, $p = .009$, 95% CI = −0.69, −0.10) and culture of safety ($ß$ = -0.45, $p = .003$, 95% CI = −0.75, −0.15)	HPEPSS [S] NIS [S]
Alquwez (2022), Saudi Arabia	See Alquwez 2020	Patient Safety Culture	Experiences of general incivility ($ß = -0.24$, $p < .001$, 95% CI = −0.35, −0.13) and supervisor incivility ($ß = -0.26$, $p = .011$, 95%CI = −0.46, −0.06) were associated with poor hospital-level PS culture perceptions	HSOPS [S] NIS [S]

(Continues)

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TABLE 2 (Continued)

References, country	Sample: N age: M(SD) or ranges gender: *n*, % profession: *n*, % practice setting: *n*, %	Patient safety outcome studied	Results	Measures (standardized [S] or non-standardized [NS])
Cho et al. (2020), USA	*N* = 799 Age ranges: <20 *n* = 495 (62.5%) >30 *n* = 297 (37.5%) *N*male n = 114, 14.4% *N*female *n* = 677, 85.6% Nursing: *n* = 799, 100%	Nurse-reported quality of care Patient Safety Outcomes Comfortability reporting incidents	Nurses who experience of incivility: From physicians 1+ times/week had 62% lower odds of reporting high-quality care (OR = 0.38, CI = 0.18–0.83) and 54% less likely to feel comfortable reporting safety problems (OR = 0.46, CI = 0.22–0.98) compared with nurses who never experience physician incivility From other employees 1–3 times/month had 44% lower odds of reporting high-quality care (OR = 0.56, CI = 0.38–0.84), 47% less likely to feel comfortable reporting safety problems (OR = 0.53, CI = 0.34–0.81) and 1+ times per week had 71% lower odds of reporting high-quality care (OR = 0.29, CI 0.15–0.56), 65% less likely (OR = 0.35, CI = 0.18–0.67) to report safety problems compared with those who report 'never' experiencing incivility. From physicians 1–3 times per month were less likely to rate favourable patient safety grade (OR = 0.18, CI = 0.07–0.41) and 1+ times/week (OR-0.68, CI = 0.47–0.97) From other employees 75% lower odds of reporting a favourable patient safety grade (OR = 0.25, CI = 0.13–0.50)	Custom developed [NS]
Cochran (2015), USA	*N* = 19 Age: M36, Male: 48%, Female: 52% Nursing: *n* = 6, Med Students: *n* = 5, Physicians: *n* = 8	Teamworking surgical errors	Incivility shifts focus from patient to surgeon (12 participants) and increases surgical errors (10 participants)	Semi-structured Interviews [NS]
Coe (2008), England	*N* = 391 Age and gender not recorded, Nurses: *n* = 227, 58% OT Practitioners: *n* = 70, 17.9% Consultant surgeons: *n* = 24, 6.1%, Junior Surgeons: *n* = 14, 4.2%, Consultant anaesthetists: *n* = 39, 9.9%, Junior anaesthetists: *N* = 17, 4.2%	Teamworking shared goals for patient care	Higher aggression from surgeons associated with perception that professional role not understood within MDT (69.3% *n* = 52, $p < .003$)- association not repeated with aggression from other groups Daily incivility re-overrunning operating lists associated with perception that role is poorly understood in MDT ($p < .001$) Daily incivility re-list order associated with perception that role is poorly understood in MDT ($p = .019$) Non-significant association between higher perception of aggression and lower perception of shared treatment goals	Custom questionnaire on teamworking and disagreement [NS]
Cooper (2019), USA	*N* = 202 (all surgeons) Surgeon demographics not described	Surgical complications	Among 13,653 patients in this cohort study undergoing surgery performed by 202 surgeons, patients whose surgeons had a higher number of co-worker reports had a significantly increased risk of surgical and medical complications. The adjusted complication rate was 14.3% higher for patients whose surgeon had one to three reports and 11.9% higher for patients whose surgeon had four or more reports compared with patients whose surgeon had 0 reports. Patients whose surgeon had one to three reports were at 18.1% higher estimated risk of complication, and those whose surgeon had 4 or more reports were at 31.7% higher estimated mean risk of complication compared with patients whose surgeon had 0 reports	Complaints management records Medical/surgical complication records

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TABLE 2 (Continued)

References, country	Sample: N age: M(SD) or ranges gender: *n*, % profession: *n*, % practice setting: *n*, %	Patient safety outcome studied	Results	Measures (standardized [S] or non-standardized [NS])
Dabekaussen et al. (2023), USA	*N* = 388 *N*female = 211 (54.3%) *N*male = 165 (42.5%)	Nurse-Physician relationships	Incivility experienced by physicians, 6.8% daily, 25.5% weekly and 30.7% monthly	Custom developed survey
Doo et al (2021), South Korea	*N* = 301 Age: M26.75 [SD 3.69] *N*female *n* = 293, 97.3% *N*male: *n* = 8, 2.7% Nursing: *n* = 301, 100%	Patient Safety Org Communication Satisfaction	Organizational Communication Satisfaction (OCS) negatively correlated with incivility ($r = -.248$, $p = <.001$) PS negatively correlated with incivility ($r = -.304$, $p < 001$) PS positively correlated with OCS ($r = .299$, $p < .001$) Organizational silence (OS) positively correlated with incivility ($r = .329$, $p = .001$) OS negatively correlated with OCS and PS ($r = -.200$, $p = .001$ and $r = -.198$, $p = .1$), respectively	NAQ-R [S] Kang and Co Organizational Silence Assessment [S] Hong Organizational Communication Satisfaction [S] Patient Safety Culture Survey [NS]
Gimeno (2012), Costa Rica	*N* = 625 age ranges: 19–33: *n* = 174, 29.8%, 24–41: *n* = 163, 24.2%, 42–49: *n* = 148, 22.7%, 50+: *n* = 140, 23.3% *N*male *n* = 284, 47.5%, *N*female *n* = 340, 52.5% Health aux: *n* = 154, 25.9%, Nurses: *n* = 185, 30.2%, Physicians: *n* = 79, 11.6%	Safety Climate	Exposure to low safety climate associated with greater prevalence of inciviltiy (OR >3.29, $p < .05$)	Incivility: Felkner verbal abuse [NS] Other custom scale [NS]
Hains (2007), Canada	*N* = 87 Age: M = 46.1 (site 1) and M = 44.1 (site 2) Female: 93% (site 1) and 91% (site 2) Male: 7% (site 1) and 9% (site 2) Nursing: *n* = 87, 100%	Safety Climate Hands Free Technique	Physician incivility associated with: orderliness ($r = -.25$; $p = .020$), no hindrances ($r = -.34$; $p = .001$), mgt support ($r = -.37$; $p < .001$), feedback/training ($r = -0.22$; $p = .042$), good communication ($r = -0.38$; $p = .001$) Supervisor incivility related to: feedback/training ($r = -.22$; $p = .042$), good communication ($r = -.32$; $p = .002$). For co-worker incivility: good communication ($r = -.37$; $p < .001$), Physician incivility borderline effect on Hands Free Technique ($p = .06$)	Incivility: WIS [S]
Hamblin et al. (2015), USA	[of people reporting incidents] Age: M40.76 Male: 19% Female: 81% Nursing: 52%	Duties and responsibilities Methods of care Poor performance Protocol Adherence High workloads (as causes of incivility reports)	Of 135 events, the following causes (can be more than 1 per event) Duties and responsibilities *n* = 29 Methods of care *n* = 16 Poor performance *n* = 15 Protocol Adherence *n* = 16 High workloads = 7	Custom thematic analysis protocol [NS]
Heslin et al. (2019), USA	Age: not collected Gender: not collected *N* = 214 Medical *n* = 214, 100%	Potential patient safety events	Increasing scores for egregiousness (3.3 [SD 0.9]) and stress of clinical situation (5.2 [SD 1.7]) were significantly related to patient safety issues. Where incivility is associated with patient safety, most significant predictor was unclear policies (odds ratio 3.03)	Custom complaint analysis tool [NS]
Higgins and MacIntosh (2010), Canada	Age: 'range from 28 to 58, most over 50' *N* = 10 Female *n* = 10, 100% Nursing *n* = 10, 100%	Patient Safety Culture	Physician incivility associated with loss of communication, more mistakes due to less confidence, distraction from patient monitoring	Semi-structured Interviews [NS]

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TABLE 2 (Continued)

References, country	Sample: N age: M(SD) or ranges gender: *n*, % profession: *n*, % practice setting: *n*, %	Patient safety outcome studied	Results	Measures (standardized [S] or non-standardized [NS])
Hossny (2021), Egypt	Age band: <30 *n* = 60, 43.2% >30 *n* = 79, 56.8% *N* = 139 *N*female = 117, 84.3% *N*male *n* = 22, 15.8% Nursing: *n* = 139, 100%	Nurse–physician collaboration	SCPI was significantly positively correlated with incivility response (R) [0.383] policies and procedures (PP) [0.388] and significant negative correlation with incivility intolerance (II) [−0.365] DMP was significantly positively correlated with R [0.270] and PP [0.318] and significant negative correlation with II [−0.199] NPC significantly positively correlated with R [0.291], PP [0.380] and significant negative correlation with II [−0.297] Overall, significant correlations existed between each of the items in the NPSC with the PWCC	Perceived Workplace Civility Climate Scale [S] Nurse-Physician Collaboration Scale [NS]
Johnson (2020), USA	*N* = 58 (all nurses) Mean age 31.7 [SD 7.98] *N*Female = 56, *N*Male = 2	Clinical performance in CPR Teamwork	Effect of incivility Overall Simulation Score- control: 46.56 ± 19.35 Experimental: 46.80 ± 19.48 Cognitive Score- control: 3.21 ± 1.20, Experimental 3.26 ± 1.39 TEAM Mean Score—control: 3.32 ± 0.69, Experimental: 3.22 ± 0.46 TEAM Global Rating Score—control: 8.06 ± 1.51, Experimental: 7.80 ± 1.06	Observations of simulation from a randomized control trial [NS]
Katz et al. (2019), USA	*N* = 67 Age Band: 25–35: *n* = 64, 97%, 36–45: *n* = 1, 1.5%, 46–55: *n* = 1, 1.5% *N*female *n* = 20, 29.9%, *N*male *n* = 47, 70.1%	Anaesthesiology resident procedural performance Help seeking and information sharing	Surgeon incivility associated with reduced: communication, discusses differential with surgeon, requests anaesthesiology help, requests the surgeon open, requests the surgeon get help, administration of fluids OR 0.126 (95% CI 0.006–2.54), administration of vasopressor 0.321 (…), decreased anaesthetic agent, placed second IV line, requests bloods be brought to theatre	Brief Fear of Negative Evaluation Scale [S] Sensitivity to Criticism Scale [NS]
Kaiser (2017), USA	Age: not reported *N* = 237 Gender: not reported Nursing *n* = 237, 100%	Leadership style	Transformational leadership style most strongly reduced incivility ($F1,234 = 61.7$, $p < .05$), variance is $r^2 = .21$	Incivility NIS (Guidroz) [S]
Keller et al. (2019), Switzerland	*N* = 30 Age, gender, prof not specified	Teamwork/collaboration quality	More incivility was significantly related to lower perceived teamwork quality for all team members except anaesthetists. Each additional incivility per hour relates to a quarter point (*B* = −0.256) decrease in teamwork quality index	Observation/coding [NS]
Laschinger (2014), Canada	*N* = 332 Age: M = 42.17 (SD = 13.01) *N*female: *n* = 298, 88.7% *N*male: *n* = 37, 11.0% Nursing: *n* = 332, 100%	Patient safety risk nurse-assessed patient outcomes	Co-worker incivility negatively correlated to quality of care (*r* = −.19), patient/family complaints (*r* = .17) positively correlated to medication error (*r* = .05), nosocomial (*r* = .16), patient falls (*r* = .04), work-related injuries (*r* = .09) and patient safety risk (*r* = .21) Physician incivility negatively correlated to quality of care (*r* = −.23), patient/family complaints (*r* = .21) positively correlated to medication error (*r* = .11), nosocomial (*r* = .12), patient falls (*r* = .05), work-related injuries (*r* = .15) and patient safety risk (*r* = .23) Supervisor incivility negatively correlated to quality of care (*r* = −.20) patient/family complaints (*r* = .12) positively correlated to medication error (*r* = .02), nosocomial (*r* = .05), patient falls (*r* = .03), work-related injuries (*r* = .14) and patient safety risk (*r* = .20)	NAQ-R [S] WIS [S] Patient Safety Risk scale Sochalski Nurse-Assessed Adverse Events Perception of Patient Care Quality

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TABLE 2 (Continued)

References, country	Sample: N age: M(SD) or ranges gender: *n*, % profession: *n*, % practice setting: *n*, %	Patient safety outcome studied	Results	Measures (standardized [S] or non-standardized [NS])
Laschinger and Read (2016), Canada	*N* = 993 Age: M = 27.44 (SD = 6.35) *N*female = 912, 92.6% *N*male *n* = 73, 7.4% Nursing: *n* = 993, 100%	Leadership style	Co-worker incivility negatively correlated to authentic leadership (*r* = −.23*), person-job fit (*r* = −.45*) and civility norms (*r* = −.51*) positively correlated to burnout (*r* = .34*)	Authentic Leadership Questionnaire Areas of Work-life Scale Civility Norms Questionnaire Workplace Incivility Scale Maslach Burnout Inventory
Laschinger (2014), Canada	Age: M = 41.52 [SD = 11.07] *N* = 1241 *N*female *n* = 1161, 93.6% Nmale *n* = 80, 6.4% AcuteHosp: *n* = 1089, 87.8% Other: *n* = 142, 11.5%	Resonant Leaderships	Leader involvement leads to decreased incivility; creating sense of teamwork and working together to complete tasks or decisions (r (235) = −.0441, $p < .05$). A model on the direct and indirect effects of resonant leadership, empowerment, co-worker incivility, emotional exhaustion and job satisfaction is presented	Workplace Incivility Scale [S] Resonant Leadership Scale [S] Workplace Empowerment Scale [NS]
Lim et al. (2022), Singapore	*N* = 486 *N*medical = 312 *N*nursing = 174	Negative patient outcomes, power distance (ethnoculture)	95% of medical staff and 93.7% nursing staff had witnessed disruptive behaviour	Nurse-Physician Relationship Survey [S]
McPherson and Buxton (2019), USA	*N* = 10 Gender: Not reported Nursing: *n* = 10, 100%	Adverse events Communication Collaboration	Incivility leads to ineffective shift handover, resulted in the feeling of dread of going to work, negatively impacted patient care and patient safety, leads to delay in clinical escalation	Semi-structured Interviews [NS]
Moreira (2019) Brazil	*N* = 27 Age: M33.8 (SD not reported) *N*female *n* = 25, *N*male *n* = 2 Nursing/Nursing assistants: *n* = 21 Physicians: *n* = 6	Teamworking Communication	Strategies for improved PSC (#units of research): Team meetings/feedback (3), Assess performance (2), Enable open conversation (5), Foster compliance (2), Professional recognition (3), Leadership (2), Cohesion (1)	Content analysis [NS]
Purpora et al. (2012), USA	*N* = 175 (100% nurses) Age: M 46.3 (SD = 12.3) *N*female *n* = 159, 91% *N*male *n* = 16, 9%	Peer relations Quality of Care Errors and adverse events	Incivility inversely associated with peer relations ($r = -.640$; $p < .01$) and quality of care ($r = -.469$; $p < .01$) Incivility positively correlated with errors and adverse events ($r = .442$; $p < .01$)	Incivility: NAQ-R[S] Nurse Staffing Quality of Care Questionnaire [S]
Riskin et al . (2019), Israel	Age: not reported *N* = 160 Gender: Not reported Nursing: *n* = 152, 95% Medical: *n* = 8, 5%	Adverse Events, Hand hygiene compliance, State depletion, Medication protocols, information sharing, teamwork	Incivility was negatively associated to information sharing among team members ($p = .046$). Incivility was a negative predictor for had hygiene compliance ($p = .03$) and positively correlated to team members' state depletion ($p = .002$). State depletion mediated the negative relationship between rudeness and medication protocol compliance and team information sharing	Rudeness and incident reporting diary [NS] Bunderson and Sutcliff [S] Twenge [S]
Riskin et al. (2017), Israel	Age: M 37.2 [SD = 7.5] *N* = 72 Gender: not reported Physicians: *n* = 24, 33% Nursing: *n* = 48, 66%	Diagnostic performance Procedural performance	Overall diagnostic performance ($a = .90$, ICC = 0.19) and procedural performance ($a = .93$, ICC = 0.35) both negatively affected by rudeness. Rudeness negatively affected most of the 10 individual performance items in above two measures. Rudeness predicted diagnostic and procedural performance simultaneously was significant (F[2,69] = 4.62, $p = .013$, $n2 = 0.118$) and explained 12% variance in performance. Information sharing mediated the adverse effect of incivility on diagnostic performance and help-seeking mediated the effect of incivility on procedural performance	Developed scripted incivility stimulus [NS] Simulation [NS]

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TABLE 2 (Continued)

References, country	Sample: N age: M(SD) or ranges gender: *n*, % profession: *n*, % practice setting: *n*, %	Patient safety outcome studied	Results	Measures (standardized [S] or non-standardized [NS])
Rosenstein & O'Daniel (2005), USA	*N* = 1509 Age and gender not reported Nursing: *n* = 1091, 72% Medical: *n* = 402, 27% Executive: *n* = 16, 1%	Preventable adverse events concentration, team collaboration, information transfer, communication nurse-physician relations	Incivility associated with reduced: Patient satisfaction: *n* = 1102 (75%), Quality of care: *n* = 1053 (72%), Incivility could negatively impact patient outcomes: *n* = 904 (94%), Aware of potential adverse outcome from incivility: *n* = 896 (60%), Aware of specific, adverse event that did occur due to incivility: *n* = 249 (17%) The above event could have been prevented: *n* = 195 (78%), 'Sometimes' 'frequently' or 'constantly' perceived incivility linked with Adverse events: *n* = 961 (66%), Errors: *n* = 1034 (71%), Patient Safety: *n* = 773 (53%), Patient mortality: *n* = 366 (25%)	Incivility and patient safety: Rosenstein and O'Daniel [NS]
Rosenstein& O'Daniel, (2006), USA	*N* = 244 Age and gender not reported Physician: *n* = 82 Nursing: *n* = 95 Surgical Technologists: *n* = 18 Other perioperative team: *n* = 4	Adverse events, medical errors, compromise in patient safety, patient mortality, collaboration communication, information transfer, nurse–physician relations	Effect of incivility: reduced collaboration (89%), reduced information transfer (86%), reduced communication (89%), impaired nurse–physician relations (87%), impaired quality (68%), linked to adverse events (67%), medical errors (67%), compromised patient safety (58%), linked to patient mortality (28%), could negatively affect patient outcomes (94%)	Incivility: Rosenstein and O'Daniel Questionnaire [NS]
Rosenstein & O'Daniel, 2008, USA	*N* = 4530 Age and gender not reported Nursing: *n* = 2846 Physicians: *n* = 944 Executives: *n* = 40 'Other': *n* = 700	Adverse events, medical errors, compromise in patient safety, patient mortality, collaboration communication, information transfer, nurse–physician relations	Effect of incivility: reduced collaboration (89%), reduced information transfer (87%), reduced communication (91%), impaired nurse–physician relations (99%), impaired quality (71%), linked to adverse events (67%), medical errors (71%), compromised patient safety (51%), linked to patient mortality (27%)	Incivility: Rosenstein and O'Daniel Questionnaire [NS]
Rosenstein and Naylor (2012)	*N* = 370 Age and gender not reported Nursing *n* = 239, Physician *n* = 44 Admin *n* = 28, Technicians *n* = 26, Physician assistants *n* = 3, Other: *n* = 30	Adverse events, medical errors, compromise in patient safety, patient mortality, collaboration communication, information transfer, nurse–physician relations	Effect of incivility: reduced collaboration (51.8%), reduced information transfer (42.0%), reduced communication (55.6%), impaired nurse-physician relations (44.7%), impaired quality (35.8%), linked to, adverse events (32%), medical errors (35.4%), compromised patient safety (24.7%), linked to patient mortality (12.3%)	Rosenstein and O'Daniel Incivility Questionnaire [NS]
Skarbek (2015), USA	*N* = 6, *N*female: *n* = 5, 83.3% *N*male: *n* = 1, 16.6% Nursing: *n* = 6, 100%	Patient impact, respect collaboration, collegiality	All participants reported that incivility negatively impacts patient care and places patient's safety at risk	Semi-structured Interviews [NS]
Tikva et al. (2023), Israel	*N* = 236	Errors and adverse events, Safety Climate, in COVID-19 teams	Incivility was negatively correlated with safe climate and positively with errors	Custom developed survey

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TABLE 2 (Continued)

References, country	Sample: N age: M(SD) or ranges gender: *n*, % profession: *n*, % practice setting: *n*, %	Patient safety outcome studied	Results	Measures (standardized [S] or non-standardized [NS])
Vauk (2022), Switzerland	*N* = 125 Mean age 36.4 [SD 10] *N*female = 83, *N*male = 42 Physicians 45, 36%, Nurses 66, 53%, Other, 14, 11%	Speaking up for safety behaviours	Effect of incivility Witnessing a civil or supportive response to speaking up Psychological safety And witnessing an uncivil or rude response were all positively associated with speaking up behaviours.	Observations of simulation from a randomized control trial [NS]
Veltman (2007), USA	*N* = 56 Gender: not reported Nursing: *n* = 56, 100%	Near misses adverse outcomes	53% reported near misses where incivility contributed 41.9% reported adverse events where incivility contributed	Incivility: NIS [S]
Walrath (2010)	*N* = 96 (Nurses 100%) Age: M = 45 *N*female *n* = 91, 95%, *N*male n = 5, 5%	Distraction Quality Safety Nurse–physician relations	'Incivility leads to distraction and jeopardizes the quality and safety of patient care' Nurses 'in the firing line' of incivility when escalating clinical concerns	Semi-structured focus group interviews [NS]
Walrath et al. (2013)	*N* = 1559 Ages: 21–70 (51.9% were 32–51) RNs and affiliates: *N*female n = 657 (92.1%), *N*male: n = 53 (7.9%) Physicians: *N*female *n* = 144, 39.1%, *N*male *n* = 206, 60.9% RN: *n* = 987, 35.8% Physicians: *n* = 496, 20% 'Affiliates': *n* = 76, 16.2%	Harm to patients	Effect of incivility: 10.1% witnessed patient harm, 19.6% witnessed adverse event but unsure of harm Level of harm by those who reported it: Temporary harm: 77.2% Permanent harm: 10% Requiring life-sustaining interventions: 12.7%	Incivility: Walrath scale [S]
Wilson and Phelps (2013), USA	*N* = 130 (100% nurses) Age 30–39 years: *n* = 30, 23.1% 40–49 years *n* = 33, 25.3% >50 years *n* = 34, 26.2% Did not give age *n* = 25, 19% *N*female: *n* = 117, 90% *N*male: *n* = 113, 10%	Clarifying orders patient manual handling scope of practice patient interest	Due to incivility, rather than seeking help or clarification; 9.3% have muddled through patient procedures they felt unclear about, 11.6% have used a piece of medical equipment they were unfamiliar with, 25.6% have lifted or ambulated a heavy patient alone, 4.7% have given medication or treatment they were unsure about, 30.2% have interpreted an unreadable order the best they could, 6.9% have withheld a medication or not performed a treatment, 11.6% have carried out an order that they did not feel was in the best interest of my patient without challenging it	Incivility and patient safety: custom developed 28 item scale [NS]
Writght & Khatri (2015), USA	*N* = 241 Age: <20: 1%, 21–39: 44%, 40–59: 50%, Over 60: 5% *N*Female: 91%, *N*Male: 9% Nursing: 100%	Medical errors	Work-related incivility significantly associated with medical error (standardized beta weight 0.260). Person-related incivility significantly associated with medical error (standardized beta weight 0.370). When regressed along with psychological and behavioural responses: work-related dropped to −0.06 and person-related to 0.251. The effect of work-related incivility on medical errors is mediated fully by psychological responses. The effect of person-related incivility on medical errors is partially mediated by psychological responses	Incivility: NAQ-R [S] Incivility and patient safety Rosenstein and O'Daniel [NS]
Yokoyama et al. (2016), Japan	*N* = 825, Age: M = 36.9 (SD = 10.1) *N*female = 785, 95.2% *N*male = 37, 4.5% Nursing: *n* = 825, 100%	Healthy Work Environment (HWE)	Effect size of incivility on: Less years of experience in current workplaces (OR 0.93, 95% CI 0.87–0.99) Not always (in comparison to always) having the opportunity to request days off (OR 1.79, 95% CI 1.15–2.80). Lower scores on nurse manager ability, leadership and support of nurses (OR 0.59, 95% CI 0.39–0.90). Staffing and resource adequacy (OR 0.55, 95% CI 0.34–0.90)	Incivility: NAQ-R [S] Healthy Work Environment: PES-NWI [S]

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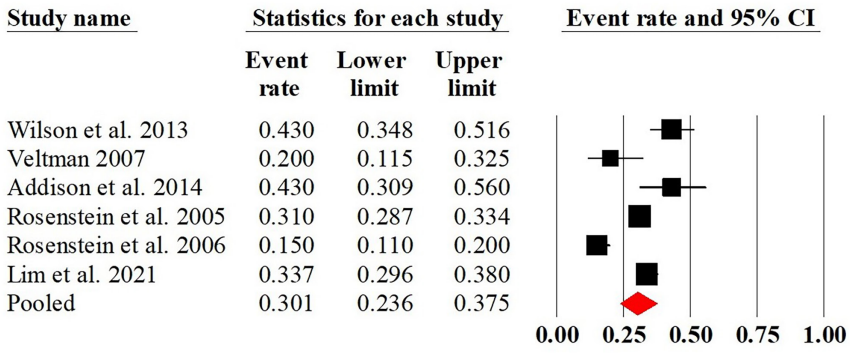

FIGURE 2 Pooled prevalence of witnessed incivility.

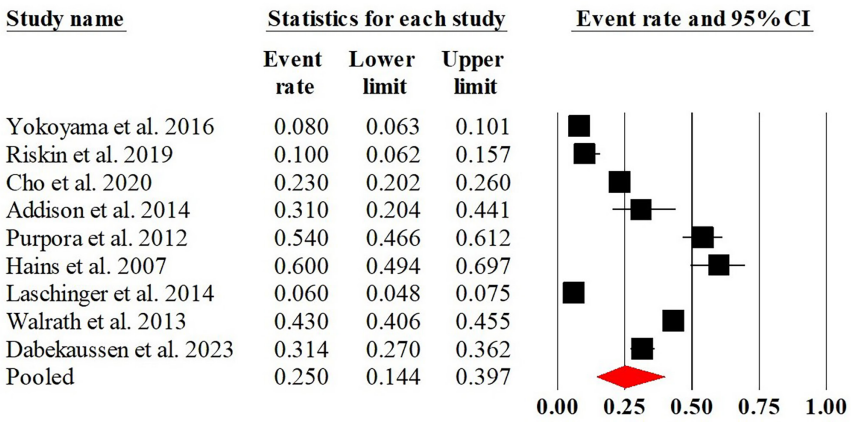

FIGURE 3 Pooled prevalence of experienced incivility.

3.1.2 | Prevalence of experienced incivility

Of the 41 included studies, nine reported prevalence of experienced workplace incivility, ranging from 7% to 76.4% (Addison & Luparell, 2014; Cho et al., 2020; Dabekaussen et al., 2023; Haines et al., 2007; Laschinger, 2014; Purpora et al., 2015; Riskin et al., 2019; Walrath et al., 2013; Yokoyama et al., 2016). The results of meta-analysis suggested a pooled prevalence of experienced incivility was 25.0% (95% CI [0.144, 0.397]), see Figure 3.

The heterogeneous test showed that the prevalence of experienced incivility varies substantially with $I^2 = 98.77$. Moderators of sample size, publishing year and country were entered into the meta-regression models. The results showed that the factors of sample size ($Q = 0.75$, $df = 1$, $p = .385$), publishing year ($Q = 0.22$, $df = 1$, $p = .641$) were not predictive for the differences in the observed prevalence, while country ($Q = 6.63$, $df = 3$, $p = .0848$) was predictive for the differences in the observed prevalence in different countries.

A *post-hoc* analysis of prevalence of experienced incivility was conducted using comparison analysis on prevalence of incivility by its frequency and source. The results indicated that the prevalence of nurses experiencing was 24.7% (95% CI [0.111, 0.463]). The prevalence of experienced incivility by its sources of co-worker, physician, supervisor, nurse, 'not specified' source and other employee were 34% (95% CI [0.060, 0.806]), 30.5% (95% CI [0.105, 0.621]), 25.5% (95% CI [0.041, 0.734]), 25.1% (95% CI [0.057, 0.651]) and 12.3% (95% CI [0.068, 0.212]) and 10.6% (95% CI [0.021, 0.392]), respectively.

3.2 | The analysis of RQ2: Effect of incivility on patient safety culture

Of the 41 studies included, 10 reported the effects of experienced or witnessed incivility on one or more of the domains of patient safety culture (Cho et al., 2020; Doo & Kim, 2020; Haines et al., 2007; Kaiser et al., 2017; Keller et al., 2019; Laschinger, 2014; Laschinger & Read, 2016; Purpora et al., 2012; Riskin et al., 2017; Yokoyama et al., 2016). Experienced and witnessed incivilities were not separated in the analysis many of the studies that looked at individual domains of PSC did not distinguish between witnessed or experienced incivility. The composite pooled effect size of experienced or witnessed incivility on PSC was OR = 0.590, 95% CI [0.515, 0.676], $p < .001$, meaning that the participants who experienced or witnessed incivility had a reduction of 41% in the odds of maintaining PSC compared to those who did not. Specifically to the individual domains of PSC, the pooled effect sizes of experienced or witnessed incivility on teamwork, reporting patient safety events, organization learning/improvement, management support for safety, supervisor/manager/clinical leader support for safety, communication openness, communication about error were OR = 0.250 (95% CI [0.054, 1.169], $p = .078$), OR = 0.590 (95% CI [0.458, 0.761], $p < .001$), OR = 0.809 (95% CI [0.652, 1.002], $p = .053$), OR = 0.387 (95% CI [0.171, 0.876] $p = .023$), OR = 0.417 (95%CI [0.302, 0.574], $p < .001$), OR = 0.330 (95% CI [0.178, 0.611] $p < .001$) and OR = 0.441 (95%CI [0.251, 0.774], $p = .004$), respectively. That is, people who experienced or witnessed incivility had a 75%, 41%, 19.1%, 61.3%,

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Study name	Group by Outcome	Statistics for each study			
		Odds ratio	Lower limit	Upper limit	p-Value
Hains et al., 2007	Communication about error	0.441	0.251	0.774	0.004
Pooled	Communication about error	0.441	0.251	0.774	0.004
Yokoyama et al., 2016	Communication/openess	0.840	0.400	1.762	0.645
Doo et al., 2011	Communication/openess	0.395	0.258	0.604	0.000
Hains et al., 2007	Communication/openess	0.250	0.155	0.404	0.000
Riskin et al., 2015	Communication/openess	0.116	0.043	0.315	0.000
Pooled	Communication/openess	0.330	0.178	0.611	0.000
Yokoyama et al., 2016	Leadership	0.590	0.388	0.896	0.013
Laschinger et al., 2016	Leadership	0.424	0.336	0.535	0.000
Kaiser et al., 2017	Leadership	0.253	0.189	0.338	0.000
Laschinger et al., 2014	Leadership	0.496	0.403	0.609	0.000
Pooled	Leadership	0.417	0.302	0.574	0.000
Yokoyama et al., 2016	Mangement support	0.550	0.338	0.895	0.016
Hains et al., 2007	Mangement support	0.236	0.102	0.544	0.001
Pooled	Mangement support	0.387	0.171	0.876	0.023
Yokoyama et al., 2016	Organisation learning/improvement	0.630	0.317	1.250	0.186
Laschinger et al., 2016	Organisation learning/improvement	0.831	0.663	1.042	0.109
Pooled	Organisation learning/improvement	0.809	0.652	1.002	0.053
Cho et al., 2020	Reporting patient safety events	0.590	0.458	0.761	0.000
Pooled	Reporting patient safety events	0.590	0.458	0.761	0.000
Yokoyama et al., 2016	Team work	0.750	0.499	1.127	0.167
Keller et al., 2019	Team work	0.404	0.214	0.763	0.005
Purpora et al., 2012	Team work	0.049	0.024	0.099	0.000
Pooled	Team work	0.250	0.054	1.169	0.078
Pooled	Overall	0.590	0.515	0.676	0.000

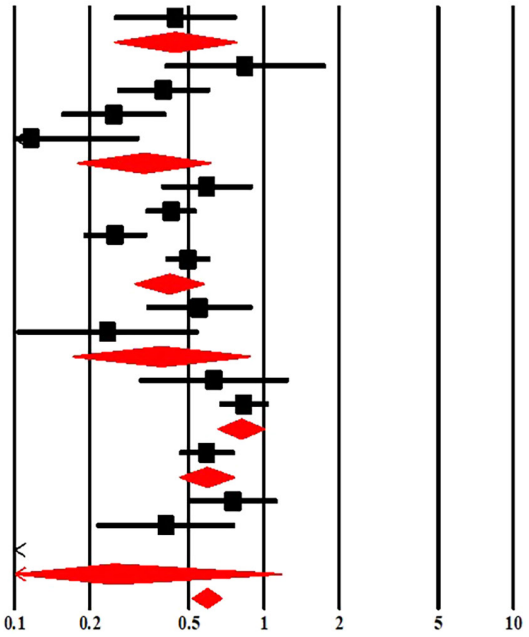

FIGURE 4 Pooled effect of incivility on domains of patient safety culture.

58.3%, 67%, 55.9% decrease in the odds of maintaining teamwork, reporting patient safety events, organization learning/improvement, management support for safety, leadership, communication openness, communication, respectively, compared to those who did not. Figure 4 presents the forest plot of the results. The heterogeneity indicator $I^2 = 85.81\%$ ($p < .001$) indicated that heterogeneity was substantial. The Egger's test (intercept = −2.290, $t = 1.636$, $df = 15$, $p = .122$) suggested that publication bias was not detected.

Due to the substantial heterogeneity, *a meta-regression* was performed. Moderators of sample size, publishing year and country were entered into the meta-regression models. The results showed that sample size ($Q = 13.99$, $df = 1$, $p < .001$) was predictive for the heterogeneity, while publishing year ($Q = 3.74$, $df = 1$, $p = .053$) and country ($Q = 10.66$, $df = 5$, $p = .056$) were not predictive for the heterogeneity.

3.3 | The analysis of RQ3: Effect of incivility on PSOs

Due to limited data, a meta-analysis was not conducted to analyse RQ3. Instead, a narrative synthesis was used. After extracting the data, outcomes were mapped against adverse events, patient safety risk, specific events, clinical performance and mortality.

Eight studies found that clinicians reported that they had witnessed adverse events where incivility had contributed, although these studies did not describe the specific types of incidents witnessed (Addison & Luparell, 2014; McPherson & Buxton, 2019; Patton, 2020; Rosenstein & Naylor, 2012; Rosenstein & O'Daniel, 2005, 2008; Veltman, 2007; Walrath et al., 2013). Seven studies reported that higher rates of incivility were associated with higher staff-rated patient safety risk that was related to the likelihood that an adverse event might occur (Addison & Luparell, 2014; Cho et al., 2020; Heslin et al., 2019; Purpora et al., 2015; Rosenstein & Naylor, 2012; Rosenstein & O'Daniel, 2005, 2008). Three studies reported that incivility is associated with the increase of specific types of near misses and adverse events, including medication errors (Riskin et al., 2019), nosocomial infection, falls (Laschinger, 2014) and post-operative complications (Cooper et al., 2019).

Two studies reported that incivility is associated with reduced procedural and diagnostic clinical performance (Katz et al., 2019; Riskin et al., 2017), while one study found no consistent effect on clinical performance (Johnson et al., 2020). Five studies reported that health practitioners perceived that incivility was positively associated with mortality. The range of staff reporting the association between incivility and mortality was between 12.3% and 28% (Addison & Luparell, 2014; Rosenstein & Naylor, 2012; Rosenstein & O'Daniel, 2005, 2008).

3.4 | The analysis of RQ4: What mechanisms underpin the relationship between incivility and PSC and PSO?

Due to limited data, a meta-analysis was not conducted to analyse RQ4. Instead, a narrative synthesis was used.

Mediating effects underlying the relationship between incivility and patient safety were explored in five studies (Keller et al., 2019; Riskin et al., 2017, 2019; Wright & Khatri, 2015). State depletion (the

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exhaustion of mental energy for reflective behaviour) and psychological responses were found to mediate the negative association between incivility, medication protocol compliance and team information sharing (Riskin et al., 2019; Wright & Khatri, 2015). Information sharing was found mediates the negative association between incivility and diagnostic performance, while help-seeking mediates the effect of incivility on procedural performance in a high-fidelity simulation (Katz,et al., 2019; Keller et al., 2019; Riskin et al., 2017).

4 | DISCUSSION

The systematic review and meta-analysis on the prevalence of workplace incivility among healthcare professionals and the effects of incivility on PSC and PSO resulted in 41 studies with a combined sample size of 16,199 participants included in the analysis, including at least 11,123 nurses.

The analysis of RQ1 indicates that nearly one-fourth (24.2%) of clinicians in hospitals experienced workplace incivility with a range between 12.7% and 41.3%, while nearly one-third (29.2%) witnessed incivility ranging between 20.2% and 40%. Nearly four out of 10 (35.4%) and one- fourth (24.7%) nurses witnessed and experienced incivility, respectively. The prevalence rates of experienced incivility in general healthcare professional and nurses are lower than the prevalence of incivility towards nurses estimated in a recent systematic review, which was to be 55.1%, 95% CI [48.05, 62.06] (Shoorideh et al., 2021). The discrepancies are likely to be caused by the sources of incivility in hospitals. Shoorideh et al. (2021) included studies reporting patient-instigated incivility, including from emergency department and psychiatric settings where there is a high prevalence of patient-related disruptive behaviour. The current review focuses specifically on interprofessional incivility, where patient-instigated incivility was not included.

While the findings support that the most common sources of incivility (witnessed and experienced) were by physicians, supervisors and co-workers. Nurses were perpetrators of incivility in nearly one-fourth of the witnessed (23.2%) and experienced (25.1%) incivility. The physicians and supervisors being the most common sources of incivility may reflect organizational hierarchies that are prominent in hospitals, where differences in organizational and professional status are relevant to the patterns of communication and interpretation of verbal messages (Porath & Pearson, 2010). Whatever the mechanism, the prevalent experience of physician-instigated incivility in interdisciplinary teams points to the important role of authority gradient in the experience of incivility, again indicating an area for further research and potential intervention. The analysis of the rates of nurse-instigated incivility is also concerning. These findings support earlier research by Guidroz et al. (2010) that incivilities experienced by nurses instigated by other nurses may be underreported as the behaviour may be rationalized or empathized because of perceived similarity with peers. Further, the experience of incivility form within the same professional group may lead to different consequences, such as social isolation, fear or anxiety, compared with incivility from a different professional group.

The analysis of RQ2 indicates that experienced or witnessed incivility was associated with 41% reduced odds of maintaining PSC. Of the seven PSC domains reported, while higher incivility was associated to the reduction of PSC in all seven domains, the two most substantially associated with incivility were teamwork and communication openness, with 75% and 67% reduced odds, respectively. The findings in the current study are consistent with findings in a recent systematic review predictors and triggers of incivility within healthcare teams, which found that communication issues are predictors of higher incivility levels within healthcare teams (Keller et al., 2020). Ineffective communication in healthcare, and the underlying substandard teamwork processes have been identified as a public health issue and a significant cause of preventable patient harm (Rosen et al., 2018). The impact of incivility on these domains relates to patient safety because the delivery of healthcare is highly multidisciplinary and interdependent. The current findings suggest that the knowledge and skills to respond constructively to incivility, to maintain interprofessional teamwork and communication, should be included be included in the interventions aiming to improve PSC.

The analysis of RQ3 indicates that incivility is associated with decrease of PSOs, including increases of near misses, adverse events, mortality and reduced procedural and diagnostic performance. The current findings are consistent with findings in Phillips et al.'s (2018) integrative review on systems thinking and incivility in nursing practice, which reported that incivility often interrupts safe healthcare and leads to patient-related errors and negative PSOs. Our findings also reflect the findings in a recent systematic review on the impact of interprofessional incivility on medical performance, service and patient care, which found that higher levels of incivility are associated with lower levels of medical team performance. In relation to patient care, incivility positively correlated with complications, medical errors and mortality (Lewis, 2023). As suggested by Pattani et al. (2018), poorer PSOs may be a result from decreased PSC caused by incivility, including the lack of consultation between colleagues, ineffective communication and poor collaboration and teamwork.

The analysis of RQ4 found the mediating effects of state depletion, psychological responses, information sharing and help-seeking on the relationships between incivility and several domains/aspects of PSC and PSO. The mediating effects are manifested through the pathways with multilevel factors, including the individual (state depletion, psychological responses, help-seeking), team level (teamwork quality, information sharing, urgent competing responsibilities) and organizational (unclear hospital policies, organizational communication satisfaction). Notably, there were no studies exploring communication style and conflict handling style as mediators or moderators in the relationship between incivility and patient safety. These factors have been explored in non-healthcare literature and are relevant to contemporary understandings of incivility (Cortina et al., 2022).

This study has several limitations. Firstly, because only studies that explored both incivility and patient safety were included, the findings of prevalence meta-analysis were not informed by studies that looked only at incivility. Secondly, although several robustly

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designed studies investigated the effect of incivility on PSOs, a meta-analysis was not performed due to limited available data. Thirdly, most included studies used self-reported PSOs rather than objective, clinical sources such as incident reporting system records. Self-reported PSOs may introduce response bias in the data. Fourthly, the heterogeneity analyses showed substantial differences in the prevalence of witnessed and experienced incivility, and the effect sizes of incivility on PSC among the studies included in the meta-analysis. The results indicate that both prevalence and the effect sizes vary significantly across the studies (Borenstein, 2019). Consequently, the generalization of the current results needs to be cautious. Finally, this systematic review included both qualitative and quantitative studies. Combining methods in a single systematic review (for example, studies with large sample sizes vs very small samples) can lead to a risk of distortion of results and thus to misrepresentations.

4.1 | Implications for policy and practice

There are three key implications of this study for practice and theoretical understanding of incivility for nurses and health services. Firstly, by establishing the effect of incivility on patient safety culture and outcomes, it demonstrates that interventions focusing on incivility are a valuable mechanism for improving patient care. Secondly, it guides the design of interventions by highlighting which domains of patient safety culture are most associated with incivility. In addition to guiding intervention design, this study supports an important direction for future research, in exploring the factors which mediate the relationship between workplace incivility and patient safety. Thirdly, the finding that some nurses were perpetrators of incivility provides a theoretical challenge to the model of workplace incivility across health systems, proposed by Phillips et al. (2018), which suggests that nurses are the core target of incivility within the broader context of healthcare system. The model also suggests that within the context of incivility, patients and family members often target the nurse. However, our study indicates that some nurses are the sources of interprofessional incivility in hospitals.

5 | CONCLUSION

This meta-analysis and systematic review found that incivility, both witnessed and experienced, is prevalent in healthcare settings and has a negative effect on patient safety culture and outcomes. This review highlights a gap in the existing literature about the mechanisms of this relationship, in particular a lack of existing knowledge on how interpersonal factors such as conflict handling style, psychological resilience and self-efficacy, mediate the relationship between workplace incivility and patient safety. This is an important direction for future research, now that the association between incivility and safety has been established, as an understanding of the mechanisms of this relationship will guide the development of effective interventions.

AUTHOR CONTRIBUTIONS

All authors contributed to the conception, design, editing and final approval of this article.

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CONFLICT OF INTEREST STATEMENT

No conflict of interest has been declared by the author(s).

PEER REVIEW

The peer review history for this article is available at https://www.webofscience.com/api/gateway/wos/peer-review/10.1111/jan.16111.

DATA AVAILABILITY STATEMENT

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

STATISTICAL EXPERTISE

a. The authors have checked to make sure that our submission conforms as applicable to the Journal's statistical guidelines.
b. There is a statistician on the author team; A/Prof. Wendy Li.
c. The authors affirm that the methods used in the data analyses are suitably applied to their data within their study design and context and the statistical findings have been implemented and interpreted correctly.
d. The authors agree to take responsibility for ensuring that the choice of statistical approach is appropriate and is conducted and interpreted correctly as a condition to submit to the Journal.

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