The association of physician empathy with cancer patient outcomes: A meta-analysis

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REVIEW

The association of physician empathy with cancer patient outcomes: A meta-analysis

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Abstract

Objective: In oncology, research remains unclear as to whether physician empathy is associated with patient outcomes. Our goal was to answer this question and explore potential moderators of the association.

Methods: In this meta-analysis on adult cancer care, we excluded randomised controlled trials, and studies of survivors without active disease or involving analogue patients. Eight databases were searched, in addition to reference lists of relevant articles and grey literature. Two reviewers independently screened citations, extracted data, assessed risk of bias and graded quality of evidence by using the AXIS tool. Effect size correlations (ESr) were chosen and pooled by using a random effect model. Subgroup analyses were performed, and statistically significant variables were introduced in a meta-regression. Several methods were used to explore heterogeneity and publication biases.

Results: We included 55 articles, yielding 55 ESr ($n = 12{,}976$ patients). Physician empathy was associated with favourable patient outcomes: ESr = 0.23, 95% confidence interval (CI) (0.18 to 0.27), $z = 9.58$, $p < 0.001$. However, heterogeneity was high, as reflected by a large prediction interval, 95% (−0.07 to 0.49) and $I^2 = 94.5\%$. The meta-regression explained 53% of variance. Prospective designs and physician empathy assessed by researchers, compared with patient-reported empathy, decreased ESr. Bad-news consultations, compared with all other types of clinical encounters, tended to increase ESr.

Conclusion: Patient-reported physician empathy is significantly associated with cancer patient outcomes. However, the high heterogeneity warrants further longitudinal studies to disentangle the conditions under which physician empathy can help patients. Recommendations are proposed for future research.

KEYWORDS
bad news, cancer care, communication, meta-analysis, oncology, patient outcome, physician empathy

1 | INTRODUCTION

Cancer patients undergo stressful events such as diagnosis, heavy treatments and side effects, the threat of or actual disease progression, uncertainty regarding the future and eventually, entry into palliative care. Several factors, such as physician empathy (PE), can help patients face these difficult times. Because there is no consensual definition of empathy, as demonstrated by numerous studies that try to address this issue,[1,2] it is crucial to precisely define it when working on the topic. Considering the most used patient-reported questionnaire of PE, the CARE,[3] PE refers to how physicians (1) establish a good rapport with the patient by putting them at ease, actively listening and paying full attention to them (i.e., establishing rapport), (2) demonstrate a genuine interest in and a full understanding of, the patient, as well as care and compassion through a connection on a human level (i.e., the emotional process, considered most important by patients[1,2]) and (3) are positive, explain things clearly, help the patient to take control and make a plan of action with them (i.e., the cognitive process, which promotes patient empowerment). This definition of PE was the one used in this meta-analysis.

On a biological level, empathy is related to the hormone oxytocin[4] which has anti-proliferative, anti-metastatic and anti-angiogenic effects in some cancers.[5] Perceived empathy, as a component of emotional support, may also be related to less inflammation,[6] which has a well-established role in cancer progression.[7] On an emotional level, Neumann et al. (2009) posited that PE is supposed to help patients feel supported and improve care by better addressing their various needs, which would be more easily expressed by the patients in front of an empathetic physician.[8] A systematic review that investigated the links between PE and patient outcomes (PO) in oncology seemed to support this theory: PE had beneficial effects on various PO.[9] However, there was heterogeneity in the results regarding the effect sizes and even the direction of the link: strikingly, in some studies, PE was associated with negative PO such as higher anxiety. Results of patient interviews suggested that an unusually high level of empathy may inadvertently convey to patients the idea that something very serious is happening and increase their already high levels of worry.[10] Furthermore, medical empathy has also sometimes been associated with less favourable medical outcomes, such as a decreased probability of quitting smoking in an intervention aimed at helping people to quit smoking.[11] This suggests that, in medical settings, empathy should not be deployed at the expense of medical priorities and warrants further investigation.

A meta-analysis was therefore needed beyond a systematic review. Indeed, conclusions based on the number of studies with significant *p* values in a systematic review cannot be relied on.[12] Given the divergent results found in the literature, we expected high heterogeneity in the meta-analysis, and one of our goals was to explain this heterogeneity. From previous data, we assumed that the following three variables could moderate the link between PE and PO:

1. Type of consultation. There is a dearth of studies that compare the effect of PE by treatment phase or cancer stage.[9] Yet, patients' sensitivity to empathy could depend on the type of consultation: the beneficial effect of PE should be stronger in bad-news consultations, in which patients' emotions may be the priority and need to be addressed, than in other less emotional contexts.[13] In line with this hypothesis, patients' expectations of PE have been shown to be high in bad-news contexts.[14]
2. The way empathy is assessed. Our previous systematic review[9] pointed out that patient assessment of PE was more associated with beneficial PO than other types of assessments were, such as doctor-reported empathy or empathy assessed by researchers, something that has already been verified in psychotherapy[15] and in a recent study in cancer care.[16]
3. The empathic processes. PE is often conceptualised as a whole, whereas three different processes can be identified[17] as previously described: (1) the process of establishing a good rapport with the patient (2) the emotional process and (3) the cognitive process. The differentiation of the three processes may inform research. For example, establishing a good rapport and the emotional process were both associated with fewer surgical complications in patients with digestive cancer, whereas the cognitive process was not.[18]

To the best of our knowledge, there is no meta-analytic conclusion on whether PE is associated with PO in cancer care, and if it is, to what extent and in which conditions the association may be strongest. Our goal was to answer these questions. They are all the more important because empathy is a demanding task, especially for clinicians, who have many institutional barriers to empathy, such as time pressure and administrative load, and who are not always comfortable with patients' emotions and perspectives. Thus, it is important to motivate clinicians towards empathy by establishing the link between their empathy and PO and the conditions in which empathy may have the strongest effects. This is all the more important since communication skills training improves PE.[19]

2 | METHODS

The analysis was conducted by following the AMSTAR 2 guidelines.[20]

2.1 | Protocol and registration

We registered the protocol prospectively on PROSPERO in November 2018 (record n° CRD42018112729).

2.2 | Eligibility criteria

Studies could be included if they met the following inclusion criteria:

1. Dealt with an adult oncology population at any stage, with any localisation, in curative or palliative settings, and with new or recurring cancer patients.

2. Addressed PE, that is, at least contained one item very similar to those of the emotional process of the Consultation and Relational Empathy (CARE) measure[3] (i.e., the physician being interested in the patient as a whole person, fully understanding patients' concerns and showing care and compassion; items 4, 5 and 6, respectively), as this process is the core of empathy.[1] Therefore, articles dealing with empathy constructs but named differently (e.g., communication or compassion) could be included as long as they met these inclusion criteria (see Appendix A for search strategy). The items of the scales used to assess PE in the candidate articles were carefully considered to determine whether the article dealt with empathy as defined in these inclusion criteria.
3. Investigated *physician* empathy (surgeon, oncologist, and any medical specialist that patients met for their cancer care).
4. Involved quantitative research.
5. Assessed the association of PE with one or several PO. Outcomes could be defined as the changes that result from health care.

Studies were excluded on the basis of the following exclusion criteria:

1. Studies about (a) survivors who no longer have cancer or (b) literature reviews and meta-analyses, as the data did not allow us to perform our analyses. However, their references were screened.
2. Studies about nurses or allied healthcare professionals exclusively.
3. Studies about primary care physicians, because the lack of coordination of cancer care between hospitals and community physicians sometimes makes it difficult for them to fully support their patients on their cancer care journey.
4. Studies that (a) artificially manipulated PE such as in analogue patient studies, (b) used standardised patients and (c) were about communication skill training.

2.3 | Information sources and search

The databases MEDLINE, PsycINFO, Academic Search Premier, Scopus, PsycARTICLES, Web of Science, Cochrane Library and Open Grey were searched. The following limiters were applied when they were available: English/French language, human studies, adult population, abstract available, peer-reviewed articles. Articles from 1 January 1990, up to 10 November 2022, were extracted. Reference lists of retained and relevant studies were hand searched.

2.4 | Data collection, extraction and management

A list of search terms was developed according to the literature. Different combinations of search terms were tested before extraction. The search strategy is available in Appendix A. Titles and abstracts of the retrieved studies from the search strategy and those from additional sources were screened independently by two authors (Lucie Gehenne and Christelle Duprez) to identify studies that met the inclusion criteria. The full texts of these eligible studies were retrieved and independently assessed for final inclusion by two team members (Lucie Gehenne and Christelle Duprez). Disagreements were discussed with one of the other two authors (Sophie Lelorain and Véronique Christophe).

A standardised, pre-piloted form was used to extract data from the included studies for assessment of study quality, evidence synthesis and data. This pre-piloted form was edited, validated by the other two authors (Sophie Lelorain and Véronique Christophe), and tested on 5% of studies. After it was considered satisfactory, the following data were extracted: information about the report (year of publication, author, funding), definition of PE and its measure (type and validity of the measure, empathy in a specific consultation or in general, interpretation of the score/tool), study setting, participants and sample characteristics and outcomes and their measures. Two authors (Lucie Gehenne and Christelle Duprez) extracted data independently for 84% of the articles; discrepancies were identified and resolved through discussion with the other two authors (Véronique Christophe and Sophie Lelorain). The remaining 16% of articles were coded by two authors (Lucie Gehenne and Sophie Lelorain) and discrepancies resolved with the other two (Christelle Duprez and Véronique Christophe).

The evaluation of the quality of studies and risk of bias was assessed by using the 20-item AXIS tool,[21] one of the rare available tools to assess the quality and risk of bias of observational studies. For each item, the answers are yes, no, don't know/comment. The quality of studies was independently coded by two authors (Lucie Gehenne and Christelle Duprez) and discussed with one of the other two authors (Véronique Christophe and Sophie Lelorain) to reach consensus. A score out of 20 was calculated for each article.

2.5 | Analyses

Correlation was chosen as the effect size (ESr). A negative value indicates an unfavourable association between PE and PO (e.g., PE is associated with higher patient anxiety), whereas a positive value indicates a favourable outcome (e.g., PE is associated with higher patient satisfaction). When ESr was not directly available from studies, other ES were retrieved and transformed into Fisher's Z by Comprehensive Meta-Analysis (CMA) software. When linear standardised coefficients were available, they were transformed into correlations by using the formula by Peterson and Brown.[22] Even though the method may not have been most appropriate for high ES, we used it because high ES are rare in the field and it is by far the most convenient method among those available.[23] All choices and computations of ESr are explained in Appendix B. A random-model effect was chosen corresponding to the various designs and variables in the field, which makes the existence of a common ES among studies unlikely.[12]

Heterogeneity was explored with the prediction interval, Q, T and I^2. Heterogeneity tests are aimed at determining whether the

observed variation reflects genuine variation (i.e., heterogeneity) or is due to random error. *Q* tests the null hypothesis that all studies share a common ES. *T* is the estimation of the standard deviation of the true effects. I^2 is the ratio of true heterogeneity to total variation in observed effects. It reflects the proportion of variance that is true but, contrary to a widespread misconception, says nothing about the absolute value of this variance.[24] For the latter question, the prediction interval is required, which informs us about how the true effects are distributed about the mean ES, that is, the actual dispersion of ES. In our case, it is the interval within which a new ESr would fall if a study were selected at random from the population of studies. The prediction interval would include that score 95% of the time.

Publication bias was explored by using several complementary methods.[24] First, the funnel plot of ES against their standard error was examined. Publication bias is likely when asymmetry exists, especially at the bottom of the plot, where small studies are represented, but it is only one possible reason for the asymmetry among many others. Egger's test and the method by Begg and Mazumdar can confirm the asymmetry with a significant *p* value. Duval and Tweedie's trim and fill method was then used to provide us with an estimate of the adjusted ES with the L_0 estimator for imputing missing studies. A cumulative meta-analysis was performed, restricted to the most precise studies. It also provides an estimate of the pooled ES that can be obtained using the most precise studies.

Finally, we conducted the pre-planned subgroup analyses as recorded in Prospero (record n° CRD42018112729), with a special interest in three hypothesised moderators described in the introduction, that is, type of consultation, the way empathy is assessed, and the empathic processes. The significant results were then added in a meta-regression in order to explore how much of the variance of the ESr could be explained by the moderators.

3 | RESULTS

Our results yielded 55 studies included in the systematic review and 55 ESr (Figure 1). Descriptive statistics of the samples are provided in Appendix C. In most samples, PE was not assessed in reference to a specific encounter, but in general (47%). When empathy was related to a specific encounter, it concerned mostly bad news. Empathy was predominantly reported by patients (75%), followed by researchers using coding systems (18%). Empathy was conceptualised as a whole with the three empathic processes (i.e., establishing a good rapport, emotional and cognitive) in 42% of samples and with the emotional process only (i.e., the core of empathy) in 29% of samples. The investigated outcomes were mostly related to care (45%, e.g., patient satisfaction) or to psychological outcomes (33%, e.g., patient distress). Only 12% were physical outcomes such as the severity of symptoms. Samples were mostly cross-sectional, comprising female patients and composed of early cancer patients, with studies being performed in the United States and being funded. A detailed description of each of the included studies of the systematic review is provided in Appendix D.

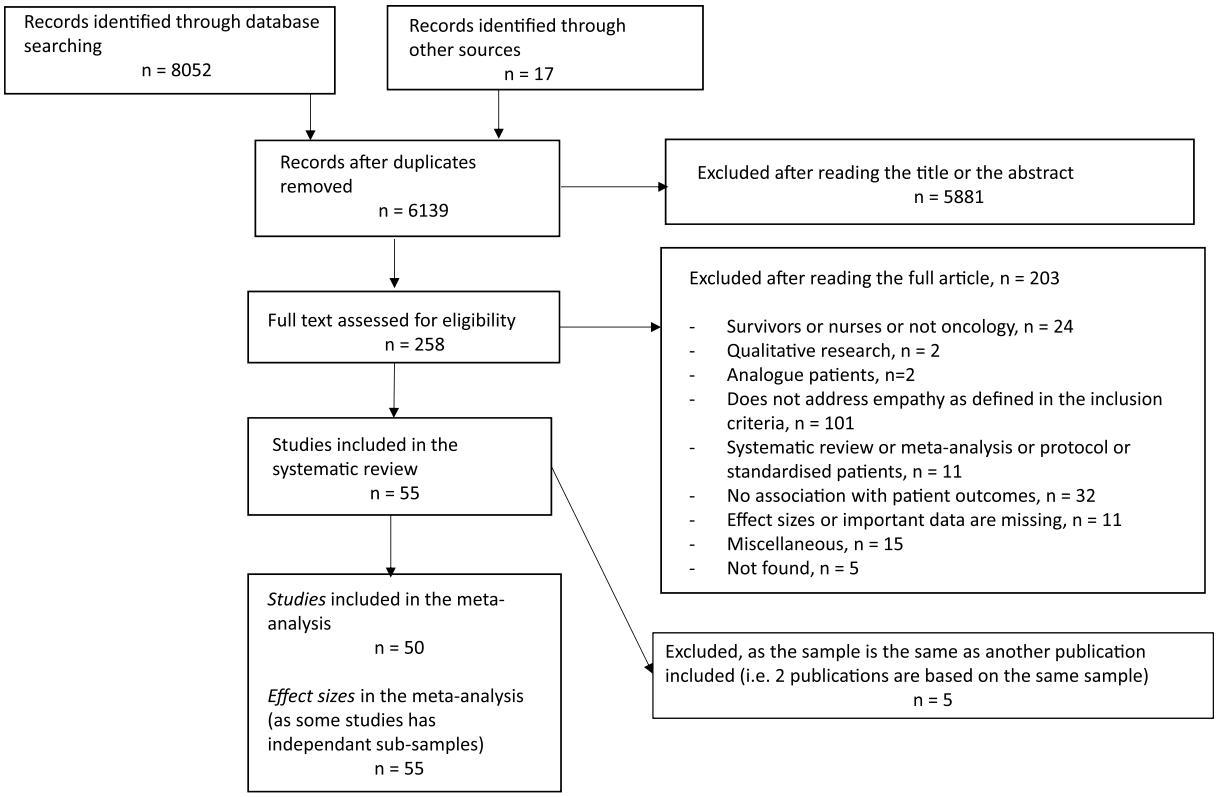

FIGURE 1 Flow diagram of the selection procedure.

3.1 | Overview of the results

The synthesis of studies is presented in Figure 2 in which the studies are sorted from the lowest to the largest ESr. The mean ESr was 0.23, 95% confidence interval (CI) (0.18 to 0.27), $z = 9.58$, $p < 0.001$ (testing the null hypothesis that ESr is 0), demonstrating that PE is significantly associated with cancer PO. As could be expected, there was a significant heterogeneity $Q(54) = 983$, $p < 0.001$; that is, the true effects varied (we rejected the null hypothesis that the true effect sizes were identical in all studies), with $I^2 = 94\%$, meaning that 94% of the observed variation was true heterogeneity. *T*, the standard deviation of true effects, was 0.15. Based on *T*, the 95% prediction interval was (−0.07 to 0.49), so that in the population of studies, 95% of ESr fell between −0.07 and 0.49, informing us that PE can be strongly and positively associated with PO or not related to outcomes or even slightly associated with unfavourable outcomes. Because of this high heterogeneity, the summary ESr of 0.23 should be considered with caution, the main concern being to understand this heterogeneity from subgroup analyses and meta-regression.

3.2 | Subgroup analyses

Subgroup analyses are presented in Appendix E. Differences in ESr were found according to the type of empathy assessment, that is, patient-reported empathy ($r = 0.23$), showing a stronger association than coding-system assessment ($r = 0.05$); the context of empathy, that is, bad news ($r = 0.33$), leading to a stronger association than any other contexts ($r = 0.20$); the stage of cancer, that is, advanced cancers ($r = 0.30$), leading to a stronger association than non-advanced ($r = 0.09$); and the design of studies, that is, prospective studies ($r = 0.07$), demonstrating smaller ESr than cross-sectional studies ($r = 0.27$). No differences were observed according to the nature of PO (i.e., psychological, physical or care-related outcomes), the nature of empathy (i.e., empathy as a whole with the three empathic processes or not), the quality of studies (i.e., the estimated risk of bias), the bivariate versus multivariate analyses, the curative versus palliative situation, and patient-reported outcomes versus objective outcomes (i.e., outcomes not reported by patients, see Appendix E for details).

A meta-regression was then performed with the significant moderators of the subgroup analyses as candidate variables (Table 1). To avoid multicollinearity with bad news and because of 18 missing data, the variable "early versus advanced cancer" was not included in the regression. The included variables explained 53% of variance (analogous R^2). Prospective design and coding system decreased the ESr, whereas physician-reported empathy and bad news increased it (only a trend for the latter). The result about physician-reported empathy must be taken with caution, as only three studies dealt with physician-reported empathy.

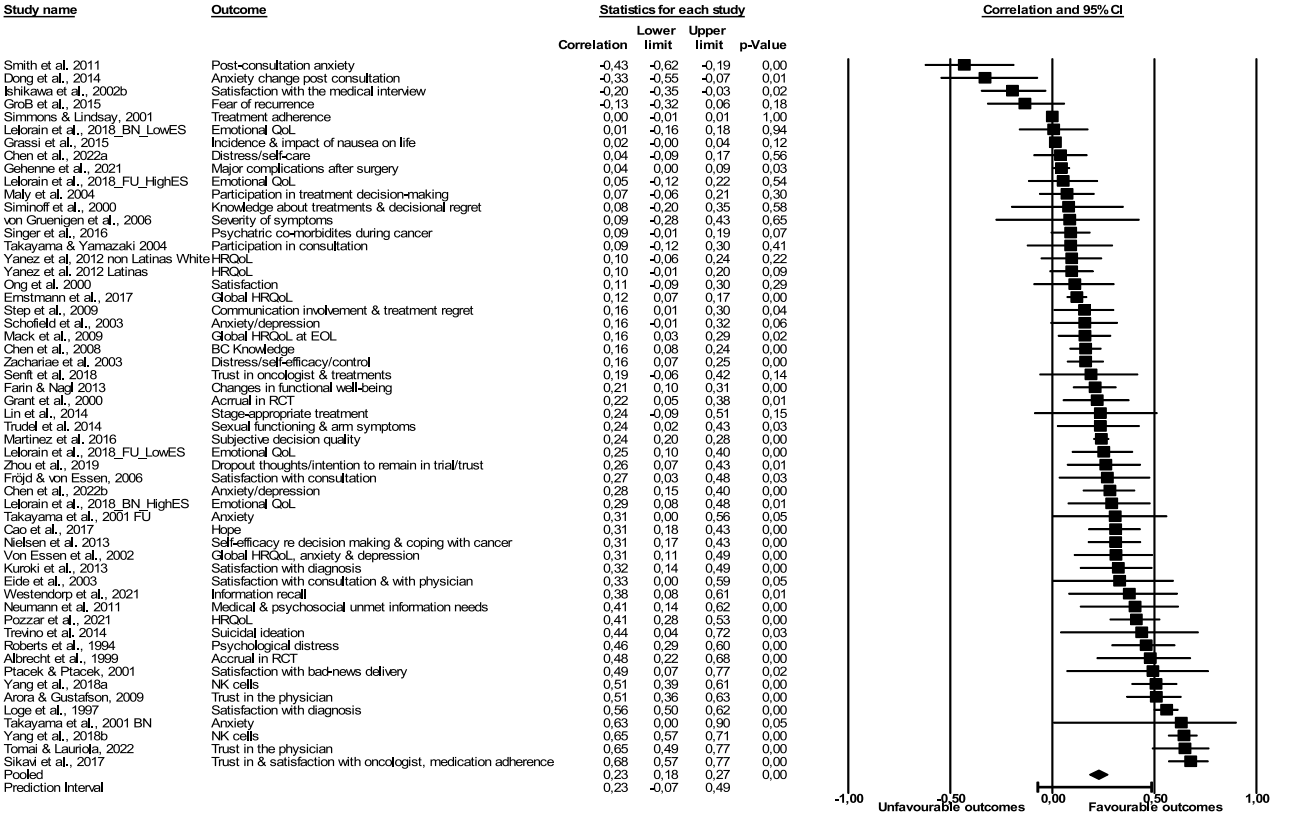

FIGURE 2 Forest plot of the correlations between physician empathy and patient outcomes. BC, breast cancer; BN, bad news; EOL, end of life; ES, patient emotional skills; FU, follow-up; HRQoL, health-related quality of life; NK, natural killer; QoL, quality of life; RCT, randomised controlled trial. Full references of the studies can be found at the end of Appendix B, D and F.

3.3 | Publication bias and other biases

The funnel plot (Figure 3) is asymmetric, that is, there is a larger ES in smaller studies.

Although Kendall's tau (Begg and Mazumdar method) did not reveal a rank correlation between ESr and sample sizes (non-significant p value), Egger's test yielded a statistically significant p value. We cannot preclude a small-study effect. More precisely, in the funnel plot, the smallest studies (i.e., high standard errors) tend to cluster towards the right side of the plot. Various reasons can explain the asymmetry, one of which is publication bias. If publication bias was indeed the reason, it would make sense to impute the missing studies and compute an adjusted ESr, which would be 0.13, 95% CI (0.08 to 0.17), using the trim and fill method. However, this result must be taken with much caution as the trim and fill method can underestimate the true positive effect when there is large between-study heterogeneity, which is the case, and when there is no publication bias.[25] Furthermore, the cumulative meta-analysis based on the 28 most precise studies (i.e., the half of all studies with the smaller standard errors) yielded an ESr of 0.23,

TABLE 1 Meta-regression explaining Effect size correlations (ESr).

Covariates	Unstandardised coefficient	95% lower limit	95% upper limit	p-value
Intercept	0.25	0.19	0.30	<0.001
Prospective design	−0.14	−0.23	−0.05	0.002
Empathy assessment[a]				
Coding system	−0.14	−0.25	−0.04	0.009
Physician-reported	0.32	0.16	0.47	<0.001
Patient and coding[b]	−0.05	−0.38	0.27	0.75
Bad news	0.09	−0.01	0.19	0.09

Note: Reference groups are cross-sectional design, patient-reported assessment, and all other contexts except for bad news.

[a]$Q(3) = 24.34$, $p < 0.001$.

[b]Note that only one study assessed empathy both via patient-reported measure and coding system.

Analogous $R^2 = 53\%$. Test of the model, that is, test that all coefficients are zero: $Q(5) = 50.02$, $p < 0.001$. Goodness of fit, that is, test that unexplained variance is zero: $Q(49) = 377$, $p < 0.001$.

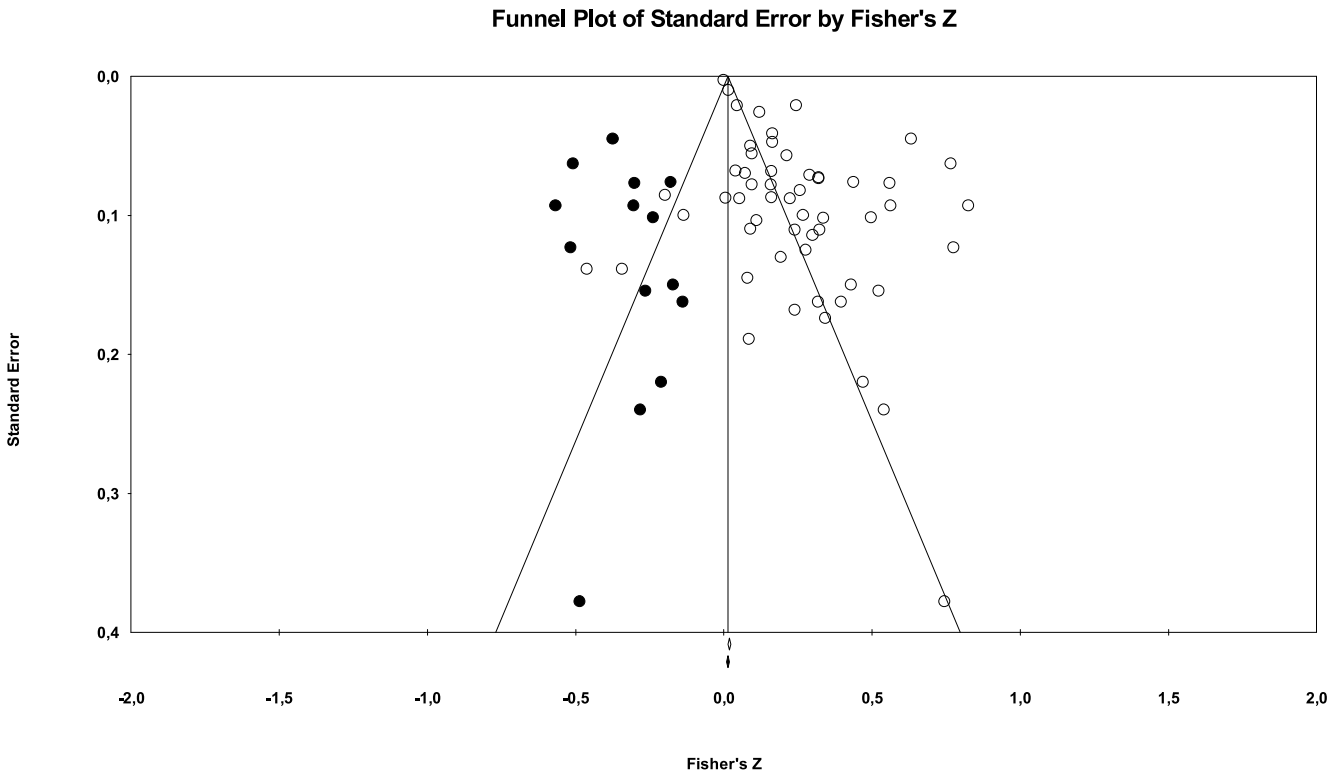

FIGURE 3 Funnel plot of standard error by Fisher's Z. Note. White dots represent the studies of the meta-analysis, and black dots (n = 14) represent the studies that would be needed to correct for asymmetry if it were due to publication bias.

95% CI (0.17 to 0.28), identical to the final ESr for all studies, and the ESr remained the same with the inclusion of the 27 less precise studies. Hence, the cumulative meta-analysis did not indicate a small-study effect.

Taking all these results into account, a small-study effect is possible (funnel plot) but not likely (cumulative meta-analyses). If this effect existed and was due to publication bias, the true ESr would be smaller than our ESr.

As reported in Appendix B (column "ES missing"), biases were also present in the seven studies that either used stepwise regression methods, excluding non-significant effects, or did not show non-significant results or all ES.[26–31] However, a sensitivity analysis that excluded these studies was performed and it did not change the result. On the contrary, in two studies,[32,33] we entered in the meta-analysis ESr that were certainly smaller than the actual ESr (see Appendix B for explanation), but their removal (i.e., sensitivity analysis) also did not change the result.

Finally, the quality of studies assessed using the AXIS tool was on average 14.7 with a standard deviation of 2.61, a minimum of 9 and a maximum of 20, with median = 15 (Appendix F). Of the 20 items, the most frequent issues were the lack of justification of sample sizes; the lack of information on non-responders and, when possible, the description of the non-response bias; and insufficient description of methods (including statistical methods) and basic data to describe the samples. The last issue was striking with, for example, 44% of missing data concerning the treatment aim (curative vs. palliative) and 33% concerning the cancer stage (Appendix C). Many articles also did not report the number of physicians involved, and the cluster effect for physicians was not statistically accounted for (i.e., no multilevel analyses). However, as reported in the moderator analyses (Appendix E), the quality of studies did not impact the meta-analytic result. We also performed a meta-analysis with the 25 ESr extracted from studies whose quality was above the median, and this did not change the results: mean ESr = 0.22, 95% CI (0.15 to 0.29), and prediction interval 95% (−0.12 to 0.51).

4 | DISCUSSION

This is the first meta-analysis to assess the association between PE and cancer PO. PE was associated with favourable PO with an ESr of 0.23. Considering the field of PE rather than an arbitrary threshold,[34] the ESr of 0.23 is much higher than what was found in a previous meta-analysis on PE[35] in various medical contexts in which the standardised mean difference between empathic and non-empathic physicians was 0.18 on various PO. Indeed, our ESr of 0.23 would correspond to a standardised mean difference of 0.47. To give further perspective, a meta-analysis performed in psychotherapies found a correlation between psychotherapists' empathy and PO of 0.28.[15] Although the latter correlation is higher than ours, the difference is not too large.

Most important, heterogeneity was high, with a prediction interval (95%) from −0.07 to 0.49. Even if this heterogeneity was rather well explained by the subgroup analyses and the meta-regression, efforts should continue to understand the conditions under which empathy can help patients. As hypothesised, PE was most strongly associated with PO in bad news and with advanced patients. Accordingly, empathy should be a priority in these contexts. However, because of the high emotional load of bad news, physicians may be tempted to hide themselves behind medical issues in order to avoid addressing patients' emotions,[36,37] as well as their own. Thus, physicians need to first regulate their own emotions in order to remain emotionally available for patients without becoming distressed themselves.[38] Indeed, medical empathy implies a genuine concern for patients along with a willingness to support them but not a *sharing* of their emotions,[39] which would be distressing and is not what is expected by the patients themselves.[1] Another important result was that the strongest association between PE and PO was for patient-reported assessments of empathy. On the one hand, the results of the PE-PO link, between empathy assessed by patients, physicians, or researchers cannot be attributed to the way empathy is assessed, since empathy is not defined and measured in the same way in these different groups. On the other hand, patient-reported empathy was expected to have the strongest effect, because the effect of empathy on patients could not occur if the empathy was not felt or perceived by the patients themselves. Furthermore, patient-reported outcomes share variance with patient-reported PE as both variables are reported by patients. This can explain the larger associations in patient-reported empathy compared to coding systems. This result might be amplified with "patient satisfaction" as outcome as in two[28,40] out of the seven articles that delt with "patient satisfaction," satisfaction comprised items very close to empathy. However, the fact that empathy coded by researchers showed no association with PO raised some concerns for research and clinical recommendations. Indeed, it means that the current tools used by researchers do not well grasp the elements of empathy that are important for patients and thus PO. According to patients,[1,2] the most important elements of empathy are relationship sensitivity (i.e., general sensitivity, listening, care and compassion) and a focus on the whole person (i.e., attention to what matter most to patients, understanding and attention to emotions). However, the coding systems, mostly the Roter Interaction Analysis System in the 10 samples that used coding systems in this meta-analysis, are mainly oriented to how physicians respond to patients' emotions, and therefore may not detect other important elements such as a genuine interest in patients. Furthermore, three intertwined elements may ameliorate the predictive power of coding systems: (1) the timing of empathy within the consultation, (2) the function of physician behaviour (why the physicians behave the way they do, what is their *intention*?) and (3) patients' reaction to physicians' behaviour. Regarding the timing of empathy, the study of Eide et al. (2003)[40] showed that empathy is associated with patient satisfaction only in the counselling phase of the consultation and not in the history taking or examination phase of

the consultation. Future studies should consider the timing of empathy. Regarding the function of physician behaviour, even if patients disclose some emotions, their need may be to receive medical information and not to have their emotions addressed *immediately*. If physicians grasp this patient need and do not respond to patient emotion purposely but take time to clarify medical points, they might be deemed not empathic by coding systems, whereas they would be from the patient's perspective. Finally, the patient's reaction to physician response to their emotion should be the first point of attention. Indeed, it will be the best assessment of whether physician response was relevant for the patient. The physician's response to the patient's emotions is not a sufficient indicator of the PE. Empathy cannot be well assessed by using pre-formatted theories about what is empathic or not. For example, naming an emotion and praising patients are coded as empathetic in the NURSE coding system whereas in cases of bad news, it is deemed as inappropriate[14] respectively because the emotion is obvious and because patients feel so bad that praise does not fit their psychological state. Therefore, the patient's reaction, rather than only the physician's behaviour, will be of help to assess PE in a more iterative and realistic manner. In this regard, artificial intelligence may be a precious tool in the future to code this iterative process along with non-verbal (e.g., prosodic features) and physiological reactions (e.g., cortisol secretion) of both clinicians and patients.[41] Physician gender should also be considered, as a recent study showed that verbal empathy statements were linked to higher patient satisfaction only when the physician was male.[42]

We did not find any differences in the ESr according to the nature of empathy. Only the studies that comprised *at least* the emotional process of empathy (i.e., a genuine interest in and a full understanding of the patient, genuine care and compassion) were included in the meta-analysis. Thus, the emotional process seems to be most important for patients, regardless of the presence of the other two processes (establishing a good rapport and the cognitive process). Furthermore, the three processes are highly correlated[17] so that in most cases, it is likely that the emotional process occurs with the other two even if the latter two are not assessed. However, for future research, we still recommend considering the precise nature of empathy in order to inform theory and practice about the processes that might be most helpful for patients according to the medical context. For example, a study by Lelorain et al. (2018)[43] revealed that in bad news consultations, emotional and relational processes of empathy predicted a *higher* risk of death whereas the cognitive process did not. Although this result needs to be replicated, it suggests that in specific contexts, too much emotional empathy can convey hopelessness to patients. In distinguishing between the different types of empathy, however, other distinctions might prove more useful, such as that between perspective taking or emotional resonance. Moreover, what we have called "cognitive empathy" can be criticized as being not empathy but patient empowerment.

Finally, the 12 prospective studies revealed a lower ESr than the cross-sectional studies did. Some methodological issues could explain this result. With the exception of two studies that assess patients across the cancer trajectory,[31,44] all the other prospective studies tested the association between PE in a specific encounter or period and PO 3 or 6 months later. So many things can happen and be heard by patients in a 3- or 6-month period of cancer that it is difficult to assume an impact of PE on PO during such a long time. However, should this result be confirmed in future longitudinal research by using a rigorous method, it would call into question the assumed causality of the link between PE and PO. Indeed, we assume that PE can alleviate PO, but the reverse might be true: the patient's physical and psychological well-being may also influence their perception of PE. PE and PO might also be independent, but both affected by a third variable such as patient personality or attachment. In order to properly clarify the causality, longitudinal studies with several assessments of PE and patients' state at key points in the cancer pathway (e.g., diagnosis, treatment, end of treatment, recurrence, entry into palliative care) are warranted. The *change* of the perceived empathy by patients during the disease trajectory may also be informative and has not yet been explored. For example, if a physician who was deemed very empathetic at the beginning turned out to be less empathic at recurrence, PO could be severely affected despite a rather high average level of empathy.

4.1 | Clinical implications

Empathy can no longer be considered a mere "bonus" in patient care. Our findings show that it is a real necessity for patient health, especially for advanced patients or in bad news. In 13 studies, the ESr was higher than 0.40, showing the large effect empathy can have on patients. Therefore, empathy training should be better developed in medical education, fully integrated into clinical training, and started at the beginning of medical education and continue throughout it. As bad news is emotionally difficult to handle for physicians, emotion regulation training is required to help them to cope with bad news. Nurses could be more involved in the delivery of bad news for the benefit of patients and physicians. In addition, patients' perceptions of empathy, rather than external assessments of empathy, should be the gold standard. Therefore, physicians could ask patients for feedback on their perceptions of communication and empathy. In this way, they could immediately clarify emotional misunderstandings and become more attuned to patients' needs.

4.2 | Limitations and perspectives

The lack of information provided in the studies hinders the test of moderators. In particular, the aim of treatments (palliative or curative), the cancer stage, patients' ethnicity and marital status, and information about the physician(s) such as gender or medical specialties are crucial pieces of information to record. Environmental information (e.g., workload, bureaucracy) could also inform the PE-PO link. Another limitation is the over-representation of women in the samples. Only 9% of samples included a large majority of male

patients. Future studies with men are warranted to make sure that the results of this meta-analysis remain valid for men. The inclusion of more minorities, patients with a lower education and isolated patients is also warranted, as PE is particularly expected and important for these individuals. Finally, interesting perspectives would be gained from studies using mixed methods (quantitative and qualitative data). Interviews with patients would be insightful to understand how they rate the empathy of their physician(s) and would provide data on the specific elements patients consider to form their judgement. Related to this last comment, it must be acknowledged that the empathy concept presents important challenges in medical settings. It is likely that patients judge their physicians to be empathetic when they are kind, thoughtful and thorough. Even in the CARE questionnaire, only two out of the 10 items really bear on empathy ("fully understand your concerns" and "showing care and compassion"). Thus, it is possible that our meta-analysis pertains as much to the physician's kindness and caring as it does to their empathy in the purest sense.

5 | CONCLUSION

At a time when cancer care is becoming more and more technical, robotised and organised into increasingly narrower specialties, PE is of utmost importance. Indeed, this radical change of medicine should not be at the expense of patient care. In the midst of medical imaging, cutting-edge medical advances and a growing variety of medical practitioners, which inevitable complicates the coordination and continuity of care, patients more than ever need empathy and support. The results of the meta-analysis show that this claim for empathy is not a humanistic fad, but a real need for patient health and quality of care.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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