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How can we explain physician accuracy in assessing patient distress? A multilevel analysis in patients with advanced cancer

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ABSTRACT

Objective: To examine the determinants of the accuracy with which physicians assess metastatic cancer patient distress, also referred to as their empathic accuracy (EA). Hypothesized determinants were physician empathic attitude, self-efficacy in empathic skills, physician-perceived rapport with the patient, patient distress and patient expressive suppression.
Methods: Twenty-eight physicians assessed their patients' distress level on the distress thermometer, while patients ($N = 201$) independently rated their distress level on the same tool. EA was the difference between both scores in absolute value. Hypothesized determinants were assessed using self-reported questionnaires. Multilevel analyses were carried out.
Results: Little of the variance in EA was explained by physician variables. EA was higher with higher levels of patient distress. Physician-perceived quality of rapport was positively associated with EA. However, for highly distressed patients, good rapport was associated with lower EA. Patient expressive suppression was also related to lower EA.
Conclusion: This study adds to the understanding of EA in oncological settings, particularly in challenging the common assumption that EA depends largely on physician characteristics or that better rapport would always favor higher EA.
Practice implications: Physicians should ask patients for feedback regarding their emotions. In parallel, patients should be prompted to express their concerns.

1. Introduction

Due to its high prevalence in cancer patients, from 22 to 58% [1], and particularly in metastatic cases [2–4], emotional distress has been endorsed as the 6th Vital Sign by the International Psycho-Oncology Society (IPOS) [5]. Routine distress screening has been strongly recommended to identify cancer patients who may need psychological or social interventions. However, systematic distress screening with validated tools is still rare [6]. Oncologists in particular may not consider distress screening an essential part of their job [7] and prefer to rely on their own clinical skills rather than using validated questionnaires [8]. Therefore, along with a continuous effort to implement routine screening, it is essential that oncologists infer patient distress accurately *by themselves* in order to make the necessary referrals. Besides, this ability to detect the emotions and cognitions of others accurately, also called empathic accuracy (EA) [9], has positive effects for patients, such as treatment adherence and appointment-keeping [10,11]. Unfortunately, it seems that physicians do not perceive cancer patient distress accurately [12,13]. To understand this phenomenon, we

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set out to investigate the correlates of physician EA on metastatic cancer patient distress. In fact, factors of EA have rarely been studied in a clinical setting, especially in oncology [10].

The theoretical framework of Norfolk et al. [14] guided our analyses. It was originally proposed in general practice and has been used successfully for the design and validation of physician training to develop rapport with patients [15].

In this model, the physician's empathic attitude, i.e. their willingness to understand and give room to a patient's emotions and feelings [16], is the starting point for the physician to detect patient cues concerning their thoughts and feelings. This empathic skill should lead to an accurate representation of the patient's state [17].

The model also specifies the importance of patient or physician-patient relationship variables. An important variable when applying this general model to our purpose is the patient's distress level. Indeed, a study of advanced cancer patients suggested that higher patient distress is more frequently detected and addressed by oncologists [18], probably because it is more visible than moderate distress. Therefore, we expected EA to increase with patient distress. However, this link could be moderated by two variables in Norfolk's model.

The first one is patient expressive suppression, i.e. the inhibition of ongoing emotion-expressive behavior [19]. Previous experimental research supports the importance of a person's verbal and non-verbal disclosure in allowing a 'perceiver' to detect his/her emotions [20–23]. This should be true in a naturalistic clinical setting. Therefore, patient expressive suppression should be a barrier to physician EA, particularly in the case of high distress where the gap between a patient's actual and visible state can be large.

The second potential moderator is rapport. Defined as the connection between patient and physician and their mutual commitment to the relationship, rapport is essential for effective clinical communication [24]. Without it, patients would not feel at ease in expressing their emotions and/or physicians would pay less attention to patient cues. Consequently, poor rapport is expected to relate to lower EA, particularly again in the case of high patient distress where the EA gap can become huge.

To summarize, following the model of Norfolk et al. [14], the hypothesized correlates of EA were physician empathic positive attitude, higher self-efficacy in empathic skills, as well as lower patient expressive suppression and physician perception of low rapport as moderators of the link between patient distress and EA.

2. Methods

2.1. Inclusion criteria

Inclusion criteria for physicians were working in a cancer ward or in a palliative care unit and treating patients meeting the following inclusion criteria: age over 18 years, metastatic cancer from and beyond the 4th line of chemotherapy for primary breast cancer, and from and beyond the 2nd line of chemotherapy for any other type of primary cancer. Second and 4th lines of chemotherapy were chosen to reach patients likely to have symptoms of their disease, often associated with distress. Patients had to have already consulted the physician at least 3 times before their inclusion, so that they had a minimum knowledge of each other. Non-inclusion criteria were psychiatric comorbidities and hematological cancers, deemed too specific compared to other cancers.

2.2. Procedure

Physicians at the 'Institut Curie' (Paris), the 'Institut de Cancérologie de l'Ouest' (Nantes), 'Hôpital Nord Laennec' (Nantes) and at the 'Polyclinique Bordeaux Nord Aquitaine' (Bordeaux) were invited to participate in the study. They were given a detailed description of the study and a written informed consent to sign.

Upon acceptance, they completed a questionnaire assessing their empathic attitude and self-efficacy in empathic skills. They then had to include 10 consecutive patients meeting the inclusion criteria. At the end of a consultation with the physician, patients were briefly introduced to the study by the physician and given a detailed written study description, the questionnaires and a written informed consent. If patients agreed to participate, they signed the informed consent and had one week to complete the questionnaires and return them to the research team in the prepaid envelope provided. When data were missing, participants were contacted by phone by the research assistant and asked to provide the missing information. On the same day of each inclusion, physicians had to fill in a short questionnaire assessing their perception of the patient (i.e. an empathic accuracy task, see Section 2).

The study protocol was approved by the institutional review board of the Curie Institute and by the French national advisory committee for the processing of information in health research. All patient and physician data were anonymous.

2.3. Samples

Data collection was carried out from May 2011 to March 2012.

Following the usual recommendations of sample size for multilevel designs such as this one [25], our goal was to obtain a sample of 50 physicians, each with a minimum of 5 patients, ideally 10.

Sixty-four physicians were invited to participate. Among them, 11 physicians had no eligible patients, 14 refused to participate and 11 accepted, but eventually 9 of these did not include any patients because of lack of time and 2 because they found it too difficult to suggest this study to metastatic cancer patients. So, the final physician sample was composed of 28 clinicians, mostly medical oncologists (see Table 1).

Two-hundred-and-one patients were included. The number of patient refusals and whether they differ from the others are unknown. Most participants were female and lived with someone, their mean age was 62 years and the primary cancer sites were breast, colorectal and lung cancers (Table 1).

2.4. Measures

Physician empathic attitude was measured using the Jefferson Scale of Physician Empathy (JSPE), a 20-item 7-point Likert response scale. It provides physician self-evaluation (e.g. 'An important component of the relationship with my patients is my understanding of the emotional status of the patients and their families') and a global score ranging from 20 to 140 [26]. Its psychometric properties have been verified in numerous studies [26,27]. In our sample, Cronbach's alpha was 0.69 for the overall scale.

Physician self-efficacy in empathic skills was assessed by a single self-reported 7-point Likert ad-hoc item: 'In general, I feel competent to detect my patients' emotional distress and needs' rated from 0 'strongly disagree' to 7 'strongly agree'.

Rapport was assessed by a single 7-point Likert ad-hoc item assessing physician-perceived quality of rapport with a patient: 'What is the quality of your relationship with this patient?' rated from 1 'very difficult relationship' to 7 'very easy relationship'.

Patient emotional distress was evaluated with the distress thermometer [28], the widely used screening visual analog scale (i.e. without anchors), which ranges from 'no distress' at the

Table 1
Description of samples.

	Mean (standard deviation) [sample range], or %
Physicians (N = 28)	
Female (%)	64.3
Age	46.8 (7.8) [31–64]
Medical specialty (%)	
Medical oncologist	75
Physician in palliative care	10.7
Miscellaneous (e.g. oncological radiologist)	14.3
Years of experience in oncology	19.0 (8.4) [1.5–33]
Patients (N = 201)	
Age	62.0 (11.5) [27–89]
Living alone (%)	34.3
Female (%)	72.6
Education (%)	
No qualification	9.5
Less than high school	37.8
Bachelors degree or more	32.3
Masters degree or more	20.4
Primary cancer site (%)	
Breast	45.3
Colorectal	20.9
Lung	14.9
Prostate	5
Miscellaneous	13.9

bottom to 'very high distress' at the top, where the patient rates his/her distress level within the last week.

Patient expressive suppression was assessed with the 4-item 7-point Likert expressive suppression scale from the Emotion Regulation Questionnaire (ERQ-Fr) [29]. Expressive suppression describes to what extent people generally inhibit ongoing emotion-expressive behavior (e.g. 'When I am feeling negative emotions, I make sure I don't express them'). The expressive suppression score ranges from 4 to 28. In our sample, Cronbach's alpha was 0.83.

EA on distress. Independently from the patient, the physician had to rate the patient's emotional distress on the distress thermometer. The physician was instructed as follows: 'Your patient was asked to rate his/her emotional distress on this thermometer. Indicate the distress level you think your patient rated.' The EA score was generated by calculating the absolute value of the difference between the patient's and the physician's rating, as recommended in the empathic accuracy literature [30,31]. It is a measure of absolute agreement between clinicians and patients on distress.

2.5. Statistical analyses

To respect the two-level hierarchical structure of patients (level 1) clustered within doctors (level 2), multilevel analyses were performed with MLwiN software 2.27 [32,33]. These analyses are an extension of the general linear model taking into account the possible dependence between individuals within groups [34,35]. For level 1 variables with possible dependence within physicians, different types of effects, i.e. intra- or inter-physician, must be disentangled.

We started from the empty model which only contains the intercept (overall population mean) and residuals for both patients (σ^2_e) and physicians (σ^2_{phy}). This model enabled the intraclass correlation (ICC) to be calculated, which is the variance due to physicians, i.e. $\sigma^2_{phy}/(\sigma^2_{phy} + \sigma^2_e)$.

Next, we introduced physician variables (Model 1). The interaction between patient distress and patient expressive suppression was then specified (Model 2). Rapport was added with both intra- and inter-physician effects disentangled since dependence can be assumed between patients of the same physician on this variable (Model 3). Within-effect indicates the effect of rapport on EA within a physician, while between-effect expresses the effect of the group mean of rapport on the group mean of EA [36,37]. In the final step (Model 4), the interaction between rapport and patient distress was specified.

Model fit was evaluated with the −2LogLikelihood (−2LL). The smaller the −2LL, the better the model is. The difference in −2LL between two models was tested using a chi square test. Lastly, although multilevel analyses do not provide an R^2 for the explained variance, a pseudo R^2 can be computed as the reduction in variance between two models, for example: $(\sigma^2_{Model\ 1} - \sigma^2_{Model\ 2})/\sigma^2_{Model\ 1}$.

3. Results

3.1. Descriptive results

The mean for the physicians' confidence in their ability to detect distress was 5.2 (SD = 0.9), they reported on average very good relationships with their patients (5.7/7, SD = 1.1), and they overestimated patient distress by 2.77 points on average (SD = 2.06; Table 2).

3.2. Physician effects, Models 0 and 1

The ICC computed from the empty model (Table 3) was 4%. This means that almost all the variance in the outcome depends on level 1 variables and not on physician variables. In Model 1, neither physician empathic attitude nor self-efficacy in empathic skills was significantly associated with EA and, overall, the model was not better than the empty model (Δ−2LL = 2.44, non-significant at $p < .05$, Table 3). Model 1 was thus discarded.

3.3. Patient variables, Model 2

In Model 2, the introduction of patient distress, patient expressive suppression and their interaction significantly im-

Table 2
Descriptive results.

	Mean and standard deviation	Sample range	Possible range
Patient-level variables (level 1, *N* = 201)			
Expressive suppression[a](ERQ)	15.0 (6.4)	4–28	4–28
Quality of rapport[b]	5.7 (1.1)	2–7	1–7
Patient distress[a] (Distress thermometer)	2.85 (2.54)	0–10	0–10
Patient distress[b] (Distress thermometer)	4.65 (2.62)	0–10	0–10
Empathic accuracy	2.77 (2.06)	0.04–8.45	0–10
Physician-level variables (level 2, N = 28)			
Empathic attitude[b] (JSPE)	97.6 (11)	78–123	20–140
Self-efficacy in empathic skills[b]	5.2 (0.9)	3–7	1–7

[a] Patient-reported.
[b] Physician-reported.

Table 3
Summary of multilevel models for the prediction of physician empathic accuracy on patient distress.

Models	Empty model	Model 1 Not retained	Model 2	Model 3	Model 4
Parameters					
Fixed effects					
Intercept	2.77*** (0.16)	2.77*** (0.16)	2.74*** (0.16)	5.74*** (1.16)	5.84*** (1.11)
Physician empathic attitude		0.03 (0.02)			
Physician self-efficacy in empathic skills		−0.31 (0.22)			
Patient distress			−0.16** (0.06)	−0.17** (0.06)	−0.19** (0.05)
Patient expressive suppression			−0.04 (0.02)	−0.04 (0.02)	−0.03 (0.02)
Patient distress × patient expressive suppression			0.02* (0.01)	0.02* (0.01)	0.01 (0.01)
Physician-perceived quality of rapport					
Within-physician effect				−0.10 (0.17)	−0.26 (0.18)
Between-physician effect				−0.52** (0.20)	−0.53** (0.19)
Patient distress × physician-perceived quality of rapport					0.22*** (0.07)
Random effects					
Physician variance σ^2_{phy}	0.14 (0.19)	0.09 (0.17)	0.15 (0.18)	0.01 (0.14)	0
Patient variance σ^2_e	4.06 (0.43)	4.05 (0.43)	3.76 (0.40)	3.76 (0.40)	3.57 (0.36)
Model fit: −2LL	858.10	855.66	843.40	837.19	826.19
Difference in −2LL between 2 models (*df*)		2.44 (2 df with M0)	14.7** (3 df with M0)	6.21* (2 df with M2)	11.00*** (1 df with M3)

Effect significance = estimate/standard error (in brackets). For each model, the random slope model, which allows the slopes to vary across physicians, was tested. No random slope models were significantly better than the model without random slope effects; these models were therefore discarded (data not shown, available on request).
* $p < .05$.
** $p < .01$.
*** $p < .001$.

proved the fit of the model (Δ−2LL = 14.7, $p < .01$, Table 3). Greater patient distress was associated with higher EA (i.e. less deviation between patient and physician distress assessment in absolute value). There was no effect of patient expressive suppression on EA, but it interacted significantly with the level of distress as rated by patients. The interaction was plotted for patient suppression at percentile 20 and 80 (Fig. 1). For patient distress under 5, *lower* expressive suppression was associated with lower accurate EA (higher absolute value), that is an overestimation by the physician when patient distress is very low.[1] For patient distress above 5, the pattern was the opposite: *higher* expressive suppression was associated with lower accurate EA (i.e. an underestimation by the physician when patient distress is very high), while lower expressive suppression was related to better EA (low absolute value).

3.4. Physician-perceived quality of rapport, Models 3 and 4

Only the between-physician effect was significantly different from zero. Physicians who reported on average a higher rapport with their patients evidenced on average a better EA score (i.e. lower absolute value). On the contrary, within a physician, variation in rapport was not related to EA (Model 3).

The specification of the interaction term (Model 4) between patient distress and rapport improved the model at $p < .001$. The interaction was plotted (Fig. 2) for rapport at percentile 20 (solid line, low rapport) and 80 (dotted line, high rapport), the other parameters being held constant and corresponding to the sample medians. For physician-perceived high rapport with a patient (dotted line), EA decreased slightly (slightly higher absolute value) by patient distress. EA was better for low patient distress than for high patient distress. For physician-perceived low rapport (solid line), EA increased strongly by patient distress. EA was low (i.e. high absolute value) for low patient distress (i.e. physician overestimation of distress), but high for higher patient distress.

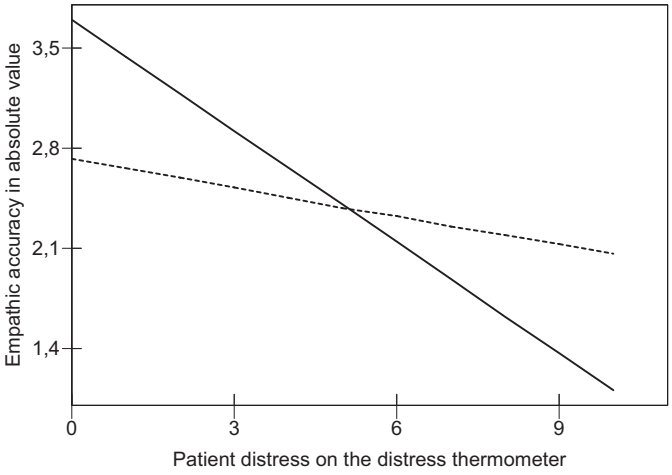

Fig. 1. Interaction plot between patient distress and patient expressive suppression on EA. Solid line: low patient expressive suppression (percentile 20). Dotted line: high patient expressive suppression (percentile 80).

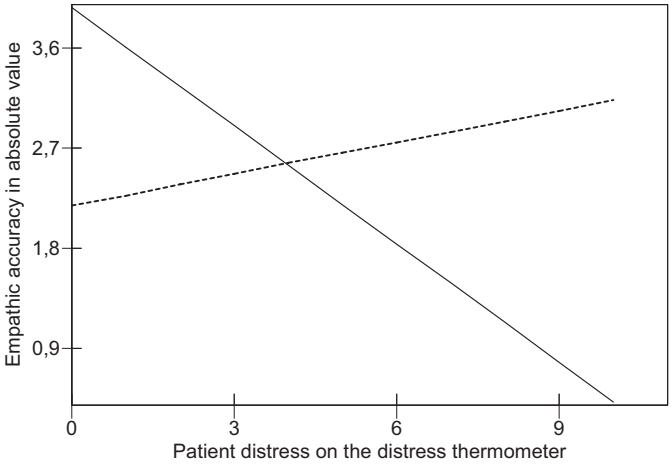

Fig. 2. Interaction between patient distress and physician-perceived quality of rapport on EA. Solid line: low physician-perceived quality of rapport (percentile 20). Dotted line: high physician-perceived quality of rapport (percentile 80).

[1] For very low patient distress, the physician could be either accurate or overestimate patient distress. For example, if the patient rated distress at 1 with an EA of 3 points, it meant that the physician overestimated the patient's distress by 2 points.

For distress above the value of 4, EA for low rapport became even better than for high rapport.

3.5. Random effects

At physician level, all variance was explained from Model 0 ($\sigma^2_{phy} = 0.14$) to Model 4 ($\sigma^2_{phy} = 0$). This pseudo R^2 of 100% means that these models are very good at explaining EA differences between physicians. In particular, the introduction of rapport in Model 3 was the most beneficial for explaining physician variance (σ^2_{phy} from 0.15 in Model 2 to 0.01 in Model 3, Table 3). At patient level, 12.1% of variance (pseudo R^2) was explained between the empty model ($\sigma^2_e = 4.06$) and Model 4 ($\sigma^2_e = 3.57$). This means that much remains to be explained regarding patient or patient–physician relationship variables affecting EA.

4. Discussion and conclusion

4.1. Discussion

At the physician level, only physician-reported quality of rapport with the patient was related to EA. Physicians with a high rapport on average demonstrated high EA on average. At the patient level, patient distress interacted with both patient expressive suppression and physician-perceived quality of rapport with the patient to explain levels of EA. However, contrary to our hypothesis, for high patient distress, physician-perceived good rapport appeared to *impede* EA.

The theoretical model chosen assumes that EA depends significantly on physicians. This was indeed found in experimental studies where a 'perceiver' (e.g. physicians in our study) had to 'read' a 'target' (e.g. patients) in a social interaction [38,39]. However, it was only true when 'targets' and the issues discussed between the two people were relatively homogeneous: always the same issues discussed by 'targets' with similar sociodemographic characteristics [38,39]. In contrast, in studies with heterogeneous 'targets' or 'target' thoughts, only very little EA variance was due to perceivers [40,41]. The very little EA variance due to physicians in our research (ICC of 4%) corroborates these latter studies and does not support the contention that, in naturalistic settings, EA depends on stable perceiver skills.

In this respect, we did not find any correlation of physician empathic attitude nor of physician self-efficacy in empathic skills with EA. In line with previous research [42,43], this suggests that empathic attitude would not alone guarantee actual EA. It might be that self-reported empathic attitude depends in part on social desirability and does not adequately reflect actual physician motivation and engagement to infer patient mental states [44]. An alternative would be that the motivation to be empathic does not influence effective EA in practice [45]. Also contrary to our hypothesis, physician self-efficacy in empathic skills was not related to EA. This is compatible with previous observations suggesting that people tend to overestimate their empathic skills compared to their actual ones [46–48].

In contrast, physician-reported good rapport was positively related to EA, as already evidenced in clinical and non-clinical settings [49,50]. However, a further and striking finding was the unexpected direction of the interaction found between rapport and patient distress. It suggests that physician-perceived good rapport could be a barrier to EA for highly distressed patients. It might be that, in order to avoid placing physicians in difficulty with their emotions, patients would withhold their distress when interacting with them [51]. It could also be that physicians would perceive rapport with patients for whom they have generated an image which tends to be stable over time. Then, as demonstrated in non-clinical contexts [39,52], physicians would rely much more on this pre-existing image rather than on external cues coming from interactions with patients to infer their mental states. Blinded by this pre-existing representation, they would not focus their attention on changes in patient distress resulting from the disease trajectory.

Nevertheless, to be detected, patient distress and concerns must be clearly expressed. Our result that patient expressive suppression appears to impede EA confirms experimental research findings about the importance of emotion disclosure for EA [20–22,53]. This point is all the more vital in cancer settings where many cancer patients conceal their psychological concerns from clinicians [51,54], assuming, among other reasons, that emotional issues are not within the doctor's scope [51].

These results must be interpreted in the light of the following limitations. First, due to the limited physician sample and thus low statistical power, type II errors are likely. Further research should replicate these promising results. Secondly, measurement flaws should be noted. The single ad-hoc item for assessing physician-perceived quality of rapport does not provide information about which elements physicians draw on to judge rapport. However, this drawback does not diminish its informative value in relation to EA, whatever elements it is based on. Self-efficacy in empathic skills was also measured using a single ad-hoc item, and the JSPE, with a Cronbach's alpha of 0.69 and a probable sensitivity to social desirability, might not be the ideal measure for empathic attitude. Hence, our conclusion that physician characteristics do not relate to EA must be regarded with these limitations in mind. In order to circumvent these drawbacks, two promising approaches may be to consider: (1) physician empathic attitude but with a control for social desirability [55] and, (2) the general interpersonal sensitivity of physicians measured by standardized tests [10] instead of self-reported empathic attitude. Another limitation of the EA measure on the distress thermometer is that the same rating given by the patient and the physician might not mean the same thing to both of them. Finally, due to the cross-sectional design, no clear causal direction could be established. In particular, there was no way to determine whether rapport facilitates EA or whether 'easily readable' patients facilitate physician-perceived rapport with the patient.

4.2. Conclusion

In spite of these limitations, this study is one of the rare EA research works in a clinical setting. It challenges the assumptions that EA falls, above all, within the physician's skills or characteristics and that physician-perceived rapport always favors an adequate perception of patients. It also strengthens the importance of the patient's clear disclosure of their concerns.

4.3. Practice implications

If our results were further confirmed, physicians should be aware that their empathic attitude and self-efficacy in detecting patient distress cannot be relied on. They should be prompted to be more attentive to patient cues, even and particularly when good rapport is established. As suggested in other settings, asking patients for feedback about what they are feeling could counteract wrong inferences and preserve EA [38,48,56]. This is all the more important since EA has been related to clinical outcomes in chronic conditions [10,11].

In parallel, patients should be encouraged to take an active role in consultations, expressing more clearly their concerns and emotions. This point is particularly relevant since patient-targeted interventions have been successful in enhancing patient participation in oncology consultations [57].

Conflict of interest

None declared.

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