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Westendorp, J.; Stouthard, J.; Meijers, M.C.; Neyrincke, B.A.M.; Jong, P. de; Dulmen, S.; Vliet, L.M. van

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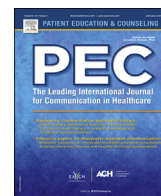
The power of clinician-expressed empathy to increase information recall in advanced breast cancer care: an observational study in clinical care, exploring the mediating role of anxiety

Janine Westendorp[a], Jacqueline Stouthard[b], Maartje C. Meijers[c], Bart A.M. Neyrinck[d], Paul de Jong[e], Sandra van Dulmen[a,f,g], Liesbeth M. van Vliet[c,h,*]

[a] NIVEL (Netherlands institute for health services research), Utrecht, the Netherlands
[b] Netherlands Cancer Institute, Amsterdam, the Netherlands
[c] Health, Medical and Neuropsychology Unit, Institute of Psychology, Leiden University, Leiden, the Netherlands
[d] Clinical Psychology, Social and Behavioral Sciences, Utrecht University, Utrecht the Netherlands
[e] St Antonius Hospital, Utrecht, the Netherlands
[f] Radboud university medical center, Radboud Institute for Health Sciences, Department of Primary and Community Care, Nijmegen, the Netherlands
[g] Faculty of Health and Social Sciences, University of South-Eastern Norway, Drammen, Norway
[h] Leiden Institute for Brain and Cognition (LIBC), Leiden University, Leiden, the Netherlands

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ABSTRACT

Objective: Experimental studies have found that clinician-expressed empathy improves patients' information recall in (advanced) cancer consultations. It remains unclear, however, whether these results are generalizable to clinical care and, if so, what the underlying mechanism is. We aimed to i) determine the relationship between clinician-expressed empathy and patients' information recall in clinical advanced breast cancer consultations; and ii) test whether the relationship between clinician-expressed empathy and recall is mediated by a decrease in patients' anxiety.
Methods: Forty-one consultations between oncologists and female patients with advanced breast cancer were audio recorded. Patients' post-consultation information recall and pre- and post-consultation anxiety (0-100) were assessed. Recall was scored according to a self-created questionnaire. Clinician-expressed empathy (0-100) was assessed by observers. Structural Equation Modelling was used for all analyses.
Results: Participants remembered 61% of the information discussed. Clinician-expressed empathy significantly increased patients' total information recall (*p* = .041) and recall of treatment aims/positive effects (*p* = .028). The mediating role of anxiety could not be established.
Conclusion: Although the underlying mechanism remains unclear, clinicians have a powerful tool to improve seriously ill breast cancer patients' recall of information: empathy.
Practice implications: These insights should encourage clinicians to express empathy; practical communication training might prove helpful.

1. Introduction

In advanced cancer care consultations, patients need to retain information about treatment aims, options, and side effects in order to make treatment decisions and cope with being incurably ill [1–3]. Ensuring that patients are well-informed about

treatments is an essential part of patient-centered decision-making and care [4]. Patients are often confronted with complex information and a range of treatment options; this is particularly true of breast cancer patients, due to the heterogeneity of the disease [5]. However, patients' information recall is often poor: 40-80 percent of information provided during cancer consultations is forgotten [6–8]. This seems to apply especially to information about treatment options, treatment aims, and positive and negative of treatments; patients' recall of information about the diagnosis is better [7,9]. One reason for patients' poorer recall of medical information may be that information processing is impaired by high emotional stress during consultations [10–12].

According to *attentional narrowing,* the dual task of dealing with stress while processing information leads to poorer retention [8,10]. Reducing patients' emotional distress during consultations may therefore enhance their recall of medical information.

One of the most powerful ways to reduce emotional stress in consultations is to use empathy [13–16]. Recent experimental video-vignette studies have indeed found that, in an advanced cancer setting, information recall increases when oncologists use more empathic communication, such as providing reassurance and attentive silence [17–20]. On the other hand, an older systematic review in a clinical care setting (focusing on the entire cancer trajectory) failed to find an association between empathy and recall [21]. It remains unclear, therefore, whether clinician-expressed empathy has the power to influence patients' recall for the better in clinical – as opposed to experimental – advanced cancer consultations.

Moreover, the possible mechanism behind a potential positive effect on recall of clinician-expressed empathy has yet to be established. The aforementioned experimental studies did indeed find that empathy decreased participants' emotional distress [17,18,22]. However, no conclusive evidence was found that this decreased emotional distress mediated the relationship between clinician-expressed empathy and patients' information recall [18,20]. Further research is needed to explore whether this mechanism is present in clinical consultations, which naturally induce higher emotions.

Against this background, the present study, in a clinical care setting, has a twofold aim: i) to determine the relationship between clinician-expressed empathy and patients' information recall in clinical advanced breast cancer consultations; and ii) to test whether the relationship between clinician-expressed empathy and recall is mediated by a decrease in patients' anxiety. Providing insight into these aims is important, as it can help shed light on whether – and how – empathy may lead to patients understanding their illness and treatment options better; this in turn could lead to better-informed care decisions.

2. Materials and methods

2.1. Design and ethics

This study has an observational design, using audio-recorded consultations between clinicians (oncologists) and patients with advanced breast cancer. Audio-observations were used because they provide a more objective view of communication behaviour than self-reports. The data were collected at two Dutch hospitals (one cancer-specific hospital and one general hospital) between August 2018 and December 2018. The method has also been described in detail elsewhere [23,24]. The study was submitted to the Ethical Committee of the Dutch Cancer Hospital, who exempted the study from formal ethical approval [P18LVW]. The study was also approved by both participating hospitals.

2.2. Participants

Eligibility criteria were defined as follows: participation was open to female patients (>18 years) with incurable breast cancer (as determined by the clinical team), who had sufficient Dutch language skills and were cognitively able to give consent and fill in a questionnaire. Moreover, we included only the first consultations in which the incurable diagnosis was discussed, or evaluative follow-up consultations which included test-results, as treatment aims, options, and side effects (the topics of the recall questionnaire) are most likely to be discussed at these consultations. Short check-up consultations and consultations with patients in the terminal phase of their disease were excluded from this study.

2.3. Procedure

Patients were approached by the medical teams from the participating hospitals. Eligible patients were called by the medical team, who briefly introduced the study. If patients were interested in participating, their contact details were passed on to the research team, who called each patient and explained the details of the study. Potential participants were informed that the study concerned communication between oncologists and breast cancer patients, and that if they agreed to participate the next consultation with their oncologist would be audio recorded. Information about the incurable nature of their disease was omitted. Patients were informed that they would be required to complete two questionnaires: a short questionnaire (of just one question) prior to the consultation and a more extensive questionnaire (<20 min) after the consultation. Patients who gave preliminary oral informed consent by telephone were sent an information letter (by mail or e-mail). The medical team were informed of (preliminary) participation; written informed consent was obtained immediately pre-consultation in the hospital waiting room. Patients were assured that participation was anonymous and voluntary; they were free to withdraw at any point if they so wished.

2.4. Measurements

Questionnaires were developed in collaboration with patient representatives; a face-to-face meeting was held and the wording was changed where necessary.

Box 1. Examples of the NURSE model.

NURSE components*	Examples†
Naming (mentioning the occurring emotions explicitly)	"You seem very upset by the news."
Understanding (showing understanding towards the emotions)	"I can't imagine how difficult this news must be for you."
Respecting (giving a compliment about emotion/response of the patient)	"You've done such a good job in coping thus far with the situation."
Supporting (stressing that a patient will be continuously cared for by oncologist/hospital)	"No matter what happens, we are going to be here to support you and your family through this."
Exploring (exploring of further emotions)	"What are your most pressing concerns?"

*Adapted from: [23,26]
†Adapted from: [26–28]

2.4.1. Background characteristics

In the post-consultation questionnaire, participants reported their sociodemographic characteristics (age, education, marital status, ethnicity, and occupation) and medical information (current treatment).

2.4.2. Clinician-expressed empathy

The research team assessed clinician-expressed empathy by means of a 0-100 Visual Analogue Scale (VAS; 'not at all'-'very much'). The empathy score took into account several behaviors [21,25]: showing interest in the patient beyond their disease, not interrupting the patient, adopting an empathic tone of voice, and showing empathic responses to patient-expressed emotions. For this latter element, the NURSE model was used: Naming, Understanding, Respecting, Supporting and Exploring [26,27,28]. Examples of the NURSE model are displayed in Box 1. In 33/45 of the consultations (73%), clinician-expressed empathy was coded by two researchers (MM, JW), and the scores of the two researchers were averaged (correlation between the two coders was high; r = .69, p < .001). The remaining 12 consultations (27%) were coded by only one researcher (JW).

2.4.3. Patients' information recall

To determine patients' information recall, the first step was to transcribe the consultations. Next, two researchers read through the transcripts of the consultations in search of information provided about: i) treatment options, ii) treatment aims, iii) positive effects of treatment(s), and iv) side effects of treatment(s). In this way the information provided by the oncologist was coded for each individual consultation (73% double coded by JW and MM, 27% single coded by JW). Post-consultation each patient completed a questionnaire about what they remembered of the information provided in that consultation in relation to i) treatment options, ii) treatment aims, iii) positive effects of treatment(s), and iv) side effects of treatment(s). This questionnaire was based on previous recall studies [17,18]. Each coded information category from the transcripts was compared with the patient questionnaire using a self-created scoring system based on scoring systems of previous recall studies [7,17–20]. The categories *treatment aims* (e.g., disease stabilization) and *positive effects* (e.g., better quality of life) were grouped together (into *recall of aims/positive effects)*, as the scoring process revealed that patients had difficulty distinguishing the two. In relation to *treatment options* (multiple-choice question), one point was given for each item that could be recalled correctly. In the categories *treatment aims/positive effects* and *side effects* (open-ended questions), points were awarded for each item that could be recalled partially (1 point), completely (2 points), or not at all (0 points). All responses were scored by two researchers (JW and ML); in the event of discrepancies, these were discussed with another researcher (LV) until consensus was reached. In the end, the researchers calculated the maximum possible score (information provided) and the individual scores achieved (recalled information); this allowed us to determine the correct recall percentage by applying the following formula: (individual score/ maximum possible score) x 100 [18].

2.4.4. Patients' anxiety

To measure patients' anxiety pre- and post-consultation, participants completed a self-created 1-item Visual Analogue Scale (VAS), i.e. "Can you indicate how anxious you are at the moment?" (0-100 range 'not at all'-'very much') [29]. The same VAS was used in a previous study in a similar setting [30]. Pre-consultation anxiety was assessed in the waiting room; post-consultation anxiety was assessed at home. The pre-post-consultation difference score – indicating how anxiety was influenced by the consultation – was used in all analyses.

2.5. Data analysis

2.5.1. Data preparation

84 patients in total gave permission for the research team to contact them; 19 patients did not give oral consent; 4 did not meet the inclusion criteria (e.g., they were scheduled for a check-up visit); 2 could not be contacted;10 dropped out due to logistical problems preventing participation (e.g., there were 2 patients at the same time or the consultation was cancelled); 4 later retracted consent; and 4 patients did not complete all questionnaires [23]. Data of the remaining 41 participants were used in the analysis. All consultations recorded were follow-up consultations.

Participants' pre- and post-anxiety levels were determined, as was their post-pre difference score.

2.5.2. Statistical analysis

First, patients' socio-demographic data were noted, and the levels of clinician-expressed empathy, patients' recall, and patient anxiety were determined. Pre- and post-consultation anxiety levels were compared by means of a paired sample *t* test. Second, the association between clinician-expressed empathy and recall was tested with linear regression analyses. Third, the total and direct effects on recall of empathy (via patients' anxiety) were tested using multiple regression analyses: empathy was added in the first step as a predictor, and patients' anxiety was added in the second step. Structural Equation Modelling (SEM) was used to investigate the total, direct, and indirect effects [31]. The total effect refers to the specific relationship between clinician-expressed empathy and patients' information recall, without accounting for patients' anxiety levels. The direct effect refers to predicting information recall based on empathy while controlling for anxiety levels. The indirect effect refers to the effect of empathy on information recall via patients' anxiety [32]. All data analyses were performed using STATA 14.0, with two-sided significance testing at p<0.05.

3. Results

3.1. Participants

Background characteristics of the 41 patients included are summarized in Table 1 (n = 41, re-used from: [23]). The mean age of the participants was 57 years old (SD = 12.20, range:31-84).

3.2. Clinician-expressed empathy

Clinicians' mean empathy score was 59.44 (SD = 17.98, range: 19-83).

3.3. Patients' information recall

In total, participants remembered 61% of the information discussed in relation to treatment options, aims/positive effects, and side effects. Recall was best for information about treatment options (77%), followed by information about treatment aims/ positive effects (63%); recall was least good for information about side effects (40%) (see Table 2).

3.4. Patients' anxiety

Patients' anxiety decreased by 27.48 points from before to after the consultation (pre-consultation: *M* = 57.41, SD = 28.88, 0-100 range; post-consultation: *M* = 29.37, SD = 25.80, 0-83 range). This decrease was significant: t(40)=-5.77, *p* < .001, 95% CI [-37.11, -17.86].

Table 1
Participants' background characteristics.

	N (%)
Highest Education	
Low (primary education or less)	-
Intermediate-1 (lower education)	9 (22)
Intermediate-2 (upper secondary)	18 (44)
High	14 (34)
Occupation	
Paid job	10 (24)
Disabled / Sick leave	14 (34)
Housewife	4 (10)
Retired	13 (32)
Marital status	
Married	27 (66)
Single	14 (34)
Ethnicity	
Dutch	35 (86)
Western Immigrant	5 (12)
Non-Western Immigrant	1 (2)
Treatments currently receiving[*]	
Chemotherapy	18 (44)
Radiotherapy	2 (5)
Hormone therapy	16 (39)
Immunotherapy	9 (22)
Operation	-
Targeted therapy	4 (9)
Symptom-oriented treatment	10 (24)
Tumor-oriented treatment possible, but refrained from	-
Tumor-oriented treatment impossible	1 (2)

[*] Women can receive several treatments, so this does not add up to 100. This table is re-used from: van Vliet et al., 2019 [23].

Table 2
Participants' information recall.

	N	Mean % (SD)
Recall Total (possible range: 0-100)[*]	40	61 (38.52)
Recall Treatment options (possible range: 0-100)	40	77 (32.94)
Recall aims/positive effects (possible range: 0-100)	28	63 (42.12)
Recall side effects (possible range: 0-100)	30	40 (45.58)

[*] in all recall categories minimum was 0 and maximum was 100.

3.5. The role of clinician-expressed empathy and patient's anxiety on recall

3.5.1. Effect of clinician-expressed empathy on recall

As displayed in Table 3 (see total effects), increased empathy led to increased information recall ($p = .041$). As regards the different categories of information, empathy significantly influenced recall of treatment aims/positive effects ($p = .028$), but not recall of treatment options ($p = .123$) or side effects ($p = .129$). Table 3 also shows that the direct effects of empathy (controlled for anxiety) on total recall and recall of treatment aims/positive effects remained a trend towards significance ($p < .10$). Fig. 1 schematically displays

the results of the SEM analyses of total recall (total, direct, and indirect effects).

3.5.2. Mediating effect of anxiety on recall

As shown in Table 3 (see indirect effects) and Fig. 1, the relationship between clinician-expressed empathy and recall was not mediated by anxiety: the indirect effects of all individual parts and total recall were close to zero and non-significant.

4. Discussion and conclusion

4.1. Discussion and limitations

This observational study of consultations between oncologists and patients with advanced breast cancer aimed to i) determine the relationship between clinician-expressed empathy and patients' information recall in clinical advanced breast cancer consultations; and ii) test whether the relationship between clinician-expressed empathy and recall is mediated by a decrease in patients' anxiety. Our results revealed that clinician-expressed empathy positively influenced patients' recall in clinical practice: both the totality of information and the information about treatment aims/positive effects in particular were recalled better after consultations in which more empathy was expressed. However, this improved recall was not explained by a decrease in patients' anxiety level.

This clinical study confirms what has been shown previously by various experimental studies [17,18,20], namely that empathic communication positively influences recall of information in the advanced cancer setting. The findings are also in line with the clinical study by Jansen et al. [33] demonstrating that nurses' empathic responses to patients' emotional cues increased cancer patients' information recall. Interestingly, the results illustrate that empathy may be most important in the more advanced phase of cancer, given that no clear positive association between empathy and recall was found by the aforementioned systematic review [21], which related to the entire cancer trajectory. As regards the different categories of recall, the total recall average of 61% is also in line with previous findings [8,34]. However, especially the aims and positive effects of treatments were better remembered after an empathic consultation; in contrast to information about side effects and treatment options. This contradicts findings from a previous experimental study [18], which did find an effect of empathy on recall of treatment options. This contradictory result may be explained by the fact that we included follow-up consultations, whereas van Osch et al. [18] used the initial bad news consultations. In addition, our study was conducted in clinical care. Patients may have already received information in previous consultations, leading to increased recall. Indeed, 77% of information about treatment options was correctly remembered by the participants.
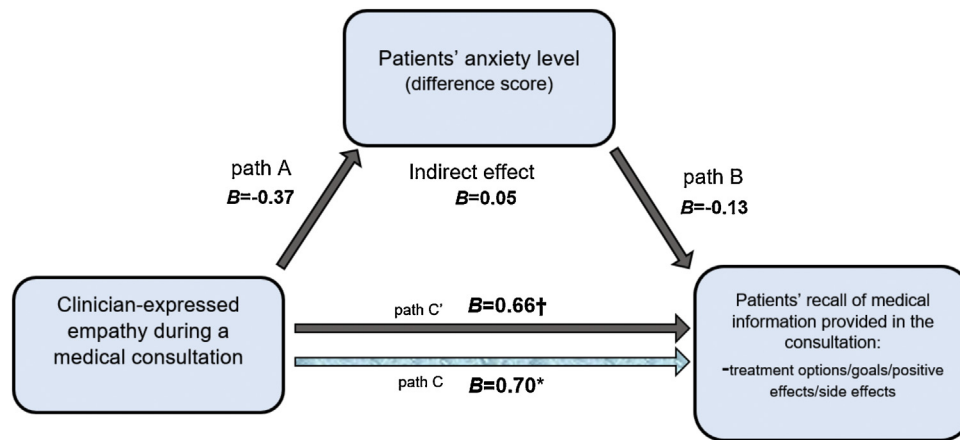
Table 3
Direct effect, indirect effect, and total effects of empathy on recall.

	Direct[1]			Indirect[2]			Total[3]		
	B	p	[95% CI]	B	p	[95% CI]	B	p	[95% CI]
Recall treatment options	0.38	.206	[-0.21, 0.97]	0.08	.342	[-0.09, 0.26]	0.46	.123	[-0.13, 1.05]
Recall aims/ positive effects	0.69	.061†	[-0.03, 1.41]	0.19	.315	[-0.18, 0.56]	**0.88**	**.028** *	**[0.10, 1.66]**
Recall side effects	0.80	.084†	[-0.11, 1.70]	−0.10	.434	[-0.37, 0.16]	0.69	.129	[-0.20, 1.59]
Recall total	0.66	.061†	[-0.03, 1.34]	0.05	.564	[-0.11, 0.21]	**0.70**	**.041***	**[0.03, 1.38]**

*$p < .05$
†$p < .10$
[1] Directs effects are the effects of empathy on recall controlled for anxiety
[2] Indirect effects are the effects of empathy on recall via patients' anxiety
[3] Total effects are the effects of empathy on recall, uncontrolled for anxiety

Fig. 1. SEM analysis results of hypothesized relationship between empathy and total recall via anxiety.
* *p* <.05
† *p* <.10

Although clinician-expressed empathy has an effect on patients' recall, the expected mediating effect of a decrease in patient anxiety could not be established. This is in line with two earlier experimental studies [18,20]. It might be that a decrease in anxiety is not the mechanism by which empathy increases recall.

Our study has limitations. Firstly, using a clinical design meant that we could not control for all variables; for example, levels of empathy and of information provided varied per consultation, and patients' recall may have been influenced by information discussed in earlier consultations. On the other hand, given the study's clinical care setting, our results have high ecological validity. Secondly, empathy was assessed by neutral observers, whose perspective may differ from that of a patient. However, using an objective assessment does imply that all consultations were rated with the same outlook, which also overcomes possible halo effects in patient evaluations [26,36]. Thirdly, our limited sample consisted of mainly highly educated females recruited in a specialized cancer hospital; this limits the generalizability of the results. Fourthly, by using audio-recorded consultations, we excluded non-verbal empathic communication from our analyses; however, these elements are a crucial part of affective communication [37,38] and might improve patient recall [20]. Fifth, due to ethical concerns the post-consultation anxiety score was not measured immediately post-consultation but at home; it may thus have been influenced by other factors than solely the consultation. Lastly, as recall was assessed by means of questionnaires, it was sometimes difficult to establish whether patients really understood the information they had received.

Future studies should overcome these limitations by including a larger, more diverse, population of patients (taking into account the role of confounding factors such as age or pre-consultation understating); by focusing on the role of different empathic behaviors; by making use of video-recorded consultations to include non-verbal communication; and by assessing recall with real-life or telephone interviews to obtain more in-depth data. Most importantly, more research is needed to discover the underlying mechanism of how empathy can improve patients' information recall. A decrease in anxiety may be explained not only by the use of empathy, but by a wider construct such as the therapeutic relationship. A good therapeutic relationship consists of several components – such as empathy, knowledge, trust, loyalty, and regard) [35] – which can be measured by the Human Connection Scale [39].

4.2. Conclusion

Although the underlying mechanism remains unclear, results from the current observational study illustrate the power of clinician-expressed empathy during consultations with seriously ill patients. By using empathy, clinicians can influence patients' recall of medical information provided.

4.3. Practice implications

Clinicians can be encouraged to display empathy in consultations with patients with advanced cancer. Short and practical communication training might be promising [40,41] for this. Such training might integrate the NURSE model [26,27], which we also used in our study to determine empathy levels. Other communication interventions, such as more detailed or more tailored information, might be needed for the information categories not influenced by empathy (e.g., information on side-effects).

CRediT authorship contribution statement

Janine Westendorp: Methodology, Formal analysis, Investigation, Data curation, Writing - original draft, Writing - review & editing, Validation. **Jacqueline Stouthard:** Methodology, Resources, Writing - review & editing. **Maartje C. Meijers:** Methodology, Investigation, Project administration, Data curation, Writing - review & editing, Validation. **Bart A.M. Neyrinck:** Supervision, Writing - review & editing. **Paul de Jong:** Methodology, Resources, Writing - review & editing. **Sandra van Dulmen:** Conceptualization, Methodology, Writing - review & editing. **Liesbeth M. van**

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