Communication Studies

Patients' emotional expressions and clinicians' responses in oncology – From recognition to exploration of concerns

Fernanda Bittencourt Romeiro [a],[*], Vanessa Garrido Pais [b], Gerry Humphris [c], Margarida Figueiredo-Braga [d]

[a] University of Vale do Rio dos Sinos-Unisinos, Graduate Program of Psychology, Brazil
[b] Medical Psychology Unit, Department of Clinical Neurosciences and Mental Health, School of Medicine, University of Porto, Porto, Portugal
[c] Health Psychology, School of Medicine, University of St. Andrews, Scotland, UK
[d] Medical Psychology Unit, Dep Clinical Neurosciences and Mental Health, Faculty of Medicine, University of Porto, Portugal

ARTICLE INFO

ABSTRACT

Objectives: The objective of this study was to analyze patient's emotional expressions during the consultations and the responses of their oncologists to these expressions.
Methods: The study employed a mixed-method, observational, descriptive, and explanatory design. A total of 31 adult patients at different clinical stages, undergoing cancer treatment and 8 oncologists were included. Thirty-one routine outpatient oncology consultations were analyzed, after being transcribed and coded, using the Portuguese version of the Verona Coding Definitions of Emotional Sequences (VR-CoDES).
Results: The oncologists elicited and recognized patients' emotional concerns but they did not explore them in a way that encouraged patients to continue verbalizing their feelings. Oncologists provided more directive and guidance-oriented responses, focusing on cues related to physical pain and symptoms. Multilevel logistic regression analysis modeled the probability of oncologists' responses showing reduction of space in relation to patients' emotional cues/concerns, controlling for clustering and patients' clinical and socio-demographic variables. The type of cue and treatment influenced the oncologists' responses.
Conclusions: Communication skills training focused on the ability to better explore patients' emotions may help oncologists to provide more explicit and empathetic responses that validate the emotional content expressed during consultations. *Practice Implications:* Oncologists do not use the same responses as a standard with patients, thus adjusting them individually.

1. Introduction

Healthcare professionals working in oncology face professional challenges related to time management, integrated teamwork, the severity of clinical situations, and the increasing number of patients. This workload and daily pressures can affect the clinician's communication abilities and the relationship with patients [1-3]. For cancer patients, communication satisfaction involves the clinician's willingness to discuss their illness, address their doubts, establish trust, and use accessible and understandable language [4]. The health professional's ability to provide information with empathy, hope, and honesty also influences patient satisfaction, leading to better disease understanding and improved health outcomes [5-7]. Communication influences patient decisions, from cancer screening to treatment adherence [8]. The use of

active listening and self-awareness are facilitative aspects of communication that benefit the clinician-patient relationship and contribute to patients' psychological well-being [9]. Conversely, inaccurate, conflicting, or deficient communication hinders discussions about prognosis [1].

Communication skills include aspects of the professional-patient relationship, such as shared decision-making, patient-centered communication, delivering bad news, and empathetic exploration of emotional cues [10,11]. Delivering bad news is not an easy task for clinicians in oncology, and the literature shows that cliniciansdo not always feel adequately prepared for this task [12]. The main barriers identified in delivering bad news include limited consultation time, high patient demands, the need to maintain a bond with the patient and their family, and the feeling of frustration from not meeting expectations

[13]. Patients' high expectations regarding treatment options are not always considered by clinicians, leading patients to experience more doubts and negative emotions. Understanding these expectations, aligning them with reality, and providing hope to patients pose challenges for oncologists [14].

This clinical context contributes to the difficulties faced by oncologists in identifying, exploring and validating patients' emotions related to the disease or treatments, while allocating enough consultation time for this task [15,16]. Similar to other chronic illnesses, addressing emotions during consultations can be challenging, and doctors tend to prioritize recognition of the physical symptoms of the disease over emotional aspects and patient concerns [17]. However, when the clinician presents more empathetic responses and provides space for the patient to express emotions about the disease or treatment, the patient may feel more confident and satisfied. As stated previously, clinicians expressing emotional support and empathy increases with increase patient satisfaction, as patients experience stronger coping and maintain hope [18].

Emotional communication in medicine has been a challenging task for healthcare professionals, as one of the main difficulties lies in identifying patients' concerns related to their medical conditions [19-21]. International researchers in health communication developed an instrument called the Verona Coding Definitions of Emotional Sequences (VR-CoDES), which allows for the coding of patients' emotional expressions of distress during medical consultations and healthcare professionals' interventions [22]. Studies have tested the applicability of this instrument in various healthcare settings, including oncology, pediatrics, nursing, nutrition, dentistry, pharmacy, ophthalmology, psychiatry, and even veterinary care [23-30].

In Brazil, VR-CoDES were applied in oncology to investigate how oncologists respond to patients' emotional expressions during routine medical consultations [31]. The study revealed that, in general, oncologists focus on physical signs and symptoms of the disease, responding in a less empathetic manner, perhaps due to difficulties in recognizing the emotional needs of patients. The most common responses used by oncologists in this study were explicit counseling with informative content, disregarding or inhibiting patients' emotional cues and concerns. We could hypothesize that oncologists delivery of clinical information aims to convey confidence and reassurance in a small amount of clinic time.

Studies show that communication skills training enhances the recognition of emotional impact caused by the disease, guiding clinicians to manage each situation appropriately and personally [32-34]. A clinician's competence should involve patient-centered care and the ability to manage their emotions while responding to patients' emotions [35]. Recently, the Brazilian Association of Medical Education (ABEM) published the first consensus on clinical communication for medical schools in Brazil [36]. The consensus, developed by experts in communication and medical education, advocates for a relationship-centered approach, professionalism, adherence to principles of the Brazilian Unified System, called SUS, and social participation in teaching clinical communication in medical schools.

Patients' emotions may be expressed through verbal or non-verbal communication, including behaviors that suggest emotional discomfort or complaint without verbal expression. To facilitate patients' emotional expressions, it is necessary for doctors to explore concerns during consultations and attentively listen to what patients are communicating in a less explicit manner [37]. For example, Anderson's study revealed that clinicians predominantly explored suffering explicitly, with directive and counseling responses like "everything will be fine" instead of providing information tailored to each patient's needs [38]. Based on a patient-centered model, it is ideal for clinicians to use responses to emotional expressions differently for each patient, fostering more assertive and empathetic communication according to each individual's needs and preferences [39,40].

An integrative review adressing factors associated with emotional distress of patients ongoing oncologic treatment revealed that feeling of prognostic uncertainty, fear of pain and death, denial, and frustrations with treatments have a significant emotional impact [41]. The oncology treatment generates anxieties and fears about recurrence, metastasis and other disease complications for patients, therefore it seesms crucial for oncologists to perceive the demands at each stage of treatment to alleviate these concerns during consultations by exploring symptoms and emotions [42]. Considering that clinical communication is an essential tool for the clinician-patient relationship and treatment management, The objective of this study was to analyze the different emotional expressions detected during the consultation and the responses of oncologists to these expressions in a group of cancer patients.

2. Method

2.1. Design

The study utilized a mixed-method, descriptive, and explanatory design.

2.2. Participants

Data were collected from 31 routine outpatient consultations. The patients had been aware of their cancer diagnosis for at least two months. First diagnosis disclosure consultations, debilitated patients (with physical or cognitive limitations hindering speech, hearing, mobility and/or understanding of consultations), and patients who were scheduled for a consultation but were hospitalized on the day of the appointment were excluded. These exclusion criteria were used to ensure that patients' exposure to the study's objectives, and audio recording of the consultation, was not detrimental or uncomfortable. A total of 25 oncologists from two reference healthcare centers specializing in oncology were invited to participate in the study. Eight oncologists, including two oncology and hematology residents accepted the invitation, resulting in a response rate of 32 %.

3. Instruments and data collection procedures

1. Preliminary contact with the heads of the oncology and hematology services: Before commencing data collection, the researchers made preliminary contact with the heads of the oncology and hematology services at a public hospital in Porto Alegre, Southern region of the country, and a specialized oncology clinic that serves adult cancer patients from the public health network in the interior of the Southern region of the country. This contact aimed to obtain permission to conduct the study at the respective locations and ensure the cooperation of the institutions.

2. Invitation to oncologists: Clinicians working in the oncology and hematology services were invited to participate in the study. They were informed about the study's objective, which involved real-time investigation of doctor-patient communication, with a focus on emotional competencies. Additionally, the doctors answered socio-demographic and professional questions, such as age, gender, sleep quality, clinical specialty, years of education and practice, and training in communication skills.

3. Invitation to patients: Patients were invited to participate in the study while waiting in the reception area, on the day of their routine consultation. Prior to this invitation, the doctors selected some patients who were considered suitable for participation in the research. Subsequently, the researcher explained the study's objectives to the patients and requested their participation, which involved completing a questionnaire and having their consultation with the doctor recorded in audio format.

4. Collection of sociodemographic and clinical information: Before the consultation recording, the patients provided some information

about themselves, such as age, gender, level of education, marital status, age at diagnosis, diagnosis, and type of treatment received.

5. Audio recording of consultations: The consultations were audio-recorded in routine oncology consultations with a scheduled duration of 20 min per patient. The attending physicians themselves during the consultations in their respective offices conducted these recordings.

The audio recording of the consultations was conducted in the oncology and hematology outpatient clinic of a hospital and a specialized cancer reference center, both providing public healthcare services under the Brazilian Unified System (SUS). The described procedures were adopted to ensure high ethical standards. Informed consent was obtained from the study participants, to collect the necessary data including analyzing doctor-patient communication with a focus on emotional competencies.

3.1. Ethical procedures

In accordance with guidelines and regulatory norms governing research involving human subjects, all ethical precautions specified in the resolutions CNS No. 510/2016, Human Sciences Resolution No. 466/2012, and Circular Letter CONEP No. 2/2021 for conducting research at any stage in a virtual environment were strictly followed to ensure the confidentiality of data collected through virtual means. The study received approval from the Research Ethics Committee (CEP) of the University of Vale do Rio Sinos – UNISINOS under registration number CAAE No. 47574521.0.0000.5344, and from the Ethics

Subcategories	Description	Examples
Concern	Explicit verbal expressions in which the patient indicates feeling anxious, sad, irritated, angry, or worried could be: .	"I'm afraid that this pain I feel in my body might be another cancer. That's what worries me." (female, 52 years old)
Cue a	Verbal expression similar to a concern, but to differentiate them, the patients' vague and non-specific expressions are considered (eg strange, sort of, weird).	"I'm feeling so-so, some days I'm okay, but other days the pain comes back, and I feel unwell." (male, 61 years old)
Cue b	Suggestion of an implicit emotion where the patient expresses his emotions through metaphors (eg "I'm about to explode", "it's all useless"), or exclamations to suggest an emotional state.	"Crying hurts more, you have to think positive and move on. (sighs)" (female, 66 years old)
Cue c	Indicates a verbal expression with a physiological nature related to emotion (eg sleep, nausea, pain in general. In this case, it is not enough for the patient to verbalize the physical discomfort, it is necessary to emphasize the expression of underlying emotion (eg "I don't sleep very well").	"Headaches, I've been having a lot of pain, especially in the back of my neck, especially at night, you know? For the past three nights, I haven't been sleeping well because of the pain." (female, 63 years old)
Cue d	Indicates that the verbal content is neutral and refers to potentially stressful circumstances or experiences. It is not enough to say 'I have cancer', this speech must have a meaning with the content of an emotion before or after signaled by the patient.	"Oh, it was before I got the injection, I can't quite remember now, how was it? But last month, I didn't take the pills because they didn't arrive. It was still in the legal process, some months they come, others they don't. Sometimes, I go 2 months without taking them." (female, 57 years old)
Cue e	Indicates repetition of content in which there is emotion and the patient repeats a neutral verbal expression on his own initiative.	"That's right, I was feeling unwell for 11 days... I can say it started last Saturday, yes, it's been 8 days now since I've been recovering, and then on Monday, I'll have my chemotherapy again. Yeah, I'm recovering." (female, 48 years old)
Cue f	Coded as a non-verbal cue, in which the patient makes some expression of non-verbal behavior (crying, silence, pause in speech).	"My God..." (sigh, silence) (male, 62 years old)
Pista g	A clear expression of an unpleasant emotion that occurred in the past (more than 1 month ago) or has no specific time frame	"The first time the doctor gave me the cancer diagnosis, I was so scared." (m, 58 years old)

Fig. 1. Description of Seven Types of Emotional Cues Subcategories and an Emotional Concern.
Note: According to the VR-CoDES-CC manual. Examples taken from the 31 consultations.

Committee of the Hospital, CAAE No. 47574521.0.3001.5530, both located in Porto Alegre, Rio Grande do Sul. Additionally, consent was obtained from the Oncology Center, located in the metropolitan region. All participating oncologists and patients who agreed to take part in the study signed an informed consent form for the audio recording of consultations, according to the Free and Informed Consent Form and signed it upon agreement to participate.

3.2. Data analysis procedures

The data were analyzed qualitatively and quantitatively. To explore the content of emotional concerns expressed by patients during routine oncology consultations, qualitative and quantitative analysis was performed to segment the dialogues into units of analysis and code the patients' emotional concerns and cues, as well as the oncologists' responses. The 31 consultations were transcribed verbatim and analyzed based on the audio recordings of routine clinical consultations with patients undergoing cancer treatment. The transcription and coding process was carried out by a research team composed of four undergraduate students from the Psychology and Medicine courses.

The research team underwent a six-week training, with weekly meetings, to conduct the analysis of the consultations using the Verona Coding Definitions of Emotional Sequences (VR-CoDES) system in its Portuguese version [43]. The VR-CoDES system was developed by an international network of researchers in the field of health communication [22,44]. According to the manual, patients' emotional expressions are categorized into seven underlying cues a, b, c, d, e, f, g' and an explicit concern of a negative emotion, as presented in Fig. 1.

The doctors' responses are divided into 17 codes, with one response being coded for each cue/concern expressed by the patient. Fig. 2 presents the coding of the doctors' responses according to the VR-CoDES-P (Professional) manual.

After VR-CoDES training, the research team coded several consultations under the supervision of the study's principal researcher. After transcription, the dialogues were divided into speech turns and units of analysis to code the emotional concerns and cues expressed by the patients and the oncologists' responses. The units of analysis used in this study closely followed the pattern provided in the manuals. The coding process requires a high level of involvement from the researcher to ensure consistent coding [45-47]. Moreover, the transcription and coding process is time-consuming, even for VR-CoDES experts, due to the potential subjectivity of clinical material.

The data were subjected to descriptive and inferential statistical analyses, including frequency, percentage, means, and standard deviations, using the IBM SPSS Statistics version 22.0 software [48]. We used multivariate multilevel logistic regression to identify significant associations between the oncologists' responses and the patients' cues/concerns. The model tries to use Cues and Concerns to predict whether the patient is closed down or not. The clustering effect reflects the fact that all interactions within a consultation are influenced by the characteristics of the doctor and the patient in that specific consultation. Multilevel regression adjusts the model to account for the fact that these interactions are not completely independent, providing estimates that consider variability both between consultations and within individual interactions. Concerns and the Cues a, b, c, d, and e were included in the regression model. Cues f and g were excluded because their frequency was very low in the sample of consultations. Therefore, each cue and concern variable independently contributes to predicting the clinician's behavior of reducing space. The total number of turns (in effect a proxy for the length of the consultation) should be Level 2. Likewise the age and patient gender should also be Level 2. Wald chi-square analyses, associations, and logistic regression were performed using the STATA 15.1 software for Windows. The likelihood ratio test compared the log-likelihoods of the various prediction models and these estimates were tested for significant differences. The dependent variable was the oncologists' responses coded as "NR" and "ER" with the function of 'reducing space,' treated as a dichotomous variable, scored with 0 or 1, where '1' indicates that the oncologist's response was 'reducing space' and '0' indicates providing space. The independent variables included patients' emotional cues and concerns, age, gender, type of treatment (surgery, chemotherapy, radiotherapy), metastasis, consultation duration, and speech turns.

4. Results

31 consultations were audio-recorded with 31 cancer patients (Table 1) undergoing treatment, aged between 39 and 78 years (M = 59.68; SD = 11.16), of which 18 (58.1 %) were women. Sociodemographic characteristics included 11 (35.5 %) who had incomplete primary education. The proportion married was 15 (48.4 %), 24 (77.4 %) had children, 13 (41.9 %) were employed at the time of the consultation and 12 (38.7 %) reported having stopped working due to the illness. The patients had been in treatment for an average of 2.46 years (SD = 2.05 years; from 2 months up to 7 years) on outpatient basis at a public hospital in the capital and a specialized Oncology clinic in the metropolitan region in the Southern region of the country, both part of the Unified Health System (SUS).

To participate, the oncologists had to have at least 1 year of experience in the field of oncology. The oncologists' ages ranged from 28 to 42 years (M = 36.25 years; SD = 3.99), of which 62.2 % were female. They had an average of 4.45 years of experience (SD = 2.60 years) and worked in two specialized public services for cancer treatment in the Southern region of the country, consisting of: 62.5 % in the field of clinical oncology and 37.5 % in hematology. Only 3 (37.5 %) oncologists reported receiving any type of communication training during medical school.
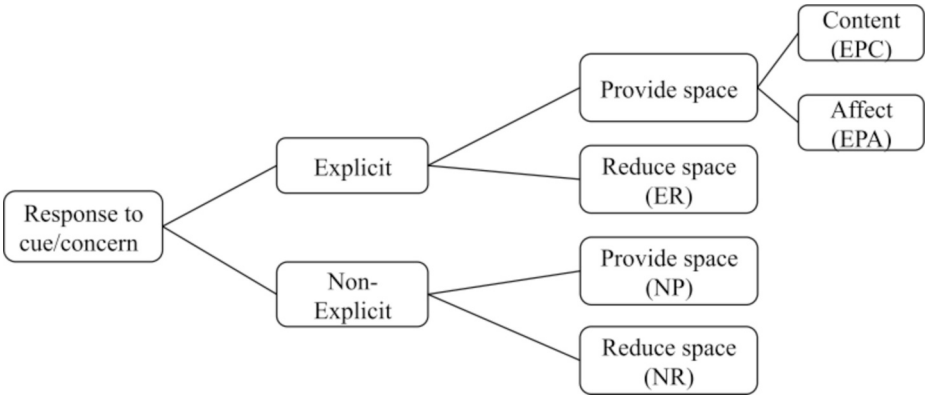

Fig. 2. VR-CoDES manual. Response types to cues/concerns.

Table 1
Description of clinical data of patients.

Clinical variables	F	%
Type of consultation		
Routine	13	41.9
Review of exams	06	19.4
Emergency	05	16.1
Authorization for chemotherapy	07	22.6
Cancer diagnosis		
Chronic Lymphocytic Leukemia	04	12.9
Uterus/Ovary	02	6.5
Head/Neck	01	3.2
Breast	08	25.8
Prostate	03	9.7
Lung	02	6.5
Intestine	03	9.7
Lymphoma	02	6.5
Colorectal	03	9,7
Metastasis	16	51.6
Cancer staging		
Level I	02	6.5
Level II	07	22.6
Level III	06	19.4
Level IV	16	51.6
Type of Treatment		
Surgery	16	51.6
Chemotherapy	29	93.5
Radiotherapy	16	51.6
Hormone therapy	04	12.9
Psychological/Psychiatric Treatment	10	32.2
Psychopharmacological		
Total	15	48.4
antidepressant	09	29
Anxiolytic	02	6.5
Mood stabilizer	02	6.5
Antipsychotic	02	6.5

A total of 3218 turns of speech were coded in the 31 recorded consultations. The average consultation duration was 13 min (SD = 7.89), ranging from 4 to 35 min. A total of 432 emotional cues/concerns were identified (range: 1–30; M = 13.9), corresponding to 13.4 % of the units of analysis, with only 23 concerns. For each emotional cue/concern identified in the speech turns, a response from the oncologist was coded.

The origin of emotional cues and concerns elicited by the patients (PE) indicates the patient's initiative or effort to draw the doctor's attention to specific problems. The origin of emotional cues and concerns elicited, explored, or facilitated by the doctor (HPE) indicates the space given to patients to explain their concerns without them having to take the initiative. Emotional cues and concerns were coded when patients initiated the conversation or when doctors prompted the question. The results showed that doctors elicited more cues and concerns from patients (59.3 %) than the patients themselves (40.7 %).

4.1. Emotional cues and concerns of oncology patients

The distribution of emotional cues and concerns is described in

Table 2
Frequency of emotional cues and concerns of patients according to the VR-CoDES manual.

VR-CoDES	F	%
Concern	23	5,3
Cue a	58	13,4
Cue b	64	14,8
Cue c	148	34,3
Cue d	52	12,0
Cue e	62	14,4
Cue f	11	2,5
Cue g	14	3,2
Total	432	100,0

Note: see Table 1.

Table 2. Patients expressed more implicit cues, such as symptoms, pain, discomfort, use of metaphors, and expressions of uncertainty, than explicit concerns with expressions of negative feelings, fears, anxieties, and distress (409 cues vs. 23 concerns). The most prevalent clue was cue C, which refers to expressions of a physiological nature. In 16 consultations, no concerns were expressed, only cues.

4.2. Responses of oncologists to emotional cues and concerns

The explicit and non-explicit responses with space reduction (R), represented by the codes ER and NR, accounted for 58.6 % of the total responses. Regarding responses with provision of space (P), 22.5 % were explicit (EP), and 19 % were non-explicit (NP). Empathic responses with acknowledgment and exploration related to content (EPC) accounted for 20.4 % of the total responses, while responses related to emotions represented a lower frequency at 2.1 %, as described in the code descriptions in Table 3.

Table 3
Description of oncologists' responses according to manual coding VR-CoDES-P.

Responses	Coding	of consultations	F %
Non-explicit–reducing space			**114 (26.4)**
	NRSd – Shutting down	"Okay, yes, did you have a fever?"	23 (5.3)
	NRIg - Ignoring	"Yes, just a moment, okay?"	31 (7.2)
Non-explicit–providing space	NRIa – Information-advice	"Mhm, no… it's not related to that issue. Your test results are very good."	60 (13.9)
	NPSi – Silence		**91 (19.0)** 1 (0.2)
	NPBc – Encorajamento	"Look, ma'am, you've had this increase in leukocytes for 5 years now."	56 (13.0)
Explicit – reducing space	NPAc - Acknowledgement	"Alright, you can go ahead, I'm listening." "Tell me what's going on, how do you feel after the hospitalization?"	24 (5.6)
	NPIm – Implicit empathy		10 (0.2)
Explicit – providing space	ERIa – Information-advice	"So, what I think would be best for you is to start addressing your insomnia, you should stop sleeping during the day."	**139 (32.2)** 112 (25.9)
	ERAb – Active blocking		3 (0.7)
	ERSw – Switching	"Exactly. My dear, look, the tests are good, and the results dropped from 12 to 7."	24 (5.6)
	EPCAc – Content Acknowledgement	"Only in the spine, I see. But when it gets quiet like this, does it feel better?"	**97 (22.5)** 28 (6.5)
	EPCEx – Affect exploring	"But do you think this pain is getting much worse?"	60 (13.9)
	EPAAc – Affect acknowledgement	"I understand it's not easy, but we can't give up now."	7 (1.6)
	EPAEm – Empathy		2 (0.5)

Note: The frequency of each type of response is highlighted in each subgroup of codes according to the functions of the responses.

4.3. Predictors of Oncologists' space reduction responses

Multilevel logistic regression analyses demonstrated that the degree of variation explained by each oncologist in the "space reduction" response was almost 18 %, with a prediction interval (95 % CI) from 0.08 to 0.33. The variation in the model indicated that oncologists provided different responses for each patient, showing that there was no standardized pattern of response. The number of turns (units of analysis) of the oncologist significantly contributed to space reduction; that is, with each increase in the number of turns, the chance of space reduction increased by about 2 %. As the consultation extended, the oncologist's likelihood of encouraging the patient to provide more details or elaborate on implicit emotions decreased. The overall model explained 60.7 % of the variance in the dependent variable (oncologists' space reduction responses) (Wald X^2 (8) = 60.71; p = 0.001). The clustering effect, that is the observations of space reduction were not independent with consultation, was high (X^2 (01) = 6.43; p = 0.005).

Emotional cues and concerns (a), (b), (c), (d), (e) were included in model 1, while cues (f) and (g) were excluded due to their low frequency, which would bias the analyses. In addition to these independent variables, demographic and clinical variables such as age, sex, type of treatment (surgery, chemotherapy, radiotherapy), metastasis, consultation time, and turns of speech were included in model 2. Emotional cues and concerns were predictors of oncologists' space reduction behavior. Patient characteristics influenced oncologists' responses based on two factors: 1) emotional cues and concerns and 2) type of treatment. Emotional cues (d) and (a) were the most significant cues that contributed to explaining oncologists' space reduction responses, indicating past emotions and vague, nonspecific expressions (p = 0.0001). Cues (b), (c), (e) also explained the influence on space reduction responses (p = 0.005), as well as concerns with explicit emotions. The chance of oncologists providing space reduction responses was high for cues (a), (d), (e), (b), (c), respectively, in order of significance.

Regarding clinical variables, the type of treatment was significant as shown in the final model, namely model 4, indicating that space reduction responses were higher for patients who underwent surgery and lower for those who received chemotherapy. Thus, for the independent variable 'surgery,' the odds ratio (OR) was 2.94, meaning that there were almost three times more chances of oncologists responding with reduced space on average (controlling for all other variables) to patients who underwent surgery as part of their treatment than patients who did not receive surgery. Furthermore, patients who received chemotherapy had a 74 % increase (OR = 0.25) in the chances of oncologists providing space, i.e., they reduced less space in response to patients' verbalizations. These data indicated that oncologists respond differently to patients with different types of treatment. Patients may have had Surgery alone, or Surgery plus Radiotherapy or all three treatments. They may have had other combinations of treatment, such as Radiotherapy and Chemotherapy. Regarding the difference between treatments, we used the frequency of patients who had already

Table 4

Multilevel Logistic Regression Model for the Results of the Dependent Variable Reducing Space (R).

Variables	Null model	Model 1 Coef.	Model 1 95 % IC	Model 1 P	Model 2 Coef.	Model 2 95 % IC	Model 2 P	Model 3 Coef.	Model 3 95 % IC	Model 3 P	Model 4 OR	Model 4 95 % IC	Model 4 P
Level 1 (n = 432)													
Cue A		2,55	1,31; 3,78	[0.001				2,52	1,29 3,76	[0.001	12,43	3,59 42,92	[0.001
Cue B		1,53	0,35; 2,72	[0.05				1,49	0,31 2,68	[0.05	4,44	1,36 14,40	[0.05
Cue C		1,16	0,03; 2,28	[0.05				1,12	0,00 2,24	[0.05	3,03	0,98 9,32	[0.05
Cue D		2,08	0,82; 3,33	[0.001				1,99	0,74 3,23	[0.001	7,24	2,07 25,23	[0.001
Cue E		1,71	0,51; 2,92	[0.05				1,65	0,45 2,85	[0.001	5,18	1,56 17,21	[0.001
Concern		1,68	0,24; 3,13	[0.05				1,65	0,22 3,09	[0.05	5,28	1,24 21,95	[0.05
Patient turn		0,02	0,11; 0,02	[0.001				0,01	0,01 0,02	[0,001	1,02	1,01 1,02	[0.001
Total turn		−0,00	−0,11; 0,00	0,539				-0,00	-0,01 0,00	0,501	0,99	0,99 1,00	0.622
Age		-0,00	-0,04; 0,02	0,623	-0,01	-0,05; 0,01	0,289	-0,15	-0,04 0,18	0,357	0,98	0,95 1,01	0,365
Patient gender (female ref.)		0,68	-0,13; 1,49	0.100	0,26	-0,43; 0,97	0,453	0,36	-0,34; 1,07	0,317	1,45	0,72 2,95	0,296
Level 2 (n = 432)													
Surgery		0,71	-0,01; 1,43	[0.05 1,04				0,29	1,78	[0.05	2,94	1,40 6,17	[0.001
Chemotherapy		-0,88	− 1,91; 0,15	0,094 -1,28				-2,32	-0,24	[0.05	0,25	0,93 0,72	[0.05
Radiotherapy		0,63	-0,05; 1,32	0,072 0,24				-0,50	0,99	0.526			
Metastasis		-0,57	-1,32; 0,17	0,130 -0,53				-1,30	0,24	0.176	0,63	0,30 1,31	0,220
Randomized Effect (Identity)													
Level 2 variance (95 % CI)	18 %	0,78 (0,51; 1,51)			0,60 (0,35; 1,01)			0,55 (0,29; 1,03)			0,55 (0,30; 1,04)		
Log likelihood	−282.99	−251,60			−276,45			−246,24			−246.44		
LR[1] test	v^2(1) = 31,96 p [0.001	v^2(1) = 23,30 p [0.001			v^2(1) = 10,52 p [0.001			v^2(1) = 6,04 p [0.05			v^2(1) = 6,43 p [0.05		

LR[1] = Likelihood Ratio. Mixed effects logistic regression Number of obs = 432. Group variable: Identity = 31 consultations. * p < 0.05. ** p < 0.001.

undergone chemotherapy during the treatment. The classification of the sample of patients does not allow you to reliably state the effects of the treatment for radiotherapy as the large majority all received chemotherapy. The results are presented in Table 4

5. Discussion and conclusion

5.1. Discussion

The present study examined clinical communication with an emphasis on patients' emotional expressions and their oncologists' responses to these emotional expressions. The analysis of physician-patient interaction in audio-recorded consultations was conducted using a coding system for emotional sequences, the Portuguese version of VR-CoDES. The number of emotional cues and concerns expressed by patients in each consultation was similar to that found in patients with chronic diseases [49]. Specifically for oncology patients, other studies found lower averages [50,51]. The number of concerns was lower compared to the number of coded cues in consultations, but when verbalized, they were related to distress, fear, and irritation, sadness about disease progression (recurrence, metastasis), treatment failures, or bureaucratic issues, reflecting the specificities of consultations with oncology patients in Brazil. In just over half of the consultations, patients expressed only cues without verbalizing concerns.

The oncologists were the ones who most frequently elicited emotional expressions by inquiring about the patient's psychological and emotional state, showing interest in their psychosocial aspects. A similar study that used the same methodology inversely concluded that physicians elicited these concerns less frequently than the patients themselves [21]. However, when patients expressed emotions, the physicians provided space reduction responses to about half of the emotional cues and concerns. In this study, this number increased when the number of consultations with the patient was higher, mainly with explicit advice responses (ERIa) and ignoring responses (NRIa) as found in another recent study that identified the occurrence of negative emotions among patients and their families. The oncologists responded with explicit with reduce space, being more directive and explicit, similar to our findings. Thus, it indicated that they provided little opportunity for patients, despite showing some concern in prompting questions about how the patient was feeling [52]. Space reduction responses were also found in a study with neurologists who used more responses of changing the subject, ignoring, and giving medical advice to anxious and older patients, indicating that there are still limitations in emotional communication [53]. Several factors may contribute to these types of responses, including a sense of lack of time during the consultation or lack of preparation to deal with emotional content in communication with patients. This is suggested by the fact that the probability of space reduction responses increases as we progress through the consultation. We also may speculate that for the oncologist the delivery of clinical information may act per se as emotionally reassuring and supportive. The severity of the disease also places, for the clinician, greater relevance and urgency in addressing clinical aspects. In line with this possibility, the oncologists in this study provided more directive and guidance responses, focused on cues with physical content and symptoms, and less on explicit concerns or more subjective cues, such as the use of metaphors, previous episodes of discomfort, and negative emotions, when they have had more consultations with the patient.

The predictive results through multilevel logistic regression allowed modeling the probability of oncologists' space reduction responses to emotional cues and concerns of patients, controlling for consultation and patient-related variables such as type of treatment, age, sex, disease stage, and speech turn times. For this study, the kappa was not calculated because the coding was performed by experts and reviewed by one of the authors of the VR-CoDES instrument. For example, in another study of ours [31], we calculated the Cohen's kappa coefficient between

two pairs of judges (1 and 2) and found a value of 0.785, representing excellent agreement. The oncologists demonstrated responding differently to each patient, inferring that they did not use the same responses as a standard pattern with patients, but rather adjusted them individually. The likelihood of doctors responding with space-reduction to emotions from surgery patients was higher compared to those undergoing chemotherapy. For chemotherapy patients, oncologists provided fewer space-reducing responses, thereby allowing more room for patient verbalizations.This difference in physicians' responses to patients with different types of treatment was also found in other studies with oncology patients [50]. These concerns are more influenced by the type and treatment of cancer than by other demographic variables. Some hypotheses for this result would be due to the level of confidence in the oncologist's approach and the need for adherence to treatment, indicating that chemotherapy is a prolonged treatment that requires patient involvement and collaboration.

Oncologists responded with provision of space in 41.5 % of responses to emotional expressions of patients, with the most frequent being exploration of content (EPCEx) and the least frequent being recognition of emotion (EPAAc) and active empathy (EPAEm). It is possible that oncologists identify patients' demands and respond to the content aspect of concerns and cues, but rarely explicitly recognize or explore the affective aspect of concerns. These findings are consistent with other studies on empathy in medical consultations [54,55]. Providing space for patients' emotional expressions does not necessarily imply giving explicit and empathetic responses. Studies with breast cancer patients found a relationship between physicians' recognition and empathy responses. Silence or some empathetic behavior was considered a way for physicians to open up space for the continuity of emotional cues [19,56]. A study developed training based on the VR-CoDES system and found that physicians and medical students rated space reduction responses as inadequate and ineffective and that "Explicit" responses with provision of space were preferred [57].

Based on this interaction in consultations, it was possible to discuss three hypotheses. The first hypothesis is that physicians may consider themselves satisfied by introducing open-ended questions about how patients feel, considering that they have recognized and sufficiently explored the emotions. The second is that the restricted consultation time forces oncologists to focus on clinical aspects and signs and symptoms, in order to complete the therapeutic plan and contribute to the disease's best evolution. The third hypothesis would be explained by the lack of training in emotional response skills or in managing their own emotions when involved in empathic communication. Oncologists who are more worn out and stressed may find it difficult to manage emotions, while perceiving this attitude as a weakness or a sign of unprofessionalism, especially when it comes to death/terminality of patients [58].

It is worth noting that, in this study, 48 % of patients were using psychopharmacological medication, and about 32 % were undergoing some form of psychological/psychiatric follow-up, signaling that some emotional content could be considered by the oncologists as exceeding their competencies. In addition, the majority were older, with low educational level and not working, which to some extent helps explain how they express emotions, using more implicit or harder-to-identify cues. In general, patients seldom use psychological vocabulary to talk about their pains, concerns, or distress but rather verbalize somatic complaints and symptoms according to their culture and what they know about the disease [59]. Therefore, it is the role of clinicians to understand these varied emotional expressions, recognize that they may be related to physiological or psychological complaints or concerns, and support and assist their patients in coping with cancer.

Ignoring, avoiding, or not providing space for patients to express their emotions can inhibit patients from expressing themselves as they would like, increasing anxiety, doubts, and dissatisfaction [47]. There is evidence that the potential negative emotional impact generated by the disease gives rise to unpleasant feelings, such as fears, anxieties,

uncertainties, and stressful emotions that need to be explored, facilitated, and supported by clinicians in order to assist patients in coping with treatment and disease evolution [28]. It is crucial for oncologists to be attentive to patients' emotional suffering and address these concerns in consultations, considering that treatments are long-lasting and invasive.

The study has limitations, such as the relatively moderate number of participants and recorded consultations, which restricted statistical testing to a small set of essential models. A larger sample would have enabled the testing of more robust statistical effects and generalizability. For example, by controlling the number of patients in chemotherapy, surgery, and radiotherapy in a proportional manner to obtain statistically more significant results. Alternatively, studies that focus for example on the reason for the consultation, the type of oncological disease, and perform separate analyses for diagnosis disclosure consultations, complications, routine visits, and others can provide the researcher to test for more precise comparisons of these factors in communication and emotional expression of patients.

Future research with larger samples and in other clinical contexts that explore how clinicians from different specialties address emotional distress in patients' healthcare, measuring the impact on patient satisfaction, adherence, and clinical outcomes, may highlight more effective physician strategies and responses. However, it is suggested that the development and training of clinical communication skills, specifically in managing, recognizing, and exploring patients' emotions during routine consultations, would be beneficial.

5.2. Conclusions

Cancer patients expressed a high number of explicit and implicit negative emotions in routine medical consultations, frequently elicited by oncologists.These negative emotions were more related to cues of symptoms, the use of vague expressions, metaphors, and past episodes that recalled how they felt at other times when the disease worsened or when they discovered the illness. Oncologists individualize their response to cue and concerns, which vary according to the patient type of treatment. When responding to the emotional expressions, oncologists frequently reduced space, providing technical information, changing the subject, or ignoring the cues, focusing on clinical aspects, particularly in longer consultations, with emotional cues and when patients were submitted to surgery.

The study has ecological validity as it approaches real-life situations under investigation for knowledge construction. This methodology allowed assessing of emotional distress in various domains by identifying emotional expressions during physician-patient interactions. It allowed an in-depth understanding of interactions between oncologists and cancer patients, providing insights into clinicians' clinical practice by guiding them to provide more space for patients' concerns, thereby fostering better health outcomes and patient satisfaction. Identifying the gap between patients' emotional expressions and clinicians' responses at each stage or type of disease will enable the development of customized communication improvement interventions in oncology.

I confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

CRediT authorship contribution statement

Fernanda Bittencourt Romeiro: Writing – original draft, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Vanessa Garrido Pais:** Writing – review & editing, Validation, Supervision. **Gerry Humphris:** Writing – review & editing, Software, Formal analysis. **Margarida Figueiredo-Braga:** Writing – review & editing, Writing – original draft, Validation, Supervision, Investigation, Data curation, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

References

[1] Grignoli N, Wullschleger R, Di Bernardo V, Amati M, Zanini C, Malacrida R, et al. Hope and therapeutic privilege: time for shared prognosis communication. J Med Ethics 2020:1–6. https://doi.org/10.1136/medethics-2020-106157.

[2] Heyman RE, Baucom KJW, Giresi J, Isaac LJ, Slep AMS. Patient experience and expression of unpleasant emotions during health care encounters. J Patient Exp 2020;7:969–72. https://doi.org/10.1177/2374373520978869.

[3] Martins DP, Fuzinelli JPD, Rossit RAS. Trabalho em equipe e comunicação no cuidado oncológico: revisão integrativa. Res Soc Dev 2022;11:e295111234630. https://doi.org/10.33448/rsd-v11i12.34630.

[4] Munhoz BA, Paiva HS, Abdalla BMZ, Zaremba G, Rodrigues AMP, Carretti MR, et al. From one side to the other: what is essential? Perception of oncology patients and their caregivers in the beginning of oncology treatment and in palliative care. Einstein (São Paulo) 2014;12:485–91. https://doi.org/10.1590/S1679-45082014RC3091.

[5] Aminololama-Shakeri S, Soo MS, Grimm LJ, Watts MR, Poplack SP, Rapelyea J, et al. Radiologist-patient communication: current practices and barriers to communication in breast imaging. J Am Coll Radiol 2018:1–8. https://doi.org/10.1016/j.jacr.2018.10.016.

[6] De Vries AMM, Gholamrezaee MM, Verdonck-de Leeuw IM, Passchier J, Despland J-N, Stiefel F, et al. Patient satisfaction and alliance as a function of the physician's self-regulation, the physician's stress, and the content of consultation in cancer care. Psychooncology 2017;26:927–34. https://doi.org/10.1002/pon.4233.

[7] Jacobs JM, Pensak NA, Sporn NJ, MacDonald JJ, Lennes IT, Safren SA, et al. Treatment satisfaction and adherence to Oral chemotherapy in patients with Cancer. J Oncol Pract 2017;13:e474–85. https://doi.org/10.1200/JOP.2016.019729.

[8] Peterson EB, Ostroff JS, DuHamel KN, D'Agostino TA, Hernandez M, Canzona MR, et al. Impact of provider-patient communication on cancer screening adherence: a systematic review. Prev Med (Baltim) 2016;93:96–105. https://doi.org/10.1016/j.ypmed.2016.09.034.

[9] Dean M, Street RL. A 3-stage model of patient-centered communication for addressing cancer patients' emotional distress. Patient Educ Couns 2014;94:143–8. https://doi.org/10.1016/j.pec.2013.09.025.

[10] Arbabi M, Rozdar A, Taher M, Shirzad M, Arjmand M, Ansari S, et al. Patients' preference to hear cancer diagnosis. Iran J Psychiatry 2014;9:8–13. http://www.ncbi.nlm.nih.gov/pubmed/25561942 (accessed April 21, 2017).

[11] van der Horst DEM, Garvelink MM, Bos WJW, Stiggelbout AM, Pieterse AH. For which decisions is shared decision making considered appropriate? – a systematic review. Patient Educ Couns 2023;106:3–16. https://doi.org/10.1016/j.pec.2022.09.015.

[12] Gorniewicz J, Floyd M, Krishnan K, Bishop TW, Tudiver F, Lang F. Breaking bad news to patients with cancer: a randomized control trial of a brief communication skills training module incorporating the stories and preferences of actual patients. Patient Educ Couns 2017;100:655–66. https://doi.org/10.1016/j.pec.2016.11.008.

[13] Ferraz MAG, Chaves BA, Silva DP, Jordán A de PW, Barbosa LNF. Communication of bad news from the perspective of oncologists and palliative physicians. Rev Bras Educ Med 2022;46. https://doi.org/10.1590/1981-5271v46.2-20210458.

[14] Ihrig A, Richter J, Bugaj TJ, Friederich H-C, Maatouk I. Between hope and reality: how oncology physicians and information providers of a cancer information service manage patients' expectations for and experiences with immunotherapies. Patient Educ Couns 2023;109:107622. https://doi.org/10.1016/j.pec.2023.107622.

[15] Sisk BA, Friedrich AB, DuBois J, Mack JW. Emotional communication in advanced pediatric Cancer conversations. J Pain Symptom Manage 2020;59:808–817.e2. https://doi.org/10.1016/j.jpainsymman.2019.11.005.

[16] Theys L, Krystallidou D, Salaets H, Wermuth C, Pype P. Emotion work in interpreter-mediated consultations: a systematic literature review. Patient Educ Couns 2020;103:33–43. https://doi.org/10.1016/j.pec.2019.08.006.

[17] Castelhano LM, Wahba L. Emotional responses of doctors to the affective stimuli from the international affective picture system (IAPS). Rev Bras Educ Med 2019;43:46–53. https://doi.org/10.1590/1981-52712015v43n3rb20180090.

[18] Romeiro FB, Peuker AC, Bianchini D, de Castro EK. Chemotherapy patient perception regarding communication with the healthcare staff. Psicooncología 2016;13:139–50. https://doi.org/10.5209/rev.

[19] Del Piccolo L, Mazzi MA, Mascanzoni A, Lonardi M, De Felice M, Danzi OP, et al. Factors related to the expression of emotions by early-stage breast cancer patients.

Patient Educ Couns 2019;102:1767–73. https://doi.org/10.1016/j.pec.2019.04.002.

[20] Finset A. Emotional cues and concerns in medical consultations. Patient Educ Couns 2011;82:139–40. https://doi.org/10.1016/S0738-3991(10)00752-4.

[21] Qian L, Liu X, Yin M, Zhao Y, Tie B, Wang Q, et al. Coding the negative emotions of family members and patients among the high-risk preoperative conversations with the Chinese version of VR-CoDES. Health Expect 2022;25:1591–600. https://doi.org/10.1111/hex.13502.

[22] Zimmermann C, Del Piccolo L, Bensing J, Bergvik S, De Haes H, Eide H, et al. Coding patient emotional cues and concerns in medical consultations: the Verona coding definitions of emotional sequences (VR-CoDES). Patient Educ Couns 2011; 82:141–8. https://doi.org/10.1016/j.pec.2010.03.017.

[23] Del Piccolo L, Mazzi MA, Goss C, Rimondini M, Zimmermann C. How emotions emerge and are dealt with in first diagnostic consultations in psychiatry. Patient Educ Couns 2012;88:29–35. https://doi.org/10.1016/j.pec.2012.01.010.

[24] van Eikenhorst L, van Dijk L, Cords J, Vervloet M, de Gier H, Taxis K. Pharmacists' responses to cues and concerns of polypharmacy patients during clinical medication reviews—a video observation study. Patient Educ Couns 2020;103: 930–6. https://doi.org/10.1016/j.pec.2019.11.032.

[25] Ortwein H, Benz A, Carl P, Huwendiek S, Pander T, Kiessling C. Applying the Verona coding definitions of emotional sequences (VR-CoDES) to code medical students' written responses to written case scenarios: some methodological and practical considerations. Patient Educ Couns 2017;100:305–12. https://doi.org/10.1016/j.pec.2016.08.026.

[26] Park J, Saha S, Han D, De Maesschalck S, Moore R, Korthuis T, et al. Emotional communication in HIV care: an observational study of Patients' expressed emotions and clinician response. AIDS Behav 2019;23:2816–28. https://doi.org/10.1007/s10461-019-02466-z.

[27] Vatne TM, Finset A, Ørnes K, Ruland CM. Application of the Verona coding definitions of emotional sequences (VR-CoDES) on a pediatric data set. Patient Educ Couns 2010;80:399–404. https://doi.org/10.1016/j.pec.2010.06.026.

[28] Vijfhuizen M, Bok H, Matthew SM, Del Piccolo L, McArthur M. Analysing how negative emotions emerge and are addressed in veterinary consultations, using the Verona coding definitions of emotional sequences (VR-CoDES). Patient Educ Couns 2017;100:682–9. https://doi.org/10.1016/j.pec.2016.11.001.

[29] Wright A, Humphris G, Wanyonyi KL, Freeman R. Using the Verona coding definitions of emotional sequences (VR-CoDES) and health provider responses (VR-CoDES-P) in the dental context. Patient Educ Couns 2012;89:205–8. https://doi.org/10.1016/j.pec.2012.05.006.

[30] Yin M, Cheng W, Liu X. Applying Chinese Verona coding definitions of emotional sequences (VR-CoDES) in ophthalmic consultations: an observational study. Patient Educ Couns 2020;103:1335–42. https://doi.org/10.1016/j.pec.2020.01.018.

[31] F.B. Romeiro, D. de F. Felizardo, E.K. de Castro, M. Figueiredo-Braga, Physicians privilege responding to emotional cues in oncologic consultations: a study utilizing Verona coding definitions of emotional sequences, J. Health Psychol. (2020) 135910532090986. doi: https://doi.org/10.1177/1359105320909862.

[32] Dohms MC, Collares CF, Tibério IC. Video-based feedback using real consultations for a formative assessment in communication skills. BMC Med Educ 2020;20. https://doi.org/10.1186/s12909-020-1955-6.

[33] Korsvold L, Mellblom AV, Lie HC, Ruud E, Loge JH, Finset A. Patient-provider communication about the emotional cues and concerns of adolescent and young adult patients and their family members when receiving a diagnosis of cancer. Patient Educ Couns 2016;99:1576–83. https://doi.org/10.1016/j.pec.2016.03.028.

[34] Stuij SM, Drossaert CHC, Labrie NHM, Hulsman RL, Kersten MJ, Van Dulmen S, et al. Developing a digital training tool to support oncologists in the skill of information-provision: a user centred approach. BMC Med Educ 2020;20. https://doi.org/10.1186/s12909-020-1985-0.

[35] Castelhano LM, Wahba LL. Doctors' emotions and their implications for clinical practice. Psicol USP 2020;31:1–11. https://doi.org/10.1590/0103-6564e180030.

[36] Grosseman S, Hokama NK, Cruvinel A de FP, Franzoi AC, Moura EP, Muraguchi EMO, et al. Abem consensus for the Brazilian medical schools' communication curriculum. Rev Bras Educ Med 2022;46. https://doi.org/10.1590/1981-5271v46.3-20210392.

[37] Giroldi E, Timmerman A, Veldhuijzen W, Muris J, van der Vleuten C, van der Weijden T. How doctors recognise that their patients are worried: a qualitative study of patient cues. Patient Educ Couns 2020;103:220–5. https://doi.org/10.1016/j.pec.2019.09.023.

[38] Anderson NC, Zhou Y, Humphris G. How are emotional distress and reassurance expressed in medical consultations for people with long-term conditions who were unable to receive curative treatment? A pilot observational study with huntington's disease and prostate cancer. Pilot Feasibility Stud 2021;7:119. https://doi.org/10.1186/s40814-021-00833-z.

[39] Del Piccolo L, Finset A, Mellblom AV, Figueiredo-Braga M, Korsvold L, Zhou Y, et al. Verona coding definitions of emotional sequences (VR-CoDES): conceptual framework and future directions. Patient Educ Couns 2017;100:2303–11. https://doi.org/10.1016/j.pec.2017.06.026.

[40] Finset A. When patients have more than one concern. Patient Educ Couns 2016;99: 671. https://doi.org/10.1016/j.pec.2016.03.016.

[41] Perdigão MM de M, Rodrigues AB, de Carvalho REFL, de Oliveira SKP, Dos Anjos S de JSB, de Almeida PC. Distress in Cancer patients in Brazil: Integrative Literature Review. Rev Bras Cancerol 2022;68. https://doi.org/10.32635/2176-9745.rbc.2022v68n3.2402.

[42] Clayton MF, Dingley C, Donaldson G. The integration of emotional, physiologic, and communication responses to medical oncology surveillance appointments during breast Cancer survivorship. Cancer Nurs 2017;40:124–34. https://doi.org/10.1097/NCC.0000000000000375.

[43] Pais VG, Figueiredo-Braga M. Verona Network on Sequence Analysis Versão Portuguesa: Vanessa Garrido Pais e Margarida Figueiredo-Braga 2017. Verona Netw. Seq. Anal; 2017. p. 7–50.

[44] Del Piccolo L, de Haes H, Heaven C, Jansen J, Verheul W, Bensing J, et al. Development of the Verona coding definitions of emotional sequences to code health providers' responses (VR-CoDES-P) to patient cues and concerns. Patient Educ Couns 2011;82:149–55. https://doi.org/10.1016/j.pec.2010.02.024.

[45] Barracliffe L, Arandjelović O, Humphris G. A pilot study of breast cancer patients: Can machine learning predict healthcare professionals' responses to patient emotions?. In: Proc. 9th Int. Conf. Bioinforma. Comput. Biol. BICOB. 2017; 2017. p. 101–6. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85016609021&partnerID=40&md5=cdfa385df37e81b253eefa9bbb522dbe.

[46] C. Birkett, O. Arandjelovic, G. Humphris, Towards objective and reproducible study of patient-doctor interaction: Automatic text analysis based VR-CoDES annotation of consultation transcripts, in: 2017 39th Annu. Int. Conf. IEEE Eng. Med. Biol. Soc., IEEE, 2017: pp. 2638–2641. doi: https://doi.org/10.1109/EMBC.2017.8037399.

[47] Humphris G, Yang Y, Barracliffe L, Cameron J, Bedi C. Emotional talk of patients with breast cancer during review appointments with therapeutic radiographers: effects on fears of cancer recurrence. Support Care Cancer 2018. https://doi.org/10.1007/s00520-018-4484-7.

[48] IBMCorp., IBM SPSS statistics for windows, version 22.0. IBM Corp., Armonk, NY. - references. Scientific Research Publishing; 2013. https://www.scirp.org/(S(i43dyn45teexjx455qlt3d2q))/reference/ReferencesPapers.aspx?ReferenceID=2010524 [accessed August 23, 2023].

[49] De Vleminck A, Craenen L, Stevens J, Lemaigre V, Pype P, Deliens L, et al. Emotional cues and concerns of patients with a life limiting, chronic illness during advance care planning conversations in general practice. Patient Educ Couns 2022. https://doi.org/10.1016/j.pec.2022.11.005.

[50] Nikoomanesh T, Goldfarb M. Emotional concerns in surgical cancer survivors not treated with chemotherapy. J Invest Med 2016. https://doi.org/10.1200/jco.2016.34.3.

[51] Zhou Y, Humphris G, Ghazali N, Friderichs S, Grosset D, Rogers SN. How head and neck consultants manage patients' emotional distress during cancer follow-up consultations: a multilevel study. Eur Arch Oto-Rhino-Laryngology 2014;272: 2473–81. https://doi.org/10.1007/s00405-014-3209-x.

[52] Tie B, Liu X, Yin M, Humphris G, Zhang Y, Liu H, et al. How physicians respond to negative emotions in high-risk preoperative conversations. Patient Educ Couns 2022;105:606–14. https://doi.org/10.1016/j.pec.2021.06.022.

[53] Del Piccolo L, Pietrolongo E, Radice D, Tortorella C, Confalonieri P, Pugliatti M, et al. Patient expression of emotions and neurologist responses in first multiple sclerosis consultations. PloS One 2015;10:e0127734. https://doi.org/10.1371/journal.pone.0127734.

[54] Korsvold L, Mellblom AV, Finset A, Ruud E, Lie HC. A content analysis of emotional concerns expressed at the time of receiving a cancer diagnosis: an observational study of consultations with adolescent and young adult patients and their family members. Eur J Oncol Nurs 2017;26:1–8. https://doi.org/10.1016/j.ejon.2016.10.005.

[55] Shen MJ, Ostroff JS, Hamann HA, Haque N, Banerjee SC, McFarland DC, et al. Structured analysis of empathic opportunities and physician responses during lung Cancer patient-physician consultations. J Health Commun 2019;24:711–8. https://doi.org/10.1080/10810730.2019.1665757.

[56] Visser LNC, Tollenaar MS, van Doornen LJP, de Haes HCJM, Smets EMA. Does silence speak louder than words? The impact of oncologists' emotion-oriented communication on analogue patients' information recall and emotional stress. Patient Educ Couns 2019;102:43–52. https://doi.org/10.1016/j.pec.2018.08.032.

[57] Graupe T, Fischer MR, Strijbos J-W, Kiessling C. Development and piloting of a situational judgement test for emotion-handling skills using the Verona coding definitions of emotional sequences (VR-CoDES). Patient Educ Couns 2020;103: 1839–45. https://doi.org/10.1016/j.pec.2020.04.001.

[58] Granek L, Ben-David M, Nakash O, Cohen M, Barbera L, Ariad S, et al. Oncologists' negative attitudes towards expressing emotion over patient death and burnout. Support Care Cancer 2017;25:1607–14. https://doi.org/10.1007/s00520-016-3562-y.

[59] Quartilho MJ. O processo de somatização: conceitos, avaliação e tratamento. Imprensa da Universidade de Coimbra 2016. https://doi.org/10.14195/978-989-26-1149-5.