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The influence of a department's psychosocial climate and treatment environment on cancer patients' anxiety during radiotherapy.

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Abstract

Purpose

The objective of this study is to determine whether there is a relationship between cancer patients' perceptions of the person-centeredness of their treatment experience and their anxiety levels during treatment.

Method

A questionnaire was distributed to adult cancer patients going through external beam radiotherapy (RT) with curative intent at a university hospital in Sweden (n=892), which included two surveys, the State Trait Anxiety Inventory - state specific questions (STAI-S), and the Patient-centered Climate Questionnaire (PCQ) and additional treatment-specific questions. Eligible patients were provided with the questionnaire on their seventh day of RT by a RT-nurse.

Results

Statistical analysis showed a significant negative relationship between STAI-S scores and PCQ scores, and a significant positive relationship between the Treatment Environment questions and the STAI-S scores. Multivariate regression modelling found the PCQ subscale of safety to have the strongest negative association with STAI-S scores, showing that a

climate of safety can significantly decrease patient situational anxiety levels. On the other hand, difficulty tolerating the overall treatment experience, worry about the treatment equipment, or feelings of isolation or claustrophobia within the treatment room all significantly factor into increases in patient-reported situational anxiety levels

Conclusion

Both the treatment environment and the psychosocial climate of the RT clinic significantly impact cancer patient state anxiety levels. These findings suggest that actively employing a person-centered approach during RT, and designing the treatment environment to be more attentive to the patient experience can both play a significant role in decreasing patient situational anxiety during treatment.

Key Words

Patient experience, anxiety, radiotherapy, person-centered care, STAI, PCQ, treatment environment.

Introduction

Person-centered care (PCC) has become a powerful concept in healthcare and nursing over the past few years, and is currently regarded as the best approach to ensure high quality of

care (Browall et al., 2013; Edvardsson et al., 2008; McCormack et al., 2010). Environmental aspects, both physical and psychosocial, seem to have a strong impact on patients' well-being and it is seen as important to create environments in hospitals that support patients' needs (Browall et al., 2013). Radiotherapy (RT) can be an overwhelming experience and cause worry in patients. In a recent qualitative study head and neck cancer patients were interviewed about their RT experiences. The participants describe being left alone in the treatment room during the RT session, and that this was an important factor in triggering anxiety in the patient and brought their cancer diagnosis to the forefront of their thoughts during this time (Egestad, 2013).

Despite the widely held belief that providing PCC is important, there is a lack of consensus around the definition of this term, due to the diverse multidimensional nature of this model (Price, 2006), which allows for a wide variety of interpretations (Leplege et al., 2007). However, treating patients as individuals, with this perspective embedded within the center of all care processes is the most common description. Many different terms and factors are used to describe person-centeredness. These often include the patient's need for more holistic aspects of care, such as physical, social, psychological, spiritual and physical environment support (Berg et al., 2005; Browall et al., 2013; Edvardsson et al., 2008; McCormack et al., 2010). Given the profound and extensive impact of RT for cancer on many aspects of a person's wellbeing, the principles of PCC are likely to be ideally suited to the RT setting (Rose & Yates, 2013).

To assess and measure the extent to which patients experience the psychosocial climate as being person-centered, a specific tool, the Person-centered Climate Questionnaire (PCQ), has been created (Edvardsson et al., 2008). The questionnaire was developed based upon a

theoretical framework consisting of three dimensions that together construct a person-centered psychosocial environment: a climate of safety; a climate of everydayness and a climate of hospitality. The tool has shown to be a valid and reliable tool for assessing the person-centered psychosocial climate within different healthcare environments (Bergland et al., 2012; Edvardsson et al., 2008).

Anxiety is a common psychological response to cancer diagnosis and treatment. It has also historically been under-diagnosed and under-treated in cancer care. Recently however, anxiety is gaining more attention as researchers seek ways to improve quality of life during treatment and survivorship (Hess & Chen, 2014). Research has shown that anxiety can affect patients undergoing RT at varying rates throughout the course of their disease and treatment, impacting anywhere from 10% to 40% of the patient population (Stieglis, 2004), and it has been directly linked to a decrease in patient quality of life (So et al., 2010).

Research has also shown that a large proportion of patients undergoing RT experience situational anxiety, caused by both physical and psychosocial factors (Clover et al., 2011; Delaney et al., 2005; Eton, Lepore, & Helgeson, 2001). Patient anxiety levels tend to be high before the initiation of the RT, however, they continue to remain high during treatment and at the end of the RT period (Chen et al., 2009; Stiegelis et al., 2004).

Triggers of patient anxiety can range from a lack of information about the treatment procedures, concern over the treatment equipment and environment, and fear of side-effects and treatment outcome (Halkett et al., 2010; Shimotsu et al., 2010). Other researchers have concluded that there are ways to make the RT processes less stressful, from altering the

treatment environment to providing educational resources and teaching coping techniques to patients (Chen, et al., 2013; Harrison et al., 2001; Mystakidou et al., 2013).

The State Trait Anxiety Inventory (STAI) is questionnaire that was developed to study the expression of these different types of anxiety within individuals (Spielberger, 1970), and is a widely accepted self-reporting tool to measure anxiety levels in cancer patients (Andersen & Tewfik, 1985; Dodd & Ahmed, 1987; Schreier & Williams, 2004; Hoff & Haaga, 2005). The Hospital Anxiety and Depression scale (HADS) is used in some papers focused on cancer patients undergoing RT (Dunn et al., 2012), but the STAI-questionnaire seems to be the most frequently used to quantify the levels of anxiety.

While there are many papers reporting on anxiety levels in cancer patients, few look closely at the relationship between patients perceptions of their treatment experience and their reported levels of anxiety during this process. The aim of this paper is to explore the relationship between curative cancer patients' state anxiety levels and their perceptions of both the psychosocial climate and the treatment environment of the RT department.

Patients and Methods

Setting and Design

This study was conducted as part of a larger study carried out at an out-patient RT-unit at Umeå University Hospital, Sweden. The RT-unit is a part of the department of Oncology with approximately 160-170 patients are being treated every day, for all types of cancer. The data in this study is a part of a larger study, described below. The larger study was designed to

assess the current patient experience of RT, and then test an intervention within this environment for its impact on the patient experience (Mullaney et al., 2011). Ethical approval for the study was obtained from the Regional Ethical Review Board (Dnr 2010-371-31M).

Patient recruitment was carried out over a two year period (2011-2013). Eligible patients were asked to participate in the study on their seventh day of RT, at the end of their daily treatment session, by the RT nurses at the treatment room. The patients were informed that the study was being conducted to better understand their experience and improve the RT department. If they consented to participate in the study, they were provided with the questionnaire and instructed to complete this at home. A postbox was located in the RT departments waiting room, where the questionnaires could be returned on following day of treatment.

The total questionnaire response rate was 85% ($n = 1268$) for the larger study, which contains responses from patients that experienced either the control or intervention environment. This study examines the 892 control patients that submitted responses to the questionnaire. The large study involved a visual and sound intervention within one of the five RT treatment rooms at the unit and surveys were gathered from all five treatment rooms both before and after the intervention. All of the patients in the larger study, who did not experience the intervention, were included in this current study.

Participants

Adult outpatients with any type of cancer scheduled to receive curative external-beam RT were eligible to participate. Exclusion criteria were: (a) receiving palliative RT; (b) receiving short-duration RT of 7 days or less; (c) incapacitating psychosis or cognitive disabilities, which was assessed by the RT-nurses (a general assessment without any assessment tool since

the patients were well known to the RT nurses at this point) in daily contact with the patients; (d) younger than 18 years of age; and (e) insufficient Swedish language skills.

Measures

Data on demographic characteristics of respondents, the psychosocial climate of the RT department, experience of the treatment environment, and self-reported state anxiety levels were collected. Two previously validated questionnaires were used: the State-Trait Anxiety Inventory (STAI) (Spielberger et al., 1970), and the Person-centered Climate Questionnaire (Edvardsson et al., 2008). Additional questions about the patients' experiences of the treatment environment were formulated based on our previous qualitative research into the RT patient experience (Mullaney et al, 2012), and other research linking patient anxiety to treatment-specific causes (Halkett et al., 2010; Shimotsu et al., 2010). Demographic data included age, gender, and RT treatment area.

The State-Trait Anxiety Inventory (STAI)

For our study we chose to use The State-Trait Anxiety Inventory (STAI) survey rather than other standardized assays of anxiety such as the Hospital Anxiety and Depression Scale (Frick et al., 2007; Linden et al., 2005) because of its ability to distinguish state anxiety levels, rather than overall trait anxiety levels. The STAI includes 40 questions, 20 relating to an individual's state anxiety levels of the patient (STAI-S) and 20 relation to an individual's trait anxiety levels (STAI-T). STAI-S is designed to specifically assess current anxiety as opposed to baseline trait anxiety, and we utilized the STAI-S measure to look at the anxiety levels in patients that was a result of their interactions with the RT environment. We excluded the STAI-T measure since it was designed to assess an individual's predisposition to anxiety determined by his/her personality, which was irrelevant to this study. There is research

precedence for only utilizing the STAI-S measure when conducting interventional studies like this one (Oliphant et al., 2013; Zhou et al., 2014).

The STAI-S was tested for its psychometric properties in the present sample, and showed a satisfactory reliability as indicated by a Cronbach's α coefficient of 0.92. Respondents rated their current feelings specific to RT on a four-point Likert-type scale, scoring the intensity of their feelings from *not at all* (1) to *very much so* (4). The questions were formulated to be either anxiety-present questions or anxiety-absent questions. In the anxiety-present questions, a score of 4 reported high levels of anxiety. For the anxiety-absent questions the reverse was true. In order to calculate the total sum score, these anxiety-absent questions were reverse scored when collected, where responses marked 1, 2, 3, and 4 were scored 4, 3, 2, and 1 according to the manual for the questionnaire (Spielberger, 1983). The total score ranges from 20-80, and a higher value corresponds to a higher level of anxiety. To be included in the analysis, the STAI scale had to be 100% complete.

The Person-centered Climate Questionnaire

The Person-centered Climate Questionnaire (Edvardsson et al., 2008) was designed to measure the extent to which the psychosocial climate of the care environment is considered person-centered. The scale comprises 17 items evaluating the psychosocial environment of the care environment and responses are given on a six-point Likert-type scale ranging from complete disagreement (1) to complete agreement (6). The total score ranges from 17-102, and a higher score correlates to a more person-centered climate of the care environment. The PCQ has demonstrated good psychometric properties, and consists of three subscales: a climate of safety, a climate of everydayness, and a climate of hospitality (Edvardsson et al., 2008). A layout and printing error within our questionnaire led to an accidental elimination of one of the questions in the everydayness subscale of the PCQ, altering the range of total score

(maximum score now 96), impacting our ability to assess the everydayness subscale and compare our total PCQ score with other studies. In testing the reliability of this 16-point PCQ survey in the present sample, satisfactory reliability was indicated by a Cronbach's α coefficient of 0.92, calculated both with and without the everydayness subscale. However, the safety and hospitality subscales of the PCQ remain unaffected and are reported. To be included in the analysis, the PCQ scale had to be 100% complete.

Treatment Environment

In addition to the STAI-S and PCQ surveys, we included 10 treatment environment-specific questions within our patient questionnaire to address topics not covered by these two more general surveys (see Table 1), based on findings from our earlier research. These questions address two different aspects of how the RT treatment environment is experienced by the patient; their perceived tolerability of the process, and their emotional experience while going through treatment. The respondents rated their feelings about the treatment environment on a 6-point Likert-type scale, scoring the intensity of their feelings from *not at all* (1) to *very much so* (6).

Table 1. Treatment Environment Questions

<i>Tolerability Questions</i>	<i>scored on a range of 1-6 from 'easy to tolerate' (1) to 'hardly bearable' (6)</i>
1. The treatment overall is...	
2. The treatment environment is...	
3. The duration of the treatment is...	
4. The temperature during treatment is...	
5. Not being allowed to move during treatment is...	

Emotion Questions

scored on a range of 1-6 from 'not at all' (1) to 'very much so' (6)

1. I feel isolated when I lie in the treatment room.
 2. I feel bored during my treatments.
 3. I experience feelings of claustrophobia when I lie on the treatment bed.
 4. I experience discomfort from my body position during treatment.
 5. The technical equipment worries me.
-

Statistical methods

The analysis of data was performed in seven steps. First, demographic data was analyzed using descriptive statistical methods. Second, STAI-S and PCQ performance levels of the respondents were analyzed using descriptive statistical methods. Thirdly, the relationship between STAI-S and PCQ scores was assessed through one-way analysis of variance. Fourth, bivariate analyses using Pearson product-moment correlation were performed to examine the relationship between the perceived safety and hospitality of the RT department and patients' reported situational anxiety levels. Fifth, a multiple linear regression model was constructed to explore the relationship between the psychosocial climate of the RT department and patients' situational anxiety levels. Sixth, bivariate analyses using Pearson product-moment correlation were performed to examine the relationship between the patients' experiences of the physical environment and their reported situational anxiety levels. Finally, a multiple linear regression model was constructed to explore the relationship between both the psychosocial climate and the experience of the physical environment of the RT department and patients' situational anxiety levels. Values of $P \leq 0.05$ (two-tailed) were considered statistically significant. All analyses were performed with SPSS Statistics 20 (SPSS Inc, IBM Corporation, Armonk, NY, USA).

Results

As indicated in Table 2, the respondents were evenly split between male and female, with a mean age of 65 years (SD 10.2). The majority of the patients were either married or in a relationship, and their education was evenly distributed across primary school, high school, and university levels. Most of the patients were being treated with RT in the chest region, but a representative sampling of all treatment areas was recorded.

Table 2. Demographic characteristics of the patient sample (n=892)

	n (%)
Age (years)	
Gender	
Male	384 (43)
Female	506 (57)
Education	
Grade School	278 (31)
High School	314 (35)
University	229 (26)
Other	36 (4)
Relationship Status	
Single	192 (22)
Married/Partnered	697 (78)
Treatment Area	
Head and Neck	131 (16)
Chest	362 (47)
Pelvis	239 (30)
Other	52 (7)

Abbreviations: PCQ = Patient Centered Climate Questionnaire; STAI-S = Spielberger State Anxiety Inventory.

In looking at patients' scores on the two previously validated surveys (Table 3), the mean total score of the PCQ for the sample was 88. Individual scores for the PCQ ranged from 33 to 96, with higher scores representing a higher climate of person-centeredness. Both the total and the sub-scale scores of the PCQ were negatively skewed, indicating that the patient scores were generally placed on the high end of the scoring categories. The mean total score of the

STAI-S for this sample was 32, with a range in scores from 20 to 71, with higher scores indicating high anxiety levels. The STAI-S scoring was positively skewed indicating that the patient scores were generally on the low end of the STAI-S scoring.

Table 3. Performance of the STAI-S total score levels, and PCQ total and subscale score levels.

	<i>n</i>	mean [SD, min-max]	SE	Variance	Skewness
STAI-S	820	32 [8.9 , 20-71]	0.31	79.09	0.83
PCQ	788	88 [7.7 , 33-96]	0.27	58.91	-1.83
Safety (PCQ subscale 1)	819	57 [4.3, 24-60]	0.15	18.21	-2.88
Hospitality (PCQ subscale 3)	814	16 [2.1, 3-18]	0.07	4.24	-1.81

Abbreviations: PCQ = Patient Centered Climate Questionnaire; STAI-S = Spielberger State Anxiety Inventory.

One-way analysis of variance between patient STAI-S and PCQ scores found a significant negative relationship between these two measures ($P < 0.0001$). This indicates that patients who experienced a higher climate of person-centeredness within the RT department reported significantly lower situational anxiety levels. To further explore the association between the perceived psychosocial climate of the RT department and patients' levels of situational anxiety, bivariate correlation analyses were performed. The two PCQ subscales of safety ($r = -0.371$, $P < 0.001$) and hospitality ($r = -0.314$, $P < 0.001$) were found to have a significant negative association with patients' reported situational anxiety levels. Correlation analyses of the PCQ total score and the everydayness subscale were not calculated due to the missing question.

The Safety and Hospitality variables were selected as predictor variables for inclusion in a regression model exploring their relationship with patient situational anxiety levels.

Multicollinearity was not found between the two variables after collinearity diagnostics were performed. The safety and hospitality subscales were evaluated for their ability to predict patient situational anxiety levels, and multivariate linear regression (Table 4) showed that

these variables can partially predict variations in patient situational anxiety levels ($R^2 = 16\%$). The hospitality subscale showed the strongest unique association with reported situational anxiety levels, with high hospitality climate scores having a significant negative impact on patients' situational anxiety levels. Safety was also found to have a significant negative impact on patient anxiety levels.

Table 4. Linear regression model with the PCQ subscales as independent variables, and STAI-S as dependent variable.

<i>Independent Variables</i>	B	SE	Beta	t	Significance
Hospitality (PCQ subscale 3)	-0.64	0.10	-0.30	-6.56	0.0001
Safety (PCQ subscale 1)	-0.61	0.20	-0.14	-2.99	0.003

Abbreviations: PCQ = Patient Centered Climate Questionnaire; STAI-S = Spielberger State Anxiety Inventory; B = unstandardized regression coefficient; Beta = standardized regression coefficient.

R^2 : 0.15. Adjusted R^2 : 0.16.

Since these two PCQ subscales were found to be relatively poor predictors for patient situational anxiety levels alone, we decided to look at the treatment environment questions included with the STAI-S and PCQ questions in the questionnaire to determine if these variables were also associated with patient situational anxiety levels. Each of the treatment environment questions were recoded from their original 6-point likert scale values to nominal values, due to the majority of scores for all questions being grouped around the first three points on the scales. Tolerability questions became grouped into the categories 'easy to tolerate' and 'problematic', with 'problematic' covering all scores from 2-5 on the original scale. Similarly, the emotion questions were grouped into the categories 'not at all' and 'somewhat', with 'somewhat' covering all scores from 2-5 of the original scale.

To explore the association between these treatment environment questions and patients' levels of situational anxiety, bivariate correlation analyses were performed. As shown in Table 5, all of the treatment environment-specific questions were found to be significantly correlated with patient anxiety levels.

Table 5. Correlation of Treatment Environment questions to STAI-S scores

	<i>n</i>	Mean [SD]	P	R	Cohen's d
<i>Tolerability of Treatment</i>					
Overall Experience					
Easy to tolerate	657	31 [7.9]	0.0001	0.37	-0.79
Problematic	154	39 [9.8]			
Environment					
Easy to tolerate	669	31 [8.2]	0.0001	0.28	-0.58
Problematic	141	38 [10.1]			
Duration					
Easy to tolerate	748	32 [8.3]	0.0001	0.27	-0.57
Problematic	62	41 [11.2]			
Temperature					
Easy to tolerate	749	32 [8.6]	0.0001	0.13	-0.26
Problematic	61	36 [11.4]			
Immobilization					
Easy to tolerate	654	31 [8.2]	0.0001	0.29	-0.60
Problematic	156	38 [9.8]			
<i>Feelings during Treatment</i>					
Isolated					
Not at all	683	31 [8.2]	0.0001	0.36	-0.77
Somewhat	127	38 [9.8]			
Bored					
Not at all	711	31 [8.1]	0.0001	0.20	-0.41
Somewhat	102	40 [9.5]			
Claustrophobia					
Not at all	721	32 [8.6]	0.0001	0.37	-0.80
Somewhat	86	37 [9.8]			
Discomfort from body position					
Not at all	636	31 [8.2]	0.0001	0.22	-0.44
Somewhat	177	42 [9.4]			
Worry over the technical equipment					
Not at all	648	31 [8.3]	0.0001	0.30	-0.62
Somewhat	162	38 [9.2]			

Abbreviations: PCQ = Patient Centered Climate Questionnaire; STAI-S = Spielberger State Anxiety Inventory; P = equal variances assumed; R = Effect size.

A step-wise multivariate linear regression model was then performed, using both the two PCQ subscales and the nine treatment environment variables which were significantly correlated with the STAI-S. Seven variables were identified as insignificant and were eliminated from the regression model. Multicollinearity was not found among the remaining four variables after collinearity diagnostics. As shown in Table 6, this new regression model improved the ability to predict changes in patient situational anxiety levels, increasing it to 28% from 16%. In this model, the PCQ subscale of safety had the strongest negative association with STAI-S scores, showing that a climate of safety can significantly decrease patients' situational anxiety levels. On the other hand, difficulty tolerating the overall treatment experience, worry about the treatment equipment, or feelings of isolation or claustrophobia within the treatment room all significantly factor into increases in patient-reported situational anxiety levels.

Table 6. Step-wise linear regression model of the PCQ Safety and Hospitality subscales and the Treatment Environment questions as independent variables, with STAI-S score as the dependent variable.

<i>Independent Variables</i>	B	SE	Beta	t	Significance	VIF
Safety (PCQ subscale 1)	-0.53	0.07	-0.25	-7.31	0.0001	1.15
Tolerability of Overall Treatment	2.20	0.39	0.20	5.71	0.0001	1.25
Isolated during treatment	1.56	0.34	0.15	4.61	0.0001	1.10
Worry over the treatment equipment	1.54	0.43	0.13	3.54	0.0001	1.38
Claustrophobia during treatment	1.30	0.51	0.09	2.57	0.01	1.27

Abbreviations: PCQ = Patient Centered Climate Questionnaire; STAI-S = Spielberger State Anxiety Inventory; B = unstandardized regression coefficient; Beta =standardized regression coefficient; VIF = Variance Inflation Factors. R²: 0.28. Adjusted R²: 0.28.

Discussion

The results show that in general, the patient population participating in this study experiences low levels of state anxiety and high levels of person-centeredness during RT. Comparing this

population to other studies using the same measures, we find that our mean scores for the safety and hospitality subscales of the PCQ are comparable and in line with results reported elsewhere (Bergland et al., 2014), while our mean state anxiety scores are similar, albeit slightly higher than Krischer and Xu's (2008) study of individuals with breast, prostate, lung, or head and neck cancer undergoing RT a week into their treatment. Additionally, half of the patients participating in our study reported STAI-S scores above the clinically meaningful cutoff score for anxiety (Dunn et al., 2014; Fletcher et al., 2008; Spielberger, 1983).

As anxiety impacts so many patients going through RT, the results of this study are quite interesting and potentially helpful for providing steps forward in order to decrease its occurrence. The results indicate that there is a significant negative relationship between patient state anxiety levels and PCQ scores. Individuals who perceive the RT department as having a low person-centered psychosocial climate, specifically regarding the safety and hospitality of the department, will experience higher levels of anxiety during their treatments, while those that experience a more person-centered experience will report lower levels of situational anxiety. However, the person-centeredness of the psychosocial climate of RT is a poor predictor of this anxiety when used alone. Analysis of factors relating to the patient's experience of the treatment environment also show a significant association with state anxiety levels, and when combined with the psychosocial factors, they provide an improved ability to predict anxiety levels in patients.

These findings demonstrate that patient anxiety is a complex emotion, with many factors influencing its expression. Patients expressing difficulty tolerating RT or worry over the medical equipment, in additions to feelings of isolation or claustrophobia during treatment all factor into increased anxiety levels. These findings are unsurprising, given that Stiefel &

Razavi (1994) have reported that situational anxiety during cancer treatment can be linked to feelings of isolation, and that claustrophobia can be triggered by the fixation devices used during RT (Sharp et al., 2005; Clover et al., 2011). Even patients' encounters with RT-nurses can impact their anxiety levels, as there is research which indicates that patients' anxiety levels increase when RT-nurses show professional incompetence (Egestad 2013).

In contrast, perceiving the psychosocial climate of the department as safe, hospitable, and person-centered all factor in to decreasing patient anxiety levels. Taken together, the PCQ measure which explores the psychosocial environment and our study-specific questions exploring patient experiences of the treatment environment, form a logical approach to measuring environmental influences on anxiety for these patients. This study's findings are strengthened by the fact that there was such a high response rate to the questionnaire, and a very large sampling of patients was collected. The use of validated instruments for measuring state anxiety and PCC also strengthens the results. The main weakness of this study is the missing question in the PCQ instrument, making this study difficult to compare with other studies using the PCQ for measurement of PCC.

The importance of the treatment environment in relation to patient anxiety suggests that there is a need to create a validated instrument to investigate and assess these factors further. While quite a few research studies have attempted to decrease patient anxiety levels by improving the treatment environment through various interventions, such as the use of music therapy (Chen et al., 2013) or providing better preparation materials (Harrison et al., 2001) prior to RT, it has been difficult to show statistically significant decreases in anxiety levels from these interventions. The results of this study suggest that a more holistic approach needs to be taken in order to significantly impact patient state anxiety levels during RT because of the multiple

factors that influence the expression of this emotion. If done concurrently, implementing a PCC approach *and* making improvements to the treatment environment that focus on decreasing worry over the technical equipment or reducing feelings of isolation or claustrophobia during RT should significantly decrease patient state anxiety levels.

Conclusions

Our study finds that both the psychosocial climate and the treatment environment significantly impact cancer patients' situational anxiety levels as they go through RT. The most important factors that play into the expression of this situational anxiety in RT patients are their perceptions of the safety of the department, in addition to their experience of feelings of isolation and claustrophobia in the treatment room, and worry over the treatment equipment. Our findings show that there is a need for a more systematic evaluation of the relationship between PCC and patient anxiety as this paper only investigates patients' perceptions of their care and does not evaluate a dedicated person-centered practice. In addition, the finding that various aspects of the treatment environment also play an important role in patient anxiety levels suggests that further investigation of these factors is warranted.

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