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ORIGINAL ARTICLE

Detrimental social interactions predict loss of dignity among patients with cancer

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Abstract
Purpose This prospective study aimed to determine the extent to which cancer patients experience loss of dignity during primary cancer care (baseline) and at 3-month follow-up and the contribution of positive social support and detrimental social interactions on loss of dignity at follow-up.
Methods At baseline, we enrolled $N = 270$ cancer patients (advanced cancer 57 %) undergoing oncological treatment. At follow-up, $n = 178$ patients (72 %) participated. Patients completed the following questionnaires: sense of dignity item (SDI), physical problem list of the NCCN Distress Thermometer, Illness-Specific Social Support Scale (SSUK), Patient Health Questionnaire (PHQ-9), and Generalized Anxiety Disorder Questionnaire (GAD-7). We conducted ordinal regression analyses controlling for age, gender, tumor stage, number of physical symptoms, depression, and anxiety.
Results At baseline, 18 % of the patients experienced moderate to extreme loss of dignity (follow-up 23 %, $p = 0.27$). Detrimental interactions significantly predicted loss of dignity (OR = 1.42, 95 % CI 1.06–1.90) in a model including positive support (OR = 1.10, 95 % CI 0.82–1.49), depression (OR = 1.55, 95 % CI 0.96–2.51), and anxiety (OR = 1.20, 95 % CI 0.83–1.74). Items in relation to detrimental interactions with significant others such as "made you feel like you couldn't take care of yourself" ($r = 0.29$, $p < 0.001$) and "felt uncomfortable in illness conversations" ($r = 0.24$, $p = 0.002$) showed the highest associations with perceived loss of dignity.
Conclusion Loss of dignity was a frequent problem in our mixed cancer patient sample. Detrimental interactions that weaken the sense of dignity may result from discrepancies with patients' needs for autonomy and security. Tailoring social support to attachment-related patient needs may help to conserve patients' sense of dignity.

Keywords Loss of dignity · Social support · Cancer · Depression · Anxiety

Introduction

Dignity is perceived as an essential component for cancer patients' and their families' perception of appropriate health care [1]. Research has thus increasingly focused on how patients can maintain a sense of dignity throughout their treatment [2]. Chochinov and his colleagues developed an empirical model of factors that may enhance or weaken the sense of dignity in patients with advanced cancer [3]. The authors describe dignity in these patients using three categories (and related themes): *Illness Related Concerns* (level of

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independence and symptom distress), *Dignity Conserving Repertoire* (dignity conserving perspectives and practices), and *Social Dignity Inventory* (privacy boundaries, social support, care tenor, burden to others, and aftermath concerns). According to this model, a challenging social dignity inventory and distressing illness related concerns can lead to loss of dignity, whereas a positive dignity conserving repertoire is understood as a buffer to balance possible negative influences.

There is little research on the prevalence and predictors of perceived loss of dignity among patients with cancer. In two palliative care samples, Chochinov et al. [4, 5] found that 5 to 8 % of the patients reported loss of dignity. Using the Patient Dignity Inventory [6], another study showed that patients receiving palliative care experienced a mean number of 5.7 (SD = 5.5) dignity-related problems, with "not being able to continue usual routines" (51 %) and "experiencing physically distressing symptoms" (48 %) being the most common concerns [7]. Comparable results were also found in non-palliative samples. In a study with inpatients suffering from early and advanced cancer, patients experienced a mean number of 4.7 (SD = 6.0) dignity-related problems [8]. In addition to higher symptom distress, loss of dignity was found to be associated with higher levels of hopelessness, demoralization, depression, anxiety, and feeling like a burden to others in previous studies [4, 5, 8–12].

Knowledge is further limited on the contribution of social support in predicting patients' sense of dignity. Yet previous work suggests that patients' perception whether their support system is helpful or obstructive has an impact on their sense of dignity. It has been emphasized that the perceived sense of dignity refers to the concept of *social dignity,* which is constructed through social relationships [13]. In contrast to *human dignity* as an inherent value, social dignity can be given and taken away by others [1, 14]. Accordingly, social support represents a source of dignity in Chochinov's model and is defined as "the presence of an available and helpful community of friends, family, or health care providers" [3]. Moreover, with regard to the psychosocial adaption in cancer patients, the helpfulness of positive emotional support has been widely studied, whereas stressful and dysfunctional social interactions, often described as *detrimental interactions*, have been found to predict distress [15–18].

Therefore, the purpose of this prospective study was twofold: First, we aimed to explore the extent to which early and advanced cancer patients undergoing oncological treatment experience loss of dignity at baseline and after 3 months. Second, we determined the predictive impact of positive support and detrimental interactions on perceived loss of dignity at 3 months follow-up, under control of demographic and disease-related variables, depression, and anxiety. We hypothesized that detrimental interactions as well as depression, anxiety, and a higher number of physical problems were significant positive predictors of perceived loss of dignity. We further expected positive support to be a significant negative predictor of perceived loss of dignity.

Method

Study design and participants

Patients who received curative or palliative oncological treatment at the University Cancer Center Hamburg and were older than 18 years were asked to participate in this prospective study. Inpatients were recruited at the Department of Hematology and Oncology, and outpatients were recruited at the Department of Radiotherapy, both during their cancer treatment procedures. Of 1026 eligible patients, 241 patients (24 %) fulfilled exclusion criteria (severe physical or cognitive impairment, language problems interfering with giving written consent and completion of self-report questionnaires, severe psychological impairment) and 122 patients (12 %) were discharged before they could be informed about the study. Of the remaining 663 patients, 456 (69 %) declared participation by written informed consent and $N = 270$ (41 %) patients completed the self-report questionnaire at the first point of assessment (baseline, T1). Of these, 146 (54 %) were inpatients and 124 (46 %) were outpatients. Three months after completion of the first questionnaire (T2), all participants were mailed a second questionnaire to their home address. At that time, 18 patients (7 %) had died, and four (1.5 %) had moved to an unknown address. Of the remaining 248 eligible patients, $n = 178$ (72 %) responded at T2. The study protocol received the local research ethics committee's approval.

Study participants were significantly younger than nonparticipants ($M = 56.9 \pm 13.9$ vs. $M = 60.7 \pm 16.4$, $p = 0.02$). In terms of tumor diagnosis, participants were more frequently diagnosed with breast or urologic cancer than nonparticipants but suffered less frequently from hematological cancers and other cancer sites ($p = 0.01$). Participants and nonparticipants did not differ in terms of gender ($p = 0.73$) and months since diagnosis ($p = 0.15$). At T2, participants did not differ from nonparticipants in age ($p = 0.38$), gender ($p = 0.81$), number of physical problems ($p = 0.31$), anxiety ($p = 0.24$), and loss of dignity ($p = 0.22$) but were more often in an early stage of the disease (UICC stage I or II) (50 vs. 28 %) ($p = 0.01$) and reported less depression than nonparticipants ($p = 0.03$).

Measures

Demographic data were assessed using a standardized self-report questionnaire. Medical information (diagnosis, date of diagnosis, tumor stage, treatment intention) was obtained from patient records. The following standardized self-report measures were used to assess the psychological constructs of interest:

Loss of dignity was measured according to Wilson et al. [19] using the seven-point Likert sense of dignity item (SDI) ranging from 0 (no sense of loss of dignity) to 6 (extreme sense of loss of dignity). Originally, the severity of loss of dignity is rated by an interviewer, showing high interrater reliability ($r > 0.92$). Based on Chochinov et al. [4], we used the SDI as a self-report measure. We used the cutoff suggested by Chochinov et al., with an item score <3 indicating an intact sense of dignity and an item score ≥3 indicating a fractured sense of dignity.

The *number of physical problems* was assessed using the physical problem list of the German version of the NCCN Distress Thermometer [20], which includes 21 symptoms common in cancer patients.

Social support was assessed using the German adaptation of the Illness-specific Social Support Scale (SSUK) [15, 21, 22], which measures the subjective perception of social support in chronically ill patients on 24 items. The scale consists of the two subscales: *Positive support* and *Detrimental interactions*. Items are scored on a five-point Likert scale from 0 (never) to 4 (always), with total scores ranging from 0 to 60 (positive support) and 0 to 36 (detrimental interactions). High scores on each scale indicate high levels of positive support and high levels of detrimental interactions, respectively. The German version shows satisfying to excellent internal consistencies with Cronbach's $\alpha = 0.91$ for positive support and Cronbach's $\alpha = 0.76$ for detrimental interactions.

Depression was assessed using the Depression Module of the Patient Health Questionnaire (PHQ-9) [23], which measures depression on nine items, reflecting DSM-IV symptom criteria. Items are scored on a four-point Likert scale ranging from 0 (not at all) to 3 (nearly every day), with a total score ranging from 0 to 27. Scores ≥10 indicate moderate depression, and scores ≥15 indicate severe depression. The German version [24] shows good internal consistencies with Cronbach's $\alpha = 0.89$ [25].

Anxiety was assessed using the Generalized Anxiety Disorder Questionnaire (GAD-7) [26, 27], which measures generalized anxiety disorder on seven items, reflecting DSM-IV symptom criteria. Items are scored on a four-point Likert scale ranging from 0 (not at all) to 3 (nearly every day), with a total score ranging from 0 to 21. Scores ≥10 indicate moderate anxiety, and scores ≥15 indicate severe anxiety. The German version shows good internal consistencies with Cronbach's $\alpha = 0.89$.

Statistical analysis

We performed statistical analyses using the Statistical Package for the Social Sciences, version 22.0. Descriptive statistics (frequency, mean, standard deviation) were calculated for sample characteristics and psychological variables. Group differences were assessed using t tests in metric data, Wilcoxon signed-rank test in ordinal data, and χ^2-tests in nominal data. We conducted two-sided significance tests with $p \leq 0.05$. We analyzed bivariate associations using Spearman's rank-order correlation. As the dependent variable loss of dignity was assessed with a seven-point Likert item, assumptions for linear regression were not met. In order to determine the predictive value of positive support and detrimental interactions at T1 on loss of dignity at T2, we conducted ordinal regression analyses [28] entering all predictors simultaneously (forced entry method). Data met the assumption of proportional odds. We calculated three multiple regression models using the hierarchical approach to control for confounding variables and to determine predictive values separately. Multiple regression models included age, gender, tumor stage, number of physical problems, depression, and anxiety as control variables. For better comparability, all metric variables (age, number of physical problems, social support, depression, anxiety) were z-standardized. For better interpretation, parameter estimates and their 95 % confidence intervals were converted into odds ratio (OR) by exponentiating the coefficients. Missing data occurred in eight cases for the variables loss of dignity at T1 and T2, positive support, detrimental interactions, depression, and anxiety. We estimated missing values using multiple imputations and created five imputed datasets. The imputation model included the variables loss of dignity at T1 and T2, gender, tumor stage, age, number of physical problems, positive support, detrimental interactions, depression, and anxiety.

Results

Sample characteristics and frequency of loss of dignity

Table 1 shows demographic and medical characteristics of the study sample. At T1 (T2), 28 % (18 %) of the patients reported moderate to severe depression with a mean of $M = 7.2$ ($SD = 4.5$) (3 months follow-up, T2: $M = 5.9$, $SD = 4.5$, $p = 0.20$) and 11 % (6 %) of the patients reported moderate to severe anxiety with a mean of $M = 4.7$ ($SD = 4.3$) (T2: $M = 3.6$, $SD = 3.7$, $p = 0.53$). Patients reported a mean number of physical problems of $M = 5.7$ ($SD = 4.3$) at T1 and of $M = 5.5$ ($SD = 3.6$) at T2 ($p = 0.54$). Social support was measured at T1, with a mean of $M = 49.3$ ($SD = 9.3$) for the subscale *Positive support* and a mean of $M = 8.4$ ($SD = 5.5$) for the subscale *Detrimental interactions.*

Table 2 summarizes patients' answers regarding their sense of dignity and shows the distribution of the sense of loss of dignity item scores at baseline. At T1, 18 % of the patients reported moderate to extreme loss of dignity (item score ≥3). At 3 months follow-up (T2), 23 % of the

Table 1 Demographic and medical characteristics ($N = 270$)

	Number	Percent
Mean age in years (SD, range)	56.9 (13.9, 18–88)	
Gender		
Male	144	53.3
Female	126	46.7
Partnership	201	74.4
Children	193	71.5
Educational level		
Elementary school	106	39.3
Junior high school	82	30.4
High school/university degree	73	27.0
Other/did not report	9	3.3
Employment status		
Employed	34	12.6
Employed, sick leave	78	28.9
Retired	122	45.2
Housewife/househusband	19	7.0
Other/did not report	17	6.3
Tumor diagnosis		
Hematologic diseases	76	28.1
Breast	51	18.9
Urologic	45	16.7
Digestive system	30	11.1
Soft tissue	18	6.7
Lung	17	6.3
Other	33	12.2
Palliative treatment intention	94	34.9
Tumor stage (UICC)		
0–II	115	42.6
III/IV	155	57.4
Mean months since initial diagnosis (SD, range)	18.4 (9.7, 3.0–384.1)	

Table 2 Sense of loss of dignity at baseline (T1) ($N = 270$)

	Number	Percent
Median sense of loss of dignity	1.0 (range 0–6)	
0 no sense of loss of dignity	77	29.5
1 minimum	90	34.5
2 mild	48	18.4
3 moderate	32	12.3
4 strong	9	3.4
5 severe	4	1.5
6 extreme	1	0.4
Sense of being a burden to others		
None	149	56.4
Sometimes	101	38.3
Often	14	5.3
Sense of dignity impaired by dependency on the help of others		
Not at all	120	45.6
A little	119	45.2
Completely	24	9.1

patients indicated moderate to severe loss of dignity. Patients' sense of dignity did not change within the 3-month period (p [Wilcoxon test] $= 0.27$). At baseline (T1), $n = 115$ patients (44 %) reported currently feeling like a burden to others and $n = 35$ patients (33 %) felt that this feeling influenced their sense of dignity. Forty-six patients (19 %) experienced dignity-enhancing situations. In opened-ended questions, the most frequently reported situations were "support by family and friends" ($n = 25$, 60 %), "having a fighting spirit" ($n = 7$, 17 %), "support by health care professionals" ($n = 5$, 12 %), "feelings of autonomy" ($n = 3$, 7 %), and "providing support to other patients" ($n = 2$, 5 %). Thirty-two patients (13 %) experienced dignity-weakening situations. The most frequently reported situations were "disease-related aspects" ($n = 9$, 30 %), such as physical weakness and changes in appearance like loss of hair, "social discrimination" ($n = 8$, 27 %), "negative experiences as an inpatient" ($n = 7$, 23 %), and "loss of autonomy" ($n = 6$, 20 %).

Impact of control variables and social support on loss of dignity

Table 3 displays bivariate correlations between hypothesized predictor variables and loss of dignity at T1 and the dependent variable loss of dignity at T2. Intercorrelations among predictor variables were <0.70. There were significant positive associations between detrimental interactions and loss of dignity at T1 ($r = 0.26$, $p \leq 0.001$) and T2 ($r = 0.37$, $p \leq 0.001$). Items on the subscale *Detrimental interactions* in relation to interactions with significant others that correlated highest with perceived loss of dignity at T2 were "made you feel like you couldn't take care of yourself" ($r = 0.29$, $p \leq 0.001$), "felt uncomfortable in illness conversations" ($r = 0.24$, $p = 0.002$), and "tried to change the way you're coping with your illness in a way you don't like" ($r = 0.22$, $p = 0.003$).

The first model included demographic and disease-related variables (age, gender, tumor stage, number of physical problems), the second model added both scales for social support, and the third model added depression and anxiety. Table 4 summarizes the results of the regression analyses.

Compared to a model without any predictor variables, each regression model improved model fit. For all three models, the p values for the Wald test statistics showed that the variables age, gender, and tumor stage made no significant contribution to the prediction of loss of dignity. The first model, accounting for 10 % of the variation in loss of dignity, identified the number of physical problems as a positive significant

Table 3 Bivariate correlations of control variables, predictors, and loss of dignity ($N = 178$)

				Baseline					
	Age	Gender[a]	Tumor stage[b]	No. of physical problems	Positive support	Detrimental interactions	Depression	Anxiety	Loss of dignity
Gender[a]	−0.10	–							
Tumor stage[b]	−0.09	−0.11	–						
Baseline									
No. of physical problems	−0.30***	−0.002	0.14*	–					
Positive support	−0.11	−0.03	0.02	−0.13*	–				
Detrimental interactions	0.09	−0.09	0.00	0.13*	−0.39***	–			
Depression	−0.26***	0.11	0.14*	0.65***	−0.18**	0.30***	–		
Anxiety	−0.16*	0.11	0.05	0.41***	−0.22**	0.30***	0.69***	–	
Loss of dignity	−0.07	−0.03	0.09	0.35***	−0.22**	0.37***	0.41***	0.40***	–
Follow-up									
Loss of dignity	−0.07	−0.08	0.12	0.28***	−0.09	0.26***	0.39***	0.35***	0.49***

*$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$

[a] Male = 1, female = 2

[b] Early = 1, advanced = 2

Table 4 Ordinal regression analyses of sense of loss of dignity ($N = 178$)

Predictors entered	Loss of dignity T2					
	Estimate[a]	SE estimate	Wald	$p \leq$	OR	95 % CI
Step 1	Nagelkerke $R^2 = 0.10$					
Age	0.01	0.14	0.04	0.93	1.01	0.77–1.34
Gender[b]	0.26	0.28	0.88	0.35	1.29	0.75–2.23
Tumor stage[c]	−0.29	0.28	1.16	0.29	0.75	0.43–1.29
No. of physical problems	0.52	0.15	12.66	0.001	1.69	1.26–2.27
Step 2	Nagelkerke $R^2 = 0.15$					
Age	−0.02	0.15	0.06	0.88	0.98	0.74–1.30
Gender[b]	0.20	0.28	0.59	0.47	1.23	0.70–2.13
Tumor stage[c]	−0.30	0.28	1.14	0.28	1.35	0.78–2.34
No. of physical problems	0.49	0.15	10.79	0.001	0.74	0.43–1.28
Positive support	0.05	0.15	0.16	0.74	1.05	0.78–1.42
Detrimental interactions	0.45	0.15	9.74	0.002	1.58	1.18–2.10
Step 3	Nagelkerke $R^2 = 0.20$					
Age	0.02	0.15	0.11	0.87	1.03	0.77–1.37
Gender[b]	0.36	0.29	1.61	0.22	1.43	0.81–2.52
Tumor stage[c]	−0.26	0.28	0.80	0.36	0.77	0.45–1.34
No. of physical problems	0.19	0.20	0.95	0.33	1.21	0.83–1.78
Positive support	0.10	0.15	0.49	0.52	1.10	0.82–1.49
Detrimental interactions	0.35	0.15	5.40	0.02	1.42	1.06–1.90
Depression	0.44	0.25	3.42	0.08	1.55	0.96–2.51
Anxiety	0.18	0.19	0.98	0.34	1.20	0.83–1.74

[a] Unstandardized

[b] Male = 1, female = 2

[c] Early = 1, advanced = 2

predictor of loss of dignity (Wald = 12.66, $p = 0.001$). If the number of physical problems increased by one standard deviation (SD), the odds of moving to the next higher score on the loss of dignity item increased by 69 % (OR = 1.69, 95 % CI 1.26–2.27). The second model, accounting for 15 % of the variation in loss of dignity, showed positive significant effects for the number of physical problems (Wald = 10.79, $p = 0.001$) and the social support subscale *Detrimental interactions* (Wald = 9.74, $p = 0.002$). The third model, accounting for 20 % of the variation in loss of dignity, identified only detrimental interactions to be a positive significant predictor of loss of dignity (Wald = 5.40, $p = 0.02$). The odds of moving to the next higher score on the loss of dignity item increased by 42 % (OR = 1.42, 95 % CI 1.06–1.90), if detrimental interactions increased by one SD. In this model, number of physical problems no longer had a predictive value. When depression and anxiety were entered into the model separately, a suppression effect became apparent, with depression suppressing the predictive value of number of physical problems and anxiety. Whereas the model with anxiety identified the number of physical problems (Wald = 12.31, $p = 0.01$), detrimental interactions (Wald = 63.74, $p = 0.01$), and anxiety (Wald = 65.28, $p = 0.01$) to be positive significant predictors, the model with depression only identified detrimental interactions (Wald = 5.57, $p = 0.02$) and depression (Wald = 9.21, $p = 0.003$) to be positive significant predictors of loss of dignity. Both models explained less variation (anxiety: Nagelkerke's $R^2 = 0.18$; depression: Nagelkerke's $R^2 = 0.19$) than the model including depression and anxiety.

Discussion

In this prospective study, we explored the extent to which patients with early and advanced cancer experienced loss of dignity and determined the predictive impact of positive support and detrimental interactions on loss of dignity at 3-month follow-up under control of demographic and disease-related variables, depression, and anxiety. We found that 18 % of the patients in our sample experienced loss of dignity. This percentage was significantly larger compared to the previous studies by Chochinov et al. [4, 5] (5 to 8 %). One possible explanation is that Chochinov's sample included patients receiving specialized palliative care, whereas the sample in our study included patients undergoing oncological treatment. This finding strengthens the need to consider dignity-weakening and dignity-enhancing factors in the setting of standard oncological care.

Further, we found that detrimental interactions with close others were a strong significant positive predictor of perceived loss of dignity. Associations between items of the subscale *Detrimental interactions* and loss of dignity indicate that higher perceived loss of dignity is closely associated with feelings of dependency and loss of autonomy. This finding is consistent with recent studies stressing the strong influence of patients' ability to control their actions and makes independent choices on their sense of dignity [29–31]. Also, studies have illustrated how much patients dread the idea of being a burden to others and have documented its association with loss of dignity and its influence on social relationships [3, 10, 32, 33]. Because of the significance of values such as individualism and autonomy particularly in Western cultures, feeling a burden to others can easily pose a threat to patients' integrity [5, 31]. Especially those patients, whose sense of autonomy is more easily challenged due to an insecure attachment style, may be more likely to experience detrimental interactions that lead to higher levels of loss of dignity [17]. Clinically, supportive interventions should take attachment styles and the perceived loss of autonomy in these patients into account [34].

Positive support, on the other hand, showed no effect on loss of dignity in neither the controlled nor the bivariate analyses, similar to a previous study [4]. This result may be explained by the consideration that patients' internalized expectations of social support, based on their attachment styles, are more likely to predict psychological distress and loss of dignity than social support itself [34]. According to Rodin et al. [17] and Street and Kissane [13], patients who did not experience encouraging or affirming interactions in their early development may expect support to be unavailable, unhelpful, or undeserved and develop a more fragile sense of dignity. As a result of insecure attachment, patients may have difficulties to appreciate social and emotional support due to their negative appraisals and thus experience high levels of distress when facing uncertainty and multiple threats to their sense of independence and autonomy. Consistently, social support was found to mediate the relationship between attachment security and depression [17]. Because insecurely attached patients either fear rejection or find others unreliable, their support system may not be able to meet their interactional needs. Hence, these patients may be less likely to experience dignity-enhancing positive social support. To determine the influence of patients' expectations of social support on loss of dignity, future studies should examine the association between attachment security, social support, and sense of dignity.

We found the number of physical problems to be a significant positive predictor of perceived loss of dignity in the regression models that did not include depression. This result can be explained by the suppression effect, because five out of nine items of the PHQ-9 assess physical problems similar to those assessed by the NCCN physical problem list, leading to a high correlation between both predictors ($r = 0.67$). Tumor stage, on the other hand, had no predictive impact on loss of dignity in all regression analyses.

There are limitations to our findings. First, the participation rate at the first point of assessment was comparatively low. Due to their advanced illness and their poor physical state, a number of patients declared feeling unable to fill out the questionnaire. To the extent that these patients were more distressed compared to participants, this might have led to an underestimation of loss of dignity in our sample. Second, we assessed loss of dignity using a single sense of dignity item. While this approach is preferable in capturing patients' individual understanding of dignity, the Patient Dignity Inventory based on Chochinov's theoretical framework would have provided a validated and more extensive instrument for assessing loss of dignity in cancer patients [35]. Third, ordinal regression analyses were conducted with most of the cells having zero frequencies due to the combination of each ordinal value with each value of the independent continuous variables. Yet linear regression analyses provided similar results indicating stability of the regression model.

In summary, we found that approximately every fifth patient in our sample experienced loss of dignity. Whereas detrimental interactions predicted loss of dignity at 3-month follow-up, positive support had no predictive impact. Patients' internalized expectations of social support are based on their attachment experiences and reflected in their need for autonomy and security. Therefore, experienced discrepancy with these needs might be one underlying factor of detrimental interactions that weaken the sense of dignity. Considering the suggestion that patients with different attachment styles need different kinds of support [34], dignity-conserving practices in health care may benefit from providing forms of social support, which can be appreciated by each patient.

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Compliance with ethical standards The study was approved by the local research ethics committee. All participating patients provided written informed consent.

Conflict of interest The authors declare that they have no competing interests.

References

1. Jacobson N (2007) Dignity and health: a review. Soc Sci Med 64(2):292–302. doi:10.1016/j.socscimed.2006.08.039
2. Östlund U, Brown H, Johnston B (2012) Dignity conserving care at end-of-life: a narrative review. Eur J Oncol Nurs 16(4):353–367. doi:10.1016/j.ejon.2011.07.010
3. Chochinov HM, Hack T, McClement S et al (2002) Dignity in the terminally ill: a developing empirical model. Soc Sci Med 54(3): 433–443. doi:10.1016/S0277-9536(01)00084-3
4. Chochinov HM, Hack T, Hassard T et al (2002) Dignity in the terminally ill: a cross-sectional, cohort study. Lancet 360(9350): 2026–2030. doi:10.1016/S0140-6736(02)12022-8
5. Chochinov HM, Kristjanson LJ, Hack T et al (2006) Dignity in the terminally ill: revisited. J Palliat Med 9(3):666–672. doi:10.1089/jpm.2006.9.666
6. Chochinov HM, Hassard T, McClement S et al (2008) The patient dignity inventory: a novel way of measuring dignity-related distress in palliative care. J Pain Symptom Manage 36(6):559–571. doi:10.1016/j.jpainsymman.2007.12.018
7. Chochinov HM, Hassard T, McClement S et al (2009) The landscape of distress in the terminally ill. J Pain Symptom Manage 38(5):641–649. doi:10.1016/j.jpainsymman.2009.04.021
8. Vehling S, Mehnert A (2014) Symptom burden, loss of dignity, and demoralization in patients with cancer: a mediation model. Psychooncology 23(3):283–290. doi:10.1002/pon.3417
9. Chochinov HM, Kristjanson LJ, Hack TF et al (2007) Burden to others and the terminally ill. J Pain Symptom Manage 34(5):463–471. doi:10.1016/j.jpainsymman.2006.12.012
10. McPherson CJ, Wilson KG, Murray MA (2007) Feeling like a burden to others: a systematic review focusing on the end of life. Palliat Med 21(2):115–128. doi:10.1177/0269216307076345
11. Wilson KG, Curran D, McPherson CJ (2005) A burden to others: a common source of distress for the terminally ill. Cogn Behav Ther 34(2):115–123. doi:10.1080/16506070510008461
12. Oechsle K, Wais MC, Vehling S et al (2014) Relationship between symptom burden, distress, and sense of dignity in terminally Ill cancer patients. J Pain Symptom Manage 48(3):313–321. doi:10.1016/j.jpainsymman.2013.10.022
13. Street AF, Kissane DW (2001) Constructions of dignity in end-of-life. J Palliat Care 17(2):93–101
14. Pleschberger S (2007) Dignity and the challenge of dying in nursing homes: the residents' view. Age Ageing 36(2):197–202. doi:10.1093/ageing/afl152
15. Revenson TA, Schiaffino KM, Deborah Majerovitz S et al (1991) Social support as a double-edged sword: the relation of positive and problematic support to depression among rheumatoid arthritis patients. Soc Sci Med 33(7):807–813. doi:10.1016/0277-9536(91)90385-P
16. Chio C, Shih F, Chiou J et al (2008) The lived experiences of spiritual suffering and the healing process among Taiwanese patients with terminal cancer. J Clin Nurs 17(6):735–743. doi:10.1111/j.1365-2702.2006.01854.x
17. Rodin G, Walsh A, Zimmermann C et al (2007) The contribution of attachment security and social support to depressive symptoms in patients with metastatic cancer. Psychooncology 16(12):1080–1091. doi:10.1002/pon.1186
18. Schroevers MJ, Ranchor AV, Sanderman R (2003) The role of social support and self-esteem in the presence and course of depressive symptoms: a comparison of cancer patients and individuals from the general population. Soc Sci Med 57(2):375–385. doi:10.1016/S0277-9536(02)00366-0
19. Wilson KG, Scott JF, Graham ID et al (2000) Attitudes of terminally ill patients toward euthanasia and physician-assisted suicide. Arch Intern Med 160(16):2454–2460
20. Mehnert A, Müller D, Lehmann C et al (2006) The German version of the NCCN Distress Thermometer: validation of a screening instrument for assessment of psychosocial distress in cancer patients. Zeitschrift für Psychiatrie, Psychologie und Psychotherapie 54(3): 213–223. doi:10.1024/1661-4747.54.3.213
21. Ramm GC, Hasenbring M (2003) Die deutsche Adaptation des Illness-specific Social Support Scale und ihre teststatistische Überprüfung beim Einsatz an Patienten vor und nach Knochenmarktransplantation [The German adaptation of the Illness-specific Social Support Scale and the test statistical

evaluation on the basis of patients undergoing bone marrow transplantation]. Zeitschrift für Medizinische Psychologie 12(1):29–38

22. Revenson TA, Schiaffino KM (1990) Development of a contextual social support measure for use with arthritis population., Paper presented at the Annual Meeting of the Arthritis Health Professions Association, Seattle
23. Spitzer RL, Kroenke K, Williams JBW (1999) Validation and utility of a self-report version of PRIME-MD. JAMA 282(18):1737–1744. doi:10.1001/jama.282.18.1737
24. Löwe B, Spitzer RL, Zipfel S et al (2002) PHQ-D Gesundheitsfragebogen für Patienten. Manual Komplettversion und Kurzform. Autorisierte deutsche Version des Prime MD Patient Health Questionnaire (PHQ), 2nd edn. New York, NY, Pfizer
25. Rief W, Nanke A, Klaiberg A et al (2004) Base rates for panic and depression according to the Brief Patient Health Questionnaire: a population-based study. J Affect Disord 82(2):271–276. doi:10.1016/j.jad.2003.11.006
26. Löwe B, Decker O, Müller S et al (2008) Validation and standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the general population. Medical 46(3):266–274. doi:10.1097/MLR.0b013e318160d093
27. Spitzer RL, Kroenke K, Williams JBW et al (2006) A brief measure for assessing generalized anxiety disorder. Arch Intern Med 166(10):1092–1097. doi:10.1001/archinte.166.10.1092
28. McCullagh P (1980) Regression models for ordinal data. J Roy Stat Soc B (Methodological) 42(2):109–142
29. Guo Q, Jacelon CS (2014) An integrative review of dignity in end-of-life care. Palliat Med 28(7):931–940. doi:10.1177/0269216314528399
30. Randers I, Mattiasson A (2004) Autonomy and integrity: upholding older adult patients' dignity. J Adv Nurs 45(1):63–71. doi:10.1046/j.1365-2648.2003.02861.x
31. Wilson F, Ingleton C, Gott M et al (2014) Autonomy and choice in palliative care: time for a new model? J Adv Nurs 70(5):1020–1029. doi:10.1111/jan.12267
32. Enes SPD (2003) An exploration of dignity in palliative care. Palliat Med 17(3):263–269. doi:10.1191/0269216303pm699oa
33. van Gennip IE, Pasman HRW, Oosterveld-Vlug MG et al (2013) The development of a model of dignity in illness based on qualitative interviews with seriously ill patients. Int J Nurs Stud 50(8):1080–1089. doi:10.1016/j.ijnurstu.2012.12.014
34. Rodin G (2013) Research on psychological and social factors in palliative care: an invited commentary. Palliat Med 27(10):925–931. doi:10.1177/0269216313499961
35. Sautier LP, Vehling S, Mehnert A (2014) Assessment of patients' dignity in cancer care: preliminary psychometrics of the German version of the Patient Dignity Inventory (PDI-G). J Pain Symptom Manage 47(1):181–188. doi:10.1016/j.jpainsymman.2013.02.023