

Brief Methodological Report

Assessment of Patients' Dignity in Cancer Care: Preliminary Psychometrics of the German Version of the Patient Dignity Inventory (PDI-G)

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Abstract

Context. The Patient Dignity Inventory (PDI) is a valid and reliable instrument designed to measure different sources of dignity-related distress in cancer patients receiving palliative care.

Objectives. We investigated item characteristics, factor structure, reliability, and concurrent validity of the German version of the PDI (PDI-G) among patients with cancer.

Methods. PDI was translated into the German language following state-of-the-art criteria. In a sample of 112 inpatients with mixed tumor types, principal component analysis, reliability analysis (Cronbach's coefficient alpha), and correlation analysis were performed. Concurrent validity was evaluated by validated measures of distress, demoralization, anxiety, depression, hopelessness, quality of life, sense of meaning and purpose, and supportive care needs.

Results. Cronbach's coefficient alpha for PDI-G was 0.96; factor analysis resulted in a four-factor solution, accounting for 71% of the overall variance, with factor loadings ranging from 0.49 to 0.86. Factor labels include Loss of Sense of Worth and Meaning, Anxiety and Uncertainty, Physical Symptom Distress and Body Image, and Loss of Autonomy, showing high internal consistencies ranging from Cronbach's α 0.80 to 0.95. Evidence for concurrent validity was established by significant associations between PDI-G scales and concurrent measures of distress.

Conclusion. Although we were unable to replicate the five-factor structure provided by Chochinov, this study gave strong support to an alternative four-factor solution of PDI-G, capturing all 25 items. We conclude that PDI-G is a psychometrically sound instrument assessing a broad range of dignity-related distress issues in patients with cancer. *J Pain Symptom Manage* 2014;47:181–188. © 2014 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.

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Key Words

Dignity, distress, measurement, cancer, palliative care, Patient Dignity Inventory

Introduction

In recent years, a growing body of research has focused on the understanding of potential causes of distress in patients with advanced cancer undergoing treatment.^{1–6} The majority of studies focused on physical and illness-related sources of distress as well as on psychological, social, or existential dimensions of distress. However, the association between perceived distress and sense of dignity has been addressed to a lesser extent, although dignified care is an unquestionable goal of comprehensive treatment.^{7–10} Chochinov et al.¹¹ created an empirically based model of dignity in the terminally ill, which is increasingly considered in health care. On the basis of semi-structured interviews, patients suffering from incurable cancer reported how they define dignity and what affected their sense of dignity. The model suggests that the broad range of dignity-related distress issues perceived by patients during palliative care can be divided into three major categories: 1) factors caused by, or associated with, the underlying illness, 2) social or externally mediated factors, and 3) psychological and spiritual considerations. Chochinov et al. reframed the major themes and subthemes into specific questions, giving patients the opportunity to indicate the extent to which these items have a possible influence on their sense of dignity. Thus, the Patient Dignity Inventory (PDI) is a novel, reliable, and validated self-report questionnaire assessing broad dimensions of dignity-related distress in patients who are terminally ill.^{12,13}

The objectives of the present study were to evaluate the psychometric properties of the German version of PDI (PDI-G) in a mixed sample of cancer patients undergoing treatment with both curative and palliative intent to provide a psychometrically sound German translation and facilitate future research efforts regarding the sense of dignity. We investigated factor structure item characteristics, internal consistency (Cronbach's alpha coefficient), and concurrent validity through correlations with validated measures of distress, anxiety, depression, demoralization, hopelessness, quality of life, sense

of meaning and purpose, and unmet supportive care needs. Although previous evaluations of PDI were performed in palliative care patient samples solely, the mixed sample was supported by recent evidence showing comparable amounts of existential distress in both patients receiving curative care and palliative care patients.¹⁴

Methods*Setting and Participants*

This analysis used data collected as part of a multicenter, epidemiological, cross-sectional study aiming to investigate the prevalence of mental disorders, psychosocial stress, and need for psychosocial support in cancer patients. The study protocol was published separately.¹⁵ The analysis of psychometric properties of PDI-G is based on a subsample of 112 cancer patients with mixed tumor types (receiving both curative and palliative treatment), who completed questionnaires during their inpatient care at the University Cancer Center Hamburg (response rate 63%). The study protocol was approved by the ethics committee of the local chamber of physicians. All patients provided written informed consent before study participation.

Study Measures

Participants completed PDI-G. The questionnaire was translated forward and backward into German following state-of-the-art criteria.¹⁶ The original PDI contains 25 items comprising five factors: Symptom Distress, Existential Distress, Dependency, Peace of Mind, and Social Support. The five-point response scale ranges from "not a problem" to "an overwhelming problem," with higher scores indicating higher perceived dignity-related distress. PDI total score shows excellent internal consistency ($\alpha = 0.93$). Additionally, Chochinov et al.¹² report a highly consistent test-retest-reliability ($r = 0.85$). However, some of its subscales appear to be less reliable (e.g., Peace of Mind: $\alpha = 0.63$). Concurrent validity of PDI is confirmed by various significant correlations

between the individual subscales of PDI and concurrent measures assessing aspects of distress identified within the Model of Dignity in the Terminally Ill.¹¹

In addition, we also used the German versions of the following self-report questionnaires: the National Comprehensive Cancer Network Distress Thermometer (a brief screening tool consisting of a scale from 0 to 10 assessing overall perceived psychosocial distress¹⁷), Patient Health Questionnaire 9 and the Generalized Anxiety Disorder seven-item scale¹⁸ (used to assess depression and anxiety), the Demoralization Scale (measures existential distress referring to the demoralization syndrome¹⁹), and the Beck Hopelessness Scale (measures pessimistic cognitions). Quality of life was assessed using the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30), which incorporates five subscales about functional aspects (physical, role, cognitive, emotional, and social), a broad range of symptom scales, and a global health and quality-of-life scale.²⁰ The Life Attitude Profile-Revised (LAP-R) was used to measure meaning and purpose in life.²¹ Finally, we used the Short Form Supportive Care Needs Survey (SCNS-SF34-G) to take into account unmet supportive care needs.²²

Statistical Analysis

A principal component analysis (PCA) was conducted on the 25 Items of PDI-G with orthogonal varimax rotation. The selection of factors for rotation, consistent with the proceeding of Chochinov et al., was based on dual criteria: Kaiser's criterion (eigenvalues greater than one) and the analysis of a scree plot. Because of the limited sample size, PCA was controlled for sampling adequacy. Item analysis included mean, SD, discrimination power, skewness, and kurtosis. Internal consistency was estimated by calculating Cronbach's coefficient alpha for each scale. Concurrent validity was analyzed using Pearson's correlation coefficient.

Results

Participants

Table 1 presents the participants' demographic and treatment-related characteristics. The mean $\pm$ SD age of the 112 participants

was 56 ± 14 years; 48 were female (43%). All 112 participants were inpatients with advanced disease; 62% were receiving active cancer treatment and 38% palliative care. Primary tumor sites included hematologic 36%, gastrointestinal 16%, prostate 11%, respiratory and intrathoracic 11%, female genital organs 10%, breast 6%, and other solid tumors 10%.

Factor Structure of PDI-G

The Kaiser-Meyer-Olkin measure (0.91) verified the sampling adequacy for PCA. Bartlett's test of sphericity, χ^2 (300) = 2164.12, $P < 0.001$, indicated that correlations between items were sufficiently large for PCA. The initial analysis resulted in four components having eigenvalues over Kaiser's criterion of one. The scree plot was marginally ambiguous and resulted in inflexions that would justify retaining both components 2 and 4. Given the convergence of the scree plot and Kaiser's criterion on four components, this is the number of components we retained in the final analysis. Table 2 shows the sums of squared loadings after rotation. In combination, these four components explore a total of 70.65% of the variance. Factor loadings after rotation are represented in Table 3. All 25 items of PDI-G could be allocated to one of the four factors. The items that cluster on the same components suggest that the four components be labeled: Loss of Sense of Worth and Meaning, Anxiety and Uncertainty, Physical Symptom Distress and Body Image, and Loss of Autonomy.

Item Analysis

Table 3 also contains the item characteristics of PDI-G. Discriminatory power ranges from $\eta_{i(t-i)} = 0.42$ (Item 1) to $\eta_{i(t-i)} = 0.86$ (Item 19). Hence, all 25 items show adequate discriminatory power. Items 5, 9, 11–14, 17–20, 22, and 24 show the highest coefficients of $\eta_{i(t-i)} > 0.70$.

Internal Consistency

Cronbach's alpha coefficient for PDI-G was calculated to be $\alpha = 0.96$, the mean inter-item correlation accounts to $r = 0.48$. Furthermore, the dimensions emerging through PCA (Table 3) show following internal consistencies (calculated by Cronbach's alpha): Loss of Sense of Worth and Meaning = 0.95,

Table 1
Patient Demographic and Treatment-Related Characteristics

Sample Characteristics	Total Sample (N = 112)	
	n	%
Mean age in years (SD, range)	56.3 (13.9; 19–75)	
Gender		
Male	64	57.1
Female	48	42.9
Married		
Yes	70	62.5
No	42	37.5
Education		
Less than elementary school	2	1.8
Elementary school (8–9 years)	30	26.8
Junior high school (10 years)	43	38.4
High school (13 years)	37	33.0
Vocational education		
Without vocational education	7	6.3
Vocational training	54	48.2
Technical college	17	15.2
Advanced technical college/ university of applied sciences	24	21.4
Employment status		
Employed	39	34.9
Unemployed	11	9.8
Retired	50	44.6
Housewife/househusband	5	4.5
Monthly household net income (€)		
Less than 500	15	13.4
500 to less than 1000	8	7.1
1000 to less than 2000	41	36.6
2000 to less than 3000	20	17.9
4000 and above	9	8.1
Cancer type		
Hematological malignancies	40	35.7
Gastrointestinal cancer	18	16.1
Prostate cancer	12	10.7
Respiratory/intrathoracic cancer	12	10.7
Gynecologic cancer	11	9.8
Breast cancer	7	6.3
Other solid tumors	11	9.8
Mean months since current diagnosis (SD; range)	6.1 (9.8; 0–51)	
Clinical characteristics		
First primary tumor	82	73.2
Second primary tumor	14	12.5
Recurrence	12	10.7
Metastasis		
Yes	18	16.1
No	78	69.6
Treatment phase		
Curative treatment intent	69	61.6
Palliative treatment intent	43	38.4
Mean Karnofsky Index (SD; range)	83.2 (19.0; 20–100)	

Anxiety and Uncertainty = 0.90, Physical Symptom Distress and Body Image = 0.83, and Loss of Autonomy = 0.81.

Intercorrelation of the Subscales

Table 4 shows significant intercorrelations among all PDI-G scales. Accordingly, Loss of

Table 2
Rotated Factor Loading for PDI-G

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	6.798	27.193	27.193
2	4.585	18.341	45.534
3	3.559	14.236	59.770
4	2.720	10.881	70.651

PDI-G = German version of the Patient Dignity Inventory.

Sense of Worth and Meaning shared 62% of the variance with the subscale labeled Anxiety and Uncertainty and 40% with Physical Symptom Distress and Body Image. Additionally, Anxiety and Hopelessness shared 51% of variance with Physical Symptom Distress and Body Image.

Concurrent Validity

Table 5 contains the correlations between PDI-G scales and several conceptually overlapping measures assessing aspects identified with the Model of Dignity in the Terminally Ill.^{7,11} Results show positively significant correlations between PDI-G total score and psychosocial distress ($P < 0.001$), depression ($P < 0.001$), anxiety ($P < 0.001$), demoralization ($P < 0.001$), and hopelessness ($P < 0.001$). Furthermore, higher perceived dignity-related distress (according to PDI-G total score) is negatively associated with global health status as well as all EORTC QLQ-C30 subscales regarding functional aspects of quality of life. Moreover, analyses show positively significant correlations with largely all symptom scales of the EORTC QLQ-C30. PDI-G correlates significantly with the Existential Vacuum scale of LAP-R, as well as inversely with Personal Meaning and Death Acceptance. Finally, significant correlations were found for PDI-G total score and all subscales of SCNS.

Discussion

An appropriate measure for assessing sense of dignity and dignity-related concerns in patients with serious and/or progressive diseases such as cancer is crucial. There is an urgent need to provide such a validated questionnaire for German-speaking countries. The results from the present study support the reliability and concurrent validity of the German

Table 3
Item and Scale Characteristics (PCA, Varimax Rotated Four-Factor Solution) of PDI-G

No.	Dimensions and Items	Item Characteristics					Factor Loadings				
		M	SD	$r_{i(i-1)}$	Skewness	Kurtosis	h^2	F1	F2	F3	F4
Loss of Sense of Worth and Meaning: $\alpha = 0.95$, 27.2%^a											
25.	Not being treated with respect	1.40	0.78	0.58	2.10	3.86	0.66	0.80			
17.	Concerns regarding spiritual life	1.36	0.82	0.76	2.70	7.54	0.77	0.79			
21.	Not feeling supported by friends	1.28	0.75	0.59	3.00	8.95	0.67	0.79			
12.	Not feeling worthwhile or valued	1.40	0.85	0.80	2.54	6.56	0.78	0.76			
15.	Feeling have not made meaningful contribution	1.32	0.76	0.60	2.37	4.60	0.65	0.75			
22.	Not feeling supported by health care providers	1.31	0.77	0.70	2.75	7.47	0.75	0.74			
14.	Feeling life no longer has meaning or purpose	1.46	0.90	0.80	2.22	4.60	0.76	0.66			
9.	Not being able to think clearly	1.52	1.00	0.80	2.30	5.03	0.76	0.64			
19.	Not feeling in control	1.74	1.13	0.86	1.56	1.68	0.80	0.58	0.56		
18.	Feeling a burden to others	2.01	1.04	0.83	0.97	0.61	0.75	0.54			
16.	Feeling of unfinished business	1.85	1.01	0.55	1.12	0.65	0.61	0.53		0.51	
13.	Not able to carry out important roles	1.80	1.05	0.71	1.27	0.93	0.57	0.50			
Anxiety and Uncertainty: $\alpha = 0.90$, 18.3%^a											
7.	Feeling uncertain	2.13	1.12	0.61	0.82	−0.11	0.70		0.75		
8.	Worried about future	2.17	1.11	0.57	0.89	0.26	0.72		0.73		
6.	Feeling anxious	1.66	0.98	0.65	1.37	0.93	0.64		0.71		
23.	Not being able to fight the challenges of illness	1.63	1.00	0.80	1.70	2.42	0.85	0.59	0.70		
24.	Not being able to accept the way things are	1.72	1.04	0.72	1.55	1.93	0.72	0.51	0.66		
20.	Reduced privacy	1.96	1.12	0.77	1.12	0.56	0.67		0.58		
5.	Feeling depressed	1.63	0.94	0.72	1.35	0.66	0.58		0.49		
Physical Symptom Distress and Body Image: $\alpha = 0.83$, 14.2%^a											
4.	Feeling how you look has changed	1.74	1.05	0.51	1.45	1.60	0.69			0.79	
10.	Not being able to continue usual routines	1.98	1.21	0.68	1.03	0.06	0.71			0.67	
3.	Physically distressing symptoms	2.22	1.17	0.53	0.57	−0.80	0.67			0.65	
11.	Feeling no longer who I was	1.98	1.19	0.73	1.15	0.48	0.67			0.62	
Loss of Autonomy: $\alpha = 0.84$, 10.9%^a											
1.	Not able to perform tasks of daily living	1.49	0.85	0.42	1.56	1.25	0.74				0.86
2.	Not able to attend to bodily functions	1.28	0.73	0.47	2.68	6.27	0.81				0.82

PCA = principal component analysis; PDI-G = German version of the Patient Dignity Inventory; M = mean (1 = not a problem to 5 = an overwhelming problem); $r_{i(i-1)}$ = discriminatory power (corrected); h^2 = communalities.

^aVariance explained (after rotation).

translation of PDI and, therefore, the future use of PDI-G in patients with cancer undergoing curative or palliative treatment. The principal component analysis gave strong support to a four-dimensional factor structure of PDI-G, accounting for 71% of the overall variation. In contrast to the original five-dimensional factor solution provided by Chochinov et al.,¹² the four-factor solution based on the German version of PDI captures all 25 Items. With the exception of four items, mainly all items

strongly cluster on single components, which, therefore, can be labeled adequately: The factor Loss of Sense of Worth and Meaning comprises 12 items concerning aspects of not being handled respectfully, concerns regarding spiritual life, not feeling supported adequately, as well as not feeling worthwhile or valued. Interestingly, this factor absorbs Chochinov's components labeled Peace of Mind and Social Support¹² but shows stronger internal consistency. PDI-G items loading on the

Table 4
Inter-Subscale Correlations of PDI-G

Correlation Matrix of Subscales				
Subscale	Loss of Sense of Worth and Meaning	Anxiety and Uncertainty	Physical Symptom Distress and Body Image	Loss of Autonomy
Loss of Sense of Worth and Meaning	1			
Anxiety and Uncertainty	0.79 ^a	1		
Physical Symptom Distress and Body Image	0.64 ^a	0.72 ^a	1	
Loss of Autonomy	0.38 ^a	0.31 ^a	0.43 ^a	1

^a $P < 0.001$.

Table 5
Correlations Among PDI Subscales and Concurrent Validity Measures

Measures	PDI-G	PDI-G Subscales			
		F1	F2	F3	F4
Emotional distress					
Psychosocial distress (DT)	0.33^c	0.18	0.36 ^c	0.43 ^c	0.23 ^a
Depression (PHQ)	0.58^c	0.47 ^c	0.57 ^c	0.64 ^c	0.31 ^c
Anxiety (GAD)	0.66^c	0.78 ^c	0.68 ^c	0.55 ^c	0.21 ^a
Demoralization (DS)	0.67^c	0.60 ^c	0.69 ^c	0.57 ^c	0.17
Hopelessness (BHS)	0.51^c	0.44 ^c	0.49 ^c	0.41 ^c	0.23 ^a
Quality of Life (EORTC QLQ-C30)					
Global health status	-0.42^c	-0.32 ^c	-0.40 ^c	-0.40 ^c	-0.19 ^a
Physical functioning	-0.22^a	-0.19 ^a	-0.12	-0.32 ^c	-0.21 ^a
Role functioning	-0.27^b	-0.18	-0.21 ^a	-0.46 ^c	-0.21 ^a
Cognitive functioning	-0.38^c	-0.29 ^b	-0.33 ^c	-0.46 ^c	-0.20 ^a
Emotional functioning	-0.57^c	-0.44 ^c	-0.82 ^c	-0.51 ^c	-0.29 ^b
Social functioning	-0.40^c	-0.32 ^c	-0.40 ^c	-0.41 ^c	-0.19 ^a
Symptom Scales (EORTC QLQ-C30)					
Fatigue	0.40^c	0.33 ^c	0.30 ^c	0.46 ^c	0.33 ^c
Nausea	0.30^c	0.24 ^b	0.30 ^c	0.46 ^c	0.33 ^c
Pain	0.30^c	0.34 ^b	0.23 ^a	0.39 ^c	0.29 ^a
Dyspnea	0.29^b	0.23 ^a	0.21 ^a	0.41 ^c	0.16
Insomnia	0.34^c	0.25 ^b	0.28 ^b	0.40 ^c	0.30 ^c
Loss of appetite	0.38^c	0.30 ^b	0.35 ^c	0.42 ^c	0.28 ^b
Constipation	0.08	0.03	0.07	0.11	0.23 ^a
Diarrhea	0.36^c	0.32 ^c	0.34 ^c	0.31 ^c	0.18
Financial difficulties	0.17	0.16	0.11	0.23 ^a	-0.02
Life Attitude (LAP-R)					
Personal meaning index	-0.20^a	-0.18	-0.24 ^a	-0.19 ^a	-0.04
Death acceptance	-0.25^b	-0.18	-0.34 ^c	-0.18	-0.09
Goal seeking	0.03	0.04	0.04	0.02	-0.05
Choice/responsibility	-0.13	-0.14	-0.13	-0.05	-0.07
Existential vacuum	0.45^c	0.41 ^c	0.46 ^c	0.40 ^c	0.05
Supportive Care Needs (SCNS)					
Overall supportive care needs	0.35^c	0.34 ^c	0.32 ^c	0.25 ^a	0.11
Need for psychological support	0.62^c	0.55 ^c	0.65 ^c	0.48 ^c	0.15
Need for support concerning health system	0.26^b	0.29 ^b	0.23 ^a	0.07	0.27 ^a
Need for support in daily routine	0.27^a	0.15	0.26 ^a	0.37 ^b	0.24 ^a
Need for maintenance and help	0.35^b	0.41 ^c	0.30 ^a	0.21	0.01
Need for support concerning sexual issues	0.28^a	0.32 ^a	0.29 ^a	0.17	-0.06

PDI-G = German version of PDI; DT = NCCN Distress Thermometer; PHQ = Patient Health Questionnaire; GAD = Generalized Anxiety Disorder; DS = Demoralization Scale; BHS = Beck Hopelessness Scale; EORTC QLQ-C30 = European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30; LAP-R = Life Attitude Profile-Revised; SCNS = Supportive Care Needs Survey.

^a $P < 0.05$.

^b $P < 0.01$.

^c $P < 0.001$.

factor Anxiety and Uncertainty include feeling uncertain and anxious and being worried about the future, in keeping with not being able to fight the challenges of illness. The factor Physical Symptom Distress and Body Image subsumes four items assessing concerns of physically distressing and restricting symptoms as well as feelings of altered body image. Items loading on the factor labeled Loss of Autonomy were endorsed less by participants and comprise the constrained ability to perform tasks of daily living and to attend to bodily functions.

Equally, based on the high intercorrelations of the subscales of PDI-G, our data provide

plausible evidence for interpreting dignity-related distress in cancer patients one-dimensionally and using the total score of PDI-G ($\alpha = 0.96$) to assess an overall amount of dignity-related distress.

Despite the absence of a gold standard, correlation analysis with several measures assessing aspects of distress identified within the Model of Dignity in the Terminally Ill^{7,11} strengthens the concurrent validity of the underlying concept of perceived dignity-related distress and its associations with physical and psychosocial health as well as spiritual and existential issues. Associations are strongest between PDI-G total score and anxiety, demoralization and

hopelessness, as well as inversely with each subscale assessing functional health status according to EORTC QLQ-C30. Moreover, results elucidate the strong relationship between patient dignity and a broad range of physical symptoms. Given the presumption regarding a strong association between patient dignity and spiritual and existential issues, correlations between PDI-G and LAP-R were examined. Analysis revealed highly significant correlations with Existential Vacuum and inversely with Personal Meaning and Death Acceptance. Most interestingly, results show that dignity-related distress according to the total score of PDI-G was significantly correlated with unmet supportive care needs (SCNS), largely with the subscale Need for Psychological Support, indicating further support of requirements for psychosocial interventions.

Although a variety of measures exist that address psychological well-being and quality of life, they fail to indicate the impact of physical symptom burden and psychosocial distress on the sense of dignity. Measuring sense of dignity raises the awareness of individual supportive care needs and thus contributes to better care. The measurement aim of PDI-G may be both discriminative and evaluative for an oncology target population. Sense of dignity could further be an important outcome criterion in interventional studies in those with serious diseases.

A major limitation of our research concerns the relatively small study sample. Only 112 participants could be included, which subsequently may limit the factor validity of PCA. Therefore, we considered the Kaiser-Meyer-Olkin measure to verify the sampling adequacy and ensure the validity of the factor analysis. In addition, our research sample comprised patients with advanced cancer; however, our population was not homogeneous with regard to palliative treatment intent alone. Furthermore, we are not able to report results regarding test-retest reliability, general acceptance, or sensitivity to change, which may be addressed in future efforts regarding the measurement properties of PDI-G.

Future research efforts may focus on evaluating the existing factor solutions and clarifying confirmatory model fit on other research samples. Thereafter, a more precise concurrent validation of the resulting PDI-G dimensions should be anticipated as well.

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