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Decreased mental health, quality of life, and utilization of professional help in cancer patients with unexpressed needs: A longitudinal analysis

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Abstract

Background: Cancer patients' mental health and quality of life can be improved through professional support according to their needs. In previous analyses of the UNSAID study, we showed that a relevant proportion of cancer patients did not express their needs during the admission interview of inpatient rehabilitation. We now examine trajectories of mental health, quality of life, and utilization of professional help in cancer patients with unexpressed needs.

Methods: We enrolled 449 patients with breast, prostate, and colon cancer at beginning (T0) and end (T1) of a 3-week inpatient rehabilitation and 3 (T2) and 9 (T3) months after discharge. We explored depression (PHQ-2), anxiety (GAD-2), emotional functioning (EORTC QLQ-C30), fear of progression (FoP-Q-SF), and global quality of life (EORTC QLQ-C30) using structuring equation models. Furthermore, we evaluated self-reports about expressing needs and utilization of professional help at follow-up.

Results: Patients with unexpressed needs (24.3%, n = 107) showed decreased mental health compared to other patients (e.g., depression: d T0 = 0.32, d T1-T3 = 0.39). They showed a significant decline in global quality of life at discharge and follow-up (d = 0.28). Furthermore, they had a higher need for support (Cramer's V T2 = 0.10, T3 = 0.15), talked less about their needs (Cramer's V T2 = 0.18), and made less use of different health care services at follow-up.

Conclusion: Unexpressed needs in cancer patients may be a risk factor for decreased mental health, quality of life, and non-utilization of professional help in the long term. Further research should clarify causal relationships and focus on this specific group of patients to improve cancer care.

KEYWORDS
cancer, longitudinal decrease, mental health, psycho-oncology, quality of life, unexpressed needs

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1 | INTRODUCTION

Cancer patients often suffer from high distress, poor mental health, and low quality of life,[1–7] and affective and anxiety disorders are highly prevalent.[7] For example, a study with German cancer patients showed that the odds of being depressed were more than five times higher for cancer patients than for the general population.[8] Furthermore, many patients suffer from different forms of anxiety[9,10] and even years after initial diagnosis cancer patients may have fear of recurrence or progression.[11] Psychosocial interventions are effective and thus may help to improve cancer patients' mental health and quality of life.[12–14] For example, a mindfulness-based intervention for younger breast cancer survivors resulted in a significant reduction of distress.[15]

What do we know about utilization of professional psychosocial support in cancer patients? A study in a large German sample of cancer patients showed that about one third of patients made use of psychotherapy or psychological counselling or both because of distress due to cancer, but less than half of patients currently diagnosed with a mental disorder, assessed with the Composite International Diagnostic Interview in oncology patients (CIDI-O),[16] reported having made use of psychosocial support offers.[17] Another evaluation of cancer patients with significant distress showed that about 70% declined help, often because patients preferred to manage distress on their own, already received help, or did not evaluate their distress as severe enough.[18] Uptake of and adherence to psychosocial interventions in cancer patients is higher when therapy is offered prior to medical treatment than later.[19] Furthermore, sociodemographic and clinical variables and information about support correlate with utilization of professional help.[17,20] For example, a study with long-term breast cancer survivors showed that older age, lower education, and less information about support was associated with decreased participation in past support programs.[20]

In the German health care system, more than half of all cancer patients attend a 3-week inpatient rehabilitation program after acute treatment.[21,22] It is financed by the German Statutory Pension Insurance to reduce long-term impairments due to cancer and to support social participation. A key element for patients to express their needs is the admission interview at rehabilitation. However, a considerable amount of cancer patients report unmet needs at both admission and discharge, whereas meeting patients' supportive care needs during inpatient rehabilitation may improve their quality of life.[23]

The main goal of our study ("UNSAID") is to explore cancer survivors' unexpressed needs in the admission interview of inpatient rehabilitation. In the first study part, we explored potential barriers to patients expressing needs. We found a wide range of potential barriers, for example, limited time in the admission interview, shame, or non-empathetic behaviour of the physician.[24] In the second part, we found that a quarter of patients reported unexpressed needs at admission, which was associated with lower quality of life and mental health at discharge.[25] Based on these previous results, we now examine the longitudinal trajectories of cancer patients after inpatient rehabilitation. Therefore, we explore whether cancer patients with unexpressed needs show lower values in mental health and quality of life than other patients at both 3 and 9 months after discharge. Furthermore, we examine if patients with unexpressed needs at admission continue to have unexpressed needs and how they make use of professional outpatient care 3 and 9 months after discharge.

2 | METHODS

The Ethics Committee of the Medical Faculty of the University of Würzburg (ref: 71/17) approved this study. It is registered on WHO International Clinical Trials (DRKS00012998) and performed in accordance with the Declaration of Helsinki. All patients provided written informed consent.

2.1 | Design, patients, and recruitment

This study has an exploratory design. We conducted a monocentric questionnaire survey with cancer patients attending a 3-week inpatient rehabilitation program. Inclusion criteria comprised written informed consent, diagnosis of breast, prostate, or colon cancer, and age of 18 years or older. Exclusion criteria comprised lack of German language skills and severe, uncorrected visual impairment. We performed measurements at the end (T1) as well as 3 (T2) and 9 months (T3) after the end of inpatient rehabilitation. Routine data were available from the standard admission diagnostics at the beginning of rehabilitation (T0). During the recruitment period (08/2018 – 11/2018), a physician asked all eligible patients two weeks after admission whether they wanted to participate in the study, and provided written information. On consent, patients received the first questionnaire during the last week of their rehabilitation stay, that is, at the end of their treatment. Patients received follow-up questionnaires via mail and sent them back to the clinic.

2.2 | Measures

2.2.1 | Unexpressed needs

To assess the proportion of patients with unexpressed needs, we asked patients at T1 to remember their admission interview and rate the following item: "In the admission interview, I expressed all my concerns and distress". Response options were[1] absolutely not true,[2] rather not true,[3] rather true, and[4] absolutely true. We grouped patients in unexpressed needs (absolutely not true + rather not true) versus expressed needs (rather true + absolutely true). For a complete description of the self-developed questionnaire see.[25] Hence, we assessed unexpressed needs in the admission interview retrospectively.

2.2.2 | Mental health

To assess symptoms of *depression* and generalized *anxiety*, we used a 2-item depression scale (PHQ-2) and a 2-item anxiety scale (GAD-2) from the Patient-Health-Questionnaire.[26] Patients assess their symptoms over the last two weeks on a 4-point Likert scale, with the response options[1] not at all,[2] several days,[3] on more than half the days, and[4] nearly every day. For each subscale, a sum score ranging from 0 to six is formed. Cronbach's alpha for both PHQ-2 and GAD-2 in our data at T1 was 0.79, respectively.

Furthermore, we used the *emotional functioning* scale of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30 (EORTC QLQ-C30).[27] The four items contain subjective ratings about mental health during the last week on a 4-point Likert scale, ranging from 1 (not at all) to 4 (very much). Sum scores are transformed into a range from 0 to 100, with higher scores reflecting better health status. Cronbach's alpha in our data at T1 was 0.92.

We assessed *fear of progression* with the short form of the Fear of Progression Questionnaire (FoP-Q-SF).[28] Patients rate 12 items on a five-point Likert scale ranging from 1 (never) to 5 (very often). In a sum score ranging from 0 to 60, higher scores indicate higher levels of fear of progression. Cronbach's alpha in our data at T1 was 0.89.

2.2.3 | Quality of life

Quality of life was assessed with the global health and quality-of-life scale of the EORTC QLQ-C30.[27] The two items contain a subjective assessment of health and quality of life during the last week on a 7-point Likert scale ranging from 1 (not at all) to 7 (very much). The sum score is transformed into a scale ranging from 0 to 100, with higher scores indicating better quality of life. Cronbach's alpha in our data at T1 was 0.90.

At T0, the routine assessment of fear of progression and quality of life showed differences to the original questionnaires in wording and order of the items as well as the formatting of scales. Therefore, we decided to present results at T0 for those outcomes separately and exclude them from the trajectory models.

2.2.4 | Utilization

We asked patients at T2 and T3 if they still had a need for psychosocial support and if they talked about their needs. Furthermore, we asked them about their utilization of professional help, using self-constructed items. In particular, we wanted to know whether they currently used or had used one or more of the following services: general practitioner, specialized physician, psychotherapy or psychological counselling, cancer counselling, self-help group, physiotherapy, domestic help, or palliative medical care. If they did not report using one of the services, we asked whether they thought it was not necessary or if access was too difficult.

2.3 | Statistical analysis

We analysed trajectories of patients not expressing needs compared to patients expressing needs regarding mental health and quality of life by conducting multigroup structural equation models (SEM), with expressed needs (yes/no) as grouping variable.[29] Analyses were conducted separately for each outcome. The observed variables (e.g. PHQ-2 at T0, T1, T2, and T3) were modelled as 4 distinct correlated variables. A model without further restrictions is a just identified model and the estimated intercepts equal the means of each variable. Hypothesis about different trajectories were tested by including restrictions on the intercepts for each variable in each group.[30] The chi^2-test of this model equals a chi^2-difference test with the unrestricted model. A non-significant *p*-value indicates that the fit of the restricted model is not worse than the fit of the unrestricted model.

We conducted the model tests as follows: First, we estimated a non-restricted model (Model 1). Second, we tested a model (Model 2) restricting all intercepts to be equal. This model tests the hypothesis of no change over time and no difference between both groups. If the chi^2-test was not significant, we could not reject a no change model (i.e., constant means over time and between groups) and no further tests were carried out. A significant chi^2-test indicated that the restricted model fits the data worse than the unrestricted model and further model tests were conducted. In the third step, we tested a model (Model 3) restricting intercepts within groups to be equal at all time points, but different between groups. A non-significant chi^2-test was interpreted as constant means over time, but differences between groups, and no further tests were carried out. A significant chi^2-test indicated that the restricted model fits the data worse than the unrestricted model and further model tests were conducted. In the last step (Model 4), we explored whether further parameter restrictions would improve model fit (e.g., restricting the group means to be equal at T0, but different at T1 to T3). This last step was purely exploratory and based on descriptive results. All models were estimated using robust maximum likelihood estimates. In all steps, model comparisons were done using Satorra-Bentler-chi^2-difference test between the focal model and a less restricted model (i.e., the unrestricted model or a model with non-significant *p*-value). Based on the results of the final model, we computed Cohen's d as a measure of effect size for differences between groups per timepoint. Cohens' d of 0.2/0.5/0.8 was regarded as small/medium/large.[31] Full information maximum likelihood (FIML) estimation with included auxiliary variables (age, sex, and diagnosis) was used to include patients with missing data in the analyses.[32]

We analysed associations between (not) expressing needs in the admission interview and utilization of professional help at follow-up using cross-tables, chi^2-tests, and Cramer's V as a measure of effect size. Effect sizes of 0.1/0.3/0.5 were regarded as small/medium/large.[31] Alpha was set to 0.05 for all analyses. We used IBM SPSS Statistics (Version 25.0.0.1) and R (Version 3.6.1). SEM were estimated using the lavaan-package.[33]

TABLE 1 Sociodemographic and clinical characteristics at T1 for all patients (n = 449), patients with unexpressed needs (n = 107), and patients who expressed their needs (n = 336).

	Total (n = 449)	Unexpressed (n = 107)	Expressed (n = 336)
Sex, n (%)			
Female	284 (63.3)	73 (68.2)	208 (61.9)
Male	165 (36.7)	34 (31.8)	128 (38.1)
Age (years), mean (SD)	58.8 (12.8)	59.1 (13.0)	58.5 (12.6)
Marital status[a], n (%)			
Single	44 (9.8)	12 (11.3)	32 (9.6)
Married	302 (67.6)	68 (64.2)	229 (68.4)
Marriage-like relationship	18 (4.0)	5 (4.7)	13 (3.9)
Divorced/separated	51 (11.4)	12 (11.3)	38 (11.3)
Widowed	32 (7.2)	9 (8.5)	23 (6.9)
Children[b], n (%)			
Yes	350 (78.1)	80 (74.8)	264 (78.8)
No	98 (21.9)	27 (25.2)	71 (21.2)
Education[c], n (%)			
Less than junior (<10 years; basic secondary school)	121 (27.7)	23 (21.7)	98 (28.7)
Junior (10 years; middle-level secondary school)	157 (35.9)	36 (34.0)	119 (33.4)
Secondary specialized school (12 years)	44 (10.1)	14 (13.2)	30 (11.1)
Senior (high-school graduate)	115 (26.3)	30 (28.3)	83 (24.8)
Employment status[d], n (%)			
Fulltime	119 (26.7)	20 (18.7)	99 (29.6)
Part time	74 (16.6)	21 (19.6)	52 (15.5)
Less than part time	25 (5.6)	8 (7.5)	17 (5.1)
Training	2 (0.4)	1 (0.9)	1 (0.3)
Unemployed	18 (4.0)	7 (6.5)	11 (3.3)
Disability pension	13 (2.9)	2 (1.9)	11 (3.3)
Old-age pension	160 (35.9)	43 (40.2)	113 (33.8)
Other	35 (7.8)	5 (4.7)	30 (9.0)
Cancer type, n (%)			
Breast cancer	238 (53.0)	58 (54.2)	178 (53.0)
Prostate cancer	134 (29.8)	30 (28.0)	102 (30.4)
Colon cancer	77 (17.1)	19 (17.8)	56 (16.7)
Stage of cancer, n (%)			
Primary cancer	407 (90.6)	98 (91.6)	304 (90.5)
Recurrent/Metastatic cancer	42 (9.4)	9 (8.4)	32 (9.5)
Treatment intention[e], n (%)			
Curative (high chance of healing)	272 (76.0)	65 (78.3)	204 (75.6)
Curative (high risk of recurrence)	59 (16.5)	11 (13.3)	47 (17.4)
Palliative	27 (7.5)	7 (8.4)	19 (7.0)

[a]missing: n = 2.
[b]missing: n = 1.
[c]missing: n = 12.
[d]missing: n = 3.
[e]missing: n = 91.

TABLE 2 Means and standard deviations of depression, anxiety, emotional functioning, fear of progression, and quality of life in patients with expressed versus unexpressed needs from T0 until T3 and structuring equation models

Means and standard deviations									
		T0		**T1**		**T2**		**T3**	
		M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**
Depression	Expressed	1.75	1.38	1.06	1.21	1.15	1.32	1.12	1.26
	Unexpressed	2.13	1.37	1.43	1.30	1.65	1.54	1.74	1.50
Anxiety	Expressed	1.55	1.37	1.13	1.36	1.27	1.40	1.10	1.30
	Unexpressed	1.83	1.48	1.39	1.42	1.64	1.52	1.81	1.63
Emotional functioning	Expressed	59.65	27.26	66.03	27.66	65.17	26.74	66.26	27.55
	Unexpressed	56.05	27.77	56.72	29.82	54.19	26.67	55.55	28.49
Fear of progression[a]	Expressed	27.63	9.71	29.18	9.46	27.94	9.57	27.70	10.10
	Unexpressed	30.28	10.00	32.28	9.79	31.02	10.30	31.22	10.57
Quality of life[a]	Expressed	6.03a	1.90a	69.88	18.53	69.59	18.87	69.57	20.35
	Unexpressed	5.75a	1.69a	67.06	17.96	63.45	19.00	62.50	21.72
Structuring equation models									
	Model 2			**Model 3**			**Model 4**		
	Chi²	**df**	**p-value**	**Chi²**	**df**	**p-value**	**Chi²**	**df**	**p-value**
Depression	174.37	7	<0.001	147.31	6	0.00	6.12	4	0.19
Anxiety	77.87	7	<0.001	67.43	6	0.00	4.83	2	0.09
Emotional functioning	44.60	7	<0.001	33.55	6	0.00	2.19	5	0.82
Fear of progression	34.01	5	<0.001	23.15	4	0.00	0.75	2	0.69
Quality of life	11.38	5	0.04	4.70	4	0.32	–	–	–

Note: T0: start of inpatient rehabilitation; T1: end of inpatient rehabilitation; T2: 3 months after inpatient rehabilitation; T3: 9 months after inpatient rehabilitation.

Abbreviation: df, degrees of freedom.

[a]Routine assessment at T0 of quality of life showed differences to the original questionnaires in the formatting of scales.

3 | RESULTS

3.1 | Sample characteristics

A total of 713 eligible patients were asked to participate in the study. Overall, 470 (65.9%) agreed to participate. Participants and non-responder showed no significant differences in gender, diagnosis, or type of rehabilitation. Non-responders were older than participants (participants: M(SD) = 58.8 (12.8), non-responders: M(SD) = 62.1 (12.9); t [704] = 3.29, $p < 0.001$). From 21 persons (2.9%) completed questionnaires at T1 were lacking, so that a total of 449 persons (63%) were finally included. Follow-up data were available from 418 persons (93.1%) at T2 and 401 persons (89.3%) at T3, respectively. Routine data at T0 were available from 437 persons (97.3%). Sociodemographic and clinical characteristics of the sample are given in Table 1.

About a quarter of patients (24.3%, $n = 107$) reported unexpressed needs in the admission interview. We consider T1 as the essential time point of measurement, where we captured unexpressed needs as a baseline for all further longitudinal analyses. Therefore, we explicitly describe patients' characteristics at this time point. Bivariate correlation coefficients (Spearman's Rho) of previous analyses showed no significant correlations of not expressing needs with sociodemographic and clinical characteristics.[25]

3.2 | Mental health

Analysing *depression*, a model assuming differences between groups at all time points, within-group mean differences between T0 and T1, and constant within-group means between T1 and T3 showed the best fit ($chi^2 = 6.12$; $df = 4$; $p = 0.19$; effect sizes of differences between groups $d = 0.32$, T0; $d = 0.39$, T1 through T3, with fewer depressive symptoms in patients expressing needs; see Table 2 and Figure 1).

In *anxiety*, a model assuming differences between groups at all time points and within groups as following fitted best: In patients expressing needs, intercepts (i.e., means) differ between T0 and T1, T2 and T3, but not T1 and T2. In patients not expressing needs, intercepts differ between T0 and T1, T1 and T2, and T2 and T3, but not T0 and T3, respectively ($chi^2 = 4.83$; $df = 2$; $p = 0.09$; effect sizes of differences between groups $d = 0.32$, T0, and $d = 0.39$, T1 through

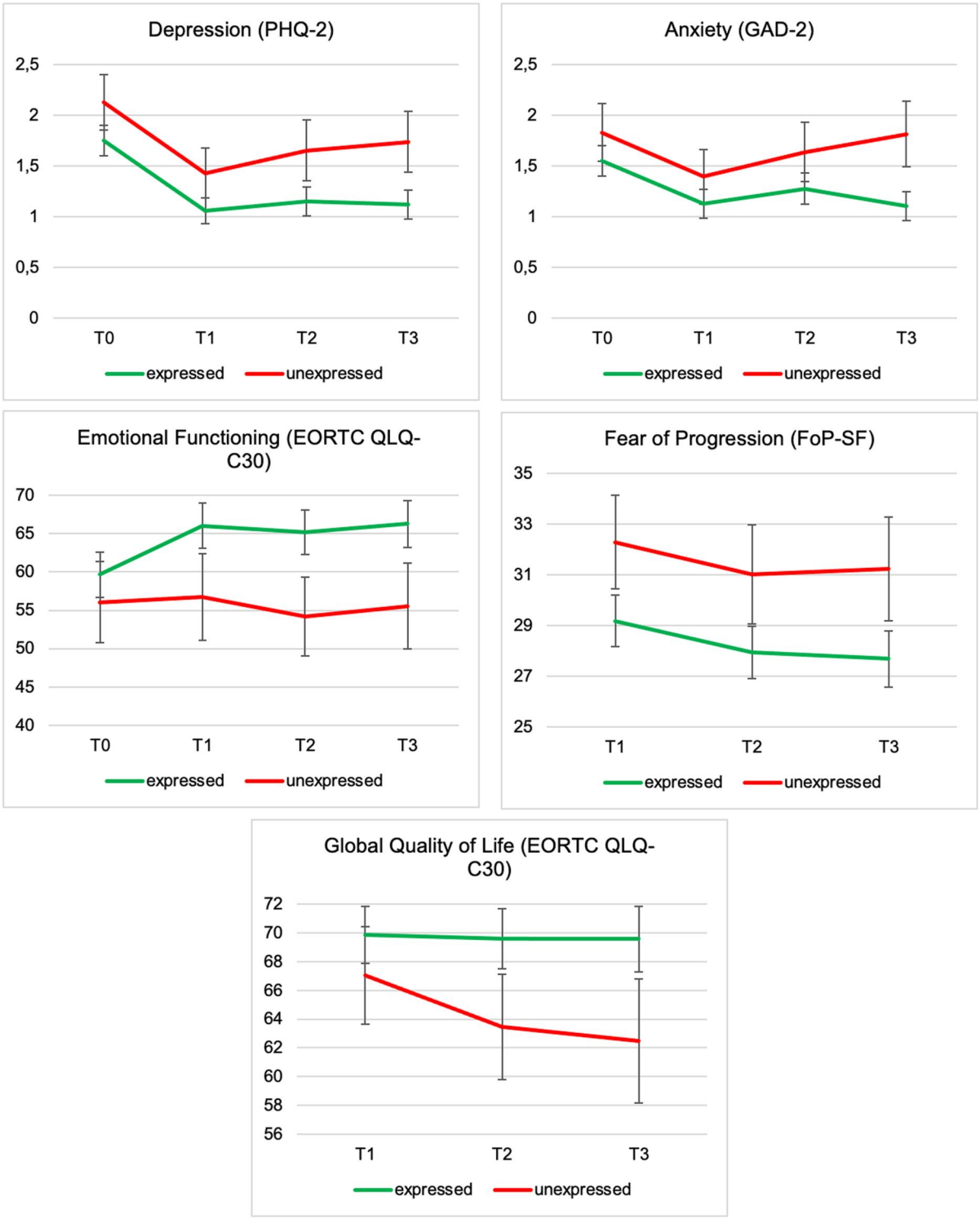

FIGURE 1 Trajectories of mental health and quality of life (means and 95% confidence interval) in cancer patients with unexpressed versus expressed needs. Notes: T0: start of inpatient rehabilitation; T1: end of inpatient rehabilitation; T2: 3 months after inpatient rehabilitation; T3: 9 months after inpatient rehabilitation. Higher scores in PHQ-2 indicate a higher risk for depression, in GAD-2 a higher risk for anxiety, in EORTC QLQ-C30 higher emotional functioning and better quality of life, and in FoP-SF a higher risk for fear of progression. We did not include values of fear of progression at T0 due to differences in in wording and order of the items at T0 compared to other measurement points. We did not include values of quality of life at T0 due to differences in our assessment in formatting of scales compared to the original

TABLE 3 Perceived need, unexpressed needs, and utilization of professional help at follow-up in cancer patients with expressed versus unexpressed needs in the admission interview

	T2: Chi^2	df	*p*-value	Cramer's V	T3: Chi^2	df	*p*-value	Cramer's V
Perceived need	4.28	1	0.039	0.10	8.52	1	0.004	0.15
Unexpressed needs	13.14	5	0.022	0.18	4.01	5	0.55	0.10
Utilization of professional help								
General practitioner	0.20	2	0.91	0.02	0.71	2	0.70	0.43
Specialized physician	8.58	2	0.014	0.15	0.21	2	0.90	0.02
Psychotherapy	10.72	2	0.005	0.17	16.26	2	<0.001	0.21
Cancer counselling	7.48	2	0.024	0.14	7.98	2	0.019	0.15
Self-help group	7.49	2	0.024	0.14	3.79	2	0.15	0.10
Physiotherapy	3.99	2	0.14	0.10	6.85	2	0.033	0.14
Domestic help	4.54	2	0.10	0.11	6.40	2	0.041	0.13
Palliative medical care	0.07	2	0.97	0.01	0.75	2	0.69	0.05

T3, with less anxiety in patients expressing needs; see Table 2 and Figure 1).

For *emotional functioning*, a model fitted best with differences between groups at all time points; in patients expressing needs, with differences between T0 and T1, but not among T1 through T3, and those not expressing needs with equal intercepts among T0 through T3 (chi^2 = 2.19; df = 5; p = 0.82; effect sizes of differences between groups d = 0.18, T0, and d = 0.44, T1 through T3, with better emotional functioning in patients expressing needs; see Table 2 and Figure 1).

Analysing *fear of progression*, we only included values of T1, T2, and T3 in SEM. A model with differences between groups at all time points, within-group mean differences between T1 and T2, but not T2 and T3 fitted best (chi^2 = 0.75; df = 2; p = 0.69; effect sizes of differences between groups d = 0.38, T1; d = 0.39, T2 through T3, with less fear of progression in patients expressing needs; see Table 2 and Figure 1). At T0, there was a significant difference between groups with an effect size of d = 0.27.

3.3 | Quality of life

For *quality of life*, again we included only values of T1, T2, and T3 in SEM. A model assuming differences between groups, but, within groups, constant means over time fitted best (chi^2 = 4.70; df = 4; p = 0.32; effect size of differences between groups d = 0.28, with better quality of life in patients expressing needs; see Table 2 and Figure 1). At T0, there was no significant difference between groups.

3.4 | Utilization of professional help

Overall, about 20% of patients had a need for professional support and less than 18% had further unexpressed needs at T2 and T3 (see Table S1). However, patients with unexpressed needs had a higher need for professional psychosocial support at follow-up than other patients. They more often did not talk about their needs after discharge, although they would have liked to. Furthermore, they made less use of the following health care services after discharge due to difficult access: specialized physician, psychotherapy or psychological counselling, cancer counselling, self-help group, physiotherapy, and domestic help (Table 3).

4 | DISCUSSION

This is the first study examining trajectories of cancer patients with unexpressed needs concerning mental health, quality of life, and utilization of professional help after inpatient rehabilitation. We assessed self-reports of unexpressed needs in the admission interview retrospectively at the end of oncological inpatient rehabilitation. Patients who reported unexpressed needs in the admission interview showed decreased mental health at admission, discharge, and follow-up compared to patients who reported they had expressed their needs. Furthermore, they showed no significant difference in quality of life at admission compared to patients who expressed needs but declined quality of life at discharge and follow-up. They had a higher need for professional psychosocial support, talked less about their needs, and made less use of different health care services up to 9 months after discharge.

Thus, our results of structural equation modelling show that patients with unexpressed needs show significantly lower mental health values than patients who express their needs at T0, and the small to medium effects tend to grow over time. As the comparison of model 4 to model 3 shows, emotional functioning is lower in patients with unexpressed needs. It shows a small difference between patients with unexpressed versus expressed needs but a medium difference upon discharge. This result might indicate that the effects of rehabilitation are smaller for patients with unexpressed needs. Differences in depression seem to be

relatively stable between groups with small to medium mean differences upon admission. Differences in anxiety are small between the groups at admission and discharge but increase at follow-up. In contrast to depression, anxiety deteriorates in patients with unexpressed needs after discharge. Maybe patients are confronted again with factors causing fear, for example, physical problems or financial worries. One possible pathway may be that people who perceive their situation more negatively, for example, due to their low mood or high anxiety, are also more likely to think they have unexpressed needs. Overall, patients with unexpressed needs show lower levels of mental health than patients with expressed needs. However, the means for depression and anxiety in both groups are relatively low. Furthermore, we would like to underline that by using screening instruments, we did not intend to identify clinically relevant depression or anxiety disorders but the increased risk of depression or anxiety. Our results therefore might indicate that not expressing needs may be a risk factor for declined mental health. However, we cannot verify this assumption due to the observational study design. In addition, other variables may influence these associations. In our sample, non-responders are slightly older. Hence, further studies might clarify if older patients are more likely to have unexpressed mental health needs. Previous study results showed that expressing needs was not associated with sociodemographic or clinical variables.[25] Furthermore, having unmet needs is associated with higher psychosocial distress,[34,35] and allocating cancer patients to support according to their needs is associated with better mental health.[23] Thus, to support patients with effective interventions[12,13] facilitating their expression of needs might be one possible approach.

Quality of life was not significantly different between groups at admission, in contrast to our findings concerning mental health indicators. However, patients with unexpressed needs declined in quality of life upon discharge compared to patients who expressed their needs. From a conceptual point of view, mental health is one aspect of health-related quality of life, and at the same time, quality of life includes other factors, for example, physical or social functioning. This might explain the different trajectories of mental health and quality of life in our findings. Equivalent to the course of emotional functioning, this development might indicate smaller longitudinally effects of rehabilitation in patients with unexpressed needs. This finding aligns with previous research, which showed that meeting patients' supportive care needs during inpatient rehabilitation might improve quality of life.[23] Patient-perceived unmet rehabilitation needs during the cancer trajectory are associated with decreased quality of life.[36] Hence, facilitating cancer patients' expressing needs seems to be one feasible strategy to reduce unmet needs and improve quality of life. Moreover, other standardized measurements would be interesting, for example, the Patient Generated Index (PGI), a more novel approach to evaluating health-related quality of life (HRQOL). Therein, patients are allowed to formulate their responses in an open-ended format to measure HRQOL based on each patient's own stated goals and expectations.[37] Compared to previous standardized quality of life measures, it would be interesting if using the PGI would allow to discover unexpressed needs more efficiently.

Few patients showed a high need for professional support or had further unexpressed needs at follow-up. However, patients with unexpressed needs had a higher need for professional psychosocial support at admission, discharge,[23,25] and follow-up. Furthermore, patients with unexpressed needs talked less often about their needs and made less use of professional help at discharge and follow-up due to difficult access. Thereby, it must be considered that the utilization report may still be biased or reduced by, for example, social desirability or shame, so our findings may still be an underestimation. Furthermore, we cannot determine if their increased need for help is related to unexpressed needs, their worse mental health, or both. However, supporting patients with expressing their needs at different time points[18,38] and initiating appropriate aftercare appears to be essential to meet cancer patients' needs. After inpatient rehabilitation, support is less well-structured,[39,40] and the risk is higher that patients with treatment-relevant needs will not express them. To improve uptake of and adherence to psychosocial interventions targeting distressed cancer patients,[19] expressing needs at the beginning, during, and after rehabilitation must be considered. These might include improvement of aftercare services and allocation to it.

Overall, this is an exploratory study, and our results should only be interpreted as associations, not as causal relationships. Future research should use well-designed studies to control for possible confounders like physical symptoms. Furthermore, moderator effects of variables like sex, diagnosis, treatment intention, or prognosis should be investigated.

4.1 | Limitations

This study has several limitations. First, we cannot make causal assumptions due to the observational study design. Therefore, the interpretation of results and the conclusion of possible solutions is inevitably speculative. Patients with unexpressed needs had worse mental health at the beginning of rehabilitation, so this may have caused not expressing needs or lower rehabilitation effects. Possible pathways have to be further examined. Second, we captured unexpressed needs at admission retrospectively about two weeks after the initial interview. Hence, memory bias or a re-evaluation of patients' initial ideas due to the effects of rehabilitation treatment may have altered patients' responses. Furthermore, selection bias might alter the results as people who are less inclined to express their needs may be less inclined to join a psychological study.

Third, we did not capture data at T0 with a separate study questionnaire but obtained data from the routine assessment in the recruiting clinic, mainly due to ethical and organizational reasons. We could gather patients' informed consent only after the admission interview; otherwise, study information might have influenced their behaviour during the admission interview. Consequently, we could

not change the standard survey beforehand. The assessment of quality of life and fear of progression in this routine assessment showed differences to the original questionnaires in wording and order of the items as well as the formatting of scales. Thus, we decided against including those results at T0 in structuring equation modelling but presenting them separately. Fourth, we solely used screening measures such as the PHQ-2 and GAD-2 as proxies for a full clinical measure of mental health. However, they might be limited in their sensitivity to change. Moreover, clinical interviews as a gold standard would be preferable when investigating mental health in cancer patients with unexpressed needs. Fifth, certain aspects regarding the setting have to be discussed. The monocentric design and local specifics might limit the generalizability of our results. However, treatment procedures of inpatient rehabilitation clinics in the German pension insurance system are standardized and should show only minor differences between clinics. A further question is to what extent these results can be transferred to other countries and health systems. Rehabilitation for cancer patients in Germany after acute treatment seems to be unique in a global perspective, including inpatient multimodal rehabilitation in specialized clinics, often far away from home, and the integration of rehabilitation in the social insurance system. Hence, we might assume that unexpressed needs might occur even more frequently in other countries since aftercare is less structured, and patients cannot express their needs.

4.2 | CONCLUSION

Cancer patients with unexpressed needs in the admission interview of inpatient rehabilitation show decreased mental health and quality of life at admission, discharge, and follow-up. Furthermore, they still have more unexpressed needs and a higher need for professional psychosocial support after discharge than patients who expressed their needs. By contrast, they made less use of professional aftercare services. Therefore, it seems necessary to facilitate cancer patients' expressing needs to improve psychosocial care and enhance their mental health and quality of life.

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CONFLICT OF INTEREST

The authors report no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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