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The impact of short-term psycho-oncological interventions on the psychological outcome of cancer patients of a surgical-oncology department – A randomised controlled study

Ute Goerling *, *Anna Foerg, Steffen Sander, Nancy Schramm, Peter Michael Schlag*

Charité Comprehensive Cancer Center, 10115 Berlin, Germany

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ABSTRACT

Background: Anxiety and depression are the two most frequent comorbidities of tumour patients. At present, it is unclear to which degree a patient's psychological condition can be altered during the treatment period and if psycho-oncological support positively affects a patient's psychological condition.

Methods: In a random sample analyses, 131 patients beginning inpatient treatment at a hospital specialising in surgical oncology were either classified as 'low-risk' or 'high-risk', according to the HADS. Patients from both categories were then randomly placed in either a low-threshold 'intervention' group or an 'observation' group. Anxiety and depression levels were measured again with the HADS scale prior to the patients discharge from the department of surgical oncology, and at a follow up 12 months after.

Results: Our findings showed a significant reduction of anxiety and depression in the high-risk patients who had undergone psycho-oncological intervention at the end of inpatient care and even a year after discharge from the hospital. The effects of psychological intervention could be observed in terms of anxiety and depression in the group of high-risk patients during the hospital stay. In the other three groups, no statistically significant changes could be measured.

Conclusion: Cancer patients on a surgical ward benefit from psycho-oncological support especially at an early stage of therapy but also over a long time after discharge from the hospital. The aim of all interventions should be to decrease psychological distress and disorders and thereby improve the quality of life for cancer patients.

1. Introduction

Receiving a diagnosis of a malignant tumour can cause various psychological reactions. The afflicted person can feel threatened and uncertain.[1] The first acute stress reaction may be followed by psychological instability, which can be considered a normal part of the adaptation process, as the patient begins to come to terms with the diagnosis.[2] The illness itself, along with the often stressful and protracted treatments, can result in a loss of a patient's sense of physical invulnerability, a loss of autonomy, and fear of death.[3] Depressive symptoms are developed by between 25% and 50% of patients with cancer during treatment, and by 77% in palliative care.[4] Anxiety disorders occur in 44% of the cases during curative treatments, and 33% in palliative care situations. According to our earlier analyses 41% of the tumour patients need professional psycho-oncological support.[5] Results showed that patients' stress levels correlated with factors like the type

* *Corresponding author:* Tel.: +49 30 450564623.
E-mail address: ute.goerling@charite.de (U. Goerling).
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of tumour they suffered from and the tumour stage. In another study, the prevalence of psychological disturbances in acute hospital care occurred at a rate of between 24% and 36%.[6,7] In terms of ICD-10, psychological disorders are classified as 'depressive disorders' (F3), anxiety disorders' (F4), and, reactions to extreme stress situations' (F43).[8] Differences in the studies' rates of prevalence of psychological comorbidities could be due to the varieties of methods used. Depressive symptoms can lead to higher sensitivity to pain, and negatively impact physical well-being and social functioning.[9] Depression can even affect the range and intensity of medications' side-effects.[10] In one review, the authors concluded that cancer patients who suffered from depressive symptoms had an increased death rate of 26% and for those suffering from a major depression the death rate was as high as 39%.[11]

Psychological comorbidities influence the length of inpatient care. Patients suffering from comorbidities show less compliance with diagnostic routines and treatments.[12] Further, their ability to adjust to circumstances and their quality-of-life is reduced.[13] These factors continue to be negatively influenced by psychologically adverse effects long after the inpatient treatment.[14]

This study examined the influence of psycho-oncological intervention on the psychological condition of tumour patients. These interventions were complementary supportive measures, and not a substitution for medical treatment.[15] The spectrum ranged from educational measures regarding symptom-oriented treatment to psychotherapeutic interventions.[16] In oncology the Hospital Anxiety and Depression Scale (HADS) is one of the most commonly used questionnaires for identifying distress.[17] For our study we followed the recommendations of Singer et al. using a total cutoff score of 12.[18]

The main goal of our analyses is to clarify the question, whether anxiety and depression levels can be reduced by a psycho-oncological support programme during inpatient treatment. Further the degree to which anxiety and depression rates change without psycho-oncological intervention should be examined.

2. Methods and patients

2.1. *Methods*

A randomised prospectively-designed protocol was chosen and approved by the ethics board at Charite Hospital (application number EA3/036/05). This study is subject to the Helsinki Declaration as well as the terms of data privacy protection laws. After inpatient admittance, patients of the department of surgical oncology, between 18 and 79 years of age, with a firm diagnosis of a malignant tumour were informed verbally and in writing about the content and goals of the study. It was explicitly stated that if they declined to participate at any point, this decision would not affect their medical or psychological care. Patients volunteering to take part signed a consent form. Disqualifying conditions were psychotic conditions and inadequate German language skills. The participants were then (t0) presented the German version of the Hospital Anxiety and Depression Scale (HADS),[19] a survey for adults with somatic illnesses to self-assess anxiety (A) and depression (D) levels. These two subscales contain seven items each. All 14 multiple-choice questions have four possible answers. The results rank raw values for each anxiety and depression on a scale of '0–21'. A maximum of one missing item from each subscale could be valued by means of a rounded average of the six other items in each subscale.

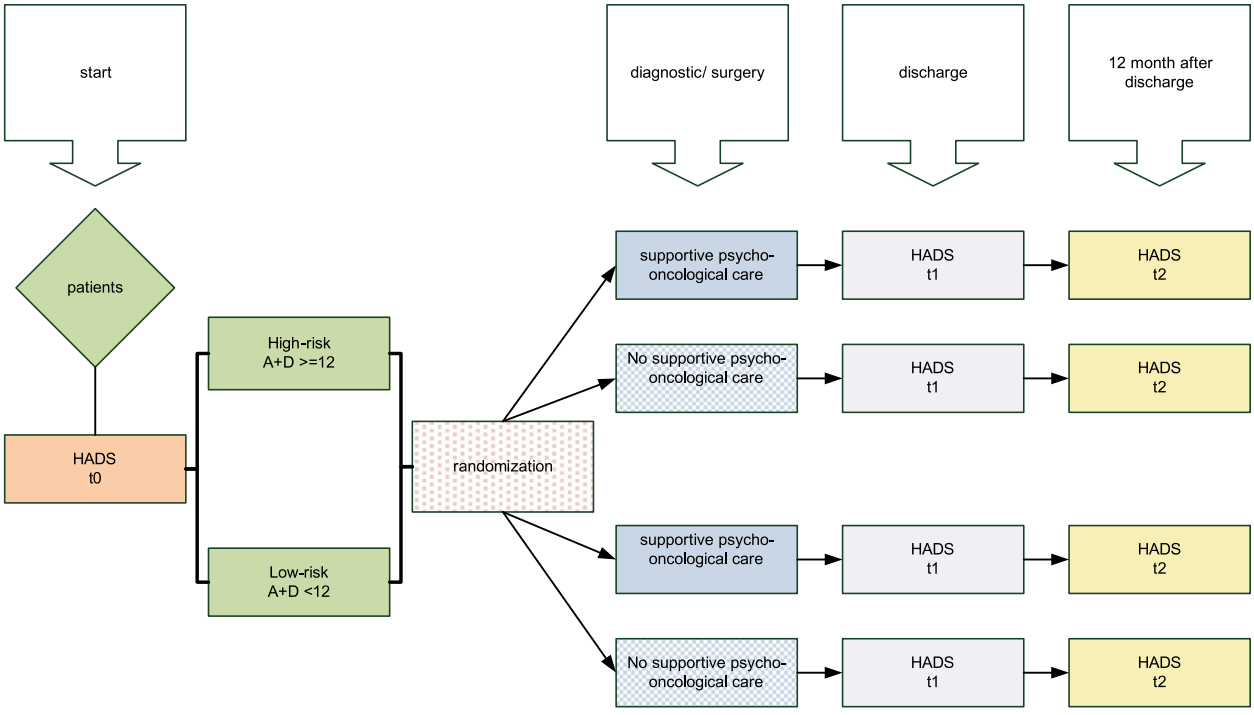

Fig. 1 – Study calendar.

Patients completed the questionnaire in about 5 min. According to the results, patients were classified into either the *high-risk group* (A + D $\geqslant$ 12) or the *low-risk group* (A + D < 12). Within both categories, patients were randomly assigned to an intervention or observation group, leaving a total of four subgroups (Fig. 1). Thus one group in each collective (high- or low-risk) received psycho-oncological support during inpatient care. The other group was observed, without an intervention. The psychologists involved in the intervention were blind to the results of the randomisation.

2.2. Interventions

Patients in the intervention group received psycho-oncological support during their inpatient hospital stay according to the recommendations by Mehnert et al.[20] Talks were conducted by a certified psychologist with additional training in psycho-oncology. They addressed the needs and capabilities of the patients and included:

- The development of a sustainable therapeutic relationship.
- The maintenance of the patient's personal autonomy.
- Support of the patient's necessary defence mechanisms.
- Strengthening of hopefulness and confidence.
- Assuring good communication between doctors, nursing staff and patients.

This psychological support was offered as a low-threshold treatment. The number of sessions varied according to the length of the inpatient care. Before leaving the hospital (t1) and 12 months after discharge (t2) all participants were asked to complete the HADS again.

2.3. Patients

In the period from January 2006 to February 2008, 146 patients were informed about the study. 132 patients gave their written consent. One patient died during inpatient treatment. The mean age of the participants was 57.2 years. 48 of them were men (36.6%) and 83 women (63.4%). 87 patients (66.4%) came to the hospital because of a primary cancer, 37 (28.2%) had a relapse, and 7 (5.4%) were admitted with the diagnosis of a second cancer. The composition of the sample group is shown in Table 1.

Twelve months after discharge 46 of all patients who received questionnaires answered (35%). In the given period, 9 patients had died (7%). In the low-risk groups, 5 patients responded. Only one of them was in the observation group. In the high-risk-groups 41 patients answered: 17 from the intervention group and 24 from the group without intervention. 76 (58%) questionnaires are missing.

2.4. Statistical analyses

The sample group was characterised with descriptive statistics (frequency, averages). The results data culled by HADS were considered by means of explorative data analyses. Samples in individual groups were tested for homogeneity by means of the Chi^2-Test and the Kolmogorov–Smirnov-Test. Further, the Levene Test for variance consistency was employed. Changes in characteristics relating to anxiety and depression were statistically tested with the Wilcoxon Test, particularly in relation to normal distributions established by the *t*-test. Changes over the period of measurement were ascertained through multivariate variance analyses with repeated measurements. Because of the small simple size 12 months after discharge we used missing values. SPSS Version 17.0 was employed.

3. Results

In the first round of questioning (t0), 101 patients scored above the cutoff score of 12 (*high risk group*). Thus 77% of the patients reported increased anxiety and depression rates.

Table 1 – Sample size description.

Patients	Male	Female	All
	N = 48	N = 83	N = 131
Age (arithmetic mean) in years (range)	57.3 (32–77)	57.2 (27–79)	57.2 (27–79)
Primary cancer	34 (70.8%)	53 (63.9%)	87 (66.4%)
Relapse	13 (27.1%)	24 (28.9%)	37 (28.2%)
Secondary cancer	1 (2.1%)	6 (7.2%)	7 (5.4%)
Colorectal cancer	13 (27.1%)	20 (24.0%)	33 (25.2%)
Breast cancer	0	21 (25.3%)	21 (16.0%)
Melanoma	5 (10.4%)	13 (15.7%)	18 (13.7%)
Gastric cancer	10(20.8%)	5 (6.0%)	15 (11.5%)
Sarcoma	7 (14.6%)	8 (9.6%)	15 (11.5%)
Oesophageal cancer	6 (12.5%)	3 (3.6%)	9 (6.8%)
Renal cell carcinoma	3 (6.3%)	3 (3.6%)	6 (4.6%)
Cancer unknown primary	0	2 (2.4%)	2 (1.5%)
Other (gall bladder carcinoma, mesothelioma, malignant peripheral nerve sheath tumour, pseudomyxoma peritonei)	4 (8.3%)	8 (9.6%)	12 (9.2%)

23% of the patients scored less than 12, and were classified as '*low-risk*'. The baseline anxiety and depression scores in the high-risk-groups were slightly different (A: $p = .523$; D: $p = .158$). There were no differences regarding sex, age, tumour type, and -stage among the four groups. The median length of inpatient care lasted 13 days (4–92).

Low-risk patients with intervention met with the psychologist for an average of 2–3 times each, for an average of 40 min (33–52 min). In the high-risk group with intervention, talks lasted 41 min on average (22–52 min), and the number of sessions amounted to an average of 4. The changes in scores for anxiety and depression were individually compiled for each study group (Tables 2 and 3). In the low-risk group that received psychological support, anxiety scores slightly dropped from an average of 3.53 to 3.40 ($p = .764$, $\eta^2 = .007$)). In the low risk group without intervention, the anxiety scores increased somewhat, from 3.93 to 4.27 ($p = .505$, $\eta^2 = .005$). A significant improvement in scores for anxiety, from 10.67 to 7.04 ($p = .001$, $\eta^2 = .442$), was shown in the high risk group with psychological support. In the high-risk group that did not receive intervention anxiety scores decreased tendentially from 11.24 to 10.40 ($p = .142$, $\eta^2 = .044$).

The scores for depression worsened in the second round of questioning for both low-risk groups. The increase from 2.40 to 2.80 ($p = .582$, $\eta^2 = .022$) was, however, somewhat less in the group with intervention than in the observation group, where the scores rose from 2.47 to 2.87 ($p = .563$. $\eta^2 = .022$). On the contrary in both high-risk groups an improvement in depression scores was found. Yet this difference is only significant in the intervention group, as the scores dropped from 8.57 to 6.29 ($p < .001$, $\eta^2 = .442$). Scores in the group without psychological support only decreased from 9.88 to 9.36 ($p = .315$, $\eta^2 = .021$).

The findings from the questionnaires administered 12 months after discharge from the hospital (*t*2) revealed the following: In comparison to the evaluation at *t*0 a slight general increase in anxiety and depression scores was shown for the low risk groups: The intervention group's anxiety rates rose to 5.50 ($p = .134$, $\eta^2 = .581$) and the depression scores grew to 4.00 ($p = .236$, $\eta^2 = .421$).

For the high risk patients the average anxiety score significantly sank to 7.88 ($p = .012$, $\eta^2 = .332$) at *t*2 in the intervention group and to 8.25 ($p = .008$, $\eta^2 = .333$) in the observation group. Depression scores of the high-risk patients with intervention dropped to 6.18 ($p = .079$, $\eta^2 = .180$), while those of the observation group decreased to 6.67 ($p = .047$, $\eta^2 = .161$) in contrast to baseline (*t*0).

4. Discussion

In our randomised, controlled trial we assessed anxiety and depression levels at three points in high and low risk patients with and without psycho-oncological intervention. In the high risk group with intervention the anxiety rates were reduced by 3.63 points during inpatient treatment significantly. One can hypothesise that the anxiety levels in our sample group were not provoked exclusively by the tumour illness, but also by fears related to surgery and anaesthesia.[21] Yet these influences were the same in all four groups. If the reduction in anxiety would solely be traced to post-operative emotional relief, then one would also expect it in the other three groups, or at least in the high-risk group without intervention. However, the anxiety score only sank 0.84 points in the latter, and 0.13 points in the low-risk group with intervention. In the low-risk group without psychological support a slight increase in anxiety of 0.34 points was detected.

A significant improvement in scores for depression was also only observable in the high-risk group with psychological intervention. In both low-risk groups, depression levels wors-

Table 2 – Arithmetic means of anxiety scores (HADS) for three time points.

		*t*0		*t*1		*t*2	
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation
Treatment	High-risk + intervention	10.67	2.86	7.04	3.68	7.88	3.62
	High-risk – intervention	11.24	3.53	10.40	4.46	8.25	5.67
	Low-risk + intervention	3.53	2.10	3.40	2.38	5.50	3.87
	Low-risk – intervention	3.93	1.83	4.27	2.43	(16)	

Only one patient from the low-risk-group without intervention filled out the questionnaire and sent back.

Table 3 – Arithmetic means of depression-scores (HADS) for three time points.

		*t*0		*t*1		*t*2	
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation
Treatment	High-risk + intervention	8.57	3.41	6.29	3.58	6.18	3.97
	High-risk – intervention	9.88	3.92	9.36	4.15	6.67	5.49
	Low-risk + intervention	2.40	1.59	2.80	2.08	4.00	3.74
	Low-risk – intervention	2.47	1.13	2.87	2.10	(6)	

Only one patient from the low-risk-group without intervention filled out the questionnaire and sent back.

ened slightly, which might reflect the strong psychological impact of the strains of surgery.

We recorded anxiolytics or antidepressants during inpatient treatment. Only 2 patients in the high-risk-groups had taken an antidepressant 6 and 12 months prior to baseline. No one received drugs against anxiety and depression during the inpatient care.

Examining the results 12 months after discharge we found a significant improvement in both high-risk-groups. Due to the high drop out rate the sample size is very small at *t*2, which is a common problem in other studies as well.[22,23] Although the differences in scores observed in the high-risk groups with and without intervention are not distinct at the 12 month follow up, the key finding of this study is that the psychological condition of high risk patients who received psycho-oncological intervention improved significantly during inpatient treatment (*t*1). Since a cancer diagnosis and its inpatient treatment can bring severe changes to the lives of patients, support at an early stage is essential. As mentioned, studies indicate that patients with higher levels of anxiety are less compliant and that depression significantly influences the number and severity of side-effects. These aspects are especially important during hospitalisation.

A similar study by Kuchler and his colleagues focused on the impact of psychotherapy on the quality of life.[24] Patients with gastrointestinal tumours, including benign tumours, were randomly placed into either an intervention or a control group. They received 6 psychological consultations, on average during hospitalisation. However, the range lay between 2 and 25 sessions. Considering the surviving patients 10 years later, the authors concluded that these patients profited from their psychological intervention. It was not taken into account whether patients engaged in further therapies later on. Quality of life was considered in very broad terms, whereas our study, concentrated on two aspects of patients' psychological distress, which are hypothesised to have an extensive impact on the entire treatment process. Other studies have also shown urgent needs for psycho-oncological support directly after surgery.[25] Our study focuses on patients' anxiety and depression. The number of patients who did not have elevated anxiety and depression rates but who, nonetheless, may have required psycho-oncological support was not considered. For example, psycho-social stress situations related to the cancer diagnosis and treatment, which again could considerably impair their psychological condition, were not assessed.

Our study confirms that even short and relatively limited interventions can improve psychological strain.[26] Study findings regarding individual therapy show that an equally positive effect is achievable through emotional support, sympathy, and empathy.[27] Currently there are no other assertions regarding the degree to which the intensity of anxiety or depression can be influenced in inpatients.

One limitation in our study is the small sample size, particularly 12 months after discharge. The overall group includes more women and different diagnosis of cancer, which could cause a bias, as it is known that women express more distress than men. In this regard our investigation was a pilot study. The next step could be an examination of the effects of psycho-oncological interventions in patients with cancer diagnosis who are highly distressed, e.g. women with gynaecological cancer.

The differences in the average number of sessions with the psychologist between the high-risk-group and low-risk-group are minor. An explanation for the unequal amount of sessions is that the patients, who received support, were grateful for the distraction from the normal routine of the clinic and for somebody, who took the time to talk. They had the possibility to address their fears and worries and develop strategies for solving problems, e.g. how to speak with children about the illness and to cope with cancer. Patients with higher anxiety and depression needed more information about these topics. Of course the psychologist perceived the patient's amount of distress during the sessions, which limited the attempt of blinding.

Further studies should clarify whether content analyses of psychological interventions in this and other studies could be used to develop a manual for psycho-oncological counselling for inpatients, and whether the desired effects can be replicated in a single-session intervention.

Conflict of interest statement

None declared.

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