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Research Article

How Distressed Are Cancer Patients when They Get Discharged from Hospital? Patients' Distress and its Associations with Health Care Professionals' Communication Skills and Perceived Stress

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ABSTRACT

Objective: For cancer patients, the period between hospital discharge and outpatient follow-up can result in “distressand” patients need to be prepared by health care professionals (HCP) for that while being in hospital. Adequate communication is important for that. HCPs have often high levels of stress which can have a negative impact on HCPs' communication. This study examines patients' distress, HCPs' communication, HCPs' perceived stress and the relationships between them.

Methods: Sixty-two cancer patients answered questionnaires on their distress (anxiety, depression, symptom burden) two days before and two days after hospital discharge and evaluated HCPs' communication. Thirty-eight HCPs', in turn, evaluated their perceived stress. Fifty-three patient data sets and 38 HCP data sets were included and analyzed descriptively, and by linear regression.

Results: Pre- and post-discharge anxiety and depression were in the normal range and symptom burden was low. However, approximately 10% had a substantial level of anxiety or depression pre-discharge and approximately 20% post-discharge. Correlations were found between HCPs' perceived stress and a change in patients' symptom burden.

Conclusion: Many patients were prepared well enough for hospital discharge. Still, the percentage of anxious and depressed patients increased after returning home. HCPs' perceived stress in hospitals is related to patients' increase in distress. It needs to be taken seriously to ensure both HCPs' and patients' well-being.

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Introduction

The period between a hospital discharge and the follow-up as an outpatient is a critical time for cancer patients [1]. They still experience multiple symptoms at the end of the hospital stay [2]. Upon arriving home, constant care is no longer available, and daily life may be altered [3]. Continuing treatment and care need to be organized [4]. This new

reality can be highly distressing. Studies conducted in the United States of America and in Europe have reported deficiencies in the preparation for this period including inappropriate or absent physician-patient-communication [3, 5, 6]. In Germany, hospitalized patients are supposed to receive support through statutory hospital discharge management [1]. This includes the assessment of needs and preparation of further care and symptom management [4, 7, 8].

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As a part of discharge management, consultations between patients and health care professionals (HCPs) are scheduled primarily for the exchange of information as adequate communication is important for treatment success [9].

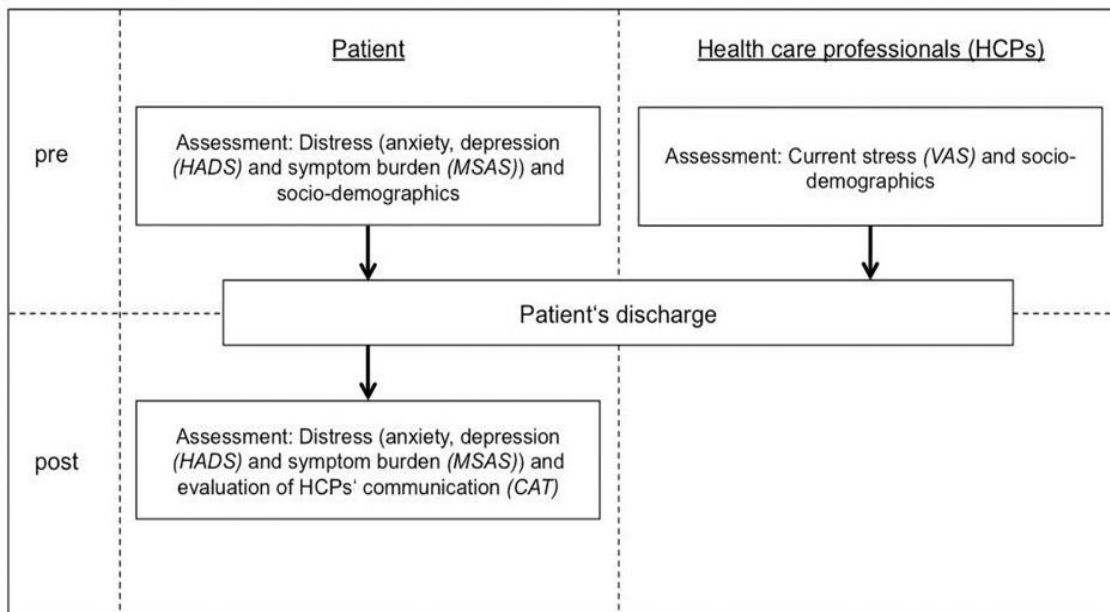
One factor often excluded, that needs to be considered as part of the patient-HCP-communication prior to the patient's discharge, is HCPs' perceived stress. Stress levels are fundamentally high when working in a hospital, especially in oncology [10, 11]. Stress in physicians in the hospital has a negative impact on communication, which is why HCP's stress level might also influence communication during hospital discharge in a negative way [12]. Patients' distress can be operationalized as anxiety, depression and symptom burden [13, 14]. The construct of symptom burden in this study subsumes symptom prevalence, frequency, intensity and distress [15].

To date, efficacy of discharge management in oncology has only been sparsely studied. Knowledge about patients' distress, HCPs' communication and their own perceived stress level is lacking. Given the scarcity of knowledge in this field, it is necessary to evaluate discharge management and to find starting points for its optimization. The current study therefore explored patients' distress in the form of anxiety, depression and symptom burden two days before and two days after hospital discharge. Furthermore, patients' evaluations of HCPs' communication and HCPs' perceived stress at the time of discharge were explored. In addition, associations between the development of patient's distress (operationalized as anxiety, depression, and symptom burden) as well as HCPs' communication and perceived stress were analyzed. The associations of interest were (1) patient-rated communication of HCPs and HCPs' perceived stress, (2) patients' distress and

communication with HCPs and (3) patients' distress and HCPs' perceived stress. In auxiliary analyses we examined (a) predictors for distress and (b) symptoms. This study adds knowledge about distress in cancer patients and about relationships between HCPs' distress, communication and patients' distress during hospital discharge.

Design

A pre-post design was applied. The study was conducted in four departments at a German university medical center between May 2018 and July 2018. First, HCPs, both physicians and nurses were informed and gave their informed consent. They provided their socio-demographics. Next, suitable patients (discharge in two days, cancer diagnosis, knowledge of their diagnosis, an imminent hospital discharge home after an inpatient stay, sufficient knowledge of the German language and a Karnofsky index equal to or greater than 60) were informed about the study. After providing informed consent they answered a questionnaire on their socio-demographics and level of distress i.e. (anxiety, depression and symptom burden). A follow-up questionnaire in a prepaid reply envelope to be answered two days after their discharge was handed out to each participant. In the meantime, HCPs rated their current stress level at work on a visual analogue scale (VAS). The follow-up questionnaire for patients asked to evaluate the HCPs' communication that was part of the discharge procedure and assessed the patients' distress (Figure 1). Full approval was given by the ethics committee of the Medical Center at the University of Freiburg (approval number 52/18, March 22, 2018). The study was registered under <http://apps.who.int/trialsearch/Trial2.aspx?TrialID=DRKS00014055>.



Abbreviations
 MSAS: Memory Symptom Assessment Scale
 HADS: Hospital Anxiety and Depression Scale
 CAT: Communication Assessment Tool
 VAS: Visual analogue scale

Figure 1: Assessment procedure for the patient (left hand side) and health care professionals (right hand side) pre and post patient discharge.

Table 1: Patients' socio-demographics, diagnoses and treatments.

Age in years (Standard deviation <i>SD</i> , range)	64.19 (13.73, 27 to 84)
Sex	
Female	27
Male	26
Partnership	
Yes	36
No	16
Missing	1
Children	
Yes	41
No	12
Housing situation	
With partner	25
Alone	14
With partner and children	8
Alone with children	2
Other	4
Education	
Primary and vocational school	18
Secondary school	10
High school	8
University / college	17
Work status	
Employed	24
Retired	29
Diagnosis (ICD-10)	
C43-C44: Melanoma and other malignant neoplasms of skin	27
C81-C96: Malignant neoplasms of lymphoid, hematopoietic and related tissue	7
C50: Malignant neoplasms of breast	6
C40-C41: Malignant neoplasms of bone and articular cartilage	4
C15-C26: Malignant neoplasms of digestive organs	2
C45-C49: Malignant neoplasms of mesothelial and soft tissue	2
C00-C14: Malignant neoplasms of lip, oral cavity and pharynx	2
D00-D09: In situ neoplasms	2
C51-C58: Malignant neoplasms of female genital organs	1
Metastases	
Yes	8
No	45
Current treatment (several may apply)	
Surgery	43
Chemotherapy	13
Immunotherapy	2
Radiotherapy	1
Hormonotherapy	1

Sample

Ninety-six cancer patients were invited to take part in the study. A total of 62 cancer patients agreed to take part. Nine patients were excluded from the analysis due to vastly incomplete data. Patients mostly had malignant neoplasms of skin, eight out of 53 patients had metastases, and most of the patients were hospitalized for surgery. Detailed socio-demographics, diagnoses and treatments are reported in (Table 1). With regard to HCPs, 38 took part, including 21 physicians and 17 nurses or nursing students.

Methods

I Assessment

We assessed anxiety and depression through the Hospital Anxiety and Depression Scale (HADS), with modified time reference (two days instead of 14 days) [16, 17]. Symptom burden was assessed using the Memory Symptom Assessment Scale (MSAS), with modified time reference (two instead of seven days) [15, 18]. The item 'difficulties with sexuality' was discarded. The index TMSAS (Total MSAS) was used.

Communication between HCPs and patients during discharge management was evaluated using the Communication Assessment Tool (CAT), [19, 20]. The modification pertained to communication during hospital discharge. HCPs' perceived stress level before discharge was assessed using a 10 cm visual analogue scale (VAS) referring to the current day [21]. Patients' socio-demographics and HCPs' socio-demographics were assessed using questionnaires.

II Statistical Methods

Statistical analyses were carried out using SPSS 25.0. It was assumed that missing data were distributed completely at random, except for missing HCPs' stress data. Data missing completely at random was imputed using multiple imputations. Patients' datasets were excluded if follow-up questionnaires were missing completely. The patients' distress before and after discharge were analyzed descriptively. The average evaluation of physicians' communication and nurses' communication was calculated. Perceived stress was calculated as the mean of physicians' and nurses' stress on particular wards. Communication and perceived stress were analyzed descriptively.

Several linear regressions were employed to analyze associations between changes in patients' distress, HCPs' communication and HCPs' perceived stress. In the first analysis (Analysis 1), communication was the criterion and perceived stress was the predictor. In the second (Analysis 2) and third analysis (Analysis 3), in which the change in patients' distress (anxiety, depression and symptom burden) was the focus, the measurements collected after the discharge from the hospital were the criteria and the measurements collected before the discharge from the hospital were the first predictors.

To analyze the association between change in patients' distress and HCPs' communication (Analysis 2) and the association between change in patients' distress and HCPs' perceived stress (Analysis 3), HCPs' communication and HCPs' perceived stress was included as the second predictor, respectively. Data were transformed (i.e., to inverses, square roots, logarithms, respectively) to meet the preconditions for linear regression and multiple imputation. For each analysis, preconditions for data were analyzed separately and data transformed to meet the conditions. Thus, used transformations differ between and within the analyses. For the linear regression analyses an a priori power analysis revealed that 55 patients were needed (moderate effect, power 80%, α level 5%). In auxiliary analyses, we carried out Mann Whitney U tests and exact Fisher tests to explore pre-discharge characteristics and socio-demographics that distinguished patients with post-discharge clinically or borderline anxiety or depression from other patients. Symptoms were analyzed descriptively.

Results

I Patients' Distress Two Days before and Two Days after Hospital Discharge

Patients' distress was operationalized as anxiety, depression and symptom burden. Anxiety was $M = 3.26$ ($SD = 2.91$) pre and $M = 3.66$ ($SD = 3.22$) post hospital discharge [HADS-anxiety range: 0 to 21]. Depression was $M = 3.70$ ($SD = 3.37$) pre and $M = 4.25$ ($SD = 3.54$) post

hospital discharge [HADS-depression range: 0 to 21]. Before discharge, 9% of the patients showed clinically relevant or borderline anxiety, and 11% showed clinically relevant or borderline depression [HADS-anxiety/depression cut-off at 8]. After discharge, 17% of the patients showed clinically relevant or borderline anxiety and 19% showed clinically relevant or borderline depression. Symptom burden was $M = 0.38$ ($SD = 0.32$) pre and $M = 0.39$ ($SD = 0.39$) post hospital discharge [TMSAS range: 0 to 4].

II HCPs' Communication and Perceived Stress

Patients evaluated the HCPs' communication as $M = 3.79$ ($SD = 0.70$) [CAT range: 1 (poor) to 5 (excellent)]. HCPs evaluated their stress level at $M = 4.48$ ($SD = 1.77$) [stress VAS range: 0 (not at all) to 10 (maximum)].

III Associations between change in patients' distress, HCPs' communication and HCPs' stress

Analysis 1

The association between HCPs' perceived stress and communication HCPs' perceived stress did not significantly predict ($\beta = .025$, $t = .175$, $p = .861$) how HCPs' communication was evaluated by the patients ($F(1, 47) = .04$, $p = .861$).

Analysis 2

The association between change in patients' distress and HCPs' communication

- i. While anxiety (pre) predicted anxiety (post) ($\beta = .588$, $t = 4.84$, $p < .001$), HCPs' communication did not significantly predict the change in anxiety from pre to post ($\beta = .039$, $t = 0.32$, $p = .749$). The overall model was significant, $F(2, 50) = 12.48$, $p < .001$. Square roots of anxiety values were used.
- ii. While depression (pre) predicted depression (post) ($\beta = .549$, $t = 4.71$, $p < .001$), HCPs' communication did not significantly predict the change in depression from pre to post ($\beta = -.143$, $t = -1.23$, $p = .218$). The overall model was significant, $F(2, 50) = 13.47$, $p < .001$. Square roots of depression values were used.
- iii. While symptom burden (pre) was a significant predictor for symptom burden (post) ($\beta = .794$, $t = 8.75$, $p < .001$), HCPs' communication did not significantly predict the change in symptom burden from pre to post ($\beta = -.023$, $t = -0.25$, $p = .802$). The overall model was significant, $F(2, 50) = 41.04$, $p < .001$. Inverses of symptom burden values were used.

Analysis 3

The association between change in patients' distress and HCPs' stress

- i. While anxiety (pre) was a significant predictor for anxiety (post) ($\beta = .528$, $t = 4.22$, $p < .001$), HCPs' perceived stress did not significantly predict the change in anxiety from pre to post ($\beta = -.057$, $t = -0.45$, $p = .654$). The overall model was significant, $F(2, 46) = 9.08$, $p < .001$. Square roots of anxiety values were used.

- ii. While depression (pre) was a significant predictor for depression (post) ($\beta = .586, t = 4.96, p < .001$), HCPs' perceived stress was not a significant predictor of the change in depression from pre to post ($\beta = -.105, t = -0.86, p = .392$). The overall model was significant, $F(2, 46) = 12.84, p < .001$. Square roots of depression and stress values were used.
- iii. Symptom burden (pre) was a significant predictor for symptom burden (post) ($\beta = .80, t = 9.09, p < .001$). Moreover, HCP's perceived stress significantly predicted the change in symptom burden from pre to post ($\beta = .20, t = 2.25, p = .024$). The overall model was significant, $F(2, 46) = 42.34, p < .001$. The logarithm of symptom burden (pre) and square roots of symptom burden values (post) and stress were used.

IV Predicting High Distress after Discharge

Pre-discharge characteristics that distinguished between patients with post-discharge clinical or borderline anxiety and other patients were anxiety (above cut-off median = 42.39, below cut-off median = 23.85, $U = 59.500, p = .001$), depression (above cut-off median = 40.20, below cut-off median = 24.30, $U = 79.200, p = .004$) and symptom burden (above cut-off median = 40.49, below cut-off median = 24.14 $U = 72.700, p = .003$). Patients with high post-discharge anxiety were more likely to be childless ($n = 5$ out of 9) than other patients ($n = 7$ out of 36; ($p = .020$)).

For depression, pre-discharge characteristics that distinguished between patients with post-discharge clinical or borderline depression and other patients were depression (above cut-off median = 36.21, below cut-off median = 24.86) and symptom burden (above cut-off median = 38.79, below cut-off median = 24.26).

V Symptoms Pre- and Post-discharge

Patients reported seven symptoms on average before ($M = 6.77, SD = 5.01$) and after discharge ($M = 7.49, SD = 6.86$). 30% reported lack of energy before and 51% after hospital discharge; 43% reported pain before and 55% after hospital discharge.

Discussion

In our sample, anxiety and depression were in a normal range. Two days before hospital discharge, approximately 10% of patients in each case showed clinically relevant or borderline anxiety and depression. Two days after discharge, however, approximately 20% of patients in each case showed clinically relevant or borderline anxiety and depression. Interestingly, reported symptom burden was low and patients rated HCPs' communication as generally good. Perceived stress of HCPs was at a medium level in our sample. While HCPs' perceived stress predicted individual patients' increase in symptom burden from pre to post, no other associations were found between (1) HCPs' perceived stress and HCPs' patient-rated communication, (2) HCP's patient-rated communication and patient anxiety, depression or symptom burden, as well as (3) HCPs' perceived stress and patient anxiety or depression. Patients with high anxiety post-discharge were distinguishable from other patients by their pre-discharge levels of anxiety, depression and symptom burden, also by not having children.

Furthermore, patients with high depression post-discharge were distinguishable from other patients by their pre-discharge level of depression and symptom burden. Numbers of most symptoms remained constant. Previous studies reported rather high levels of anxiety, depression and symptom burden in cancer patients, but similar results with respect to communication and stress [11, 22-25]. Studies suggest that there might be associations between (a) HCPs' stress and communication as well as (b) HCPs' communication and patients' distress [26, 27]. Nonetheless, such correlations were not found in the presented study.

One reason for not finding said correlations between HCPs' communication and patients' distress might be the way we assessed communication in our study. This will further be discussed in the section of limitations. The correlation between HCPs' perceived stress and patients' symptom burden, but not between HCPs' perceived stress and anxiety or depression, respectively, could be explained by insufficient treatment of physical symptoms when HCPs are under high stress. Similar results were reported in previously published studies [28, 29]. The results on predicting factors for anxiety and depression are in line with other studies that identified anxiety and depression and lacking social support as predictors of distress after a longer period [30, 31]. The increase in the number of reported symptoms from before to after hospital discharge was found in another study [32].

Limitations

The study's sample had characteristics that can explain lower anxiety, depression and symptom burden. Our sample may be not representative for all cancer patients. For example, only a small group of patients had metastases or advanced cancer. A high number of patients had skin cancer, which is often not life-threatening. These patients are rather mildly affected by physical symptoms and have often only minimal surgery removal. Therefore, this could explain the lower reported level of distress as compared to previous studies [22-24]. By not including all types of cancer a bias in the study sample may be explained. However, the non-representativity of our sample is not a critical flaw: firstly, this study did not aim to assess an "all cancer type" patient population; and secondly, the selected study design with two measurement points allowed for analyses of patients' individual change and predictors.

The fact that this study did not find any associations involving HCPs' communication does not imply an absence of such associations. Possibly, the sensitivity of the instrument applied to assess communication was not great enough. For patients, HCPs' communication may have been difficult to evaluate in an isolated context, such as discharge from the hospital. Furthermore, the evaluation of communication is likely to be influenced by other aspects, for example treatment success or overall communication.

A connection between highly stressed HCPs and limited availability for reporting their stress levels may exist; the data obtained from highly stressed HCPs might be underrepresented in overall ward stress values. HCPs' perceived stress was most likely underestimated, thus restricting variance. Future studies should aim to examine a larger sample of patients in order to take hierarchical dependencies into account and to help explain more of the residual variance.

Implications

We found that hospital discharge works well for patients with a low distress level. They experience low levels of anxiety, depression and symptom burden before and after hospital discharge. Some patients experience clinically relevant anxiety or depression symptoms before discharge and these numbers increase after hospital discharge. These patients need more support. Risk patients for greater distress after discharge can be identified before discharge. These patients report more anxiety, depressive symptoms and a higher symptom burden before discharge. They are more likely to have no children, which might be an indicator for less social support. Increased support for these patients can be organized prior discharge of hospital. Thus, there is a need to assess the patients' distress not only in the beginning, but also toward the end of a hospital stay.

Furthermore, we advocate an emphasis on pain management to be included in the discharge process as patients frequently report pain and lack of energy after discharge. This study suggests that there is an association between HCPs' stress and patients' distress. Therefore, for healthcare providers and patients alike, it is a worthwhile endeavor to alleviate stress in the hospital, be it by tackling its structural, procedural or human causes.

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Conflicts of Interest

None.

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