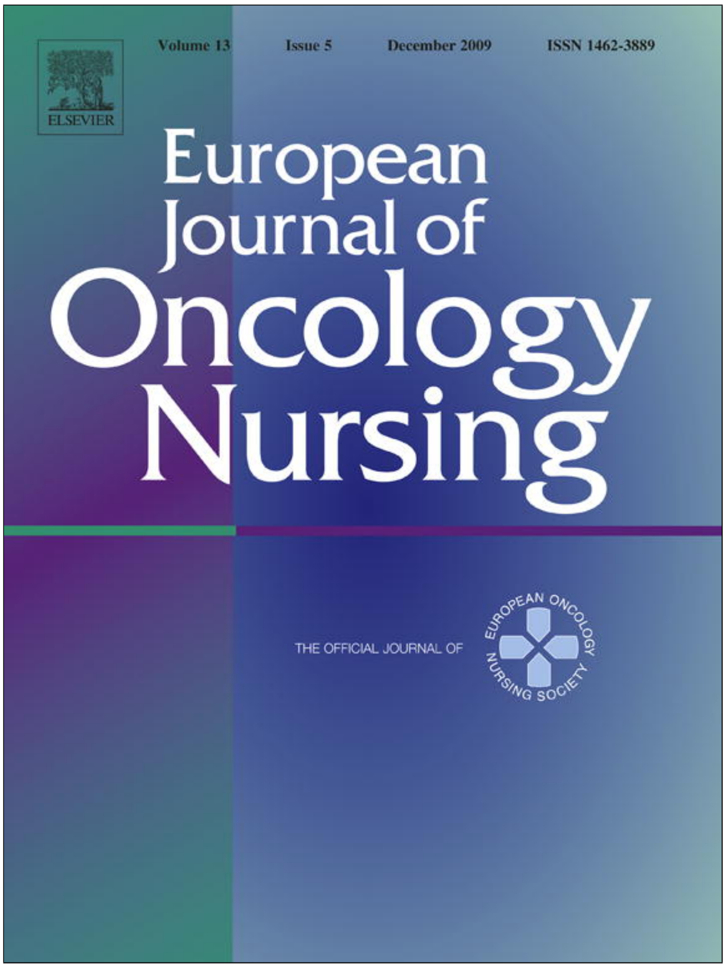
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Distress in patients undergoing allogeneic haematopoietic stem cell transplantation is correlated with distress in nurses

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ABSTRACT

Purpose: To date, no studies have reported on the relationship between the emotional distress of patients undergoing allogeneic haematopoietic stem cell transplantation (HSCT) and the distress of their nurses.

Methods: 113 patients rated their distress by means of a daily questionnaire during their inpatient hospitalisation for HSCT. At the same time, nurses were asked to assess their distress caused by the additional care needs and increased emotional demands placed on them by the patients. Surveys covered a treatment period from day -5 to day $+29$ post-HSCT.

Results: The correlation between the distress level of the patients and that of the nurses was $r = 0.40$ ($p < 0.001$). The partial coefficient of this correlation was $r = 0.43$ ($p < 0.001$) when an indicator of the physical state of the patients, as assessed by their treating physicians, was controlled.

Conclusions: Distress, as experienced by patients and nurses, is positively correlated. We assume that such a relation holds beyond other individual, organisational, structural, and occupational influences that play decisive and limiting roles in the patient–nurse relationship. Reducing the distress of one of these parties could also positively affect the distress levels of the other party. Therefore, patient distress should be monitored since it may add to nurse distress. Types of patient interventions, as well as the people responsible for performing these interventions, must be discussed. On the other hand, interventions aimed at reducing nurse distress (regardless of the cause of the distress) could reduce patient distress and improve their satisfaction with the treatment, and their quality of life.

Introduction

Working as a professional caregiver in a hospital is stressful (Sherman et al., 2006), especially for staff members assigned to units that care for severely ill patients, such as those undergoing bone marrow transplantation (BMT). Studies of psychological stress in the context of BMT have been predominantly focused on the patients undergoing this treatment. In these studies, professional caregivers (i.e., nurses and physicians) are considered simply as persons whose role is to reduce the distress in patients (Gaston-Johansson et al., 2004; Molassiotis, 1999). On the other hand, patients may experience their interactions with the staff as a source of distress (Heinonen et al., 2005). One study simultaneously gathered stress-related data from patients and nurses, but the degree to which nurses felt exposed to stress was not addressed (Larson et al., 1993).

Unfortunately, there are few empirical data regarding the psychological stress of nurses assigned to BMT units, and no such data have been reported in German-speaking countries. It is well known that both patients undergoing allogeneic or autologous haematopoietic stem cell transplantation (HSCT) and their families are exposed to significant physical and psychological stressors during this life-threatening treatment. Demands on the hospital staff assisting in the intensive care treatment of these patients are high. Hospital personnel are often expected to meet the challenge of supporting the emotional stability of both the patient and the patient's family while, at the same time, performing procedures associated with aggressive treatment. The intensive, time-consuming care of BMT patients often leads staff members to identify with patients and their families. Transplantation-associated mortality is high (Andrykowski and McQuellon, 1998; National Marrow Donor Program NMDP, 2006), forcing the staff frequently

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to confront the issue of “death and dying” (Molassiotis and Haberman, 1996; Molassiotis and van den Akker, 1995). Divergent opinions regarding the appropriateness of curative versus palliative treatment options (“moral distress” (Ferrell, 2006; Rice et al., 2008)) can produce significant pressure within the team structure, resulting in problems between staff members, especially between nurses and physicians. Treatment errors resulting from overwork can engender feelings of senselessness, helplessness, and guilt among the personnel (Kiss, 1994). In general, the diverse aspects of psychological stress to which members of the transplant team are exposed have received insufficient attention (Kiss and Kainz, 2004), and the nurses’ emotional labour of care in BMT is not sufficiently appreciated (Kelly et al., 2000).

Although HSCT is a treatment option for some non-malignant diseases (e.g., severe aplastic anaemia, paroxysmal nocturnal hemoglobinopathy, rheumatoid arthritis or thalassemia), transplants are predominantly performed for malignant diseases (European Group for Blood and Marrow Transplantation EBMT, 2008; National Marrow Donor Program NMDP, 2006). Since our study focuses on the malignant HSCT setting, it seems reasonable to generalise the results from studies that have addressed distress and burnout among caregivers assigned to oncology wards. In general, stressors that increase the risk of burnout are associated with organisational factors (e.g., leadership, team structure, and payment), work-related factors (e.g., workload, decision latitude, and patient-to-nurse ratio), and personal characteristics (e.g., personality and coping abilities) (Barrett and Yates, 2002; Piko, 2006; Quattrin et al., 2006). Approximately one-third of oncology nurses suffer from levels of clinically relevant psychological stress (Catalan et al., 1996), and working with cancer patients seems to have a negative impact on nurses’ quality of life (Ergun et al., 2005). Persistent stress at work can reduce job satisfaction, adversely affect the quality of work, and lead to higher rates of missed shifts and increased staff turnover (Barrett and Yates, 2002; Kash et al., 2000; McVicar, 2003; Molassiotis and van den Akker, 1995). One study showed that patients’ distress decreased as the degree of nurses’ expression of empathy increased (Olson, 1995); however, this study did not focus on the nurses’ experience. No previous study has examined the emotional stress experienced by patients in relation to their professional caregivers’ distress. We explored this relationship with respect to the nurses as part of a psycho-oncologic study (Bailer et al., 2007; Grulke, 2007) of patients undergoing allogeneic BMT or peripheral blood stem cell transplantation (PBSCT).

Methods

Surveys were conducted in the Transplantation Units of the University Hospitals of Tübingen and Ulm in Germany. The study was approved by the Ethics Commission of the University of Ulm. During the 28-month survey period, 230 patients were admitted for allogeneic HSCT (comprised of BMT and PBSCT). Inclusion criteria were as follows: 18 years of age or older, adequate knowledge of the German language, and undergoing allogeneic HSCT for the first time. There were no systematic differences between those patients who consented and those who declined study participation with respect to available data on age, gender, and diagnosis. One hundred forty patients were successfully recruited for the psycho-oncology study, which represents a participation rate of eligible subjects of greater than 70%. This study was limited to patients who were discharged from the hospital following HSCT. The final analysis was based on 113 cases. The bases for exclusion are provided in Fig. 1.

Inpatient admission occurred at different intervals prior to actual transplantation due to individual factors and organisational aspects of the respective transplantation centres. In 95% of the cases, patients were admitted to the hospital no later than 5 days prior to transplantation (day −5, where day 0 represents the day of transplantation). Within 2 weeks following transplantation (day +14), 75% of the patients had been transferred from isolation, while by day +29, 75% of patients had been discharged from the hospital. The overall observation period was, therefore, limited to days −5 through +29.

Distress assessment and samples

We will use the term “distress” as a general term for the subjective experience of the sum of describable internal and external stressors. The term covers the extent to which these stressors were negatively evaluated; however, which specific stressors (likely primarily implicit) with which weighting was summarised for this evaluation are unknown.

During the period of inpatient hospitalisation, patients assessed their degree of distress and nurses assessed their own distress in relation to each of the patients for whom they provided care. Patients and nurses did not receive information regarding their respective complementary assessments.

Patients

Each night, patients completed a journal entry, wherein they, looking back over the preceding 24 h, assessed their degree of distress from various symptoms. They used a numerical scale corresponding to the grading system used in German schools that assigned the value of 1 to the best (roughly corresponding to a grade or mark of “A” in the American and British systems) and the value of 6 to the worst grade (i.e., failure). Patients recorded their entries on a sheet with a sufficient number of columns for an entire week. The sheets were provided with the following instructions:

> Please enter in the column corresponding to each day a score indicating the degree to which you suffered from each of the listed problems. Rate your degree of suffering using a number between 1 and 6 (school grading system) that best describes how you feel. On this scale, the number “6” (“very bad”) indicates the least favourable, most pronounced degree or level of suffering; the number “1” (“very good”) indicates that you assess an individual factor as favourable or that you did not suffer from that individual problem. Please use only whole numbers (1, 2, 3, 4, 5, and 6). It is best to fill out the form each evening looking back at the past day and the preceding night.

Patients were asked to rate 13 dimensions, including *emotional state*, *physical state*, *coping, anxiety*, *depressed mood*, *appetite*, *diarrhoea*, *vomiting*, *exhaustion*, *pain*, *sleep*, and *nausea*. The first 3 items cover general dimensions, whereas the others address more specific physical and psychological symptoms. The diary was developed especially for this study and items were chosen from a clinical point of view to cover frequently seen complaints. The 13th item (*other complaints*) served as a “catch all”. For each item, verbal examples were provided for the extremes, i.e., the values 1 and 6:

> Examples for “1” (most favourable assessment):
>
> Coping with the current situation: “I am able to adapt well to the current situation; I am doing very well.”
> Physical state: “Very good.”
> Depressed mood: “I do not feel depressed at all.”
>
> Examples for “6” (least favourable assessment):
>
> Coping with the current situation: “I am doing very poorly.”

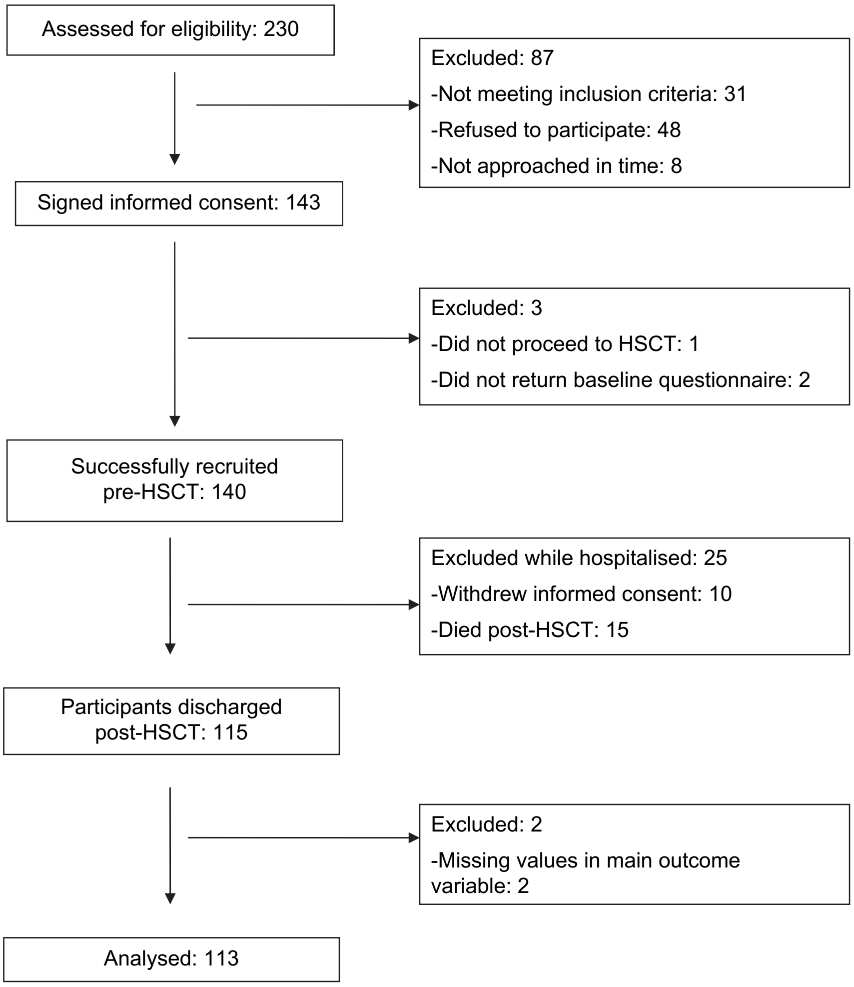

Fig. 1. Attrition of patients.

Physical state: “Very poor.”
Depressed mood: “I feel very depressed, despondent.”

The patients were predominantly male (61.9%) and the mean age of the sample was 39.3 years (SD, 11.3 years; range, 18–61 years). Post-secondary education was completed by 29.7% of the patients, 81.1% of the patients cohabited with a significant other, and 61.2% of the patients had minor children. Acute leukaemia was the indication for treatment in 52.2% of the patients, while 20.4% of the patients were treated for chronic myelocytic leukaemia (CML), and 27.4% of the patients had other haematologic or oncologic diseases. In 13.3% of the cases, patients had undergone a prior autologous HSCT. “The risk for treatment failure” (Ringhoffer et al., 2004) was high in 34.5% of the patients, moderate in 46.0% of the patients, and low in 19.5% of the patients. Approximately one-half of the donors were not related to the recipient patients (50.4%). Peripheral blood stem cells were used in approximately two-thirds of the cases (67.3%), while the remaining patients received bone marrow transplantation. Donors and patients were HLA-identical in 92.0% of the cases. All patients received high-dose chemotherapy (HDC). In addition to HDC, 70.8% of the patients underwent total body irradiation and 20.4% of the patients underwent radio-immunotherapy. The duration of inpatient hospitalisation was between 22 and 133 days (mean, 50 days; SD, 18.1 days). Patients remained in isolation between 11 and 32 days (mean, 21.3 days; SD, 4.4 days). Patients were discharged between 13 and 121 days after transplantation (mean, 32.9 days; SD, 15.8 days).

Nurses

Nurses evaluated the extent to which they perceived a certain patient as an “average” patient with routine care demands and the extent to which they felt emotionally distressed.

The nurses used the numerical rating system analogous to the grading system used in German schools. They were provided with the following written instructions:

> For the period of the past 3–4 days, please enter a score that indicates the degree to which (slight-to-significant) each individual dimension applies to you. Please use a 1-to-6 scale (school grading system), where “1” indicates “very good” and “6” indicates “very bad.” Use whole numbers only (no fractions or decimals). In all cases, “1” indicates the most favourable, while “6” indicates the least favourable degree.

For both items, verbal anchors for the extremes, 1 and 6, were given as follows:

“1” (most favourable assessment):

Care demands: “No problems, routine care demands.”
Emotional demands: “No additional emotion demands, no problems.”

“6” (least favourable assessment):

Care demands: “Requires significant additional attention, support, and care.”

> Emotional demands: “Requires additional resources, is exhausting and is emotionally stressful.”

These items address two distinct aspects of nursing. “Care demands (of the patient)” were intended to cover the strain based primarily on the physical aspects of nursing, while “emotional demands” cover the psychological and emotional efforts, i.e., the emotional distress the nurse felt. In our own clinical practice, we met patients who required substantial amounts of time-consuming and strenuous activities, but who did not cause additional negative feelings of exhaustion or additional emotional distress. Both items enquire about subjective impressions and request an assessment of the extent to which one feels distressed more than would be expected.

Considering nurse workload and in order to enhance compliance, nurses were asked to complete the questionnaire only twice a week as opposed to the patients, who were asked for daily ratings. Two times a week, i.e., every 3 or 4 days, our research assistants handed in questionnaires for all patients who participated in the study. Assessment was performed at the end of the morning shift by the nurse assigned to the patient that day. The written assessments were collected by research assistants on the same day. Staff anonymity was a prerequisite for conducting this psycho-oncology study. Therefore, an anonymous nurse’s rating for a certain patient could not be examined in relation to the rating nurse. During the study period, approximately 20 persons composed the nursing teams in each of the transplant units, approximately 30% of whom were male. Most of the staff members (between 27 and 60 years old) had experiences on haematologic and/or transplant units for at least five years; about 20% held a special certificate for nursing in oncology. In both clinics, the turnover for the nursing staff on the transplantation wards was less than that on the other haematologic wards.

Since the present investigation was not the primary objective of the psycho-oncology study, we did not specifically record certain objective data regarding a patient’s physical condition, such as frequency and intensity of vomiting and a patient’s risk for infection. Before beginning the conditioning regimen, we asked the treating physicians to provide estimations for each patient’s prognosis by using the above-mentioned 6-point scale (German grading system), in which 1 = very good/favourable and 6 = very bad/unfavourable. This assessment proved to be predictive of overall survival. A one-unit “more unfavourable” physician’s estimation was associated with an increased hazard ratio = 1.51 (Grulke et al., 2008a). For example, in comparing a patient with a prognostic estimate of 3 to a patient with an estimate of 2, the former has an increased risk of death of 51%. Therefore, we deemed the physician estimation to be a suitable substitute for disease and treatment-related objective factors.

In summary, patients rated their physical and psychological distress with respect to 12 items. We excluded the “catch all” item from the analysis because it showed up that in most cases, the patients did not specify any other complaints or assess this item. Nurses used 2 items to assess their additional nursing and emotional efforts related to each patient compared to their subjective image of an “average” patient. The ratings of the patients and nurses were the main criterion variables. In order to control for medical aspects, ratings from the treating physicians were evaluated.

Statistical evaluation

First, a score for each of the 12 items covered in the patient journal and the 2 items provided by the nurses was calculated as a mean of all reported scores for the period of day −5 through day +29. Missing values were replaced with the mean.

Second, the mean of the 12 scores represented the overall distress perceived by the patients. Analogously, an overall distress score was calculated for the nurses as the mean of the two scores.

Third, the reliability of these overall distress scores was determined by calculating Cronbach’s alpha.

Fourth, to assess the direct (linear) association between the distress reported by patients and that reported by the nurses, the correlation of the overall distress score of the patients and nurses was calculated.

Fifth, to account for objective disease and treatment-related factors, the partial correlation between patients’ distress and nurses’ distress was calculated while controlling for the prognostic assessments provided by the physicians, i.e., taking away the effect of the prognostic assessment on the relationship between patients’ and nurses’ distress.

Statistical evaluation was performed using SPSS for Windows, version 11.0.1 (SPSS Inc., Chicago, IL, USA).

Results

Table 1 presents descriptive statistics for the 12 and 2 items answered by patients and nurses, respectively, and the overall distress scores. Loss of appetite and exhaustion (scores > 3) appears to be the two most stressful symptoms reported by patients as opposed to depressed mood, diarrhoea, and vomiting (scores < 2). The nurses’ assessment scores were relatively lower by comparison. The physicians used the total range of the scale. The mean prognostic estimate was calculated as 3.06 ($n = 109$, median = 3.00, SD = 1.25). For Cronbach’s alpha, values were calculated as 0.94 and 0.96 for the overall distress scores of patients and nurses, respectively. The Pearson correlation coefficient between the overall distress scores of the patients and nurses resulted in $r = 0.40$ ($p < 0.001$). Due to missing values for the physicians’ assessments, the calculation of the partial correlation coefficient was based on 109 cases and resulted in a partial-$r = 0.43$ ($p < 0.001$).

Discussion

The current study reports on the correlation between the subjective distress level of patients and the subjective distress, due

Table 1
Descriptive statistics ($n = 113$) for the distress scores within the entire survey period (days −5 to +29).

	Min	Max	Mean	Median	SD
Patients					
Anxiety	1.00	5.26	2.04	2.00	0.75
Loss of appetite	1.00	5.77	3.21	3.20	0.94
Depressed mood	1.00	4.89	1.77	1.64	0.75
Diarrhoea	1.00	3.79	1.93	1.80	0.66
Vomiting	1.00	4.43	1.96	1.77	0.80
Exhaustion	1.42	5.37	3.05	3.00	0.76
Physical state	1.07	5.37	2.76	2.77	0.70
Pain	1.00	5.00	2.37	2.35	0.78
Emotional state	1.00	5.11	2.19	2.13	0.75
Sleep problems	1.00	5.15	2.72	2.78	0.89
Nausea	1.00	5.76	2.29	2.11	0.91
Coping with the situation	1.00	5.26	2.24	2.21	0.76
Overall patient distress[a]	1.18	4.88	2.38	2.34	0.61
Nurses					
Care needs	1.00	4.11	2.00	1.89	0.65
Emotional demands	1.11	4.11	2.03	1.88	0.64
Overall nurse distress[a]	1.06	4.11	2.02	1.91	0.64

[a] Arithmetic mean of the preceding 12 (patients) and 2 (nurses) listed items, respectively.

to care needs and emotional demands, experienced by the nursing staff. The statistically significant correlation of $r = 0.40$ represents a moderate ($r = 0.30$) to strong ($r = 0.50$) effect (Cohen, 1988). The findings clearly indicate that the degree of distress reported by patients corresponds to the distress experienced by the nurses.

At first glance, this finding may appear trivial. It was previously reported that nurse distress is associated with patient characteristics. For example, in one study, nurses were asked to assess their distress caused by patients presenting with nagging and aggressive behaviours (Nolting et al., 2006); a significant correlation between reported distress and desire to change occupations was found; however, in this study, the nurses were asked the extent to which they were distressed by the behaviours of the patients in general, and no direct link to specific patients was made.

Our 12-item instrument, designed to assess the distress of patients, showed a high internal consistency and addressed relevant aspects (face validity). In separate analyses, the overall distress score of the patients calculated for each day clearly reflected the clinically-observed course of the condition of the patient while hospitalised (Grulke et al., 2001). Initially, we assumed that the 2 items presented to the nurses addressed two different aspects of patient-related distress, namely patient care requirements and emotional demands on the caregiving staff. Contrary to our expectations, these were not two distinct dimensions but, rather, were two closely related aspects in nearly perfect correlation. This finding obviated the need for a separate evaluation of the two dimensions. In hindsight, we would have preferred a single-item instrument, such as the Distress Thermometer, which has gained much international attention in practice and research in the field of psycho-oncology as well as in the field of oncology nursing (Madden, 2006); however, when our study was launched, the German version of this instrument (Mehnert et al., 2006) was not available.

It is conceivable that the restricted physical constitution of the patients is responsible for the significant correlation between distress in patients and nurses. A reduced physical constitution is likely associated with a higher degree of patient distress as well as with increased care requirements and higher emotional demands, i.e., nurse distress. In order to examine this assumption, we calculated the partial correlation while controlling for information from a third source, i.e., the physicians' assessments. The partial coefficient had the same level as the zero-order correlation. This finding suggests that the observed correlation is likely not solely attributable to physical factors.

A simple correlation coefficient does not allow causal conclusions; therefore, potential causes and effects must be discussed.

1) *The patient's distress causes reactive distress in the nurse*. This interpretation would, in and of itself, be positive since it would show that nurses do not experience patients solely as care objects; however, the degree to which nurses can manage distress is limited. As the pressure caused by a patient's distress increases, the risk that nurses will be pushed to the limits of their distress tolerance may also increase. Moreover, it is possible that further distress on the nurse could originate from the necessity of providing intense care to two or more patients with an increased degree of distress at the same time. We expect that interventions that relieve distress in patients will also relieve distress in nurses. Of course, every effort should be made to optimise patient care in terms of medical (e.g., antiemetics and analgesics), physiotherapeutic, psycho-social, and psycho-oncologic aspects, irrespective of this correlation.
2) *The increasing distress of nurses increases the patients' distress*. The interpretation that the distress of a patient results from the increasing demands on the nurse points towards nurse interventions. Such interventions should relieve the nurse's distress through, for example, stress management training and other specific continuing education presentations. Supervision may also be an effective intervention for personnel assigned to units with particularly high stress levels (Begat et al., 2005; Wittich, 2004).

   It is also conceivable that varied stress conditions experienced by patients and nurses could reinforce one another in a vicious circle; however, the data of this correlative study do not permit causal conclusions.
3) *The correlation is a spurious correlation, other variables cause the correlation*. Not only psychological and interpersonal factors, but also structural factors may increase the distress experienced by both nurses and patients. Prime examples include reduced budgets and increased work intensity. For example, aggressive streamlining of personnel resources can result in excessive demands on nurse staff members, resulting in a reduction in their ability to provide emotional support. Although this may represent a possibly adaptive stress management strategy, an unintended result may be unsatisfactory patient care; however, the present study did not investigate structural factors that could cause the findings. For explorative purposes, we recalculated the correlation coefficient between patient and nurse distress scores separately for the two transplant centres (data not shown). The two centres were located in two different cities and differed in several aspects regarding patients and organisation (e.g., more BMT than PBSCT in Tübingen than in Ulm; no option for intensified conditioning by radioimmunotherapy in Tübingen). The two coefficients were calculated as 0.39 ($n = 55$, $p = 0.003$) and 0.41 ($n = 58$, $p = 0.001$) for Tübingen and Ulm, respectively. This finding implies stability in the strength of the correlation and that a correlation exists beyond objective, external factors.

Further shortcomings and limitations of the present study must also be considered. The data summarised in Table 1 clearly show that the distress levels reported by the nurses were relatively low (i.e., a score of 2 on a scale of 1–6). This result may have been partly due to the wording of the items, which asked respondents to assess the degree of distress that was over and above average, routine demands. Another explanation could be that the nurses' frame of reference has a high set point which causes them to declare very stressful tasks as ‘average and routine demands’. Future surveys should include a range from minor or below average to very significant or above average distress. One study showed that experience as a nurse could be a protective factor against burnout (Liakopoulou et al., 2008). Therefore, one could speculate – as most of the nurses in the current study were quite experienced – that the nurses' experience was related to the low distress scores that we observed in our study. If experience lowers the nurses' general distress level and if the correlation between patient distress and nurse distress is not spurious, one clinical suggestion is to monitor patient distress and schedule experienced nurses to care for highly distressed patients. Furthermore, a future study should document more information about the staff members. In our study, a nurses' score for a patient represents a score resulting from assessments of several nurses. We assume that the correlation would be higher if distress assessments of each nurse could be connected to the distress scores of single patients. In such a study design, the role of, for example, experience could be explored in greater detail.

The patients also provided low assessments of their distress. The symptoms of diarrhoea and vomiting, both with ratings < 2, normally only occur on some days (e.g., distress caused by vomiting is experienced highest through the days of isolation (Bailer et al., 2007)) and, hence, are low overall. The lowest scores were found for depressive mood. One explanation could be the fact that we focused on patients who were discharged after HSCT and did not refuse further participation in the study or die while in the hospital. In fact, the available depression scores of the patients excluded from this analysis were significantly ($p < 0.05$) higher, but still low (mean 2.20, $n = 19$, data not shown). We assume that the generally low depression scores reflect the attitude of most patients to persevere. In cases of fatal progression, patients were unable or no longer willing to report in their diaries, which may further explain why highly depressed mood states were not documented. The highest ratings were found for loss of appetite. We knew from clinical practice that appetite loss was a persistent problem for many patients, but were astonished that the patients felt distressed by this problem more than by, for example, pain. One explanation may be the fact that pain can be influenced or even controlled by medications, while appetite loss requires psychological efforts of the patient to bring himself/herself to eat. Furthermore, patients were urged by doctors and nurses to eat since oral ingestion is a prerequisite for discharge.

In a review of stress and burnout among persons providing therapy in oncology units, Sherman et al. (2006) reported that currently available studies on practical interventions aimed at reducing burnout address the problem on two levels: organisational (e.g., broadening personnel's decision-making latitude or reductions in work time or time spent in contact with patients) and individual (the nurse; e.g., stress management programs or communication training). The concept of reducing a nurse's distress by means of psycho-social interventions for patients has not been discussed to date. Studies on which (psycho-social) interventions for patients will bear beneficial effects must be carefully designed, including attention to who offers such interventions. Increasing the workload of the nursing staff for this purpose may endanger the potential beneficial effects. Other interventions addressing specific sources of distress should be offered by specialists, e.g., psycho-oncologists focusing on depression, a potential risk factor for patients facing HSCT if seen in the pre-transplant period (Grulke et al., 2008b). An apparently simple means would be to increase the nurse-to-patient ratio; however, put into context, it is not that simple (New England Public Policy Center and Massachusetts Health Policy Forum, 2005). This topic involves a complex process of interactions between several factors that provides numerous opportunities for interventions and promising topics for future research.

Conclusion

Distress as experienced by patients and nurses is positively correlated. Reducing the distress of one of these parties could also positively affect the distress levels of the other party. If our results were not spurious and could be replicated, wards with patients who experience high levels of distress should be considered as bearing a risk for increased nurse distress. We assume that such a relation holds beyond other individual, organisational, structural, and occupational influences that play decisive and limiting roles in the patient–nurse relationship. Therefore, similar to other vital signs (Bultz and Carlson, 2005), patient distress should be monitored, for example, with the Distress Thermometer (Ransom et al., 2006). Unidentified patient distress may add to nurse distress even though their routine work appears to remain the same. Relieving patient distress may reduce nurse distress. Types of patient interventions as well as who will perform these interventions must be discussed. On the other hand, interventions aimed at reducing nurse distress (regardless of the cause of distress) could reduce patient distress and improve their satisfaction with the treatment, and their quality of life.

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Conflicts of interest

None declared.

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