Perceptions of Stress, Burnout, and Support Systems in Pediatric Bone Marrow Transplantation Nursing

Regan Gallagher, MSN, RN, and Denise K. Gormley, PhD, RN

Bone marrow transplantation (BMT) is used to treat various conditions, ranging from immune disorders to many types of cancer. The critical complexity of patients and the environment in which BMT nurses work can lead to stress, burnout, and, ultimately, poor retention. This study aimed to investigate nurses’ perceptions of work-related stress and burnout as well as current support systems for nurses. The study included 30 BMT staff nurses from a large pediatric medical center in the midwestern United States. Critical illness or acuity of patients was reported as the most stressful factor; long work hours was the least stressful factor. Most nurses perceived moderate to high levels of emotional exhaustion, and 33% reported moderate levels of depersonalization. Fifty percent perceived high levels of personal accomplishment, despite the critical illness or acuity of their patients, demanding patient families, rotating shifts, short staffing, and caring for dying patients. Most nurses felt that support systems were in place and that staff was accessible, but most respondents were undecided about the helpfulness of the support systems. Results suggest that support systems may significantly affect work satisfaction and feelings of accomplishment for BMT nurses.

Patient distress is a primary contributor to the highly stressful work environment of pediatric oncology nurses, and patient suffering is a major cause of job dissatisfaction (Barnard, Street, & Love, 2006; de Carvalho, Muller, de Carvalho, & de Souza Melo, 2005). Pediatric bone marrow transplantation (BMT) nurses work with young patients who suffer greatly from cancer as well as from BMT side effects. The critical complexity of patients and stressful work environment can lead to high stress, burnout, and, ultimately, high attrition rates among BMT unit nurses. Managing medical interventions has taken precedence in the BMT nursing role, and the emotional toll on nurses remains under-researched (Kelly, Ross, Gray, & Smith, 2000). Decter and Villeneuve (2001) reported that nurses are among the most overworked, stressed, and sick workers. A healthy and satisfied nursing workforce is important for patient safety and the achievement of positive patient outcomes (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; Laschinger, Shamian, & Thomson, 2001); therefore, the current study aimed to examine relationships among nurse stress, burnout, and perceptions of support systems in pediatric BMT work settings.

Background

Many nurses feel that they receive little education to prepare them for caring for dying patients or coping with death. Rodgers and Brown (2001) conducted a needs assessment interview with RNs on a BMT unit in Texas. The findings indicated that caring for dying children was a large stressor for the nurses in their practice (Rodgers & Brown).

Molassiotis, van den Akker, and Boughton (1995) examined level of job satisfaction, psychological difficulties related to work, stress, and useful stress-reduction techniques in 129 nurses and 26 doctors from 16 BMT centers in the United Kingdom. Eighty percent felt low personal accomplishment, more than 10% experienced clinical anxiety, and 0.8% of nurses and 3.8% of doctors experienced clinical anxiety, and 0.8% of nurses and 3.8% of doctors experienced clinical anxiety, and 0.8% of nurses and 3.8% of doctors experienced clinical anxiety, and 0.8% of nurses and 3.8% of doctors...
displayed overt depression. Sources of stress were rapid advances in BMT technology, excessive demands from patients and families, and excessive responsibility in working with dying patients. Most staff reported difficulties in their personal lives because of stress at work (Molassiotis et al.).

Molassiotis and Haberman (1996) studied burnout, psychopathology, and job satisfaction in inpatient and outpatient BMT nurses (N = 40). Four (10%) nurses experienced high emotional exhaustion, and most reported moderate (n = 21; 52.5%) or low (n = 9; 37.5%) emotional exhaustion. Seven (17.5%) and nine (22.5%) nurses reported moderate and low personal accomplishments, respectively. Ten (27.5%) exhibited manifestations of anxiety neurosis, and six (15%) were categorized as having borderline anxiety. In addition, outpatient nurses were significantly more satisfied than inpatient nurses in areas of professional development, professional support, training, and overall job satisfaction (Molassiotis & Haberman).

Grimm, Zawacki, Mock, Krumm, and Frink (2000) compared the emotional responses and needs of nonprofessional caregivers of adult patients undergoing BMT. Grimm et al.’s study involved an inpatient-outpatient model of BMT compared to studies in a traditional inpatient BMT setting. The inpatient-outpatient model incorporates intense outpatient care, medical hotel-like facilities, quick access to inpatient care, and a smooth transition between inpatient and outpatient settings. In the inpatient-outpatient model, BMT preparation, marrow harvest or reinfusion, and uncomplicated falls in blood counts are managed in the ambulatory setting, with the patient and family caregiver in their nearby residence. The family caregiver was a full partner in all physical care, emotional care, and monitoring after they completed an educational program designed for BMT caregivers (Grimm et al.). Overall, inpatient-outpatient caregivers scored significantly lower when compared with inpatient caregivers in areas of anger, anxiety, confusion, and fatigue and scored higher in areas of vigor (Grimm et al.). Inpatient-outpatient caregivers also were more satisfied with how their psychological needs were met compared to inpatient caregivers (Grimm et al.).

Researchers have examined factors that affect job satisfaction in oncology nurses. Cummings et al. (2008) found that leadership and working relationships with colleagues play an important role in work environment and nurses’ job satisfaction. Rheingans (2008) explored the relationship between patient symptom management and pediatric oncology nurses’ job satisfaction. Rheingans reported that the number and perceived effectiveness of symptom management interventions for patients were predictive of nurse distress and job satisfaction. In a study of pediatric oncology nurses, Barnard et al. (2006) found that patients’ symptom distress contributed to a stressful work environment and was correlated with perceived burnout, peer support, and feelings of personal accomplishment.

The literature demonstrates that BMT is a complex nursing specialty that contributes to high levels of stress and burnout in oncology nurses. Few studies have examined how stress, burnout, and perceptions of support affect nurses’ job satisfaction and retention in BMT settings. Additional research is needed in the area of identifying and assessing stressors and burnout factors in pediatric BMT nursing. As a result, this pilot study investigated perceived job stress, burnout, and support systems of inpatient pediatric BMT nurses.

Methodology

The current study used a descriptive nonexperimental design to describe stressors, burnout factors, and perceived support systems associated with pediatric BMT nursing. The study was designed to answer the following questions: What are nurses’ perceptions of work-related stress and burnout in pediatric BMT units? What do nurses on the BMT unit perceive to be the most stressful aspects of their job? What support systems are available to nurses in pediatric BMT units? Are the support systems perceived as helpful, visible, and accessible? How could the institution or program better support pediatric BMT staff?

Setting and Sample

The setting for the current study was a pediatric BMT center in a large, academic, pediatric medical center in the midwestern United States. The nurse-patient ratio at the center primarily averaged 1:2 but was 1:3 at times, depending on patient acuity. Most staff RNs worked 12-hour shifts from 32–36 hours per week. The nurses worked closely with physician hospitalists, nurse practitioners, patient-care assistants, and BMT attending physicians at the facility on a daily basis.

The current study used an accessible convenience sample of all eligible pediatric BMT nurses, ranging from new graduates to senior staff members. The only exclusion factor was traveling RNs because of the possibility of peripheral concerns or stressors not centered on BMT nursing at the institution.

Instruments

The Maslach Burnout Inventory (MBI) and a demographic-informational questionnaire were used to collect data from the staff pediatric BMT nurses. The questionnaire was used to collect basic, pertinent information not included in the MBI, such as years of work experience, years as a BMT nurse, predominant shift worked, and full-time or part-time status. The questionnaire also asked about perceptions of work-related stress and support systems in the pediatric BMT unit. Nurses ranked the following stressors in order of importance: critical illness or acuity of patients, dying patients, rotating shifts or schedule, short staffing, long work hours, and demanding families. Nurses then were asked whether they felt supported at work and whether current support systems were in place for staff to use, and if so, whether the support systems were accessible, visible, and helpful.

<table>
<thead>
<tr>
<th>Table 1. Maslach Burnout Inventory Rankings of Pediatric Bone Marrow Transplantation Nurses</th>
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<tr>
<td>RANK</td>
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<tr>
<td>n</td>
</tr>
<tr>
<td>Low</td>
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<tr>
<td>Moderate</td>
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<tr>
<td>High</td>
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N = 30

Note. Because of rounding, not all percentages total 100.
The MBI is a 22-item scale measuring burnout, which was defined in the current study as a syndrome combining emotional exhaustion, reduction of personal accomplishments, and depersonalization (i.e., nurses’ impersonal feelings and responses toward recipients of their care). The syndrome may affect those who work with people regularly. The MBI’s subscales focus on those three aspects of burnout syndrome (Maslach, Jackson, & Leiter, 1996).

The personal accomplishment subscale assessed nurses’ feelings of competence and achievements at work. A score of 39 or higher indicated feelings of low personal accomplishment, 32–38 indicated moderate feelings of personal accomplishment, and 31 or lower indicated high feelings of personal accomplishment. The depersonalization subscale measured nurses’ impersonal feelings and responses toward recipients of their care. A score of 13 or higher indicated high depersonalization, 7–12 indicated moderate depersonalization, and 6 or lower indicated low depersonalization. The emotional exhaustion subscale assessed nurses’ feelings of emotional overexertion and exhaustion caused by their work. Scores of 27 or higher indicated high emotional exhaustion, 17–26 indicated moderate emotional exhaustion, and scores of 16 or lower indicated low emotional exhaustion (Maslach et al., 1996).

The MBI has documented reliability as well as convergent and discriminant validity (Maslach et al., 1996). The reliability coefficients for each subscale were 0.9 for emotional exhaustion, 0.79 for depersonalization, and 0.71 for personal accomplishment.

Data Collection

After institutional review board approval was obtained, nurses were approached to participate in the current study. Survey completion by the nurses served as informed consent. The researcher distributed the MBI and demographic-informational questionnaires to one or two nurses at a time during various shifts and days of the week. Questionnaires were distributed at different times and days to avoid disrupting patient care and workflow for the nurses. Descriptive statistics of quantitative data and correlations using SPSS® 16 were formulated based on data from both tools.

Findings

Sample Description

The study sample consisted of 30 staff pediatric BMT nurses. Years as an RN ranged from less than one to 17 years ($\bar{X} = 5.2$ years). Years as a BMT nurse ranged from less than one to 12 years ($\bar{X} = 4.2$ years). The full-time equivalency (FTE) status of the BMT nurses ranged from PRN to 1 FTE; 19 (63.3%) worked 0.9 FTE. Fourteen nurses (46.6%) worked day shift, eight (26.7%) worked night shift, and eight nurses (26.7%) worked days and nights.

Work-Related Stress and Burnout

Nurses were asked to rank their top three work-related stressors. Perceptions of work-related stress were relatively consistent among short staffing, rotating shifts or schedules,
critical illness or acuity, dying patients, and demanding families. Critical illness or acuity of patients was the most stressful factor, and long work hours was the least stressful factor. Demanding families, rotating shifts or schedules, short staffing, and dying patients were perceived fairly equally as work-related stressors.

Nurses also completed the MBI to assess perceptions of burnout (see Table 1). Twenty-two (73.7%) perceived moderate to high levels of emotional exhaustion, and 10 (33.3%) surveyed reported moderate levels of depersonalization. However, 15 (50%) perceived high levels of personal accomplishment, despite the critical illness or acuity of their patients, demanding patient families, rotating shifts, short staffing, and caring for dying patients.

Relationships among nurses’ experience, perceptions of support, and stressors as well as the burnout subscales were analyzed using Pearson product moment correlations (see Table 2). Significant correlations were found among many variables. Years as a nurse and years as a BMT nurse were positively correlated with perceptions of visible support and feelings of personal accomplishment. Years as a nurse and years as a BMT nurse were negatively correlated with critical acuity of patients, emotional exhaustion, and depersonalization. The findings demonstrated that as years as a nurse and BMT nurse increased, levels of emotional exhaustion and depersonalization decreased and feelings of personal accomplishment increased. In addition, nurses felt less stress from the critical acuity of patients as years as a nurse increased. Shift work also was moderately positively correlated with perceptions that support was in place, suggesting that nurses who work day shift feel that support systems are more available than nurses who work night shift.

**Most Stressful Aspects of Nursing**

The second research question aimed to clarify what staff BMT nurses considered the most stressful aspects of their job (see Table 3). Nurses were asked to rank their highest stressor; no significant variation was found among critical illness or acuity of patients, short staffing, rotating shifts or scheduling, or dying patients. Only one nurse responded that demanding families was most stressful, and no nurses ranked long work hours as most stressful. Interestingly, nurses who perceived that support systems were accessible, visible, and helpful felt less stress from demanding families.

**Support Systems**

The third research question asked about support systems that were available to the pediatric BMT nurses and whether the systems were helpful, visible, and accessible (see Table 4). Twenty-five nurses (83.3%) felt supported on their unit. Twenty-seven (90%) felt that support systems were in place, and 19 (63.3%) stated that support systems were accessible to the staff. However, nine (30%) reported that support systems on the unit were not visible, and 17 (56.7%) were undecided about the helpfulness of the support systems. As length of time as a BMT nurse increased, participants increasingly reported a lack of visibility of their support systems. As expected, a strong correlation existed among perceptions that support systems were accessible and that they were visible and helpful.

**Improving Support for Staff**

The fourth research question explored how to better support the pediatric BMT staff with an open-ended single response item that asked, “What would make you feel more supported at work?” Responses fell into three general categories. Ten nurses (33.3%) reported that better scheduling, staffing, and assignments would improve perceptions of support. Ten (33.3%) reported that improved teamwork and peer recognition would improve support. Seven (23.3%) stated that leadership and management need to be more supportive. One (3.3%) said that better pay would improve perceptions of support, and one (3.3%) reported that knowing families are satisfied improved support. One nurse (3.3%) wrote, “The longer you are here, the harder it is to be here.” Surprisingly, nurses who reported that support systems were in place and felt supported still were emotionally exhausted. However, nurses who were emotionally exhausted also had impersonal feelings toward their patients (depersonalization) and felt low personal accomplishment.

**Discussion**

The current study investigated and analyzed nurses’ perceptions of work stress, burnout, and support system availability on a pediatric bone marrow transplantation unit at a large pediatric academic medical center in the midwestern United States. Findings demonstrated that the critical complexity of patients and the environment in which BMT nurses work can lead to stress, burnout, and, ultimately, poor retention. Nurses also felt that support systems were in place but were undecided on their helpfulness. The findings were similar to Molassiotis et al.’s (1995); however, sources of stress in Molassiotis et al.’s study were rapid advances in BMT technology, excessive demands from patients and families, and excessive responsibility in working with dying patients; major sources of stress in the current pilot study were

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**Table 3. Stressors in Pediatric Bone Marrow Transplantation Nursing**

<table>
<thead>
<tr>
<th>STRESSOR</th>
<th>n</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>Short staffing</td>
<td>8</td>
<td>26.7</td>
</tr>
<tr>
<td>Rotating shifts or schedules</td>
<td>8</td>
<td>26.7</td>
</tr>
<tr>
<td>Critical illness or acuity</td>
<td>7</td>
<td>23.3</td>
</tr>
<tr>
<td>Dying patients</td>
<td>5</td>
<td>16.7</td>
</tr>
<tr>
<td>Demanding families</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Undecided</td>
<td>1</td>
<td>3.3</td>
</tr>
</tbody>
</table>

N = 30

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**Table 4. Pediatric Bone Marrow Transplantation (BMT) Staff Nurses’ Perceptions of Support Systems**

<table>
<thead>
<tr>
<th>PERCEPTION</th>
<th>n</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>Support systems are in place.</td>
<td>27</td>
<td>90</td>
</tr>
<tr>
<td>Feel supported on the BMT unit.</td>
<td>25</td>
<td>83.3</td>
</tr>
<tr>
<td>BMT support systems are accessible.</td>
<td>19</td>
<td>63.3</td>
</tr>
<tr>
<td>Undecided about helpfulness of BMT support systems</td>
<td>17</td>
<td>56.7</td>
</tr>
<tr>
<td>BMT support systems are not visible.</td>
<td>9</td>
<td>30</td>
</tr>
</tbody>
</table>

N = 30

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critical illness or acuity of patients, demanding families, shift or scheduling and staffing issues, and dying patients.

Despite the complexity and critical nature of the BMT environment and the identified stressors, many nurses responded positively on feelings of personal accomplishment associated with their work. In contrast to Molassiotis et al. (1995), the current sample scored significantly higher on personal accomplishment, despite the fact that perceptions of emotional exhaustion and depersonalization were moderately high.

The current study’s findings also were similar to those of Molassiotis and Haberman (1996). BMT nurses in Molassiotis and Haberman’s study perceived moderate to high levels of emotional exhaustion as well as moderate to high levels of personal satisfaction, satisfaction with standards of care, salary, and professional support. However, Barnard et al. (2006) found only weak to moderate positive correlations between peer support and personal accomplishment and no relationship between supervisor support and burnout; however, results did indicate that oncology nurses viewed supervisor support as important. These studies suggest that support systems for nurses in high-stress environments may play a significant role in work satisfaction and feelings of personal accomplishment, but the results are inconclusive.

Limitations of the current study were its small convenience sample, single setting, and use of self reports only. Therefore, the results cannot be generalized to other populations.

Conclusions

Despite moderate to high levels of emotional exhaustion and depersonalization as well as the complexity and critical nature of a BMT environment, nurses in the current study perceived moderate to high levels of personal accomplishment. Most nurses felt that support systems were in place on the unit but were undecided on the helpfulness of the systems; therefore, support may be the mitigating factor in improving feelings of personal accomplishment. Experienced nurses perceiving a lack of available support was a surprising finding; additional studies are warranted to examine the effects of support on job satisfaction, work commitment, and retention of nurses in this complex nursing specialty.

Inpatient pediatric BMT nurses provide care for medically fragile patients for several weeks to months throughout the course of their BMT process. The current study’s results indicated that the participants perceived high levels of personal accomplishment associated with pediatric BMT nursing, despite the stress and acuity of their job. Concerns about support systems and their current helpfulness to the staff warrant additional investigation and intervention. Future studies are needed to determine what impact changes to the current support system model would have for staff nurses on pediatric BMT units. Differences in adult and pediatric BMT settings also should be explored.

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