ORIGINAL ARTICLE

General Health Status and Burnout of the Hematopoietic Stem Cell Transplantation Nurses in Tehran

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Abstract

Background

Nowadays, it has been found that the mental state of caregivers may have a noticeable effect on both patient and caregiver's health. This study was conducted to determine the burnout and general health status of the hematopoietic stem cell transplantation nurses in Tehran, Iran.

Methods

In a cross-sectional study, burnout and general health status of 65 hematopoietic stem cell transplantation nurses in Tehran were examined. Each subject filled out two questionnaires in 2010: The General Health Questionnaire and the Maslach Burnout Inventory as well as demographic information. The data were gathered after obtaining the participants' agreement to take part in the study.

Results

The majority (67.7%) of the nurses had scores lower than the cut off score of the General Health Questionnaire-28. The majority of the nurses were in the low level in terms of emotional exhaustion (50.8%), depersonalization (66.2%), and personal accomplishment (58.5%). The general health status score of the nurses was positively related to emotional exhaustion and depersonalization scores. However, there was an inverse relationship between health status and personal accomplishment scores.

Conclusion

The result of the current study did not have a significant agreement with the general view indicating that working in hematopoietic stem cell transplantation units leads to an increase in burnout levels. Hence, the majority of nurses were in low levels in terms of emotional exhaustion and depersonalization and in good condition in terms of general health status; there is a need for conducting further studies in order to find out the reason behind these differences.

Keywords: Burnout; Cancer; General health status; Hematopoietic stem cell transplantation; Iran; Nurse; Oncology

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Introduction

Health organizations are one of the most important fields of health sustained development in human societies, which have a crucial role in maintaining humans' wellbeing. Nurses are the main staff in these organizations and have a significant role on the overall process of patients› care and treatment. Since nurses' health, as care providers, has bearing on the quality of the care offered by them, achieving the optimal efficiency of the nurses is of great importance.[1] Generally, previous studies have revealed that nurses' mental health is at risk as compared with other people in society due to several reasons, such as the stressful nature of this job, work-related pressure, necessity to deal with unpredictable situations, work shifts, and organizational and individual factors.[2] Nowadays, it has been found that the mental state of caregivers may have a noticeable effect on both patient and caregiver's health.[3] However, recent studies indicate the ever increasing growth in burnout and mental illnesses, specially the experience of depression and anxiety among the health care staff in general, and among the nurses in particular.[4-10]

Due to coping with the stresses arisen by factors such as patients' mortality, care of the patients with complex needs, communicational issues, low social support, high job stress, no job security, low rate of salary and payments, the abundance of patients to handle during the day, insufficient information to make decisions during the emergency situations and responsibility for such decisions, mental pressures and struggles arisen by nurses avoiding to make no mistakes, confrontation with aggressive behaviors and threatening situations at their work place, and night shifts, health care staff, including the nurses, are made prone to have a high potential for poor job performance, psycho-social problems, and finally burnout.[8,11,12]

Burnout is a psychological syndrome consisting of emotional exhaustion (EE) (the feeling of a discharge in mental forces), depersonalization (DP) (negative and cold reaction followed by excessive inattention toward the recipients of care), and decrease in the sense of personal accomplishment (PA) which leads to a negative self image, a negative attitude toward job, and lack of relationship with visitors, which consequently affects the individual, career, and organizational relationships to a large extent,[2,4,5,8,11-14] imposing a considerable financial cost to the organizations,[11] and also resulting in patients' dissatisfaction,[2,4,13,15] due to the consequences of offering a low quality care.[16] As a result, the recognition and prevention of burnout can contribute to the promotion of the individuals' health care and the quality of the offered services.[2] Many studies have been conducted in Iran for assessing the factors which effect the nurses' burnout,[2,4-11,13,14] and their general health.[1,7,17] These studies suggest that different clinical working fields appear to have an impact on the nurses' burnout.[18] As an example in this regard, through a study of various parts of hospital, researchers showed the effect of environment on burnout.[9] In the same direction, the studies indicated a high rate of burnout and mental disorders among the oncology units' staff.[8,15,19] Despite the large number of research performed on the patients undergoing hematopoietic stem cell transplantation (HSCT), less attention is given to the staff of specialized and stressful units of HSCT; actually, the nurses working in these units are often neglected. The nurses who work with the patients undergoing HSCT are in a more critical condition. The literature shows that work in the HSCT units requires complex nursing skills which involve high levels of stress, burnout, and as a result high attrition rates among the HSCT units' nurses.[20] Nevertheless, few studies have been conducted in this area. For instance, some studies have been carried out abroad, such as the one performed in the United States on 30 bone marrow transplantation

(BMT) staff nurses from a large pediatric medical center in the Midwestern United States.[20] These researchers reported that the critical nature of the illness or the acuity of patients were the most stressful factors.[20] Researchers mentioned the most important stress-inducing sources such as the excessive responsibility involved in working with dying patients, rapid advances in BMT technology, and the excessive demands on the side of patients and their families for the nursing and medical staff.[21]

Although HSCT units are considered as one of most stressful wards with high job-related pressure and their nurses are responsible for taking care of the painful, disparate, and anxious patients with particular recognition and prognosis. Considering the fact that the atmosphere of these units in Iran is different from those in other countries (in terms of structure, job relationships, and patients' reactions), no study has been conducted on this group of nurses in Iran yet. Hence, this study was carried out to determine the burnout and general health status of the HSCT nurses in Tehran, Iran.

Materials and Methods

This research is a cross-sectional descriptive-analytical study. There are three HSCT centers in Tehran located in Shariati, Vali-Asr and Taleghani Hospitals. The population of the study consisted of all the nurses working in these HSCT units. Inclusion criteria for the study were an academic degree in nursing and work experience in HSCT units. The study sample consisted of 65 staff HSCT nurses. Data were collected in 2010 through a two-part questionnaire. The personal information such as age, gender, education level, marital status, number of children, monthly income, years of work experience, number of years working as a HSCT nurse, working shifts, and the amount of overtime were added to questionnaires.

General Health Questionnaire

The third part of the questionnaire was the general health questionnaire (GHQ-28). This tool cannot be used to diagnose specific psychiatric disorders, but rather it identifies potential psychiatric morbidity.[18,22] In order to conduct the study, a 28-item questionnaire with a grading scale of 0 to 3 was employed. The higher scores show the increase of the symptoms. This test evaluates the following aspects: physical complaints, anxiety and sleep disorder, social dysfunctions, and depression. Each of these aspects involves seven questions. Generally, the test score varies between 0 to 84 and its cut off score was chosen to be 23. The scores lower than the cut off point indicated a healthy status. Also, the scores of 14 to 21 demonstrated severe disorders, whereas the scores of 7 to 13 represented medium problems and the score of 0 to 6 indicated a healthy status.[22] This questionnaire is a standard tool with the reliability of 0.88 in Iran.[1]

Maslach Burnout Inventory

The second part of the questionnaire included 22 questions pertaining to Maslach burnout inventory (MBI) which consists of EE (9 questions), DP (5 questions), and PA (8 questions). This tool was designed from two aspects of frequency and intensity. The employed scale was the Likret and the scoring of these frequencies varied from 0 (never) to 6 (every day). The grades for each aspect were separately reported and on the basis of the obtained score, the subjects were categorized into one of the groups including Low, Medium, and High Burnout. For EE and DP subscales, high mean scores reflect a high level of burnout whilst for the PA subscale, high scores reflect low levels of burnout.[23] The normative scores of the MBI are presented in table 1.

The MBI has documented reliability and validity, and internal consistency.[20,24] After going through the translation and retranslation phases, we evaluated the reliability of this tool in Iran; its rate was

Table 1: Scores of the MBI

Subscale	Low		Medium		High	
	Frequency	Intensity	Frequency	Intensity	Frequency	Intensity
EE	≤17	≤25	18-29	26-39	≥30	≥40
DP	≤5	≤6	6-11	7-14	≥12	≥15
PA	≤33	≤36	34-39	37-43	≥40	≥44

EE: Emotional Exhaustion; DP: Depersonalization; PA: Personal Accomplishment

reported to be 0.86 by test-retest,[11] and 0.96 by Cronbach's coefficient α.[25]

All the data were analyzed using SPSS software. Descriptive statistics, correlations, Fisher's exact test, and Chi-squared were used for data analysis. A *P* value of 0.05 was considered to be significant for comparison of the results.

This research was approved of by the Research Council of Tehran University of Medical Sciences. To conduct this study, first permission was obtained from the university and hospitals' managers. All research samples were aware about the research, its objectives and the participant's freedom in leaving the study at any time. Also, they were assured of the privacy of their individual information. The data were gathered after obtaining the nurses' agreement to participate in the study.

Results

The mean age of the subjects was 31.12 (SE=0.92 years; range=23-53 years), among which the females allocated the majority (96.9%) to themselves with bachelor degrees (98.5%). Most nurses were single (53.8%) and did not have any children (72.3%). The working time as a nurse ranged from seven months to 28 years (M=7.02, SE=0.82 years). The working time as an HSCT nurse ranged from one month to 19 years (M=3.90, SE=0.6 years). Twelve nurses (18.5%) worked in day shifts, two (3.1%) worked in night shifts, and fifty nurses (76/9%) worked both days and nights. The nurses' average overtime was (M=33.77, SE=4.02 h/months) ranging from 0 to 160 h/months. A small ratio of samples (16.9%) had a second job.

The findings of the general health status suggest that the majority of the samples (67.7%) were in the healthy range and just about 32.3% of them had potential morbidity in their general health conditions. The results of general health condition of the samples are shown in table 2. The average score of GHQ was (M=22.66, SE=1.51, Median=21).

The findings of the Burnout Questionnaires regarding the frequency indicated that about half of the samples (50.8 %) had low EE and 13.8% of them had high EE. The majority of the samples (66.2%) had low DP, while 21.5% of them obtained high scores within this subscale. In the PA subscale, 58.5% of the samples felt like having low accomplishment, while 20.0% of them had the medium sense of accomplishment. Table 3 shows the frequency distribution of various aspects of the burnout.

In terms of burnout intensity, the majority of samples (66.2%) in the subscale of EE,

Table 2: GHQ Rankings of HSCT Nurses

	Physical compliant		Anxiety		Social dysfunction		Depression	
Rank	N	%	N	%	N	%	N	%
Healthy	35	53.8	32	49.2	29	44.6	57	87.7
Medium problem	26	40.0	29	44.6	33	50.8	6	9.2
Severe disorder	4	6.2	4	6.2	3	4.6	2	3.1
Mean±SE	6.72±.46		6.66±.52		6.72±.44		2.55±.42	
Median	6.0		7.0		7.0		1.0	

N=65

Table 3: MBI rankings of HSCT nurses

	EE		DP		PA	
Rank	**N**	**%**	**N**	**%**	**N**	**%**
Low	33	50.8	43	66.2	38	58.5
Moderate	23	35.4	8	12.3	13	20.0
High	9	13.8	14	21.5	14	21.5
Mean±SE	18.14±1.28		5.49±.73		30.98±1.2	
Median	16.5		3.0		31.0	

EE: Emotional Exhaustion; DP: Depersonalization; PA: Personal Accomplishment; N=65

and about half of them in the subscale of DP (53.8%) and PA (52.3%) had low scores as well.

The data obtained as to the relationship between various subscales of burnout and the general health status of the nurses revealed that the general health status of the nurses was positively related to EE and DP. These relationships were at the low to medium levels. However, there was an inverse low relationship between health status and PA subscale. Table 4 demonstrates the relationships between different subscales of these two variables.

The findings as to the relationship between demographic variables and general health status of the samples revealed that there was a significant relationship between the monthly income and the general health status (Fisher's exact test, P=0.047). Moreover, there was an inverse low relationship between the experience of the nurses in HSCT units and anxiety subscale (r=-0.276). The Fisher's exact test showed a significant relationship between work shift and PA; the PA of the nurses was higher for those with constant work shift than those with rotating shifts (P=0.008).

The data obtained from the relationship between demographic variables and the frequency of burnout aspects showed that there was an inverse low statistically significant relationship between experience in HSCT units and DP (r=-0.278, P=0.033), implying that the nurses with more experience history in these units had lower DP. However, the other demographic variables did not show any statistically significant correlation with the frequency of burnout subscale.

Discussion

The results of this study reveal that the majority of the studied samples had scores lower than the cutoff point of the GHQ-28 and were generally in an acceptable level. On the other hand, about 32.3% of the samples had scores higher than the cutoff point. This value is low in comparison with some other studies. For instance, in some studies 43% and 55.3% of the nurses working at educational hospitals of Tehran University of Medical Sciences and Isfahan University of Medical Science had scores higher than the cutoff point, respectively.[1,2]

Table 4: Correlations between GHQ and MBI subscales in HSCT nurses

	MBI					
	EE		DP		PA	
GHQ	**r_s**	**P**	**r_s**	**P**	**r_s**	**P**
Physical complaint	0.512	0.0001	0.445	0.0001	-0.136	0.281
Anxiety	0.602	0.0001	0.447	0.0001	-0.292	0.018
Social Dysfunction	0.347	0.005	0.086	0.498	-0.257	0.039
Depression	0.501	0.0001	0.473	0.0001	-0.268	0.031
Total	0.636	0.0001	0.491	0.0001	-0.300	0.015

EE: Emotional Exhaustion; DP: Depersonalization; PA: Personal Accomplishment

In the current study, about half of the samples in terms of physical complaints and anxiety symptom and also the majority of them in terms of depression symptom were in the healthy range. Also, about half of the samples were in medium range regarding social dysfunctions. The average score of anxiety and depression in the current study was lower than that of Molassiotis and Haberman's study; they investigated the nurses working in BMT units.[26] For some reasons, such as the difference in the applied tools for measuring depression and anxiety and also the difference in the studied population, these values were different. The results of this study, as to general health status, confirmed that of the study conducted by Mehrabi and Ghazavi, except for the physical health status of the nurses had higher number of healthy nurses in this study.[1]

The findings of the burnout subscales for nurses working in HSCT units showed that the average EE score regarding frequency was in the medium range, while the average DP and PA scores were both in the low range. Unfortunately, in one study, which was closer to the objectives of the present study, the average of burnout subscales was not reported.[20] In the present study, the average score of the three subscales of burnout was lower than that of Molassiotis and Haberman' study.[26] The growing advances in HSCT technology, the decrease in patients' mortality, and the difference in the population of these two studies can be among the alleged reasons for this difference. The other studies performed on different nursing groups in Iran yielded similar results. These studies reported the average EE in medium level,[2,5,8,13] DP in low level,[5,13] and PA scores in low level.[8] On the other hand, in some other studies an average score of both DP,[2,8] and PA was reported in medium level.[2,5,13] The studies in other countries reported an average EE score between 12.9±7.5 to 31.5±9.1, the average DP between 4.0±5.1 to 13.1±5.0, and the average of PA between 31.1±10.5 to 43.4±2.9.[23,24,27-31]

In the present study, the results imply that the majority of the samples were in low level in terms of EE, DP, and PA. Several studies on nurses' burnout rate indicated different results. In a study, about half of the studied nurses (46.7%) presented the medium level in the EE, 63.3% of them in the low level of DP and 50% were in high level of PA.[20] These results are in agreement with DP subscale of the present study, though they vary in the other subscales.

It is surprising that in the present study, despite the criticality of the disease and acuity of patients, the needs of patients and their families, the rotating shifts, and caring for the dying patients, most nurses were in low levels in terms of EE and DP aspects. However, the majority of them obtained low scores in terms of PA. Although most conditions for this study were the same as those for Gallagher and Gormley's research, the PA of their samples was higher.[20] One of main differences of these two studies is that in their study, just 30 BMT staff nurses from a pediatric medical center were examined,[20] whereas in the present study, besides the nurses working in the pediatric HSCT units, those in the adults' units of HSCT were examined as well. After comparing the results of pediatric ward in the present study (BMT-3 in Shariati Hospital) with their study, the difference in PA subscale was evident. It seems that the presence of supportive systems and different organizational structures in both groups has probably led to this difference in the PA aspect.

The results of one study are in agreement with those of the current study in DP subscale.[26] In some other studies performed on Iranian nurses working in several parts, it has been reported that the majority of the samples are in low levels in EE,[2,4,25] DP,[2,10,32] and PA subscales,[2,4,25] in terms of frequency and their findings were in accordance with the results of the present study. However, in

some other studies, the majority of samples were in the medium,[32] to high levels,[10] in EE, in the medium,[25] to high levels,[4] in DP, and in the medium level,[32] in PA subscale.

As mentioned before, the majority of samples are in the low level in terms of EE and DP; nonetheless, regarding the stressful setting of these nurses' workplace, the obtained statistics are satisfying. However, necessary measures are needed to be taken in order to decrease the nurses' burnout, particularly those dealing with patients who need multiple and complicated cares. In general, the low scores of the majority of the nurses in these two aspects might have resulted from suitable coping of the nurses with their workplace. Several studies show that people with higher mental abilities have a lower rate of DP.[32] The low rate of DP can show the good and humane relationship among the organization's staff.[32] Still, regarding the complexity of the subject and role of multiple factors in DP, the role of genetic, family, and social factors should not be neglected.

Recent studies show that patients' death is the main source of distress for HSCT nurses, consequently creating grief in them. Being unable to overcome the grief can lead to EE and mental problems.[26] In 2008, Iran ranked third in BMT in the world. In the Shariati Blood and BMT Research Center, more than 3,000 BMTs have been performed up to now.[33] This center has now become one of the leading BMT centers in the Middle East. 72 percent of the BMT recipients have resumed a normal life.[34] Probably, the advances in technology and the low mortality rate of patients in these units as a main distress-inducing source for the nurses are the reasons that nurses were in lower level in terms of EE and DP compared with other populations. Unfortunately, most nurses were in a low level in terms of PA. Sense of accomplishment and self-efficacy can be developed whenever the individual is able to manifest his/her potentials.[2] Decrease of PA might be an indication of the negative attitude towards self and job, as well as lack of willingness, interest and satisfaction towards the job and decrease of self-esteem among the individuals.[2] Some studies showed that the supportive systems can play a key role for nurses in highly stressful settings by virtue of their sense of PA.[20,26] Hence, it seems that through taking necessary measures, it is possible to take big steps toward increasing the PA of the nurses and decreasing their burnout. Through providing efficient supports for nurses, they would be able to express their feelings, talk about their concerns, and look for professional supports.

In general, the result of this study did not have a significant agreement with the general view that working in HSCT units leads to increase of burnout levels. As it was previously shown, the majority of the studied samples were in the low levels in terms of both EE and DP, which is more satisfactory in comparison to the result of many conducted studies on the nurses. Many studies showed that burnout is mainly created by organizational factors and is somehow in a process state rather than constant state.

The results of this study imply that the majority of the studied samples obtained scores lower than the cutoff point in terms of general health status. Therefore, it seems that the nurses in this study were in good condition in terms of individual parameters.

Based on the results of this study, a statistically significant relationship existed between various aspects of burnout and nurses' general health status. The more the scores in different aspects of general health status increase, the more the score for EE and DP. This signifies the existence of a direct relationship between these parameters. On the contrary, there was an inverse relationship between general health status of the nurses and PA. Some studies indicated that there is a significant relationship between burnout subscales and nurses' mental health.[2] Some researchers

reported that all aspects of burnout have a significant relationship with depression.[26] Moreover, some researchers reported that EE was strongly associated with the risk of psychiatric morbidity,[18] which is in agreement with the current study. On the other hand, they did not find any significant relationship between the risk of psychiatric morbidity and DP/PA,[18] which is in contrast with the results of this study. Regarding the relationship between various aspects of general health and burnout, it is required to make an effort to decrease the burnout and provide nurses with appropriate means to well being in various levels. Consequently, the promotion in health level and the decrease of burnout would enable the nurses to provide more qualified nursing care, which in turn leads to an increase in patients' satisfaction.

In the present study, the majority of the samples were female. Nursing is a female-dominant profession in Iran, as in other countries.[35] According to the Ministry of Health and Medical Education in Iran, nurses in Iran are mainly female. In 2009, it was reported that 79.5% of Iranian nurses were female.[36] The results of this research on the relationship between demographic variables and nurses' general health status showed that as the length of experience at HSCT units increases, the nurses' anxiety level decreases; this implies promotion in nurse's adaptation level during their work in these units. Furthermore, the results as to the relationship between demographic variables and the burnout of nurses revealed that there was a significant relationship between just a few variables. For instance, working time as a HSCT nurse was negatively correlated with DP. Some similar results were reported in other studies. For instance, studies indicated that as years of working as a BMT nurse increased, levels of DP decreased accordingly.[20] Researchers mentioned that clinical experience can protect the staff from the occurrence of EE since it teaches them how to control their emotions and unfavorable events during the long years of work.[26] These findings are in agreement with the results of the present study, so the managers must strongly concentrate on novice staff, create more useful and constructive communications and career education plans for them, and pay attention to their job security in order to decrease their burnout level and the danger of their social isolation.[32]

Another significant result of this study was the relationship between nurses' work shift and the frequency of PA; the majority of nurses working in fixed work shifts (50%) had a medium PA, while the majority of those working in rotating work shifts (66.0 %) had a low PA. These findings confirm this claim that the nurses with fixed work shifts can show their potential and capabilities in a better way and as a result enjoy further sense of success in contrast with those who work in rotating shifts. Callagher and Gormley did not find any significant relationship between burnout and work shift; yet, they reported that the nurses who work in day shifts believe that the supportive systems are more available for them than for those who work in night shifts.[20]

A limitation of the current study was the exclusive use of self reports, but as stress is an experience based on the perception of a mismatch between demands and resources to meet those demands, subjective report has to be paramount.[30] Furthermore, although we recruited samples of all HSCT units located in Tehran and gained a high response rate, we suspect the generalizability of these findings to Iran or other countries.

It generally seems that the majority of nurses participating in this research are trustworthy in their performance, in spite of the fact that they are providing care for patients who are mainly in need of complicated cares. Hence, by attending the fact that burnout in this study is lower than those values obtained in other studies, and also the fact that the nurses in this study were in good health condition, there is a need

for conducting further studies in order to explore the reason behind these differences. Probably, the amount of support received by these nurses is higher than that received by those working in other wards; or maybe the decrease of the mortality rate in patients undergoing HSCT in the last years serves as a factor to decrease the nurses' burnout. Besides, the other organizational conditions of these fields might be in better status since the nurses have efficiently adapted themselves to the existing conditions.

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