JECT. 2004;36:44–50
The Journal of The American Society of Extra-Corporeal Technology

A National Study of Job Satisfaction and Burnout Among Perfusionists

Mary Murphey Ames, BS; Anne Osborne Kilpatrick, DPA; James Zoller, PhD; Joseph J. Sistino, MPA, CCP; Mindy Blackwell, MS, CCP; Jeffrey Acsell, BS, CCP

Medical University of South Carolina, Charleston, South Carolina

Presented at the 41st International Conference of the American Society of Extra-Corporeal Technology, Las Vegas, Nevada, March 2003

Abstract: A national qualitative survey of perfusionists to assess their level of job stress, career satisfaction, and burnout in various organizational settings was performed. The hypothesis for this study is incorporated into the following research questions. First, is there an association between job satisfaction and burnout among perfusionists? Second, is there an association between level of burnout and intention to leave their job or profession among perfusionists? Third, is there a difference in job satisfaction and burnout across different organizational affiliations of perfusionists? Invitations to participate in the survey were sent by electronic mail to the 1478 AmSECT members with an e-mail address. To categorize perfusionists, the Phase Model of the Maslach Burnout Inventory (MBI) was used. It is based on the Maslach Model, but extends it by suggesting the order of severity in which persons experience burnout. Two hundred eighty-three responses were received, with the following results. As burnout increases, job satisfaction decreases. As burnout pressure increases from low to high, it is associated with a greater intention of perfusionists to leave their jobs for a lateral move or demotion within 6 months. There is insufficient evidence to show a difference between employee satisfaction and burnout based on organizational affiliation. The perfusionists who answered the inquiry seem to be clear about their role at work, to have adequate resources, and to feel they are treated fairly by supervisors. Organizational climate, communication, training, participation, trust, and culture are evaluated positively. Although the respondents considered interdepartmental communication adequate, higher management or corporate communication is portrayed as needing improvement. When the MBI scores are divided into the eight phases and then compressed into the three subphases, 42% of the perfusionists surveyed are categorized as low burnouts, 20% of the perfusionists as moderately burned out, and 38% were in the high burnout group. It will be important to use this information as a benchmark and follow the profession as it changes over the next few years. **Keywords:** perfusionists, burnout, Maslach Burnout Inventory (MBI), job satisfaction. *JECT. 2004;36:44–50*

Within the job stress illness literature, the study of burnout has more than a 25-year history (1). Job burnout has been conceptualized in many different ways; however, the most cited definition is a syndrome of emotional exhaustion, depersonalization of others, and a feeling of reduced personal accomplishment (2). Because of the nature of their work, professionals in health care and such other fields as teaching, policing, and human services are thought to be at especially high risk for burnout (3).

Burnout is a risk factor for personal dysfunction and negative work-related attitudes. It has been associated with reports of physical exhaustion and illness, increased use of alcohol and drugs, marital and family conflict, and psychological problems (3,4). The negative work-related attitudes include feelings that the worker has arrived at the point where he or she has little to nothing to contribute to one's work, judging patients as somehow deserving of their troubles, and thinking that one's accomplishments on the job fall short of one's expectations, leading to negative evaluations of one's performance on the job.

In the workplace, burnout can lead to potentially serious consequences for professionals, their clients, and the larger settings in which they interact. For example, research indicates that among health care professionals, burnout can lead to deterioration in the quality of service (5). Burnout has been associated with turnover, absenteeism, and low morale. Even in such a high-risk profession as medicine, risk of burnout varies. For example, medical specialties differ widely in their job characteristics, in ways that appear to affect the prevalence of burnout (1,6,7). This is not to say that any medical specialty is immune to burnout, particularly in terms of emotional exhaustion and depersonalization (8,9).

Address correspondence to: Mary Murphy Ames, BS, 2009 Highland Avenue, Florence, SC 29501. E-mail: MaryMurpheyAmes@aol.com

The standard measure of burnout is the Maslach Burnout Inventory (MBI) (10). Most burnout studies in the United States and worldwide rely on one of the versions of the MBI. The MBI, an instrument previously used with speech pathologists (11), physical therapists (12), music therapists (13), psychiatric nurses (14), hospice nurses (15), occupational therapists (16), social workers (17), pharmacists (18), dentists (19), VA administrative personnel (20), emergency physicians (21), correctional officers (22), oncologists (23), radiologists (24), teachers (25), and emergency medical technicians (26) assesses burnout by requiring respondents to rate how frequently they experience certain attitudes and feelings characteristic of burnout. The MBI includes statements that respondents rate on a scale ranging from 1 (very much like me) to 7 (very much unlike me). Evidence of the fact that the MBI is widely used and accepted is the fact that it has been translated into Arabic, Italian, French, German, Spanish, and Polish (27). The results of the MBI reflect a continuum of burnout, burnout not its presence or absence (28).

The three main components of the MBI are emotional exhaustion, depersonalization, and reduced sense of personal accomplishment. The first component, or phase, of burnout is emotional exhaustion. It is considered to be the most important of the three components. Emotional exhaustion is characterized by feelings of being emotionally drained. The development of negative attitudes and feelings toward the recipients of care is the definition of depersonalization. A reduced sense of personal accomplishment is described as a growing reduction of self-competence and overall achievement in the job (5).

The Phase model of the MBI was used to categorize perfusionists as to their level of burnout (29). It is based on the Maslach model, but extends it by suggesting the order of severity in which persons experience burnout and the progression through these phases, from not burned out at all to high scores on all three dimensions. The least problematic subscale is depersonalization, and the most virulent is emotional exhaustion. The eight phases have been compressed into three levels: low burnouts Phase I–III; intermediate or average Phases IV–V; and high burnout Phases VI–VIII (Table 1).

The purpose of this research survey is to assess the level and effects of burnout and job satisfaction of perfusionists in various organizational settings. It will determine whether there is an association between job satisfaction and certain demographic and environmental variables and/or their intention to leave the field or profession.

The hypotheses for this study are incorporated into the following research questions: First, is there an association between job satisfaction and burnout among perfusionists? Second, is there an association between level of burnout and intention to leave their jobs or professions among perfusionists? Third, is there a difference in job satisfaction and burnout across different organizational affiliations of perfusionists? Making these correlations and intervening before an avoidable, regretful outcome occurs would be of great benefit to the perfusion community.

MATERIALS AND METHODS

Following approval from the Institutional Review Board (IRB), invitations to participate in this national qualitative survey were sent by electronic mail to the 1478 members of the American Society of ExtraCorporeal Technology (AmSECT) e-mail list. A cover letter was sent to these members that described the purpose of the study and encouraged participation. Two reminder letters followed up the initial letter. The study population was inclusive for practicing perfusionists. Participation was voluntary, confidential, and anonymous. Individuals completed the survey by accessing a web page at a URL provided in the cover letter.

Using selected items from model questionnaires already constructed and validated previously for other healthcare professionals (10,30,31), a tool was constructed to reflect the demographic information, work history, and the job satisfaction of perfusionists. The MBI was the main part of this survey. It was used to measure the frequency of burnout. The scale consisted of 22 items comprising the three subscales. Emotional Exhaustion (EE) (7 items) assessed feelings of being emotionally overextended and exhausted by one's work. Depersonalization (DP) (7 items) assessed unfeeling and impersonal response toward recipients of one's care. Personal Accomplishment (PA) (8 items) assessed feelings of competence and successful achievement in one's work with people. It should be noted that high

Table 1. The phase of the Maslach Burnout Inventory.

	Phases of Burnout							
Phases	1	2	3	4	5	6	7	8
Collapsed phases	Low			Intermediate		High		
Depersonalization	L	H	L	H	L	H	L	H
Emotional exhaustion	L	L	H	H	L	L	H	H
Personal accomplishment	L	L	L	L	H	H	H	H

L = low score from specified subdomain; H = high score from specified subdomain.

levels of EE and DP and low levels of PA are anticipated in the individual who is burned out (10). Other components of this survey asked questions in the categories of role clarity, resources, role conflict, potential turnover, demographics, employee satisfaction, organizational climate, communication, training, participation, and vitality (30,31). This Likert-type scale survey (32) was specifically generated to encompass the health history, social history, and daily life activities, thoughts, and feelings of practicing perfusionists.

Analysis of the data was done using Statistical Package for the Social Sciences for Windows (SPSS). Basic descriptive statistics were gathered for demographic data. One-way analysis of variance (ANOVA) was used to determine if there was a statistically significant relationship between job satisfaction and burnout. A nonparametric chi-square test was used to determine if there was an association between level of burnout and intention to leave among perfusionists. ANOVA was also used to determine if there was statistical significance between job satisfaction and burnout across different organizational affiliations of perfusionists.

RESULTS

Replies were received from 283 perfusionists. Two-hundred of the original 1478 e-mail invitations sent were returned to sender because of incorrect addresses or a change of address. The response rate was 22%. According to responses received, the majority, 44%, of subjects were in the 40–49 years old age category (see Fig, 1). The distribution of males to females for this study (207 males and 76 females, or 73% and 27%, respectively) compares favorably with an earlier AmSECT survey that revealed a female–male distribution of 71% and 29% (1997 AmSECT Today survey). Figure 2 summarizes the number of perfusionists in the respondent's department. The largest percentage, which is 52.7%, of perfusionists answering the inquiry work in a nonprofit community hospital. Figure 3 shows the age of respondents.

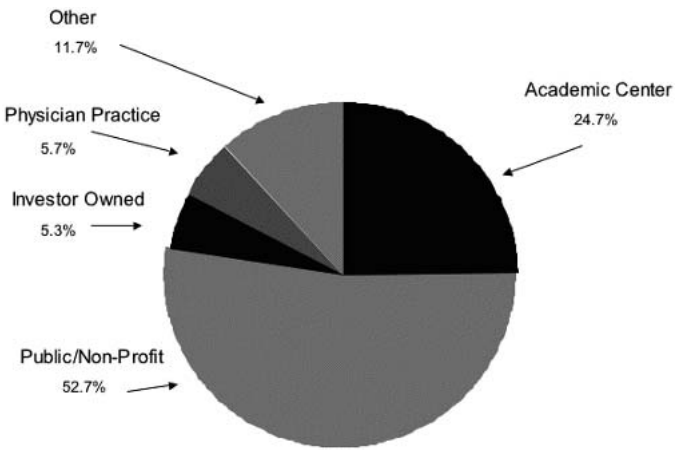

Figure 1. Respondents' work locations.

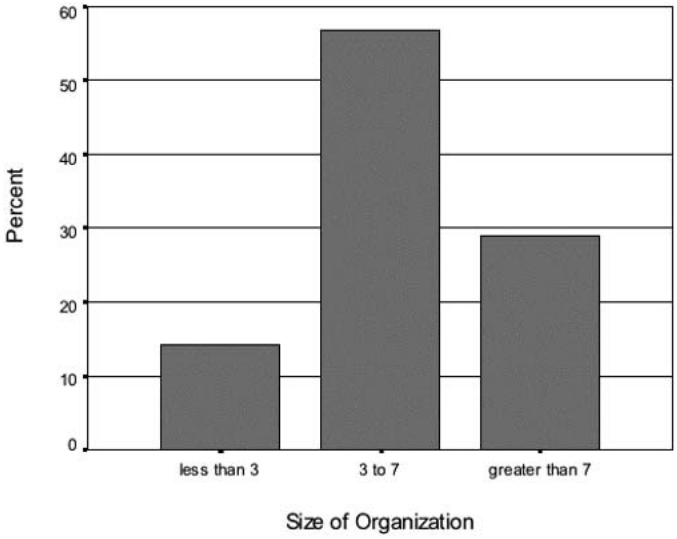

Figure 2. Number of perfusionists at work site.

A statistically significant inverse relationship ($p < .01$) was seen between employee job satisfaction and burnout. As burnout increased, job satisfaction decreased. A post hoc Bonferroni Multiple comparisons test also showed a statistically significant difference between each of the three groups (see Figure 4).

Because the level of burnout and intention to leave were both measured on the survey in ordinal categories, a nonparametric chi-square test was used to determine if there was an association between level of burnout and intention to leave among perfusionists. Figures 5 and 6 illustrate intention among perfusionists to leave their job

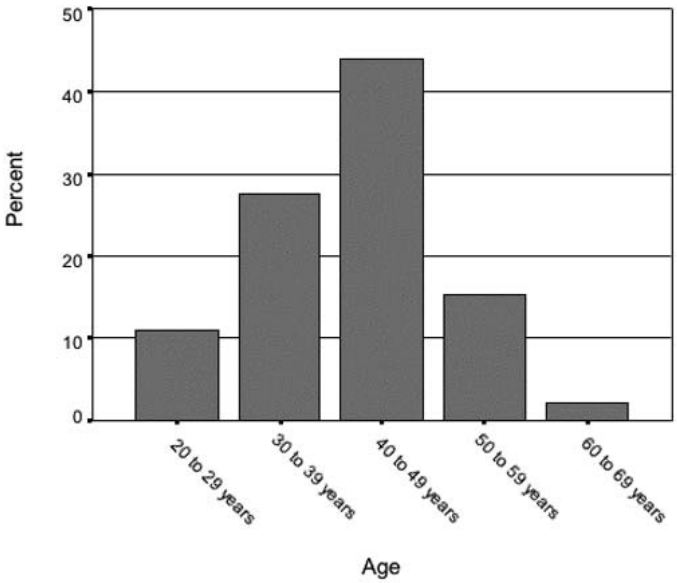

Figure 3. Age of respondents.

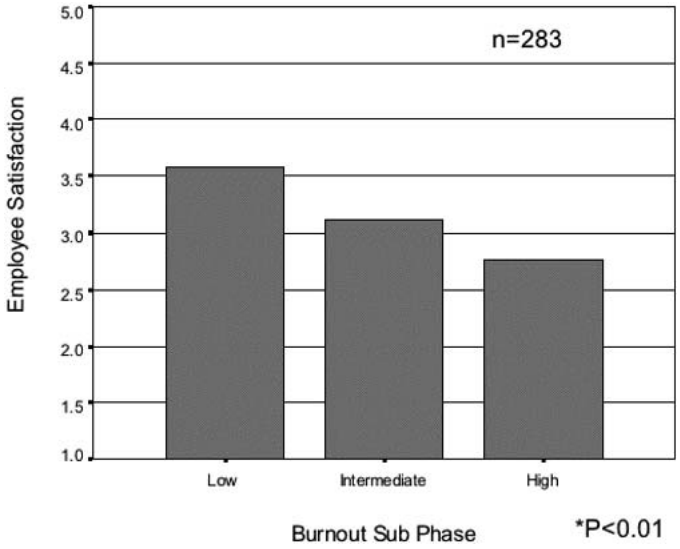

Figure 4. Job satisfaction vs. burnout.

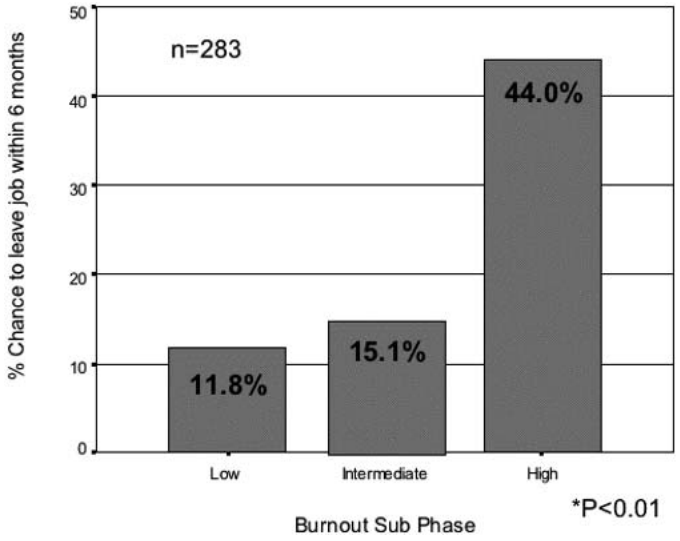

Figure 5. Would perfusionists leave their jobs?

and profession, respectively. As burnout increased from low to high, there was an association ($p < .01$) of a greater intention of the perfusionists to leave their jobs for a lateral move or demotion within 6 months. In Figure 6, it is significant to note that once burnout reached a high level, their intention to leave the profession increased.

ANOVA was also used to determine if there was a statistically significant difference between job satisfaction and burnout across different organizational affiliations of perfusionists. Figure 7 shows that the association ($p > .01$) did not reach statistical significance, so there was insufficient evidence to show a difference between employee satisfaction and burnout in any of the organizational affiliations. Although, again, no statistical significance was achieved, there seems to be a trend toward less burnout in an investor-owned perfusion group.

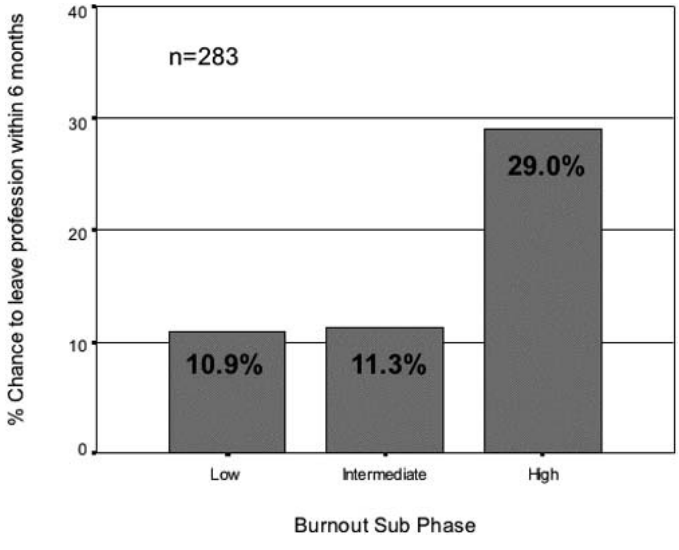

Figure 6. Would perfusionists leave the profession?

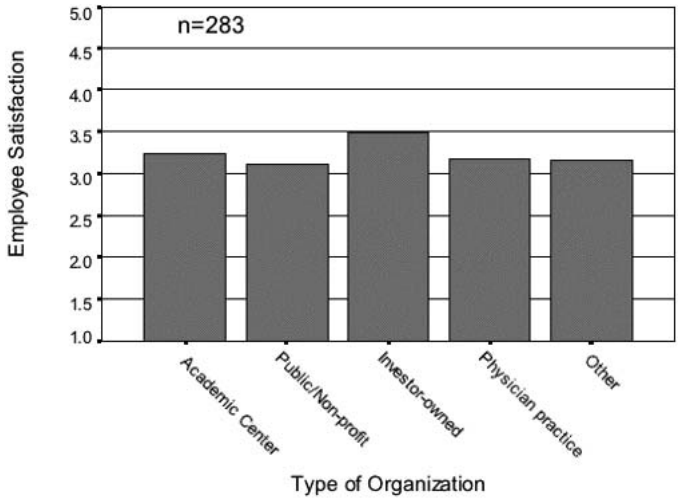

Figure 7. Employee satisfaction vs. type of organization.

Frequencies of high levels of each of the three subdomains of burnout are shown in Figure 9. Figure 10 represents the percentage of perfusionists in each of the eight phases. The percentage of respondents to the survey with low (phases I through III), intermediate (phases IV and V), and high (phases (VI through VIII) levels of burnout are illustrated in Figure 11. When the MBI scores were divided into the eight phases and then compressed into the three subphases, 42% of the perfusionists surveyed were categorized as low burnouts. The phase model categorized 20% of the perfusionists as moderately burned out. 38% were in the high burnout group.

CONCLUSIONS

Burnout is defined as a progressive, negative response to the workplace environment that has significant detri-

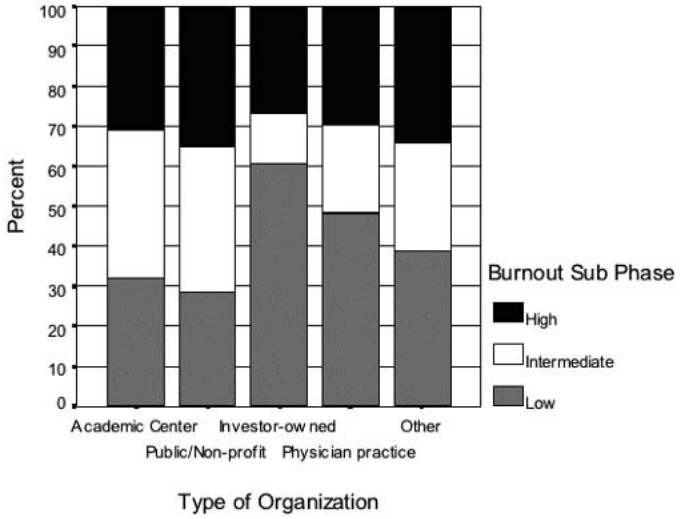

Figure 8. Burnout phase vs. organizational affiliation.

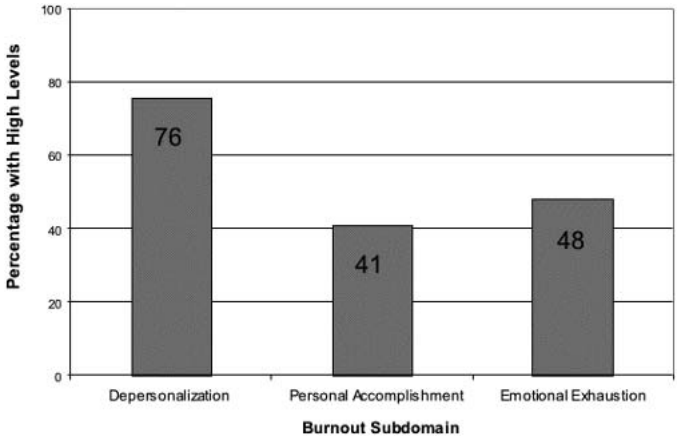

Figure 9. Levels of subdomain by survey.

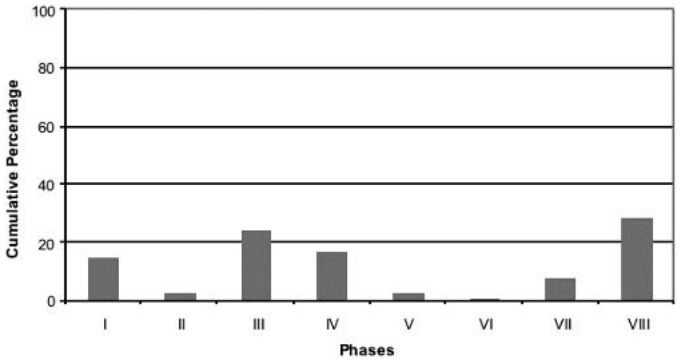

Figure 10. Cumulative frequencies for eight phases.

mental consequences to both the person and to the organization. The severity of burnout was estimated using the "phase model of burnout" proposed by Golembiewski and Munsenrider (33). In this severity of burnout model, phase is determined by the distribution of low and high levels of the three-burnout subdomains: emotional exhaustion, depersonalization, and sense of lack of personal accomplishment. Prior studies have shown that the cut points dividing high and low levels of the subdomains are reproducible in populations of differing job type, responsibility levels, and culture (34).

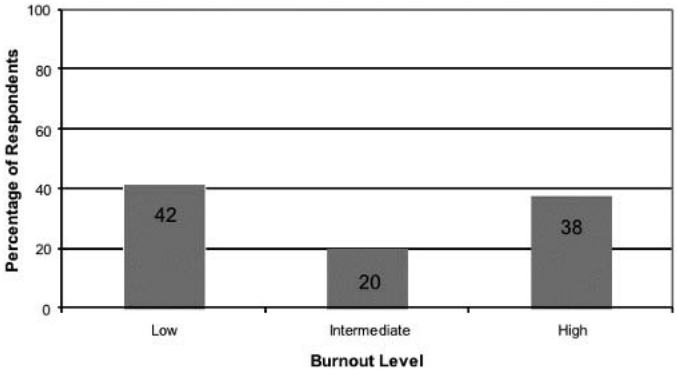

Figure 11. Burnout levels of survey responses.

Maslach and Jackson have argued that each of the three subdomains has separate behavioral and organizational correlates and, therefore, each should be assessed individually rather than being combined into a single score (35). Leiter and Maslach have also argued that if the subdomains are combined into a single-phase assignment that a different sequence should be used. In the phase model, depersonalization is first and emotional exhaustion is the last subdomain to reach high levels as burnout intensifies, but Leiter and Maslach suggest that a high level of emotional exhaustion is the first step in burnout, which then leads to the other two subdomains (36).

Friday's research of the psychological profiles of perfusionists has been the primary assessment of perfusionists to date (37,38). Friday's studies suggest that perfusionists have moved from well balanced interpersonal profiles 6 years ago to a higher degree of assertiveness and aggressiveness. As a relatively young field, research of on the job satisfaction and burnout of cardiovascular perfusionists or why they stay or leave the field has not been conducted. In addition, the changing field of perfusion and the effects of technological and research advancements on the profession should also influence perceptions of perfusionists.

The results of this study demonstrate that the number of perfusionists in the low and high burnout categories is almost equal. This suggests that the majority of perfusionists either handle the stress of the job well or are very burned out. A large portion of perfusionists seem to have high levels of depersonalization. If the phase model's theories about the order of the presence of the burnout subdomains holds true, this high percentage of depersonalization present suggests that if perfusionists are not already burned out, they are in the initial stages of the process.

The results of this study also confirm that job satisfaction is a reliable indicator of burnout. As was expected, overall there was an inverse relationship between job satisfaction and burnout. As burnout increased from low to high, there was an association of a greater intention of the perfusionists to leave their jobs for a lateral move or demotion within 6 months. Perfusionists answering the inquiry indicated that once burnout has reached a high level, their intention to leave the profession increases.

Limitations

Most studies of this nature are subject to limitations inherent in online survey research. Although many of the benefits of online research were taken advantage of, there are negative aspects, also. Low overhead cost, quick results, automated data entry, frequent update, and efficiency in data reporting/presentation are some of the advantageous features of online research. Sampling problem, intensive data cleaning, data integrity, and biased representation are some of the disadvantages. One area to note is the sampling problem. Some practicing perfusionists were excluded from the survey because they are not members of AmSECT or may be members lacking an e-mail address. Under the category of biased representation, there may have been selection bias caused by the low response rate. It is possible that individuals with high levels of burnout would be less likely to be members of AmSECT or even of the profession or that individuals with high levels of burnout would be more likely to participate in a burnout assessment. If people have difficulty in dealing with burnout when they are younger and newer on the job, they may leave the profession entirely. Because of this early dropout in the burned out, these perfusionists will not be around 5 or 10 years later to answer questions about the emotional strain of their work.

Implications for Further Study

Several findings and conclusions have emerged that have implications for any future research in this area. First, there is a need for additional information about workload. This may include how many cases per year are performed, types of cases, adult versus pediatric, and so forth.Because this study uncovered moderate to high levels of burnout among perfusionists, it is essential that specific preventive and coping measures be developed for perfusionists. Because there is no single coping procedure to deal with burnout, perhaps a number of different programs could be devised to meet specific individual needs. To the extent that perfusionists can recognize and anticipate burnout as an intricate element of their work, they will be better able to avoid it or develop realistic coping mechanisms. Research has shown that those who have conducted workshops and seminars on burnout discovered that simply identifying the concept of burnout had therapeutic value for the participants (22).

Preventing burnout is preferable to treating it, of course. Steps can be taken to reduce the occurrence of burnout because many of its determinants are ingrained in specific social and situational factors that can be changed (22). As this study has shown, job satisfaction is one of these factors.

REFERENCES

1. Snibbe JR, Radcliffe T, Weisberger C, et al. Burnout among primary care physicians and mental health professionals in a managed heathcare setting. Psych Rep. 1989;65:775–80.
2. Lee RT, Ashworth BE. On the meaning of Maslach's three dimensions of burnout. J Appl Psych. 1990;75:743–7.
3. Maslach C, Jackson SE. Burnout in health professions: A social psychological analysis. In: Social Psychology of Health and Illness. Sanders GS, Suls, eds. Hillsdale, NJ: Lawrence Erlbaum, 1982;227–51.
4. Koeske GF, Koeske RD. Construct validity of the Maslach Burnout Inventory: A critical review and reconceptualization. J Appl Behav Sci. 1989;25:131–44.
5. Maslach C, Jackson SE. The measurement of experienced burnout. J Occup Behav. 1981;2:99–113.
6. Goldberg WA, Greenberger E, Nagel SK. Employment and achievement: Mothers' work involvment in relation to children's achievement behaviors and mothers' parenting behaviors. Child Develop. 1996;67:1512–27.
7. Whippen DA, Canellos GP. Burnout Syndrome in the practice of oncology: Results of a random survey of 1,000 onconlogists. J Oncol. 1991;9:1916–20.
8. Deckard GJ, Hicks LL, Hamory BH. The occurrence and distribution of burnout among infectious diseases physicians. J Infect Dis. 1992;165:224–8.
9. Lemkau J, Rafferty J, Gordon R. Burnout and career-choice regret among family practice physicians in early practice. Fam Pract Res J. 1994;14:213–22.
10. Maslach C, Jackson S. Revised Maslach Burnout Inventory. Palo Alto, CA: Consulting Psychologists Press, 1986.
11. Fieman M, Lieberman J, Fasteneau P. Development and validation of an instrument to measure occupational stress in speech-language pathologists. J Speech Hear Res. 1991;34:439–46.
12. Wandling B, Smith B. Burnout in orthopaedic physical therapists. JOSPT. 1997;26:124–29.
13. Oppenheim L. Factors related to occupational stress or burnout among music therapists. J Music Ther. 1987;24:97–106.
14. Kilfedder C, Power K, Wells T. Burnout in psychiatric nursing. J Adv Nurs. 2001;34:383–96.
15. Payne N. Occupational stressors and coping as determinants of burnout in female hospice nurses. J Adv Nurs. 2001;33:396–405.
16. Brown T, Pranger T. Predictors of burnout for psychiatric occupational therapy personnel. CJOT. 1992;59:258–67.
17. Acker G. The impact of clients' mental illness on social workers' job satisfaction and burnout. Health Soc Work. 1999;24:112–7.
18. Gupchup G, Lively B, Holiday-Goodman M, et al. Maslach Burnout Inventory: Factor structures for pharmacists in health maintenance organizations and comparison with normative data for USA pharmacists. Psych Rep. 1994;74: 891–5.
19. Shelley J, Wong M, Rackcliffe J. Are Texas dentists burned out? Texas Dent J. 1989;9–14.
20. Mirvis D, Graney M, Osborne Kilpatrick A. Trends in burnout and related measures of organizational stress among leaders of Department of Veterans Affairs Medical Centers. J Healthcare Mngt. 1999; 44:353–65.
21. Goldberg R, Boss RW, Chan L, et al. Burnout and its correlates in emergency physicians. Acad Emerg Med. 1996;3:1156–64.
22. Dignam J, Barrera M, West S. Occupational stress, social support, and burnout among correctional officers. Am J Comm Psych. 1986; 14:177–91.

23. Grunfeld E, Whelan T, Zitzelsberger L, et al. Cancer care workers in Ontario: Prevalence of burnout, job stress, and job satisfaction. CMAJ. 2000;163:166–9.
24. Graham J, Ramirez AJ, Field S, et al.. Job stress and satisfaction among clinical radiologists. Clin Radiol. 2000;55:182–5.
25. Malanowski JR, Wood P. Burnout and self-actualization in public school teachers. J Psych. 1984;117:23–6.
26. Boudreaux E, Mandry C, Brantley P. Stress, job satisfaction, coping, and psychological distress among emergency medical technicians. Prehospital Disaster Med. 1997;12:242–9.
27. Schaufeli, Dierendonck. A cautionary note about the cross-national and clinical validity of cut-off points for the Maslach Burnout Inventory. Psych Rep. 1995;76:1083–90.
28. Cordes CL, Dougherty TW. A review and an integration of research on job burnout. Acad Mngt Rev. 1993;18:621–56.
29. Golembiewski RT. The phase model of burnout: Conceptual, theoretical, and practical issues. J Health Hum Serv Admin. 1999;21:490–501.
30. Stepanovich P, Stepanovich P. The Organizational Learning Group, 1998.
31. Miller LH, Dell Smith A. BioBehavioral Institute of Boston.
32. Patten ML. Questionnaire Research: A Practical Guide. Pyrczak Publishing, 1998.
33. Golembiewski RT, Munzenrider R. Phases of Burnout: Development in Concepts and Applications. New York: Praeger, 1988.
34. Golembiewski RT, et al. Reports on Task Force on Burnout Norms. J Health H Serv Admin. 1994;17:32–75.
35. Maslach, Jackson. The measurement of experienced burnout. J Occup Behav. 1981;2:99–113.
36. Leiter, Maslach. The impact of interpersonal environment on burnout and organizational commitment. J Org Behav. 1988;9:297–308.
37. Friday PJ, Mook WJ. The cardiovascular perfusionist as a model for the successful technologist in high stress situations. J Soc Occup Med. 1991;41:151–6.
38. Friday PJ, Mook WJ. The managed care revolution: How medical technologists have tolerated the change. Occup Med. 1998;48:451–3.