

The Relationship Between Burnout and Occupational Stress in Genetic Counselors

Brittney Johnstone^{1,2} · Amy Kaiser¹ · Marie C. Injeyan^{1,3} · Karen Sappleton⁴ · David Chitayat^{1,2,3} · Derek Stephens⁵ · Cheryl Shuman^{1,2}

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Abstract Burnout represents a critical disruption in an individual's relationship with work, resulting in a state of exhaustion in which one's occupational value and capacity to perform are questioned. Burnout can negatively affect an individual's personal life, as well as employers in terms of decreased work quality, patient/client satisfaction, and employee retention. Occupational stress is a known contributor to burnout and occurs as a result of employment requirements and factors intrinsic to the work environment. Empirical research examining genetic counselor-specific burnout is limited; however, existing data suggests that genetic counselors are at increased risk for burnout. To investigate the relationship between occupational stress and burnout in genetic counselors, we administered an online survey to members of three genetic counselor professional organizations. Validated measures included the Maslach Burnout Inventory—General Survey (an instrument measuring burnout on three subscales: exhaustion, cynicism, and professional efficacy) and the Occupational Stress

Inventory—Revised (an instrument measuring occupational stress on 14 subscales). Of the 353 respondents, more than 40 % had either considered leaving or left their job role due to burnout. Multiple regression analysis yielded significant predictors for burnout risk. The identified sets of predictors account for approximately 59 % of the variance in exhaustion, 58 % of the variance in cynicism, and 43 % of the variance in professional efficacy. Our data confirm that a significant number of genetic counselors experience burnout and that burnout is correlated with specific aspects of occupational stress. Based on these findings, practice and research recommendations are presented.

Keywords Burnout · Occupational stress · Genetic counseling · Exhaustion · Cynicism · Professional efficacy · Professional development

Introduction

The concept of burnout was first described in the 1970s and has since been extensively examined in the psychology literature. The term 'burnout' was coined by American psychologist Herbert Freudenberger (1974) and refers to the wearing out of an individual due to excessive demands on one's resources. Burnout results in a state of exhaustion, causing individuals to question the value of their occupation and their ability to perform (Schaufeli et al. 1996). Characteristic features of burnout include diminished energy (exhaustion), indifference towards work (cynicism), and decreased job satisfaction accompanied by a lowered expectation of continued effectiveness at work (decreased professional efficacy) (Schaufeli et al. 1996). Organizations experience significant consequences of burnout in terms of decreased work quality, patient satisfaction, and professional development of staff, as

✉ Brittney Johnstone
brittney.johnstone@sickkids.ca

¹ Department of Molecular Genetics, University of Toronto, Toronto, ON, Canada

² Division of Clinical and Metabolic Genetics, Hospital for Sick Children, 555 University Avenue, Toronto, ON M5G 1X8, Canada

³ Department of Obstetrics and Gynecology, Prenatal Diagnosis and Medical Genetics Program, Mount Sinai Hospital, University of Toronto, Toronto, Ontario, Canada

⁴ Centre for Innovation and Excellence in Child and Family Centred Care, Hospital of Sick Children, University of Toronto, Toronto, Ontario, Canada

⁵ Biostatistical Design and Analysis, Clinical Research Services, Hospital for Sick Children, Toronto, Ontario, Canada

well as employee turnover, absenteeism, and job exit (Cordes and Dougherty 1993; Maslach and Jackson 1981; Ozer and Beycioglu 2010; Vahey et al. 2004). Further, the ramifications of burnout often extend beyond the workplace to affect an individual's personal life by increasing the likelihood of exhaustion, insomnia, alcohol and tobacco consumption, as well as interpersonal conflicts with loved ones (Gillespie and Melby 2003).

Although burnout and compassion fatigue may be synergistic (Udipi et al. 2008), the two phenomena are conceptually distinct and may have different triggers (Benoit et al. 2007; Injeyan et al. 2011). Compassion fatigue is an intense personal experience, with a sudden onset, arising when caregivers are overwhelmed by patient suffering or trauma (Figley 2002). A key component of compassion fatigue is empathy experienced by caregivers for individuals in distress (Figley 2002). In contrast, burnout is not restricted to caregivers, can occur in a range of professions, and is characteristically related to work conditions (Jenkins and Baird 2002). Interventions may relieve the symptoms of compassion fatigue; however, the symptoms of burnout may require a job or career change (Figley 2002).

Research aimed at exploring burnout highlights the influence of stressors in the work environment (Maslach and Jackson 1981). Conceptually, stress is an individual's response to a perceived imbalance between situational demands and one's coping resources (Gandi et al. 2011). Occupational stress is the strain experienced when an individual's perceived workplace stress exceeds coping skills (Decker and Borgen 1993) and it typically occurs as a result of employment conditions and aspects of the work environment (Wu et al. 2007). Specific examples of factors that influence occupational stress levels include characteristics of the tasks performed, relationships at work, as well as an individual's previous work experience and educational level (Sharit and Salvendy 1982). Chronic elevations of occupational stress have been reported to contribute to burnout (Clegg 2001; Freudenberger 1974).

Numerous studies highlight the association between occupational stress and burnout in professions such as nursing, medicine, psychology, social work, and teaching (Johnson and Stone 1987; Rupert and Morgan 2005; Vercambre et al. 2009; Wang et al. 2014; Xie et al. 2011). In the nursing literature, high levels of occupational stress have been found to be a significant predictor of burnout. Specific aspects of occupational stress that correlate with burnout have been identified, including work relationships, psychosocial support at work, problem-solving coping strategies, and contact with other professionals (Clegg 2001; Hare et al. 1988; McGrath et al. 2003; Yasko 1983). These correlations have led to recommendations aimed at mitigating the effects of burnout, which include facilitating staff coping and improving peer supports through the provision of resources, training, and counseling (Hare et al. 1988; Johnson and Stone 1987; McGrath et al. 2003; Wu et al.

2007; Yasko 1983); providing supervisory support (Hare et al. 1988); clarifying staff roles (McGrath et al. 2003); and including burnout theory in educational curriculums (Yasko 1983).

To date, there is limited research investigating burnout risk among genetics service providers; however, existing research suggests that genetic counselors are at risk for burnout. Dexter et al. (2003) reported that amongst 190 surveyed genetic counselors, low to moderate levels of burnout were experienced. Self-reported factors found to contribute to burnout included low social support, inadequate support staff and autonomy, ineffective coping methods, age, clinical setting, and workload (Dexter et al. 2003). Bernhardt et al. (2009) observed a higher level of burnout in genetic counselors in comparison with genetic nurses and physicians citing age, concerns about informational bias, personal values conflicts, and burden of professional responsibility as potential causes for the observed difference. According to a professional status survey by the National Society of Genetic Counselors (NSGC 2014), 35 % of genetic counselors who have left, are considering leaving, or are undecided about leaving the field of genetic counseling cite burnout as one of the primary reasons.

Studies on topics related to burnout point to the importance of this area of research in genetic counselors. Several recent publications designed to examine genetic counselor compassion fatigue have highlighted the prevalence of burnout in this population. Studies utilizing Stamm's Professional Quality of Life Scale (as cited in Injeyan et al. 2011) to measure burnout, compassion satisfaction, and compassion fatigue in genetic counselors indicate that between 19 and 44 % of respondents were at a high risk for burnout (Injeyan et al. 2011; Lee et al. 2014; Udipi et al. 2008). Qualitative analysis identified several burnout contributors including increasing patient load and logistical demands, stress from administrative tasks, a lack of support in the workplace, poor professional relationships, and extra responsibilities such as teaching (Benoit et al. 2007; Lee et al. 2014).

Given the existing evidence of burnout amongst genetic counselors, elucidating the contributing factors is pivotal to addressing this issue and reducing its harmful impact on both personal and organizational levels. Moreover, as the field of genetic counseling continues to expand and job roles diversify (Christian et al. 2012; Gettig 2010; Harris et al. 2013; Powell et al. 2010), it is important to explore genetic counselors' experience with burnout in various professional roles.

Purpose of the Present Study

In this study, the relationship between burnout and occupational stress in genetic counselors was examined. We hypothesized that genetic counselor burnout is positively associated with occupational stress. Findings can inform potential

interventions aimed at preventing or reducing genetic counselor-specific burnout and its negative effects.

Methods

Sample and Procedures

The population of interest in the present study included genetic counselors who were either in practice at the time of the survey (March 2014–May 2014) or who had, within the previous 5 years, worked as a genetic counselor. Following Research Ethics Board approval at the Hospital for Sick Children and the University of Toronto, an invitation to participate in the study was distributed via the listservs of the following organizations: the National Society of Genetic Counselors (NSGC; $N=2900$), Canadian Association of Genetic Counsellors (CAGC; $N=320$), and Australasian Society of Genetic Counsellors (ASGC; $N=201$). The invitation noted that burnout differs from compassion fatigue and included the goal of the study as well as a description of the instruments used. As outlined in the invitation, consent was implied through survey completion. Study data was collected and managed using REDCap electronic data capture tools hosted at the Hospital for Sick Children (Harris et al. 2009).

Instrumentation

The survey consisted of two validated instruments: The Maslach Burnout Inventory—General Survey (MBI-GS; Schaufeli et al. 1996) and the Occupational Stress Inventory—Revised (OSI-R; Osipow 1998), as well as demographic items. Demographic items were designed to collect information about participants such as demographics (age, gender, marital status, number of children, number of pets, educational background, years employed as a genetic counselor), their workplace and working conditions (hours worked per week, area of genetic counseling (clinical/research/laboratory/teaching/other/multiple roles), average number of patients seen per week, number of genetic counselor colleagues in work setting), and whether or not they had changed or considered changing roles due to burnout.

Maslach Burnout Inventory—General Survey

Burnout was assessed using the Maslach Burnout Inventory—General Survey (MBI-GS), which was developed to assess the performance of work in general, without a specific focus on the professional-client interaction (Schaufeli et al. 1996). Construct validity of the MBI-GS has been established in numerous studies across occupational groups, organizations, and nations (Kitaoka-Higashiguchi et al. 2004; Schaufeli et al. 1996; Taris et al. 1999; Wu et al. 2007) and it is widely

accepted as the leading measure of burnout. The MBI-GS consists of 16 items broken down into three subscales: exhaustion (5 items), cynicism (5 items), and professional efficacy (6 items). All three subscales have high levels of reliability with alpha coefficients ranging from 0.76 to 0.89 (Schaufeli et al. 1996). Each subscale item is a statement answered on a seven point Likert scale based on frequency of experience, which ranges from 0 = *never* to 6 = *every day*.

The exhaustion subscale assesses fatigue and the depletion of energy in relation to one's work, with items such as "Working all day is really a strain for me." The cynicism subscale assesses attitudes of distance or indifference towards work, with items such as "I have become less enthusiastic about my work." The professional efficacy subscale assesses satisfaction with accomplishments and expectations of continued effectiveness at work, with items such as "At my work, I feel confident that I am effective at getting things done." Reproduction of these items is by special permission of the Publisher, Mind Garden, Inc., www.mindgarden.com from the Maslach Burnout Inventory General Survey by Wilmar B. Schaufeli, Michael P. Leiter, Christina Maslach, & Susan E. Jackson Copyright© 1996 by Wilmar B. Schaufeli, Michael P. Leiter, Christina Maslach, & Susan E. Jackson. Further reproduction is prohibited without the Publisher's written consent.

Each subscale of the MBI-GS is scored separately. The final score for each subscale is represented by the average score of the items within the subscale (minimum score of 0, maximum score of 6). High burnout is reflected by high scores on the exhaustion and cynicism subscales and low scores on the professional efficacy subscale. Subscale scores can be categorized as low, moderate, or high burnout levels based on which third of a range of scores they fall into, using cut-offs established by a sample of 3727 scores from individuals in a range of professions (Maslach et al. 2010). Exhaustion subscale score cut-offs are: Low (≤ 2.00), Moderate (2.01–3.19), High (≥ 3.20); cynicism subscale score cut-offs are: Low (≤ 1.00), Moderate (1.01–2.19), High (≥ 2.20); and professional efficacy score cut-offs are: Low (≥ 5.00), Moderate (4.01–4.99), High (≤ 4.00).

The Occupational Stress Inventory—Revised

Occupational stress was measured using the Occupational Stress Inventory—Revised (OSI-R; Osipow 1998), which was designed to examine aspects of the environment and the individual that relate to occupational adjustment. Validity data for the OSI-R is derived from numerous sources including convergent validity studies and confirmatory factor analyses (Hicks et al. 2010; Osipow 1998). All 14 subscales have high levels of reliability with alpha coefficients ranging from 0.70 to 0.89 (Osipow 1998). The OSI-R consists of 140 items broken down into three dimensions: occupational role (60 items), personal strain (40 items), and personal resources (40 items).

Each item is a statement answered on a five point Likert scale based on frequency, ranging from 1 = *rarely or never true* to 5 = *most of the time*.

Each of the three dimensions of occupational stress is broken down further into subscales. The occupational role dimension is comprised of 6 subscales (10 items each): role overload, role insufficiency, role ambiguity, role boundary, responsibility, and physical environment. The personal strain subscale is comprised of 4 subscales (10 items each): vocational strain, psychological strain, interpersonal strain, and physical strain. The personal resources subscale is comprised of 4 subscales (10 items each): recreation, self-care, social support, and rational/cognitive coping.

Each individual item is scored; subsequently a total for each subscale (10 items) is calculated. Scores for each subscale can range from 10 to 50. High occupational stress is reflected by high scores on the subscales of the occupational role and personal strain dimensions and lower scores on the subscales of the personal resources dimension. Means, standard deviations, and *T*-score conversion tables from sample populations of a range of professions and educational levels have been published for interpretation purposes (Osipow 1998).

Data Analysis

Statistical analyses were performed using SAS software (Version 9.3, Copyright, SAS Institute Inc., Cary, NC, USA). Analyses were performed on data from complete surveys only. Descriptive statistics (means, standard deviations, and percentages) were calculated for demographic items and responses to the MBI-GS and OSI-R. Data are presented as counts, percentages, means, and standard deviations. The three subscales of the MBI-GS (exhaustion, cynicism, and professional efficacy) are each scored on a continuous scale and reported separately.

To allow for quantitative analysis, education levels were coded into three groups (genetic counseling degree only, other degree only, genetic counseling plus other degree) based on categorical and written responses. Original marital status categories (single, married, separated, divorced, widowed) were coded into three groups (single, married, separated/divorced) as zero respondents selected 'widowed' and only one respondent selected 'separated.' Within the category of primary area of genetic counseling, responses noting 'multiple roles' ($n=52$) were analyzed as such and not further sub-grouped for analysis. Gender was not included in regression analysis due to few ($n=9$) male respondents.

Univariate analysis of demographic variables and OSI-R subscales was used to highlight covariates of interest with the burnout subscales. Occupational stress subscales with a coefficient of correlation of $r \geq 0.2$ and demographic variables with a significance of $p \leq 0.25$ (Hosmer and Lemeshow 1989;

Ray and Vermeulen 1999) were considered as potential covariates of burnout subscales. Covariates were included in multiple normal linear regression analysis involving four selection methods (forward, backward, stepwise, and purposeful) and predictors that were consistent across models and significant at $p < 0.05$ were retained in the final model for each burnout subscale. Measures of the goodness of fit of each final model were completed and residuals were found to be normally distributed.

Results

Respondent Characteristics

A total of 353 completed survey responses were received, resulting in a final sample size of $n=353$. Assuming the maximum number of NSGC, CAGC, and ASGC members received the invitation email with no overlap of membership between the organizations (though membership in multiple professional organizations is not uncommon), a conservative estimate of response rate is 10.3 % (353/3421).

Genetic counselor demographic characteristics are summarized in Table 1. The majority of respondents were female (97.5 %) and the mean age was 35.5 years ($SD=9.5$, Range=24–64); these data are consistent with NSGC membership (NSGC 2014). Slightly under half of respondents had children (41.4 %), 60.6 % were married, and 59.5 % had pets. The majority of respondents had a genetic counseling degree (98.6 %). The mean years of genetic counseling experience was 9.2 ($SD=8.0$, Range=1–34). Most respondents worked primarily in clinical roles (73.7 %), while 14.7 % of respondents worked in positions in more than one area of genetic counseling (clinical, research, laboratory, teaching, other). The mean hours worked per week was 38.7 ($SD=10.7$, Range=0–70), with over 76 % of respondents working >37.5 h per week, which is again reflective of NSGC membership (NSGC 2014). The mean number of patients seen per week was 10.0 ($SD=7.0$, Range=0–45) and the mean number of genetic counseling co-workers was 4.2 ($SD=5.8$, Range=0–60); data which are comparable to a recently published study on genetic counselors (Lee et al. 2014). Respondents in the present study were asked "Have you switched your job role or considered doing so in recent years due to burnout?" to which 43.9 % of genetic counselors answered 'Yes'.

Maslach Burnout Inventory—General Survey Scores

Descriptive statistics and categorized respondent burnout levels for the MBI-GS subscales are presented in Table 2. The mean exhaustion score was 2.8 ($SD=1.37$), with 41.1 % ($n=145$) of respondents scoring in the high burnout

Table 1 Respondent demographic characteristics (*N*=353)

Characteristic	<i>N</i>	%	<i>M</i> (<i>SD</i>)
Age (years)	353		35.5 (9.3)
Gender			
Female	344	97.5	
Male	9	2.5	
Marital status			
Single	118	33.4	
Married	214	60.6	
Separated/divorced	21	5.9	
Number of children			
Zero	207	58.6	
One	47	13.3	
Two	77	21.8	
Three	18	5.1	
Four	3	0.8	
Five	1	0.3	
Pets			
Yes	210	59.5	
No	143	40.5	
Education			
Genetic counseling degree only	334	94.6	
Other degree only	5	1.4	
Genetic counseling degree plus other advanced degree	14	4.0	
Genetic counseling experience (years)	353		9.2 (8.0)
Hours of work per week	353		38.7 (10.7)
Primary area of genetic counseling			
Clinical	260	73.7	
Research	14	4.0	
Laboratory	21	5.9	
Teaching	5	1.4	
Other	1	0.3	
Multiple roles	52	14.7	
Patients seen per week	353		10.0 (7.0)
Number of genetic counselor co-workers	353		4.2 (5.8)
Switched or considered switching job role due to burnout			
Yes	155	43.9	
No	198	56.1	

range, 24.1 % (*n*=85) in the moderate burnout range, and 34.8 % (*n*=123) in the low burnout range. The mean cynicism score was 2.22 (*SD*=1.45), with 47.6 % (*n*=168) of respondents scoring in the high burnout range, 22.9 % (*n*=81) in the moderate burnout range, and 29.5 % (*n*=104) in the low burnout range. For professional efficacy, the mean score was 4.84 (*SD*=0.85), with 18.1 % (*n*=64) scoring in the high burnout range, 29.5 % (*n*=104) in the moderate burnout range, and 52.4 % (*n*=185) in the low burnout range.

Predictors of Burnout

Multiple regression analysis was conducted to determine the amount of variance in the burnout subscales explained by specific predictors (selected OSI-R subscales and demographics), while the other predictors were held constant. The final model for each MBI-GS subscale is presented in Table 3. The final model for exhaustion accounted for 59 % of the variance (adjusted *R*²=0.59), which indicates that over half of the variability in exhaustion amongst genetic counselors is explained by the eight predictors included in the final model. All eight predictors were significant at *p*<0.05 and included role overload (job demand/resource balance), role boundary (level of conflicting role demands/loyalties), vocational strain (problems in work quality/output/attitude), psychological strain (psychological/emotional problems), physical strain (health worries/physical symptoms), role switching (switched or considered switching job role due to burnout), marital status, and patients seen per week. The six predictors in the final model for cynicism accounted for 58 % of the variance (adjusted *R*²=0.58). All six predictors were significant at *p*<0.05 and included role boundary, role insufficiency (appropriateness of skills/training), vocational strain, psychological strain, role switching, and ‘hours of work per week.’ The three predictors in the final model for professional efficacy accounted for 43 % of the variance (adjusted *R*²=0.43). All three predictors were significant at *p*<0.05 and included role insufficiency, vocational strain, and rational/cognitive coping (possession/use of cognitive skills to face stress).

Table 2 MBI-GS means, standard deviations, ranges, and burnout level categorizations for respondents (*N*=353)

Subscale	<i>M</i>	<i>SD</i>	Range	Possible range	Level of burnout experienced ^a		
					High	Moderate	Low
Exhaustion	2.8	1.37	0.2–6	0–6	145 (41.1)	85 (24.1)	123 (34.8)
Cynicism	2.22	1.45	0–6	0–6	168 (47.6)	81 (22.9)	104 (29.5)
Professional efficacy	4.84	0.85	1.83–6	0–6	64 (18.1)	104 (29.5)	185 (52.4)

^a Presented as *n*(%); higher scores on the MBI-GS subscales indicate a greater risk for exhaustion and cynicism, and a greater sense of professional efficacy

Table 3 Models for predictors of the MBI-GS burnout subscales following multiple linear regression analysis

Covariate of interest	Exhaustion ($R^2 = 0.59$)			Cynicism ($R^2 = 0.58$)			Professional efficacy ($R^2 = 0.43$)		
	Estimate	SE	<i>p</i> -value	Estimate	SE	<i>p</i> -value	Estimate	SE	<i>p</i> -value
Role overload	0.38	0.07	<0.0001						
Role boundary	0.27	0.09	0.0021	0.38	0.09	<0.0001			
Role insufficiency				0.59	0.09	<0.0001	-0.30	0.06	<0.0001
Vocational strain	0.64	0.14	<0.0001	0.73	0.16	<0.0001	-0.65	0.09	<0.0001
Psychological strain	0.29	0.11	0.0095	0.29	0.10	0.0032			
Physical strain	0.25	0.1	0.0122						
Rational/cognitive Coping							0.30	0.06	<0.0001
Role Switching			0.0001			0.003			
Yes	0.00			0.00					
No	0.41	0.105	0.0001	-0.42	0.11	0.003			
Marital status			0.0156						
Separated/divorced	0.00								
Single	0.005	0.21	0.98						
Married	-0.28	0.20	0.18						
Patients seen per week	0.03	0.007	0.0001						
Hours of work per week				0.01	0.005	0.0132			

R^2 presented is adjusted R^2

Discussion

Burnout Amongst Genetic Counselors

Results of the current study demonstrate that genetic counselors experience significant levels of burnout. Based on responses to the MBI-GS, 65.2, 70.5, and 47.6 % of genetic counselors scored in the moderate to high burnout range for exhaustion, cynicism, and professional efficacy, respectively. These results contrast data presented by Dexter et al. (2003), which indicate that genetic counselors experience low to moderate levels of burnout. Given that Dexter et al. (2003) published their findings over a decade ago, it is possible that changes in the landscape of the profession including genetic counselor demographics, advancing genetic technologies, expanding complexity of testing options, as well as increased workload and patient volumes contribute to increased burnout levels. Our study findings are consistent with recently published research, which indicates that genetic counselors are a population at risk for burnout (Injeyan et al. 2011; Lee et al. 2014; Udipi et al. 2008).

Numerous studies have been published utilizing the MBI-GS to assess burnout. Although the populations examined and study designs differ, these published outcomes offer a context within which to conceptualize genetic counselor-specific burnout. Our data indicate that mean scores for genetic counselors (exhaustion: 2.80, cynicism: 2.22, professional

efficacy: 4.84) are comparable to scores for occupational therapists (exhaustion: 2.82, cynicism: 2.23, professional efficacy: 4.39) and physicians (exhaustion: 2.32, cynicism: 2.34) (Gupta et al. 2012; Upton et al. 2012). Genetic counselors in our study had higher mean burnout scores on the MBI-GS in comparison with nurses (exhaustion: 1.88, cynicism: 1.49, professional efficacy: 5.13) and psychiatric professionals (exhaustion: 1.94, cynicism: 1.32) (Garcia-Izquierdo and Rios-Risquez 2012; Perseus et al. 2007). Although a meta-analysis was beyond the scope of the present study, differences observed between study populations suggest that there may be unique factors affecting genetic counselor burnout. Such factors could include increasing complexity in genetic/genomic testing methodologies (Harris et al. 2013), the volume and uncertainty of resulting test outcomes (Ormond et al. 2010), as well as the evolving nature of the profession (Christian et al. 2012). Further research elucidating unique associations between aspects of the genetic counseling profession and burnout may point toward profession specific interventions.

Employee turnover and job exit are recognized consequences of burnout (Cordes and Dougherty 1993; Maslach and Jackson 1981) and genetic counselors cite burnout as a primary factor in deciding to leave the field (NSGC 2014). Over 43 % of respondents in the present study report that they had switched or considered switching job roles due to burnout. These data affirm the importance of developing workforce strategies to mitigate burnout's effects and retain genetic counselors in the profession.

Predictors of Burnout

We present the first study to examine genetic counselors' occupational stress in relation to burnout levels. Elevated levels of occupational stress are known to contribute to burnout (Clegg 2001; Freudenberger 1974; Maslach and Jackson 1981). As hypothesized, our data indicate that genetic counselor burnout is positively associated with occupational stress. Through multiple regression analysis, specific predictors surfaced that accounted for the bulk of the variance in each burnout subscale (59 % of the variance in exhaustion, 58 % of the variance in cynicism, and 43 % of the variance in professional efficacy).

Predictors Unique to Exhaustion

Significantly higher levels of exhaustion were reported for single or separated/divorced respondents, as well as genetic counselors reporting physical strain (frequent worrying about health and physical symptoms), increased patient volumes, and role overload (the extent to which job demands exceed personal and workplace resources) (Osipow 1998). The association between lower burnout scores for married individuals in comparison with those who are not married has been previously identified (Maslach and Jackson 1985) and it has been suggested that having a partner at home may encourage work-life balance or act as a form of informal social support (Chiriboga and Bailey 1986). Physical strain and health problems including sleep disturbances, aches and pains, and increased alcohol and drug consumption have been consistently correlated with burnout (Burke and Deszca 1986; Lee and Ashforth 1990; Maslach and Jackson 1981); however, further research examining physical strain experienced by genetic counselors is required to clarify its role in contributing to burnout.

As seen in the present study, increased patient volumes have previously been associated with higher burnout levels (Maslach and Jackson 1985; Lee et al. 2014) and excessive job demands and time constraints have been consistently related to exhaustion (Maslach et al. 2001; Peiro et al. 2001; Wu et al. 2007). Heightened workload, increasing logistical demands, and a lack of support in the workplace are known contributors to burnout amongst genetic counselors (Dexter et al. 2003; Lee et al. 2014). Genetic counselors' job demands commonly include responsibility for a high volume of patients, administrative duties, restrictive timelines, and ongoing adaptation to a changing career landscape (O'Daniel 2010). These demands are expected to contribute to genetic counselor role overload and exhaustion.

Predictors of Exhaustion and Cynicism

Exhaustion and cynicism levels were significantly higher in respondents who had switched, or considered switching job

roles due to burnout, as well as in genetic counselors who had concerns with role boundary (level of conflicting role demands/loyalties) and higher levels of psychological strain (psychological/emotional problems) (Osipow 1998). The association between job switching and burnout levels corroborates with prior research, which indicates that burnout is associated with employee turnover (Cordes and Dougherty 1993; Maslach and Jackson 1981). The relationship identified between role switching "due to burnout" and higher burnout scores indicates that genetic counselors may have a level of self-awareness regarding burnout.

Consistent with prior research (Schwab and Iwanicki 1982; Brookings et al. 1985), role boundary was found to be a significant predictor of burnout; specifically of exhaustion and cynicism in the present study. Concerns with respect to role boundary more frequently surface in complex work environments where responsibility for tasks is distributed among team members and boundaries between occupations become blurred (Tubre and Collins 2000). Differing perspectives on how a role should be performed can lead to conflicting role demands and confusion regarding role boundary (Tubre and Collins 2000). Work in multidisciplinary teams and in complex settings may create conflicting viewpoints regarding role boundaries for genetic counselors.

Psychological strain may present in many ways including depression, anxiety, complaints, and irritability (Osipow 1998). Psychological strain has been associated with burnout, and more specifically with cynicism and exhaustion in empirical studies as well as literature reviews (Kahill 1988; Lee and Ashforth 1990; Schaufeli et al. 1996). Factors influencing psychological strain may include facets of an individual's work life, personal life, past experiences, underlying psychological vulnerabilities, and existing psychiatric conditions. Although exploration of psychological strain was outside the scope of the present study, consideration of psychological factors may be useful in an effort to further delineate genetic counselor-specific burnout.

Predictor of Exhaustion, Cynicism, and Professional Efficacy

In the present study, respondents with high vocational strain reported significantly higher burnout levels on all three MBI-GS subscales. Vocational strain indicates the extent to which an individual is having problems with respect to their attitudes toward work, as well as their work quality or output (Osipow 1998). In a review of the burnout literature, Kahill (1988) found that negative attitudes towards clients, the job, and the organization were found to be associated with increased burnout. Feeling negatively about work may lead to distancing oneself from the job, finding work draining, and feeling less satisfaction with work. The current study highlights the importance of vocational strain and genetic counselor attitudes

toward work in relation to burnout. However, further research is warranted to confirm this relationship and to ascertain specific factors affecting work attitudes as they pertain to burnout in genetic counselors.

Predictor of Cynicism and Professional Efficacy

Our data identified role insufficiency (appropriateness of skills/training) (Osipow 1998) as a significant predictor of both cynicism and professional efficacy. Consistent with prior research in nursing (Bourbonnais et al. 1998; Garcia-Izquierdo and Rios-Risquez 2012; Wu et al. 2007), role insufficiency was found to be positively associated with burnout in genetic counselors. We noted that increased role insufficiency scores were associated with increased cynicism scores and decreased feelings of professional efficacy. The vast majority of respondents in our study completed a Master's of Science in Genetic Counseling or equivalent, suggesting that there are factors other than educational differences contributing to role insufficiency in genetic counselors. Other possible contributors to genetic counselor role insufficiency may include inadequate on-the-job training and/or incompatibilities between current job roles and prior experience.

Predictor Unique to Cynicism

Hours of work per week' was a positive predictor of cynicism in the present study, as one might expect when hours of work increase beyond a threshold. The relationship between increased work hours and burnout is supported in burnout theory (Freundenberger 1974) and empirical studies (Bourbonnais et al. 1998).

Predictor Unique to Professional Efficacy

Rational/Cognitive coping was the only unique predictor identified in the final regression model for professional efficacy. In the present study, genetic counselors that employed rational/cognitive coping experienced significantly higher levels of professional efficacy. Osipow (1998) defines rational/cognitive coping as the use of a systematic approach to problem solving and the consideration of the consequences of one's actions. The relationship between cognitive coping and professional efficacy in our study is consistent with Leiter's findings (1991), which demonstrate that mental health workers who used cognitive and control coping strategies to address workplace challenges had lower burnout, including a more positive assessment of their accomplishments at work. The psychology literature uses the label "control coping" to describe thinking proactively and using a cognitive strategy to engage in problem-solving efforts in stressful situations (Latack 1986). In a review of the burnout literature, Cordes and Dougherty (1993) indicate that feeling a lack of control

over workplace demands is associated with increased burnout. It follows that genetic counselors that employ cognitive coping skills are able to address problems more constructively and effectively, and thereby have decreased burnout. As Udipi et al. (2008) identified significant associations between several coping strategies and compassion fatigue in genetic counselors, it would be expected that coping strategies beyond cognitive coping may also affect burnout levels. Research exploring and comparing a variety of coping mechanisms in relation to genetic counselor-specific burnout could provide valuable insights and strategies for reducing burnout.

Predictors Expected, But Not Identified

Although previously identified in the literature, significant associations between burnout and social support, having children, or working in a clinical setting were not identified in our study. In one study lower burnout scores were reported in individuals with children in comparison to individuals without children (Cordes and Dougherty 1993); however, a statistically significant difference was not observed between these groups in the present study.

Previously, Lee et al. (2014) identified that poor professional relationships may contribute to genetic counselor-specific burnout. Prior studies examining burnout support this finding, suggesting that peer supports (Hare et al. 1988; Johnson and Stone 1987; McGrath et al. 2003) as well as supervisory support (Hare et al. 1988) may decrease burnout. In the present study, social support was not a significant predictor in the final model for any of the MBI-GS subscales. Genetic counselors have noted that, in relation to compassion fatigue, support from family members may be limited given a lack of understanding of complex clinical experiences (Benoit et al. 2007). Although an assessment of different types of social support in relation to burnout was beyond the scope of this study, it follows that select types of support may have significant associations with burnout. This topic warrants further investigation as it may point to key interventions to address burnout.

Data obtained by a professional status survey (NSGC 2014) indicate that clinical genetic counselors experience more burnout than non-clinical genetic counselors. In contrast, a significant difference in burnout levels between clinical and non-clinical genetic counselors was not identified in the present study. Exposure to patient suffering is known to contribute to compassion fatigue (Figley 2002); therefore genetic counselors working clinical roles would be expected to be at an increased risk for compassion fatigue over genetic counselors that do not interact with patients. Given that compassion fatigue is thought to be synergistic with burnout (Injeyan et al. 2011; Udipi et al. 2008), clinical genetic counselors may also be at an elevated risk for burnout. Further research is

warranted to elucidate the relationship between burnout and compassion fatigue in genetic counselors.

Study Limitations

This study was cross-sectional and correlational; therefore, the directionality of relationships between variables studied cannot be assumed and causal connections cannot be made. Although the study population shares similarities with the NSGC membership (NSGC 2014), the estimated response rate of 10.3 % raises questions about the generalizability of our findings. Affiliation with specific organizations (NSGC, CAGC, or ASGC) was not differentiated in the present study; therefore, there may be differences in working conditions and burnout levels among these groups that were not measured. As well, respondents may reflect an ascertainment bias with genetic counselors experiencing higher burnout levels being more likely to participate because of the immediate relevance of this topic. Conversely, it is also possible that individuals experiencing higher levels of burnout were less likely to participate in this study given that exhaustion and indifference toward work are characteristic features of burnout (Schaufeli et al. 1996). Individual's beliefs about burnout vary; therefore, prefacing administration of the MBI-GS with the term 'burnout' is advised against in an effort to avoid sensitizing respondents (Schaufeli et al. 1996). In the present study the term 'burnout' was included in the survey invitation for informed consent purposes, which may have sensitized participants and introduced response bias.

Practice Implications

The results of this study demonstrate that genetic counselors experience burnout. High burnout levels can lead to significant consequences in terms of inhibited professional development, decreased work quality and patient satisfaction, absenteeism, and job-exit (Cordes and Dougherty 1993; Maslach and Jackson 1981; Ozer and Beycioglu 2010; Vahey et al. 2004). Increasing effective coping strategies via seminars or online education modules in graduate education programs and workplace settings could promote professional development and decrease genetic counselor burnout, especially given that our data show that cognitive coping was associated with significantly lower burnout levels.

The present study highlights the importance of balance between job demands and resources in burnout reduction for genetic counselors. Based on our findings, it also appears that providing clarity regarding genetic counselor job role, within the context of the health care team and with respect to patient expectations, could circumvent burnout. Orientation protocols for new genetic counselor hires should include role expectations for the individual and colleagues, which may provide clarity regarding job roles and interactions. Regular

assessment and discussion of role boundaries and overlap among health care team members would be expected to further facilitate this process.

Research Recommendations

We present the first study to explore the relationship between occupational stress and genetic counselor-specific burnout. The multiple regression predictor sets for exhaustion, cynicism, and professional efficacy respectively accounted for 59, 58, and 43 % of the variance in burnout. Although these are large percentages for a study of this nature, another 41, 42, and 57 % of the variance for exhaustion, cynicism, and professional efficacy respectively, were not explained. Research should be directed at identifying additional factors that contribute to burnout risk in genetic counselors. One potential factor to consider involves the influence of various healthcare systems on genetic counselor burnout. Furthermore, the relationships between psychological, vocational, and physical strain with burnout are complex. Additional investigation is recommended to shed light on factors influencing psychological issues, work attitudes, and physical well-being in relation to burnout in genetic counselors. It is expected that coping mechanisms beyond cognitive coping may also be effective in ameliorating genetic counselor burnout; therefore, future studies addressing genetic counselor coping styles would be prudent. Further studies examining the variables identified in the present study in association with burnout are also warranted, including longitudinal studies to provide information regarding how burnout amongst genetic counselors changes over time. Finally, based on the present study and suggested research, interventions targeting genetic counselor-specific burnout could be designed to help reduce burnout risk and subsequent studies may aim to evaluate the efficacy of such interventions.

Conclusions

Burnout negatively affects professional life and work quality and may ultimately lead to job-exit. In this study the bulk of genetic counselors scored in the moderate to high burnout range (65.2, 70.5, and 47.6 % for exhaustion, cynicism, and professional efficacy respectively). Recognition of burnout at the time of presenting symptoms may be too late for interventions to be efficacious, which highlights the importance of directing efforts towards burnout prevention or at the very least, burnout reduction. A balance between job demands and resources, clearly defined job roles and expectations, and employment of cognitive coping skills are associated with significantly lower burnout levels in genetic counselors. Efforts to reduce burnout in genetic counselors should be directed at clearly defining job roles and expectations as well as

fostering feelings of professional efficacy through the development and utilization of cognitive coping skills.

Compliance with Ethical Standards

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Conflict of Interest The authors declare that they have no conflict of interest.

Human Studies and Informed Consent All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional (the Hospital for Sick Children and the University of Toronto) research committees and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Animal Studies This article does not contain any studies with animals performed by any of the authors.

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