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Work- and home-related stressors in radiation therapists and radiation oncology nurses: implications for provision of psychotherapy services to cancer-care health professionals

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Summary

Aims. To identify and quantify the major sources of workplace and non-workplace stress, plus commonly used coping strategies among a group of cancer therapists.
Method. Individual personal interviews were conducted with 16 radiation therapists (RTs) and 13 radiation oncology nurses (ONs) at two Brisbane hospitals.
Results. Major workplace stressors were administration difficulties, patient issues, equipment and staffing issues. Major coping strategies included seeking help from mental health professionals, talking (with colleagues, supervisor, family), doing extra work, and doing nothing or withdrawing from work problems. Non-workplace stressors included family health and stress, relationship issues and financial problems. Coping strategies included taking time for self, exercise and acceptance.
Discussion. Provision of psychotherapy services for cancer therapists requires accurate data regarding their major stressors and coping styles. The findings from this study help focus those services for maximum effectiveness.

cancer / oncology / stress / nurses / radiation therapists

Healthcare staff engage with patients across a range of illnesses and outcomes. Of those illnesses, perhaps none presents such potential for major disability and death as does cancer. It is therefore understandable that health professionals who work with cancer patients may experience occupational stress. This is because of the caring and empathic relationship between the two parties as well as the potentially negative outcomes of cancer on patient health and relationships. As evidence of that suggestion, prolonged stress and burnout have been reported in oncology nurses (ONs) [1, 2, 3] and radiation therapists (RTs) [4]. Counsellors who offer their services to these cancer-care professionals may therefore expect to encounter high levels of staff stress and burnout related to patient care issues. Alternatively, workplace stress can be caused by industrial/organisational issues, and the possible counselling interventions which might be relevant to those stressors experienced by cancer-care staff will be different to those occasioned by patient death – and illness-related issues. In addition to patient care and organisational issues,

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cancer care staff may also experience non-workplace stressors that could affect their ability to function. The provision of adequate counselling services to these individuals assumes that counsellors have an understanding of the particular aspects of patient care, organisation issues and non-workplace issues which act as major stressors for these carers, how they have attempted to cope with those stressors, and how successful those attempts have been.

However, research into the stressors and coping responses of ONs has often been undertaken as part of larger studies investigating burnout among cancer workers [1, 2, 5]. The most commonly cited stressors reported in a pilot study of Australian ONs included poor interprofessional communication and work overload [6], and the highest stress intensity levels were associated with making mistakes in patient care, feeling unable to complete required patient-care tasks within allotted time frames, and patient illness and death issues. Major stressors reported by RTs have included poor senior management practices and a failure to foster team collaboration, both of which have been associated with high levels of emotional exhaustion in RTs [4]. An observational study of stress experienced by RTs over a 4-week period found that interruptions during work activities, time stressors caused by delays in information exchanges and approval processes, and unexpected patient demands (e.g. strong pain leading to delays in a scheduled procedure) were the highest sources of stress for RTs [7].

However, the researchers cautioned against widespread interpretation of their results due to the observational nature of their study and relatively low number of observations per professional group. Further investigation of the types of stressor experienced by RTs is therefore needed to provide a firmer basis for counsellors who work with these employees when they experience stress-related problems.

Therefore, this project was the first stage of a three-stage investigation into the stressors that are experienced by ONs and RTs in Australia, and was designed to inform the development of effective interventions that might be used by counsellors who work with these oncology care staff. The aim of the current stage of this project was to identify the major sources of stress experienced by these staff via a series of confidential individual interviews with ONs and RTs from two hospital sites, as well as to document those individuals' perceived success of their coping strategies in dealing with those stressors.

In-depth interviews are a recognised method of commencing the process of forming models of information from a selected population, such as the kinds of stressors and coping strategies experienced by ONs and RTs. These data may then be summarised and used as the basis for a formal and standardised survey questionnaire which may be delivered to greater numbers of participants than is possible using individual interviews. The first author (C.F.S.) has used this procedure to identify and measure the major stressors experienced by prostate cancer patients [8], breast cancer patients [9], parents of a child with autism [10] and university students [11].

METHOD

Participants and settings

Following ethical clearance from the Hospital Ethics Committee, 13 ONs and 16 RTs from two large metropolitan cancer hospitals in Brisbane, Australia, volunteered to participate in the study. Both hospitals deliver comprehensive cancer care including surgical oncology, medical oncology, radiation oncology and palliative care. The study volunteers came from a pool of 161 ONs and 115 RTs, representing a sample rate of 14% and 8% for each professional group. There was a female bias (ONs 92% female, RTs 87.5% female). ONs who volunteered from hospital 1 had less clinical experience (mean 7.5 years) than ONs from hospital 2 (mean 17.7 years). RTs from both hospitals had similar years of clinical experience (mean 11.9 and 10.25 years, respectively).

Interviews

Individual semi-structured interviews were held in two private meeting rooms at the participating hospitals during one week in July 2012. All interviewees provided written consent to participate in the study and were assured of project confidentiality. Interviews were not au-

diotaped in an effort to ensure that frank responding by participants was not impeded. Informal discussions with these health professionals prior to commencement of the study indicated that audiotaping was perceived as potentially hampering transparent disclosure of work-related stressors during one-to-one interviews, and might contribute to low trust about confidentiality, as well as potentially affecting recruitment of study participants in a small workforce. In an effort to ensure trust and safety, the interviewer was not previously known to the participants and was not employed by the hospitals in question, nor the organisation which administered the hospitals, and was not known to any study participants. The first author, an experienced clinical psychologist, conducted all interviews. Participants were advised that the maximum anticipated length of the interview was 1 hour with no penalties for withdrawal at any time. Interviews ranged from 15 to 50 minutes.

A mixed methodology was employed for this study. The 'direct replication' recommendations of Barlow et al. [12] were followed, where responses to interview questions were recorded and tabulated in an ongoing compilation of trends. The interviewer adhered to a prepared interview protocol, with each interviewee being encouraged to respond to standard questions using their own words. Ongoing monitoring of inter-patient consistency of responses occurred until data saturation was achieved and further interviews were unlikely to produce new information. Simplified content analysis determined key common characteristics and content of interviewees' responses [13], but was limited to a compilation of actual words rather than extension into relationships between phrases. Additionally, participants were invited to complete Likert scales rating their levels of job satisfaction, job stress and perceived success with personally identified coping strategies.

Interview schedule

The interview schedule was developed by the first author based on previous studies conducted on stress and coping of participants mentioned in the introduction. The interview schedule is divided into three sections: (1) demographics; (2) job characteristics; (3) job stressors and coping strategies; it may be obtained from the authors on request. In section 1, participants provided demographic data regarding professional stream, hospital site, job title and years of experience. Section 2 included two open-ended questions about job characteristics and job demands ("What are the major tasks and responsibilities of your job?" and "What are the major job demands?"). Interviewees were also asked to rate their perceived levels of job satisfaction, job stress and job control on a scale from 1 to 10 (where 1 "very low", 10 "very high"). A 10-point Likert scale was selected because it is intuitive and easy to conceptualise in an interview situation. Open-ended questions were asked following these appraisals (e.g. "What are your major job satisfactions?", "How do you cope (generally)?"). In section 3, participants responded to open-ended questioning about workplace and non-workplace stressors and rated each of these in terms of perceived severity from 1 to 10 (1 "very low", 10 "very high"). Interviewees were provided with a lead question, "In your own words, can you describe your workplace/non-workplace stressors and how you cope with these?". As each stressor was identified and rated, participants were invited to reflect on the coping strategies that they had employed for that stressor and the perceived success of those strategies rated 1 to 10 (1 "very low", 10 "very high"). All interviews were conducted individually with handwritten notes generated by the interviewer and recorded on the interview schedule.

Data-reduction procedures

Following data collection, the interviewer and a masked, independent rater, each of whom were experienced clinical psychologists trained in content analysis procedures, read each interview schedule separately and formed tables of the stressors and associated coping strategies as described by the interviewees. These tables were then compared and any discrepancies identified and discussed. Data were cross-checked until consensus was achieved. Interrater agreement was initially 94%, then 100%.

RESULTS

Data on participants' responses to questions about job satisfaction, job stress and control over their job are presented in Table 1, and suggest the presence of some differences between occupations and across sites.

However, although statistical tests could not be performed on differences according to participants' gender due to the small number of males in the sample, Chi-square tests for independence failed to indicate any significant differences in job satisfaction, job stress or job control according to either site or participants' occupation, thus allowing the sample's responses to be considered as a unit. On that basis, the final column in Table 1 suggests that, by reference to the nomenclature used in the interview procedure, where 1 is "very low", 5 is "medium" and 10 "very high", the sample showed only medium levels of job stress and job control and slightly higher levels of job satisfaction.

Radiation therapists

In terms of workplace stressors experienced by radiation therapists, approximately equal numbers of major stressors were reported from each hospital. From an informal index of "stress intensity" developed by multiplying the number of participants who reported a stressor by the mean severity that they gave for each stressor, hospital 1 had a mean stress intensity index of 89.8 and hospital 2 had a mean stress intensity index of 262.9. While this is a non-standardised measure of the combination of frequency and severity of stressors reported, it does allow for some numerical measure of "stressor intensity" to be given for the apparent difference between the two sites for RTs' self-reports of workplace stressors. Further, by classifying each stressor according to its major source, such as staffing issues, equipment problems, administration difficulties and patient issues, and then applying the numeric used above to determine overall stressor intensity, it is apparent that RTs at hospital 1's major stressors were concerned with administration difficulties (stressor intensity 45.9), patient issues (33.9) and staffing issues (23.0). Hospital 2's major stressors were: administration difficulties (stressor intensity 107.0), equipment (89.9) and staffing issues (66.0). Thus, while perceived problems with administration issues dominated the responses of RTs from both sites, hospital 2 differed from hospital 1 by their reported equipment problems. Staffing issues were the third most intense source of stress reported across both sites. Non-workplace stressors reported by RTs are also shown in Table 2, and indicate fairly similar kinds of stressors reported by RTs at both sites, with the exception that RTs from hospital 2 also reported more non-work stressors, and the different stressors reported by them were relat-

Table 1. Mean job satisfaction, stress and control across both sites (all scores from a max. of 10). ON, oncology nurses; RTs, radiation therapists.

Variable/site	Hospital 1		Hospital 2		Total sample
	RTs	ONs	RTs	ONs	
Job satisfaction	6.7	5.3	7.1	9.0	7.38 (1.47)
Job stress	7.6	6.0	6.7	4.6	6.07 (2.23)
Control over job	7.4	6.5	5.8	7.2	6.31 (2.05)

Stressors

The complete list of workplace and non-workplace stressors, number of participants who reported them and their reported intensity for both RTs and ONs is available from the authors. Summaries of the major (i.e. reported by at least two participants in each site) stressors reported by the participants at both hospitals, plus the frequency of reporting and the mean severity rating given for each stressor are shown in Table 2 and Table 3.

Table 2. Major workplace and non-workplace stressors and severity for radiation therapists (RT) across two sites

Hospital	Workplace stressors	N	Mean severity[a]	Non-workplace stressors	N	Mean severity[a]
Hospital 1	Poor senior management support/follow through	3	9.3	Poor health of family	3	8.0
	Patient death	3	7.3	Family problems/stress	3	7.7
	Tension/personality differences with other staff/team	2	5.0	Finances	2	7.0
	Emotional reactions to patient illness	2	6.0			
	Unfair treatment from management	2	9.0			
	Carrying tasks/responsibilities belonging to colleagues	2	6.5			
Hospital 2	Treatment machine breakdowns	9	8.1	Finances	4	7.3
	Time pressure for patient treatment	8	7.5	Poor health of family	3	9.7
	Tension/personality differences with other staff/team	6	6.0	Family problems/stress	3	8.0
	Hospital system/administration errors and poor processes	2	9.0	Fatigue due to overtime	3	8.7
	IT problems/not enough computers	2	8.5	Relationship difficulties	2	7.5
	Micro-managed by senior management	2	7.0			
	New staff needing training	2	7.5			
	Poor leadership provision	2	7.5			

Self-rated on a scale of 1 to 10.

Table 3. Major workplace and non-workplace stressors and severity for oncology nurses (ONs) across two sites

Hospital	Workplace stressors	N	Mean severity[a]	Non-workplace stressors	N	Mean severity[a]
Hospital 1	High patient allocation/concern over safety, level of care	4	6.5	Poor finances	2	5.5
	Poor communication with same-level colleagues	3	7.7	Family problems/stress	2	5.5
	Higher medical staff decisions leading to patient care delays	3	6.3			
	Fluctuating workloads	3	6.0			
	Supervisor ignores complaints/offers poor support	2	9.0			
	Rigid hierarchical system	2	8.0			

	Crowded work area	2	8.0			
	Changes to roster/work schedule with no discussion	2	7.5			
	IT problems/not enough computers	2	7.0			
	Time pressure	2	7.0			
	Dealing with patient distress/showing empathy	2	7.0			
	Patient death	2	6.5			
	Patient anxiety/need to understand procedures	2	5.5			
Hospital 2	Tension/personality differences with other staff/team	4	5.0	Family problems/stress	3	7.0
	Hospital system/administration errors and poor processes	4	9.0	Family responsibilities	2	6.5

Self-rated on a scale of 1 to 10.

ed to relationship difficulties and fatigue due to overtime.

Oncology nurses

Table 3 presents the major workplace and non-workplace stressors that were reported by ONs at the two hospitals, plus frequency reported and severity of stressors. There were many more stressors reported from hospital 1 than from hospital 2 for this group, giving a stressor intensity index of 217.0 for hospital 1 and 56 for hospital 2. ONs at hospital 1 were concerned about administration difficulties (72.9), patient issues (45.0), equipment (30.0) and staffing problems (23.1), whereas their colleagues at hospital 2 were concerned with administration difficulties (36.0) and problems with colleagues (20.0). The major common sources of reported stress for ONs in hospital 2 were the same as for RTs. ONs at hospital 1 also reported stressors from their concerns about dealing with patients and getting sufficient equipment to do their job effectively. Non-workplace stressors for ONs (Table 2) were family problems, common to both sites, with the only other stressors reported being finances (hospital 1) and family responsibilities (hospital 2).

COPING STRATEGIES

Radiation therapists

When asked to report on the kinds of coping strategies they used to deal with their workplace stressors, RTs mentioned a range of strategies, and those reported by at least two participants are shown in Table 4 – *next page.* RTs from hospital 2 reported more coping strategies than RTs from hospital 1, however, when looking at a mean coping strategy success rate hospital 1 did better (hospital 1 success rate 17.9, hospital 2 success rate 12.9). The success rate was obtained by adding the figures shown in the 'Mean success' column for each site and then dividing by the number of coping strategies reported by RTs at each site. These data suggest that, as well as reporting more stressors with a higher stressor intensity than hospital 1 participants, RTs from hospital 2 reported that their average coping strategy success rates were lower than those from hospital 1. Further, if the various coping strategies were grouped according to their focus, hospital

Table 4. Major coping strategies reported by radiation therapists across sites, plus the success of those strategies

Hospital	Workplace stressor coping strategies	N	Mean success[a]	Non-workplace stressor coping strategies	N	Mean success[a]
Hospital 1	Talk to colleagues to solve the problem	5	7.5	Just get on with life	2	6.0
	Do nothing	3	4.0			
	Complain to management	3	2.3			
	Do extra time at work to make up delays	2	7.5			
Hospital 2	Put up with it – do nothing	5	4.8	Seek professional help (psychologist, social worker)	3	6.7
	Complain to management	3	4.0	Talk to partner	3	7.3
	Discuss with supervisors	3	3.3	Focus on oneself and trying to relax	3	7.3
	Plan ahead to avoid time pressures	3	5.7			
	Seek advice from colleagues	2	7.0			
	Just get on with the job	2	6.0			
	Withdraw	2	3.5			
	Look for other jobs	2	3.5			

Self-rated on a scale of 1 to 10.

Table 5. Major coping strategies reported by oncology nurses across sites, plus the success of those strategies

Hospital	Workplace stressor coping strategies	N	Mean success[a]	Non-workplace stressor coping strategies	N	Mean success[a]
Hospital 1	Seek professional help (e.g. psychologist, social worker)	4	6.8	Exercise	3	4.3
	Complain to union/management	4	2.0			
	Self-organisation and structure	3	7.5			
	Ignore the problem	3	5.3			
	Make efforts to communicate with higher-level staff	2	7.5			
	Acceptance	2	1.0			
Hospital 2	Self-organisation and structure	4	6.0	Just accept it	2	5.5
	Complain to union/management	3	5.7			
	Self-talk	2	8.0			
	Vent to self	2	7.5			
	Withdraw from conflict with peers	2	7.5			
	Accept the situation	2	4.5			

Self-rated on a scale of 1 to 10.

1 RTs reported two strategies that involved talking with others (colleagues, supervisor) about their stressors, one which involved them doing extra work, and one which reflected a failure to take any action at all to cope with the stressor. By contrast, RTs from hospital 2 reported two "talking" strategies, one relating to themselves ("plan ahead to avoid time pressures") and four that reflected either doing nothing or withdrawing from their work.

RTs from hospital 2 reported more active coping strategies in response to their non-work stressors, seeking help from professionals, talking with their partners and spending some "me" time, whereas RTs from hospital 1 reported that they adopted an "acceptance" strategy to their non-workplace stressors.

Oncology nurses

ONs from each site reported the same numbers of coping strategies for both workplace (6 strategies) and non-workplace (1 strategy) stressors, although ONs at hospital 2 reported a mean coping success rate of 39.2, whereas for ONs at hospital 1 it was 30.1. Grouping the strategies for workplace stressors, two categories emerged: "talking to others" (hospital 1 had three strategies that fell into this category, and hospital 2 had one strategy) and "personal adjustment" (three strategies in hospital 1, five strategies in hospital 2), thus reflecting some differences in the ways that these two groups of ONs attempted to deal with their stressors. Non-workplace stressors were met with personal strategies by ONs at both sites, but those at hospital 1 used a more active strategy (exercise) than those at hospital 2 (acceptance) (Table 5).

DISCUSSION

The findings of this interview study indicate some similarity across the RTs and ONs in terms of stressor frequency and intensity, as well as the use of various coping strategy approaches. Stressors for the ONs and RTs participating in this study may be grouped into three categories. First, stress arising from administrative or managerial processes, errors and leadership styles that were accepted as uncontrollable by participants. Second, issues associated with equipment and IT infrastructure unavailability, limited access and breakdown, which can also be classified as organisation-related issues, and over which RTs and ONs felt they had only low levels of control. Third, patient issues, particularly arising from emotional attachments to patients and therapist empathy with their patients' suffering; here again, participants felt they had little control. Thus, the major sources of workplace stress reported by the two occupational groups may be seen as arising from factors over which they had little direct control. When the severity of these stressors (Tables 2 and 3) was also taken into account, it can be understood that the participants in this study were in the kind of "aversive and uncontrollable" stressor situation that has been associated with burnout in oncology staff [1, 4]. Non-workplace stressors were generally the same across both sites and occupations, and focused on family issues, finances and health.

From a counselling perspective, these identified stressors represent major potential sources of psychological ill health. For example, it has been demonstrated that the kinds of uncontrollable environmental stress reported by these oncology staff can lead to long-lasting but reversible disruption of prefrontal cortex (PFC) function and consequent attentional tasks. Translated to the workplaces of the participants in this study, this reduction in the efficiency of the PFC could influence their ability to solve the problems they meet in regard to patient care, as well as devising methods of responding to organisational stressors [14]. Further, consistent environmental stress can elevate circulating levels of the hormone cortisol, leading to hypercortisolaemia, which has been strongly associated with an increased likelihood of depression [15, 16]. Although counsellors may encounter the endpoints of these processes (i.e. client depression, confusion), it is worthwhile understanding that the process by which these mental disorders developed was psychophysiological and included major and consistent stress (as reported by these participants), biological alterations to brain and endocrine systems, and consequent depression and cognitive confusion.

In terms of the kinds of therapeutic interventions that may be used by counsellors when

working with clients who present with these outcomes of prolonged aversive stress in the workplace, it is relevant that there is some evidence that provision of counselling support has been shown to reduce circulating cortisol, thereby indirectly contributing to a lowered risk of depression [17]. In addition, two meta-analyses of a range of counselling and psychotherapy interventions for workplace stress have shown that cognitive-behavioural therapy (CBT), relaxation training and multimodal programmes were significantly effective in reducing the indices of psychological ill health in stressed employees, but that organisation-focused interventions had a less powerful effect than individual-focused interventions [18, 19]. A recent study [20] on medical staff with burnout who underwent an integrated psychodynamic, cognitive and educational counselling intervention that was delivered in either group – or individual-based format reported that emotional exhaustion and job stress were significantly reduced after the intervention and also at 3-year follow-up. Akroyd and colleagues [21] suggested that workplace stress reduction intervention targets could include increasing self-awareness through self-monitoring and self-assessment, promoting a healthy lifestyle, the adoption of recovery strategies, such as relaxation techniques, and physical exercise.

Participants in the current study reported using both "active" and "passive" coping strategies to deal with their workplace and non-workplace stress. Active strategies included talking to colleagues, discussing with line managers, seeking professional help, and complaining to management or the unions. Passive coping responses included ignoring the problem, withdrawal or "getting on with life". Due to the small numbers of participants in this study, it was difficult to conclusively measure the effectiveness of these coping strategies. However, ignoring the emotional responses to the suffering of patients and not acknowledging this potentially preventable source of an ongoing stressor within the workforce are more likely to contribute to burnout [22].

Finally, in terms of potential counselling strategies for cancer care workers, it is salutary to reflect on the comment made by Turner and colleagues [22] that, despite cancer care workers having better access to healthcare, many are less likely to actively seek and receive appropriate care, perhaps because of the stigma associated with acknowledging emotional problems. Improving awareness of the availability and success of counselling interventions for stress management in the workplace may therefore represent the first task of counsellors who offer their services to cancer care staff.

The variations in stressors and coping strategies between the hospitals and professional streams studied remind us that generic interventions to improve the well-being of workers are less likely to be successful than those that are tailored. Even in this small sample of cancer workers from two hospitals in the same region there were differences, even though the case-load was similar. Professional streams tend to operate in silos, with each having its own management stream. What may have been a problem with management in one professional stream need not have been problematic with another professional stream in the same department.

LIMITATIONS

As with any research study, the current endeavour had strengths and limitations. All interviews were conducted by one person from outside the organisation who sought to increase trust and elicit full disclosure of workplace stressors by interviewees in a maximally supportive environment. This interviewing schedule has been used in previous research and therefore there was some precedent for it. A possible limitation of the study was that interviews were not audiotaped and therefore open to post-interview interpretation by others and therefore establish better reliability. However, participants were invited to view their responses, and the interviewer read out what was recorded to increase source verification and lessen omissions or bias. One limitation was that the study was confined to just two professional streams in two hospitals and therefore was not necessarily generalisable to other populations, although there was a substantial degree of consistency in participant responses. Another limitation of the study is that less than 10% of the available workforce was interviewed, and it is possible that there may have

been some bias in terms of who volunteered, although this limitation is countered by the consistency in reports across participants.

In conclusion, results of this initial stage in the planned research project to investigate stress among cancer care workers indicated that there were several commonly reported sources of stress in the workplace and outside of workplace, that workplace stressors were largely perceived as beyond the control of participants, and that the kinds of coping strategies employed by the sample did not focus on active methods of dealing with the issues which caused the staff to feel stressed. The implications for counsellors who offer their services to cancer care staff are to increase awareness and acceptance of the kinds of counselling interventions that may be offered, and to then develop individual-focused interventions based on the previous literature. The combination of (a) stressed employees, (b) evidence-based counselling interventions for management of workplace stress, and (c) counsellors who can deliver these interventions is one that requires action to ensure that all three components are integrated to the benefit of cancer care workers, their patients and (ultimately) the organisation in which they work.

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