

Occupational stress and coping resources in physiotherapists: a survey of physiotherapists in three general hospitals

M.C. Santos^a, L. Barros^{b,*}, E. Carolino^a

^a School of Technology and Health, Polytechnic Institute of Lisbon, Portugal

^b Department of Psychology, University of Lisbon, 1649-013 Lisbon, Portugal

Abstract

Objectives To identify occupational stressors and coping resources in a group of physiotherapists, and to analyse interactions between subjective levels of stress, efficacy in stress resolution and coping resources used by these professionals.

Design A sample of 55 physiotherapists working in three general hospitals in Portugal completed the Coping Resources Inventory for Stress, the Occupational Stressors Inventory and two subjective scales for stress and stress resolution.

Main results Most physiotherapists perceived that they were moderately stressed (19/55, 35%) or stressed (20/55, 36%) due to work, and reported that their efficacy in stress resolution was moderate (25/54, 46%) or efficient (23/54, 42%). Issues related to lack of professional autonomy, lack of organisation in the hierarchical command chain, lack of professional and social recognition, disorganisation in task distribution and interpersonal conflicts with superiors were identified as the main sources of stress. The most frequently used coping resources were social support, stress monitoring, physical health and structuring. Perceived efficacy in stress resolution was inversely related to perceived level of occupational stress ($r = -0.61$, $P < 0.01$). Significant correlations were found between several coping resources and the perceived level of stress and efficacy in stress resolution. Associations between problem solving, cognitive restructuring and stress monitoring and both low levels of perceived stress and high levels of perceived efficacy were particularly strong.

Implications for practice The importance of identifying stressors and coping resources related to physiotherapists' occupational stress, and the need for the development of specific training programmes to cope with stress are supported.

© 2010 Chartered Society of Physiotherapy. Published by Elsevier Ltd. All rights reserved.

Keywords: Occupational stress; Coping resources; Physiotherapy; Health professionals

Introduction

It is unquestionable that health professionals work in stressful contexts and that occupational stress has become a concern for both health professionals and their employers. Research has shown evidence of high levels of stress in health professionals working in different healthcare settings and the consequent negative effects, not only in the physical and psychological health of these professionals, but also in the quality of care they provide and in the overall quality of healthcare institutions [1–6].

Traditional approaches to the study of occupational stress in healthcare settings have focused on the identification of stressors. Intrinsic factors of the job, relations between work

demands and control, workload, relationships with other professionals, organisational structure, work environment and career achievements have been identified as the major sources of occupational stress [7–12].

The development of a cognitive–transactional approach [13], which conceptualises stress as the result of the interaction between the individual and his/her environment, has opened new perspectives on the study of stress and stress management interventions by emphasising the role of personal resources (individual beliefs, personality characteristics, coping resources and coping strategies) in individual stress reactions [14–18]. With regard to personal characteristics and individual beliefs, there is some evidence that hardiness, sense of coherence, self-efficacy, locus of control, commitment to work, positive attitudes towards the healthcare system and the perception of work relevance are important moderators of occupational stress for nurses and physicians [19–23].

* Corresponding author. Tel.: +351 918146020; fax: +351 217933408.

E-mail address: lbarros@fpce.ul.pt (L. Barros).

As conceptualised by Lazarus and Folkman [13], ‘coping’ refers to cognitive and behavioural efforts to confront external or internal demands that are perceived as exceeding individual resources. ‘Coping resources’ refer to the reserves or sources of support that are used by the individual to managing stress. The use of coping resources can act as a buffer that interacts with a stressor to predict mental and behavioural outcomes. Thus, the study of coping resources used by health professionals is of particular relevance, and constitutes an area of research to identify preventive interventions with this population.

Studies with physiotherapists have reported moderate to elevated levels of stress [24–30], and occupational stress has been reported as a negative feature that diminishes the attractiveness of physiotherapy as a career [31]. These professionals identified several sources of stress, including lack of human resources and consequent work overload, limited time to attend patients and their families, excessive paperwork or administrative duties, conflicts relating to role ambiguity and function, autocratic management services and lack of professional autonomy, employment and career development dimensions, personal relationships within the health team, lack of social and emotional support in their work environments, and communication with patients and their families, particularly with non-collaborating patients or patients with unrealistic expectations about their treatment [26,28,32–35].

Although recent studies on stress management in health professionals have investigated stress and coping strategies [19,36–38], no studies have aimed to verify potential relationships between perceived levels of stress or stress resolution and the use of coping resources in physiotherapists.

The main objective of this research was to contribute to the study of occupational stress in physiotherapists by providing information for the development of educational and support programmes that may help these professionals to confront their professional stress more effectively.

This study assessed the levels of perceived stress, perceived efficacy in stress resolution, and the major occupational stressors and coping resources used by physiotherapists working in hospital settings. Possible associations between the use of coping resources, the levels of perceived stress and the levels of perceived efficacy in stress resolution of these professionals were analysed.

Method

Subjects

The sample consisted of 55 physiotherapists working in three main general hospitals in the urban area of Lisbon. Ninety-five percent of the sample mainly worked with patients with a moderate to good prognosis or with minor lesions, and only 5% reported spending most of their time working with patients with a poor prognosis. The majority (85%) of participants were female, mean (standard deviation)

age was 35 (8) years (range 21 to 56 years), and they had been working as physiotherapists for a median of 10 years (range 1 to 31 years).

Instruments

The Occupational Stressors Inventory [39] was used to identify occupational stressors. The Coping Resources Inventory for Stress, translated and adapted for the Portuguese population by McIntyre *et al.* [40], was used to identify the main coping resources used in the professional context. Two subjective four-point Likert scales were used to identify perceived stress and perceived self-efficacy in stress resolution (1, not stressed/low efficacy in stress resolution; 2, moderately stressed/moderate efficacy in stress resolution; 3, stressed/effective in stress resolution; 4, highly stressed/high efficacy in stress resolution).

The Occupational Stressors Inventory is a self-report questionnaire with 23 items, answered on a four-point Likert scale ranging from a score of 1 (not stressful) to 4 (very stressful). This inventory was developed by the first author for a non-published study with several health professional groups (radiologists, clinical analysts and anatomy physiologists) that served as a pilot study for the present research. This inventory is based on the Gray-Toft and Anderson scale [41]; the results of occupational stress studies with health professionals presented by Lees and Ellis [42], McGrath *et al.* [43], Lindstrom [44], and Calhoun [45]; and on the meta-analysis of occupational stressors by Ross and Altmaier [46]. The inventory is composed of two occupational stress-related dimensions: the functional dimension and the socio-emotional dimension. The functional dimension itemises stressors inherent to the health professionals’ tasks and functions, and includes two subdimensions: work conditions (e.g. physical space where work is conducted) and organisational aspects (e.g. task distribution). The socio-emotional dimension presents stressors related to emotional and socio-emotional aspects, and includes two subdimensions: intrapersonal (e.g. facing death or permanent incapacity) and interpersonal (e.g. conflict with coworkers).

The Coping Resources Inventory for Stress [47] assesses the degree to which people use coping resources to prevent or confront stressors. This inventory is based on Lazarus and Folkman’s transactional model [13], which asserts that the evaluations people make about their own coping resources and about their ability to adapt to the demands they face, determine the degree to which the stressful stimulus can produce the stress response. The authors consider that a deficit in the use of coping resources may be mitigated by educational and preventive intervention, thus making the Coping Resources Inventory for Stress a privileged and preferred instrument to use before intervention with specific professional groups. The inventory has 280 first-person assertions (with yes or no answers) grouped into 12 primary scales (see Table 1; self-disclosure, self-directedness, confidence, acceptance, social support, financial freedom,

Table 1
Description of Coping Resources Inventory for Stress scales.

Scales	Description
1. Self-disclosure	The extent to which individuals freely express feelings, thoughts, worries and opinions. Implies interpersonal confidence.
2. Self-directiveness	The extent to which individuals maintain a positive sense of self-worth and self-competence.
3. Confidence	The degree to which individuals feel confident to face stressful situations. Implies self-confidence, emotional control and a positive attitude to problem solving.
4. Acceptance	The degree to which individuals are able to accept themselves and the world (the situations they are in). Implies the acceptance of possibility of failure and of interpersonal differences.
5. Social support	The degree to which individuals search and use social support from friends, family and peers, and are able to provide support in times of stress.
6. Financial freedom	The degree to which individuals perceive having financial resources and use these resources to provide for their needs and to confront stress.
7. Physical health	The degree to which individuals perceive their general health and feel that they can use their energy to cope with stressful events.
8. Physical fitness	The degree to which individuals adopt health-promoting behaviours that they believe contribute to increased physical well-being.
9. Stress monitoring	The degree to which individuals are able to anticipate stressful situations and evaluate signs and symptoms of stress, and use that resource to diminish stress.
10. Tension control	The degree to which individuals are able to control stress symptoms by using relaxation and thought control strategies.
11. Structuring	The degree to which individuals are able to organise and use resources such as time and energy. It includes competences for planning, management of priorities, and balancing needs and efforts.
12. Problem solving	The degree to which individuals are able to solve personal problems. It includes definition of objectives, conceptualisation, planning, exploring solutions and analysing results.
13. Cognitive restructuring	The degree to which individuals are able to change beliefs and to use their knowledge to cope with stress. It includes competences to focus on problems with a positive but realistic attitude.
14. Functional beliefs	The extent to which individuals have beliefs which help them to prevent or cope with the stressful situations. It includes rational positive beliefs such as 'We can always be competent' or 'We cannot be loved by everybody'.
15. Social ease	The extent to which individuals feel comfortable in social situations. It implies social skills.

physical health, physical fitness, stress monitoring, tension control, structuring and problem solving) and three combined scales (cognitive restructuring, functional beliefs and social ease).

Demographic characteristics

A number of personal demographic details of the respondents were collected, including age, gender and the number of years working as a physiotherapist.

Procedure

After approval by each hospital's ethical committee, the questionnaires were distributed to all physiotherapists working in three central general hospitals. A letter was also sent explaining the objectives of the study, asking for voluntary cooperation and assuring respondents of the confidentiality of their answers. After being completed anonymously, questionnaires were returned in a sealed envelope. The response rate was 92%.

Statistical analyses

The statistical analysis of data was undertaken using Statistical Package for the Social Sciences Version 16 (SPSS Inc., Chicago, IL, USA). The results are presented as frequencies and percentages for the subjective scales; frequencies, medians and interquartile ranges (IQRs) for the stressors

inventory; and medians and IQRs for the coping resources. Correlations between coping resources and perceived stress levels and perceived efficacy in stress resolution were measured using Spearman's Rank correlation. *P*-values less than 0.05 were considered significant.

Results

Subjective scales

In response to 'How stressed do you feel as a result of your job', the majority of the participants (Table 2) reported that they were moderately stressed (19/55, 35%) or stressed (20/55, 36%). A small percentage (4/55, 7%) rated themselves as highly stressed.

The majority of physiotherapists in this sample reported that their efficacy in stress resolution was moderate (25/54, 45%) or effective (23/54, 42%).

A significant negative correlation (Spearman correlation -0.613 , $P < 0.01$) was found between perceived levels of occupational stress and perceived efficacy in stress resolution. Thus, high levels of perceived stress are significantly associated with low levels of perceived efficacy in stress resolution, and low levels of perceived stress are significantly associated with high levels of perceived efficacy in stress resolution (Table 3).

Table 2

Subjective scales—perceived occupational stress and perceived efficacy in stress resolution.

Score	Perceived occupational stress Frequency (%)	Perceived efficacy in stress resolution Frequency (%)
1 Not stressed/low efficacy	12 (22)	3 (5)
2 Moderately stressed/moderate efficacy	19 (35)	25 (45)
3 Stressed/effective	20 (36)	23 (42)
4 Highly stressed/high efficacy	4 (7)	3 (5)
Missing		1
Total	55	54

Table 3

Frequencies, medians and interquartile ranges (IQR) for occupational stressors—functional dimension stressors ($n = 55$).

Items	Scale				Median	IQR
	1 Not stressful Frequency (%)	2 Moderately stressful Frequency (%)	3 Stressful Frequency (%)	4 Very stressful Frequency (%)		
1. Workspace physical conditions	4 (7)	27 (49)	21 (38)	3 (6)	2	2 to 3
3. Lack of task definition in the health team	6 (11)	16 (29)	20 (36)	13 (24)	3	2 to 3
4. Work overload	4 (4)	11 (20)	26 (47)	16 (29)	3	3 to 4
6. Lack of professional autonomy	3 (6)	11 (20)	18 (33)	23 (42)	3	2 to 4
7. Highly demanding and unexpected situations	3 (6)	23 (42)	25 (46)	4 (7)	3	2 to 3
9. Discrepancies between individual professional values and administration objectives	3 (6)	9 (16)	24 (44)	19 (35)	3	3 to 4
10. Routine tasks	4 (7)	32 (58)	11 (20)	8 (15)	2	2 to 3
12. Sharing responsibilities	6 (11)	22 (40)	18 (33)	9 (16)	2	2 to 3
13. Lack of material resources in the workplace	3 (6)	20 (36)	24 (44)	8 (15)	3	2 to 3
15. Lack of organisation in the hierarchal command chain	3 (6)	8 (15)	25 (46)	19 (35)	3	3 to 4
16. Low salary	3 (6)	12 (22)	24 (44)	16 (29)	3	2 to 4
18. Work timetable	16 (29)	29 (53)	8 (15)	2 (4)	2	1 to 2
19. Lack of human resources in the work place	7 (13)	14 (26)	25 (46)	9 (16)	3	2 to 3
21. Disorganisation in task distribution	4 (7)	11 (20)	22 (40)	18 (33)	3	2 to 4

Occupational Stressors Inventory

In the functional dimension, the items that were identified as very stressful by a high number of respondents were lack of professional autonomy [frequency 23, median 3 (IQR 2 to 4)], lack of organisation in the hierarchal command chain [19, 3 (3 to 4)], discrepancies between individual professional values and administration situations [19, 3 (3 to 4)], disorganisation in task distribution [18, 3 (2 to 4)], low salary [16, 3 (2 to 4)] and work overload [16, 3 (3 to 4)]. Work overload, lack of organisation in the hierarchal command chain, discrepancies between individual professional values and administration situations, and low salary were identified as stressful by a high number of individuals. In addition, almost half of the subjects identified lack of human resources in the workplace [25, 3 (2 to 3)], highly demanding and unexpected situations [25, 3 (2 to 3)] and lack of material resources in the workplace [24, 3 (2 to 3)] as stressful.

The lowest stress levels were found for work timetable [16, 2 (1 to 2)]. Routine tasks were identified as moderately stressful by the majority of individuals [32, 2 (2 to 3)].

For the socio-emotional dimension (Table 4), a high number of individuals identified lack of professional and social recognition [22, 3 (2 to 4)], interpersonal conflicts with superiors [19, 3 (2 to 4)], hierarchal superiors' pressure [15, 3 (2 to 4)] and interpersonal conflicts with coworkers [14, 3 (2 to 4)] as very stressful.

Lack of professional and social recognition [17, 3 (2 to 4)] and interpersonal conflicts with superiors [19, 3 (2 to 4)] were identified as stressful by a high number of individuals. Other items frequently identified as stressful were lack of social and emotional support in the institutions [27, 3 (2 to 3)], emotional burden of the tasks [23, 3 (2 to 3)] and facing death or permanent incapacity in patients [22, 3 (2 to 3)]. In this dimension, the lowest stress levels were found for interpersonal conflicts with assistant staff [19, 2 (1 to 2)].

Table 4

Frequencies, medians and interquartile ranges (IQR) for occupational stressors—socio-emotional dimension ($n = 55$).

Items	Scale				Median	IQR
	1 Not stressful Frequency (%)	2 Moderately stressful Frequency (%)	3 Stressful Frequency (%)	4 Very stressful Frequency (%)		
2. Interpersonal conflicts with coworkers	8 (15)	15 (27)	18 (33)	14 (26)	3	2 to 4
5. Lack of social and emotional support in the work institution	4 (7)	14 (26)	27 (49)	10 (18)	3	2 to 3
8. Lack of professional and social recognition	2 (4)	14 (26)	17 (31)	22 (40)	3	2 to 4
11. Interpersonal conflicts with superiors	5 (9)	12 (22)	19 (35)	19 (35)	3	2 to 4
14. Interpersonal conflicts with assistant staff	19 (35)	23 (42)	9 (16)	4 (7)	2	1 to 2
17. Emotional burden of tasks (associated with illness and/or death)	7 (13)	15 (27)	23 (42)	10 (18)	3	2 to 3
20. Hierarchal superiors' pressure	6 (11)	14 (26)	20 (36)	15 (27)	3	2 to 4
22. Facing death or permanent incapacity in patients	7 (13)	16 (29)	22 (40)	10 (18)	3	2 to 3
23. Impossibility to freely express personal emotions	6 (11)	19 (35)	20 (36)	10 (18)	3	2 to 3

Occupational Stressors Inventory

In relation to the Coping Resources Inventory for Stress, the results (Table 5) show that social support [median 17 (IQR 15 to 18), range 1 to 20], stress monitoring [17 (14 to 19), 1 to 20], financial freedom [16 (13 to 18), 1 to 20], structuring [16 (11 to 18), 1 to 20] and physical health [15 (13 to 18), 1 to 20] were the coping resources most frequently used by this group. The least used resources were physical fitness [6 (4 to 11), 1 to 20], acceptance [8 (6 to 12), 1 to 20], self-directedness [11 (8 to 15), 1 to 20] and confidence [11 (8 to 14), 1 to 20].

Relations between variables

As shown in Table 6, statistically significant correlations were found between the use of coping resources and levels of perceived stress and of perceived efficacy in stress resolution, except for financial freedom and physical fitness. These correlations were stronger between problem solving (0.725,

$P < 0.01$), cognitive restructuring (0.696, $P < 0.01$), stress monitoring (0.684, $P < 0.01$) and perceived stress levels; and between problem solving (0.783, $P < 0.01$), cognitive restructuring (0.626, $P < 0.01$), stress monitoring (0.615, $P < 0.01$) and perceived efficacy in stress resolution.

Discussion and conclusions

More than half of the physiotherapists who participated in this study rated themselves as moderately stressed or stressed. A small group considered themselves to be highly stressed. These findings are consistent with other research on stress and burnout in health professionals that found moderate to high levels of stress related to occupational problems [4–9].

Although the majority of these initial studies were primarily focused on physicians and nurses, research with other health professionals such as physiotherapists found similar levels of stress [2,24,25,28–30]. Balogun *et al.* [28] found high levels of emotional exhaustion and depersonalisation, and low levels of personal achievement in a sample of 169 physiotherapists working in various clinical settings. More recently, Gisbert *et al.* [25], in a study of 258 Spanish physiotherapists, found high levels of emotional exhaustion in one-third of the sample. Other studies with physiotherapists obtained similar results, reinforcing the conclusion that health institutions should not ignore the stress levels of their staff.

This study identified levels of perceived efficacy in stress resolution, and correlated the results with the perceived levels of stress reported by the respondents. The majority of physiotherapists reported moderate or efficient stress resolution. In line with Lazarus and Folkman's [13] transactional model of stress, a significant correlation between stress and stress resolution was found, such that those professionals claiming to be more stressed reported lower levels of efficacy in stress resolution, and those claiming to be less stressed reported higher

Table 5

Medians and interquartile ranges (IQR) for the coping resources of stress ($n = 55$).

Coping resources	Median	IQR
Self-disclosure	14	4 to 18
Self-directedness	11	8 to 15
Confidence	11	8 to 14
Acceptance	8	6 to 12
Social support	17	15 to 18
Financial freedom	16	13 to 18
Physical health	15	12 to 18
Physical fitness	6	4 to 11
Stress monitoring	17	14 to 19
Tension control	12	7 to 15
Structuring	16	11 to 18
Problem solving	13	9 to 15
Cognitive restructuring	13	9 to 16
Functional beliefs	12	8 to 14
Social ease	12	8 to 14

Table 6

Correlations between coping resources of stress, perceived occupational stress level and perceived efficacy in stress resolution.

Coping resources	Perceived occupational stress level Correlation coefficient, <i>P</i> -value	Perceived efficacy in stress resolution Correlation coefficient, <i>P</i> -value
Self-disclosure	−0.437, 0.001	0.415, 0.002
Self-directedness	−0.383, 0.004	0.368, 0.006
Confidence	−0.577, <0.001	0.596, <0.001
Acceptance	−0.322, 0.017	0.284, 0.036
Social support	−0.517, <0.001	0.440, 0.001
Financial freedom	−0.211, 0.121	0.202, 0.138
Physical health	−0.382, 0.004	0.403, 0.002
Physical fitness	−0.158, 0.249	0.060, 0.665
Stress monitoring	−0.684, <0.001	0.615, <0.001
Tension control	−0.564, <0.001	0.496, <0.001
Structuring	−0.550, <0.001	0.382, 0.004
Problem solving	−0.725, <0.001	0.783, <0.001
Cognitive restructuring	−0.696, <0.001	0.626, <0.001
Functional beliefs	−0.388, 0.003	0.335, 0.013
Social base	−0.486, <0.001	0.570, <0.001
Perceived occupational stress level		−0.613, <0.001

Spearman Rank Order Correlations (two-tailed significance).

levels of efficacy in stress resolution. These physiotherapists demonstrated that they can adequately assess their level of perceived efficacy to solve occupational stress, which can be an important tool to evaluate and decide upon the need for intervention. In addition, these results emphasise the notion that professionals perceive lower levels of stress as a result of engaging in effective stress resolution strategies, and not necessarily because their work context is less demanding.

Consistent with other studies [12,24,25,32,34,48–51], this study found that the physiotherapists emphasised issues related to the functional dimension of their job and to organisational problems in the institutions as important sources of occupational stress. Lack of professional autonomy, lack of organisation in the hierarchical command chain, disorganisation in task distribution, work overload and low salary were the most commonly reported sources of occupational stress. For the socio-emotional dimension, participants in this study reported that lack of social recognition of their profession and interpersonal problems with superiors were the primary sources of stress. The lack of emotional support in the institutions, the emotional burden of their tasks, and situations in which they must face the death or permanent incapacity of patients were also identified as stressful.

Other studies of physiotherapists [26,27,52] and other health professionals, such as radiologists [53], nurses [48] and radiation therapists [49], have reported that lack of autonomy, lack of social recognition and role ambiguity are stressors. This may be due to the fact that, from these professionals' perspectives, the recent scientific and technological breakthroughs in their fields of intervention, and the consequent longer training required, have not brought either social recognition or more autonomy to their profession. As stated by Wolfe [27], this situation creates a major discrepancy between the level of education acquired and the possibilities of actual professional fulfilment, thus leading to professional frustration.

The results of this study highlight five coping resources that are commonly used by this professional group: social support, stress monitoring, financial freedom, physical health and structuring. Social support is considered an important coping resource, particularly for health professionals [19,33,54,55]. This social support not only refers to individual personal networks (i.e. family and friends), but also to the emotional support provided within health institutions.

The high levels obtained on the stress monitoring scale could be interpreted as excessive attention and concern about tension symptoms, commonly known as 'stress disease'. However, as the present study demonstrates, this monitoring does not necessarily lead to health-promoting behaviours such as those described in the coping resource 'physical fitness'. In fact, contradicting the results of similar studies in other countries, these Portuguese physiotherapists, although aware and preoccupied with their stress levels, seem to be inadequately involved in their own health promotion and tend to adopt unhealthy lifestyles.

The use of structuring as a preferred coping resource suggests that the physiotherapists in this study have the ability to incorporate organisational skills, such as scheduling tasks, establishing objectives and priorities, and managing time and efforts. Considering the academic training of these professionals and the importance given to practical experience from the very early stages of training, these results suggest that these organisational skills are effectively developed during their academic training.

The low use of the coping resources 'acceptance' and 'confidence' reported by these professionals may be an indication of their difficulty to manage situations that involve frustration and tension or that require self-confidence. These results emphasise the need for programmes focused on personal skills development from the early stages of professional training as a way to explore alternative responses to situations appraised as stressful or problematic.

In addition to the coping resources most commonly used by these physiotherapists, it is important to pay special attention to the significant correlations between coping resources and stress levels reported by these professionals, and between coping resources and perceived levels of efficacy in stress resolution. Results show that coping resources such as problem solving, cognitive restructuring and stress monitoring are related to lower levels of perceived stress and higher levels of perceived efficacy in stress resolution.

Although the authors were unable to find a study in the literature with a similar methodology that could support these results, it is interesting to note that in previous studies [56–58], coping resources that promote active coping (e.g. problem solving) and positive reappraisal (e.g. cognitive restructuring) are reported as more effective in the reduction of stress.

Limitations

This study is limited by a relatively small sample size so that, ultimately, these results can only be interpreted as trends that need to be confirmed in larger studies. Nevertheless, these results offer important guidance for future work in the area. Furthermore, caution is needed in interpreting these results as the correlation between levels of stress and perceived efficacy in stress resolution, or the association between levels of stress and reported coping resources do not essentially determine a causal or directional relationship. Studies with larger populations to allow multiple regression analysis or intervention studies are needed to help understand these causal links.

Implications for practice

The present study found significant levels of stress in a reasonable number of physiotherapists, which reinforces the need to incorporate this theme in the academic training of physiotherapists, in continuing professional development [59], in the development of preventive and stress management programmes, and in the organisation and management of health institutions [60]. Identification of the coping resources most commonly used by professionals with lower levels of stress and higher levels of perceived efficacy in stress resolution, namely social support and active coping strategies, may provide an indication of some of the resources that should be emphasised in professional training. However, the data show that it may be important to go beyond the identification of coping resources and learn how to use these resources more effectively. Ultimately, this will better equip physiotherapists to manage their stress levels, thus enabling them to be more effective and successful in their professional practice.

Ethical approval: The names and protocol number of the hospitals granting ethical approval have been provided

but have been withheld from publication for reasons of participant anonymity.

Funding: Fundação para a Ciência e Tecnologia, Portugal.

Conflict of interest: None declared.

References

- [1] Burrows GD, McGrath C. Stress and mental health professionals. *Stress Med* 2000;16:269–70.
- [2] Carpenter C. Moral distress in physical therapy practice. *Physiother Theory Pract* 2010;26:69–78.
- [3] Shapiro SL, Astin JA, Bishop S, Cordova M. Mindfulness-based stress reduction for health care professions. Results from a randomized trial. *Int J Stress Manag* 2005;12:164–76.
- [4] Harris LM, Cummings SR, Campbell AJ. Stress and psychological well-being among allied health professionals. *J Allied Health* 2006;35:198–207.
- [5] Weinberg A, Crrred F. Stress and psychiatric disorders in health care professionals and hospital staff. *Lancet* 2000;355:533–7.
- [6] Su JA, Weng H, Tsang HY, Wu JL. Mental health and quality of life among doctors, nurses and other hospital staff. *Stress Health* 2009;25:423–30.
- [7] Bettina P. Burnout, role conflict, job satisfaction and psychosocial health among Hungarian health care staff: a questionnaire survey. *Int J Nurs Stud* 2006;43:311–8.
- [8] Herting A. The health care sector: a challenging or draining work environment. Psychosocial work experiences and health among hospital employees experiences during the Swedish 1990s. Dissertation. Stockholm: Karolinska Institutet; 2003.
- [9] McVicar A. Workplace in nursing: a literature review. *J Adv Nurs* 2003;44:633–42.
- [10] Patricia S. Stress and stressors in the clinical environment: a comparative study of fourth-year student nurses and newly qualified general nurses in Ireland. Master of Science Thesis Dissertation. Dublin: City University; 2009.
- [11] Tattersall AJ, Bennet P, Pugh S. Stress and coping in hospital doctors. *Stress Health* 1999;15:109–13.
- [12] Enberg N, Nordin C, Ohman A., Work experiences of novice occupational therapists and physiotherapists in public sector employment. Analyses using two occupational stress models. *Adv Physiother* 2009, doi:10.1080/14038190903033161.
- [13] Lazarus R, Folkman S. Coping and adaptation. In: Gentry WD, editor. *The handbook of behavioural medicine*. New York: Guilford; 1984. p. 282–325.
- [14] Chen WQ, Siu OL, Lu JF, Cooper CL, Phillips DR. Work stress and depression: the direct and moderating effects of informal social support and coping. *Stress Health* 2009;25:431–43.
- [15] Redinbaugh EM, Schuerger JM, Weiss LL, Brufsky A, Arnold R. Health care professionals' grief: a model based on occupational style and coping. *Psycho-oncology* 2001;10:187–98.
- [16] Sasaki M, Kitaoka-higashiguchi K, Morikawa Y, Nakagawa H. Relationship between stress coping and burnout in Japanese hospital nurses. *J Nurs Manag* 2009;17:359–65.
- [17] Luria G, Torjman A. Resources and coping with stressful events. *J Organ Behav Manag* 2009;30:385–707.
- [18] Nijyama E, Okamura H, Kohama A, Taniguchi R, Sounohara M, Nagao M. A survey of nurses who experienced trauma in the workplace: influence of coping strategies on traumatic stress. *Stress Health* 2009;25:3–9.

- [19] Hawkins CA, Howard RA, Oyebode JR. Stress and coping in hospice nursing staff. The impact of attachment styles. *Psycho-oncology* 2007;16:563–72.
- [20] Alblet J, Jones R. Resilience and well-being in palliative care staff: a qualitative study of hospice nurses' experience of work. *Psycho-oncology* 2007;16:733–40.
- [21] Kirkcaldy B, Martin T. Job stress and satisfaction among nurses: individual differences. *Stress Med* 2000;16:77–89.
- [22] McManus IC, Keeling A, Paice E. Stress burnout and doctors' attitudes to work are determined by personality and learning style: a twelve year longitudinal study of UK medical graduates. *BMC Med* 2009;2:29.
- [23] Moreno B, Morett NI, Rodriguez A, Morante ME. La personalidad resistente como variante modeladora del síndrome de burnout en una muestra de bomberos. *Psicothema* 2006;18:413–8.
- [24] Castro AM, Rodrigues CM, Moreno LC, Vicente MC, Arroyo MM, Fernandez FM. Prevalence of burnout syndrome in physiotherapy. *Fisioterapia* 2006;28:17–22.
- [25] Gisbert F, Los Fayos E, Montesinos MD. Burnout en fisioterapeutas españoles. *Psicothema* 2008;20:301–68.
- [26] Broom J, Williams J. Occupational stress and neurological rehabilitation physiotherapists. *Physiotherapy* 1996;82:606–14.
- [27] Wolfe GA. Burnout of therapists: inevitable or preventable? *Phys Ther* 1981;61:1046–50.
- [28] Balogun J, Joseph A, Titiloye V, Balogun A, Adetoyeje O, Katz J. Prevalence and determinants of burnout among physical and occupational therapists. *J Allied Health* 2002;31:131–9.
- [29] Ogiwara S, Hayashi H. Burnout amongst physiotherapists in Ishikawa Prefecture. *J Phys Ther Sci* 2002;14:7–13.
- [30] Wilkins K. Work stress among health care providers. *Health Rep* 2007;8:33–6.
- [31] Park JR, Coombs C, Wilkinson AJ, Preston D. Attractiveness of physiotherapy in the National Health Service as a career choice: qualitative study. *Physiotherapy* 2003;89:575–83.
- [32] Lindsay R, Hanson L, Taylor M, McBurney H. Workplace stressors experienced by physiotherapists working in regional public hospitals. *Aust J Rural Health* 2008;16:194–200.
- [33] Donohoe E, Nawawi A, Wilker L, Shindert T, Jette D. Factors associated with burnout of physical therapists in Massachusetts rehabilitation. *Phys Ther* 1993;73:750–61.
- [34] Hendriks O. An investigation of role conflict in physiotherapists practising in general hospitals in Dublin. *Physiotherapy* 1990;76:6–14.
- [35] Linzer M, Gerrity M, Douglas J, McMurray J. Physician stress: results from physician worklife study. *Stress Health* 2002;18:37.
- [36] Payne N. Occupational stressors and coping as determinants of burnout in female hospice nurses. *J Adv Nurs* 2001;33:396–405.
- [37] Escribà-Agüir V, Bernabé-Muñoz Y. Coping strategies in stress and sources of professional reward in specialized physicians of the Valencia Community. A study with semi-structured interviews. *Rev Esp Salud Publica* 2002;76:595–604.
- [38] Chne CK, Lin C, Wang SH, Hou TH. A study of job stress, stress, coping strategies, and job satisfaction for nurses working in middle-level hospital operating rooms. *J Nurs Res* 2009;17:199–211.
- [39] Santos MC. Stress ocupacional numa amostra de profissionais de saúde das áreas laboratoriais – construção de uma escala de stressores ocupacionais. Unpublished study. Lisbon: Escola Superior de Tecnologias da Saúde de Lisboa; 1999.
- [40] McIntyre T, McIntyre S, Silvério J. Inventário de Respostas e Recursos Pessoais. Brief personal survey – Portuguese version. Jonesboro, GA: Automated Assessment Systems; 1995.
- [41] Gray-Toft P, Anderson JG. Stress among hospital nursing staff: its causes and effects. *Soc Sci Med* 1983;15A:639–47.
- [42] Lees S, Ellis N. The design of a stress-management programme for nursing personnel. *J Adv Nurs* 1990;15:946–61.
- [43] McGrath A, Reid N, Boore J. Occupational stress in nursing. *Int J Nurs Stud* 1989;26:343–58.
- [44] Lindstrom K. Work organization and well-being of Finnish health care personnel. *Scand J Work Environ Health* 1992;18:90–3.
- [45] Calhoun G. Hospitals are high-stress employers. *Hospitals* 1980;54:171–6.
- [46] Ross R, Altmaier E. Intervention in occupational stress. London: Sage Publications; 1984.
- [47] Matheny KB, Curlette W, Aycock D, Pugh J, Taylor J. The Coping Resources Inventory for Stress. Atlanta, GA.
- [48] Steven M, Taylor S, Green D, McManus C. Nurses' representations of the perceived causes of work-related stress: a network drawing approach. *Work Stress* 2002;15:40–52.
- [49] Duane A, Caison A, Adams R. Burnout in radiation therapists: the predictive value of selected stressors. *Int J Radiat Oncol Biol Phys* 2002;52:816–21.
- [50] Escot C, Artero S, Gandubert C, Boulenger JP, Ritchie K. Stress levels in nursing staff working in oncology. *Stress Health* 2001;17:273–9.
- [51] Blau R, Carolant T, Krame D, Mahoney I, Jette D, Beal J. The experience of providing physical therapy in a changing health care environment. *Phys Ther* 2002;82:648–57.
- [52] Oginawara S, Kurakawa J. Present-day autonomy and professional role of Japanese physiotherapists. *J Phys Ther Sci* 2008;20:209–16.
- [53] Gram J, Ralirez AJ, Field S, Richards MA. Job stress and satisfaction among clinical radiologists. *Radiology* 2000;55:182–5.
- [54] Escribà-Agüir V, Pérez-Hoyos S. Psychological well-being and 76 psychosocial work environment characteristics among emergency medical and nursing staff. *Stress Health* 2007;23:153–60.
- [55] Tyler P, Cushway D. Stress in nurses: the effects of coping and social support. *Stress Med* 1995;11:243–51.
- [56] Mak A, Muller J. Job insecurity, coping resources and personality dispositions in occupational strain. *Work Stress* 2000;14:312–28.
- [57] Karlsen B, Idsoe T, Dirdal I, Hanestad BR, Bru E. Effects of a group-based counselling programme on diabetes-related stress coping, psychological well-being and metabolic control in adults with type 1 and type 2 diabetes. *Patient Educ Couns* 2004;53:299–308.
- [58] Arranz P, Ulla SM, Ramos JL, Rincón C. Evaluation of a counselling training program for nursing staff. *Patient Educ Couns* 2005;56:233–9.
- [59] French HP, Dowds J. An overview of continuing professional development in physiotherapy. *Physiotherapy* 2003;89:575–83.
- [60] Shapiro SL, Astin JA, Cordova M. Mindfulness-based stress reduction for health care professionals. Results from a randomized trial. *Int J Stress Manag* 2005;12:164–76.

