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Occupational stress and job satisfaction of healthcare staff in rehabilitation units

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Summary
Background: *Occupational stress and job dissatisfaction are recognized risk factors for healthcare professionals and can lead to a decrease in work performance and in the quality of care offered, and to poorer health of workers. Research in the rehabilitation care setting is very limited and needs to be explored.* **Objectives:** *To investigate occupational stress, job satisfaction and their relationships with organizational factors among healthcare staff in rehabilitation units.* **Methods:** *A cross-sectional study of healthcare staff working in two rehabilitation units was conducted. They were sent two self-administered questionnaires, the Occupational Stress Indicator (OSI) and the Areas of Work life Scale (AWS), in order to assess occupational stress and job satisfaction. One-way ANOVA was used to explore work stress among two groups of workers, characterized by high and low job satisfaction levels. Stepwise multiple linear regression analysis was conducted to assess the association between job satisfaction and organizational risk factors.* **Results:** *A total of 90 questionnaires were returned (response rate 53%). The main sources of stress were unfairness, conflict between personal and organizational values, lack of reward and workload. Workers with low job satisfaction significantly scored higher in work-related stress in regard to various aspects of work, and in lower job control. Regression analysis showed that the most important predictors of job satisfaction were fairness and workload.* **Conclusions:** *The results of this study showed that job dissatisfaction is strongly associated with work stress and certain organizational risk factors. This study suggests the importance of focusing on the psychosocial factors in the work environment and job satisfaction in order to improve the well-being of rehabilitation healthcare staff.*

Riassunto
«Stress e soddisfazione lavorativa degli operatori sanitari nei reparti di riabilitazione». **Introduzione:** *Lo stress e l'insoddisfazione lavorativa rappresentano importanti fattori di rischio per le professioni sanitarie; negli ultimi anni la richiesta di servizi di riabilitazione è in costante aumento, ma solo pochi studi hanno investigato la salute occupazionale in questo specifico settore della medicina.* **Obiettivi:** *La ricerca ha l'obiettivo di identificare le*

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principali cause di insoddisfazione e stress lavorativo nei reparti di riabilitazione. **Metodi:** *Il personale sanitario di due reparti di riabilitazione è stato invitato a compilare i questionari Occupational Stress Indicator (OSI) e Areas of Work life Scale (AWS) per la valutazione della percezione di stress e della soddisfazione lavorativa. I dati raccolti sono stati elaborati attraverso analisi descrittive, della varianza e modelli di regressione multipla.* **Risultati:** *Il campione totale è costituito da 90 operatori sanitari (pari al 53% dei questionari consegnati). Le principali fonti di stress lavorativo riguardano la percezione di scarsa equità, l'incongruenza tra i valori personali e dell'organizzazione, la mancanza di riconoscimento e il carico di lavoro. Gli operatori meno soddisfatti mostrano valori significativamente maggiori di stress lavorativo e una percezione di minore controllo sul proprio lavoro. I più importanti predittori della soddisfazione lavorativa sono risultati essere la percezione di equità e il carico di lavoro.* **Conclusioni:** *L'insoddisfazione lavorativa è fortemente associata alla percezione di stress e a specifici fattori di rischio organizzativo. Il presente studio evidenzia l'importanza di valutare i fattori lavorativi di tipo psicosociale, e in particolare la soddisfazione professionale, al fine di promuovere il benessere degli operatori e migliorare l'attività lavorativa nei reparti di riabilitazione.*

Introduction

In recent years, the growing concern about the relationship between work stress, job dissatisfaction and health has stimulated special interest in working environment features and psychosocial factors which can negatively affect workers' wellbeing (3, 15, 27, 32). Specifically, healthcare professions, including nurses, physicians and physiotherapists, have been recognized as occupations with high psychological distress due to the intrinsic nature of the job, characterized by a high degree of responsibility towards other people, high emotional burden and exposure to severe suffering (27, 39, 40).

Work stress can be described as a negative emotional experience resulting from inadequate coping with stressors at the workplace, which has negative consequences on workers' physical and psychological health, but also on the quality of care offered to their patients (6, 39).

The psychosocial work factors that were found to be important contributors to occupational stress in healthcare settings are heavy workload, low job control, low co-worker support, low supervisor support, high effort-reward imbalance, complaints from patients and relatives, and low job satisfaction (24, 26, 39).

In particular, healthcare professionals who deal with serious and long-term diseases, such as those working in rehabilitation units, are commonly exposed to stressful experiences, including highly demanding patients, pressure of work and frequent interpersonal conflicts due to the multidisciplinary nature of rehabilitation teams, made up of different healthcare professionals who have to interact with each other in order to provide effective patient treatment (9, 17).

Previous studies showed that the process of occupational stress does not result directly from the working environment itself but might also be influenced by individual factors which moderate work stress perception (15, 16, 35, 39). Cooper's model of stress (6) focused on the importance of work locus of control, type A behaviour pattern and job satisfaction in the stressor-strain process. Work locus of control refers to the individual's perceived control or autonomy over the job, i.e., how much control and influence workers feel they exert at their workplace. Individuals with internal locus of control believe they may control the work environment through their behaviour and were found to experience lower levels of job stress and psychological strain and reported higher levels of job satisfaction and job performance than individuals with external locus of control (16, 35). Type-A personality refers to a behavioural pattern characterized by ambition, competitiveness, time urgency, impatience and hostility (11). Previous studies reported that this type of personality, with particular regard to the impatience-irritability di-

mension, was associated with increased vulnerability to job stressors and risk of cardiovascular disease, but results were somewhat inconsistent (4, 16, 35)

Many studies found that work stress has a negative association with job satisfaction (15, 22, 27), which is an important factor influencing both workers' mental health, in terms of burnout, lowered self-esteem, anxiety and depression, and job-related behaviour such as absenteeism, turnover and intention to leave (5, 10, 21, 32).

Job satisfaction is considered as an overall emotional state resulting from the appraisal of one's job, or as a related set of attitudes about various aspects of the work environment (35). Measurement of specific job components make it possible to determine which particular aspects are producing satisfaction or dissatisfaction for the worker and are important when planning areas for improvement. The literature has shown that job satisfaction in healthcare staff is a critical issue and is the result of various aspects of work, such as structure, organizational atmosphere, job tasks, salary, career perspectives, personal recognition and leadership style (12, 21).

In recent years, the demand for rehabilitation services has steadily increased and this is primarily due to the aging population, suffering from disabilities and chronic diseases, and the development of important innovations in rehabilitation practices and disease prevention (38). Despite the need for efficient and specialized rehabilitation teams, very few studies have investigated occupational stress and job satisfaction in staff working in rehabilitation units, who are a potentially high risk occupational category (8, 9, 14, 17, 41). Identifying those aspects causing most job dissatisfaction and occupational stress may be useful in implementing effective organizational changes, aimed at improving workers' health and reducing costs associated with turnover, low work performance and occupational accidents (5).

In this context, the main objectives of our research were a) to investigate the workplace sources of occupational stress among healthcare staff in rehabilitation units; b) to investigate whether higher levels of occupational stress are associated with lower levels of job satisfaction and c) to identify the organizational predictors of the different components of job satisfaction.

Methods

A cross-sectional survey of rehabilitation staff working in two hospitals in Northern Italy was conducted in January 2010.

Anonymous questionnaires were administered to a convenient sample of healthcare staff (N=168) working in in-patient rehabilitation units which provide services mainly to patients with neurological conditions such as head injuries, spinal cord injuries and stroke. Questionnaires were accompanied by a letter, which guaranteed anonymity and explained to the participants that the main aim of the study was to assess organizational well-being at their workplace; written consent was obtained from all participants. A special box was placed in a hospital staff room to collect and return the questionnaires. In addition, subjects were invited to provide basic socio-demographic information like gender, age, education level, living circumstances, and work information, such as years employed in healthcare, type of contract, working hours, employment status and time necessary to get to place of work.

Occupational stress was assessed using the Occupational Stress Indicator (OSI) (6, 33). This is a self- reporting questionnaire, consisting of 167 items, which evaluates different aspects of occupational stress. We used this self-reporting instrument because it provides a comprehensive analysis of work stress that is not restricted only to the potential sources of job stress but also measures important individual factors such as locus of control, job satisfaction and health. The theoretical development of the OSI and its validity is well documented and demonstrated (6, 31), also for use with healthcare personnel (30).

The OSI is based on the transactional model of stress which incorporates four key elements: sources of work pressure, individual variables (Locus of control and Type A behaviour pattern), coping strategies and the effects of stress on the individual (job satisfaction and health). The OSI con-

sists of six main scales: i) Sources of pressure (61 items, with 6 subscales) evaluates potential risk factors related to the specific workplace (high scores indicate high stress); ii) Type A behaviour (14 items, 3 subscales and a total score) investigates typical individual attitudes such as the need to achieve career success or the time pressure (high scores are classified as Type A); iii) Work locus of control (12 items, 3 subscales and a total score) refers to how much control individuals feel they have over their jobs (high scores indicate external locus of control); iv) Coping styles (28 items, 6 subscales) examine how the individual copes, especially the frequency with which different strategies are used, rather than their importance or their real efficacy (high scores indicate frequent use of the strategy); v) Job satisfaction (22 items, 5 subscales and a total score) refers to the worker's subjective perception about his/her quality of work, organizational structure and work relationships (high scores indicate high satisfaction). The specific job satisfaction components measured by the five subscales were: a) the "Achievement, value and growth" subscale (6 items) that evaluates the possibility of professional advancement and career and the presence of adequate rewards; b) the "Job itself" subscale (4 items) that evaluates satisfaction related to the specific tasks and job demands such us workload, job security, role; c) the "Organizational design and structure" subscale (5 items) that evaluates the relationships with colleagues and supervisors, communication within the organization, the methods used to promote changes and to solve conflicts and the organizational hierarchical structure; d) the "Organizational processes" subscale that evaluates workers' decision attitude, job motivation, job flexibility and their satisfaction with workplace supervisors; e) the "Personal relationships" subscale (5 items) that evaluates satisfaction with interpersonal relationships with colleagues and supervisors and the organizational atmosphere; vi) Health (30 items, two subscales) assesses the individual's mental and physical health through questions that will ascertain the presence of cognitive and somatic complaints (high scores indicate illness). All items are scored on a 6-point Likert response key ranging from 1 (strongly disagree) to 6 (strongly agree).

The second instrument we used for assessing potential organizational risk factors in the workplace was the Areas of Worklife Scale (AWS) (19), which has been used extensively in the context of healthcare services to evaluate the organizational causes of burnout (13, 18, 20). The AWS was validated in an Italian sample of healthcare personnel and was confirmed as possessing good psychometric characteristics (2). The questionnaire assesses workers' perception about six key aspects of their job environment: i) Workload (6 items; the amount of work to be done in a given time), ii) Control (3 items; the opportunity to choose and decide, to solve problems, and to contribute to taking responsibilities), iii) Reward (4 items; financial and social rewards for contributions to the job), iv) Community (5 items; the quality of an organization's social environment), vi) Fairness (6 items; the extent to which the organization has consistent and equitable rules for everyone), and vi) Values (5 items; what is important to the organization and to its members). Respondents indicated their degree of agreement with these items on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Maslach & Leiter (23) suggested that high scores (> 3.00) indicate good perception by workers about their workplace, while low scores (< 3.00) identify the presence of perceived organizational risk factors.

All analyses were performed using SPSS (13.0) for Windows. Descriptive analysis for continuous variables were calculated using mean and SD. Total job satisfaction scale was dichotomized considering the median of the scores distribution, in order to obtain two separate groups of workers characterized by high and low job satisfaction levels. To compare groups, one-way ANOVA was used for parametric data, while Kruskall-Wallis one-way analysis of variance by ranks was used for non-parametric data. Pearson's correlation analysis was performed to examine the bivariate correlation between job satisfaction dimensions and organizational factors. Stepwise multiple linear regression analysis was conducted to identify the organizational predictors of each sub-dimension of job satisfaction. A p-value < 0.05 was considered as statistically significant.

Results

A total of 90 subjects completed their questionnaires and demographic profiles, with a response rate of 53%. Non-respondents did not differ from the participants in any of the socio-demographic factors (p>0.05). Of the 90 respondents, 73% were women, 59% had a degree, 50% were aged between 30 and 40 years and 68% lived with a partner or other persons. The majority of the sample were nurses (42%), had a permanent (83%) and full-time (86%) contract, took fewer than 30 minutes to arrive at place of work (71%) and had less than 5 years of experience in health care (39%). The socio-demographic characteristics of the sample are summarized in table 1.

AWS means scores are showed in figure 1 with higher scores reflecting lower risk of work-related stress. The most important organizational risk factors perceived by the sample were fairness (M=2.66, SD=0.81) and values (M=3.02, SD=0.88), followed by rewards (M=3.11, SD=0.96) and workload (M=3.13, SD=0.80).

The job satisfaction scale was first examined comparing results of the different socio-demographic groups. No significant differences were found except for years employed in health care (p<0.05; the most satisfied were professionals working for less than 5 years) and professional category (p<0.01; the most satisfied were physicians).

OSI mean scores of workers with high job satisfaction and those with low job satisfaction are compared in table 2.

Workers with low job satisfaction reported a significantly higher risk of work-related stress than the group with job satisfaction in relation to: Factors intrinsic to the job (p<0.05), Relationships with other people (p<0.05), Career and Achievement (p<0.001), Organizational structure and climate (p<0.01), Home-work interface (p<0.05). In addition, workers with low job satisfaction showed higher levels of Ambition (p<0.05) and an external work locus of control compared to the satisfied workers, as indicated by the following scales: Organizational forces (p<0.01), Management processes (p<0.05), Individual influences (p<0.01), Total work locus of control (p<0.001).

Table 1 - Socio-demographic characteristics of the sample and descriptive statistics for job satisfaction

Variable	N (%)	Job satisfaction	
		M	SD
Sex			
Male	24 (27)	78.00	16.70
Female	66 (73)	80.90	16.70
Age (years)			
Under 31	17 (19)	81.11	19.27
31-40	45 (50)	79.10	18.68
40 or more	28 (31)	81.35	11.06
Education level			
Non-graduate	37 (41)	79.59	16.99
Graduate	53 (59)	80.60	16.58
Years in health care			
Under 5 years	35 (39)	84.60	16.12
6-12 years	33 (37)	74.90	18.44
12 or more	22 (24)	81.09	12.67
Type of contract			
Temporary	15 (17)	90.60	17.14
Permanent	75 (83)	78.10	15.87
Working hours			
Full-Time	86 (95)	79.87	16.58
Part-Time	4 (5)	87.00	19.61
Employment status			
Physician	10 (11)	85.10	13.63
Nurse	38 (42)	82.39	18.22
Nursing aid	14 (31)	83.99	16.30
Physiotherapist	28 (16)	73.53	14.19
Living circumstances			
Living alone	29 (32)	81.27	17.58
Living with partner/others	61 (68)	79.67	16.63
Time necessary to get to place of work			
<30 minutes	64 (71)	79.24	17.08
30-60 minutes	21 (23)	81.66	16.23
>1 hour	5 (6)	86.00	14.08

Table 3 shows the correlations between organizational factors and job satisfaction. We used the six areas of work life (AWS) and the six job satisfaction scales (five sub-components and a total score) measured by OSI. Four of the six organizational factors (Workload, Reward, Fairness and Values) had a significant positive correlation (p<0.01) with all dimensions of job satisfaction.

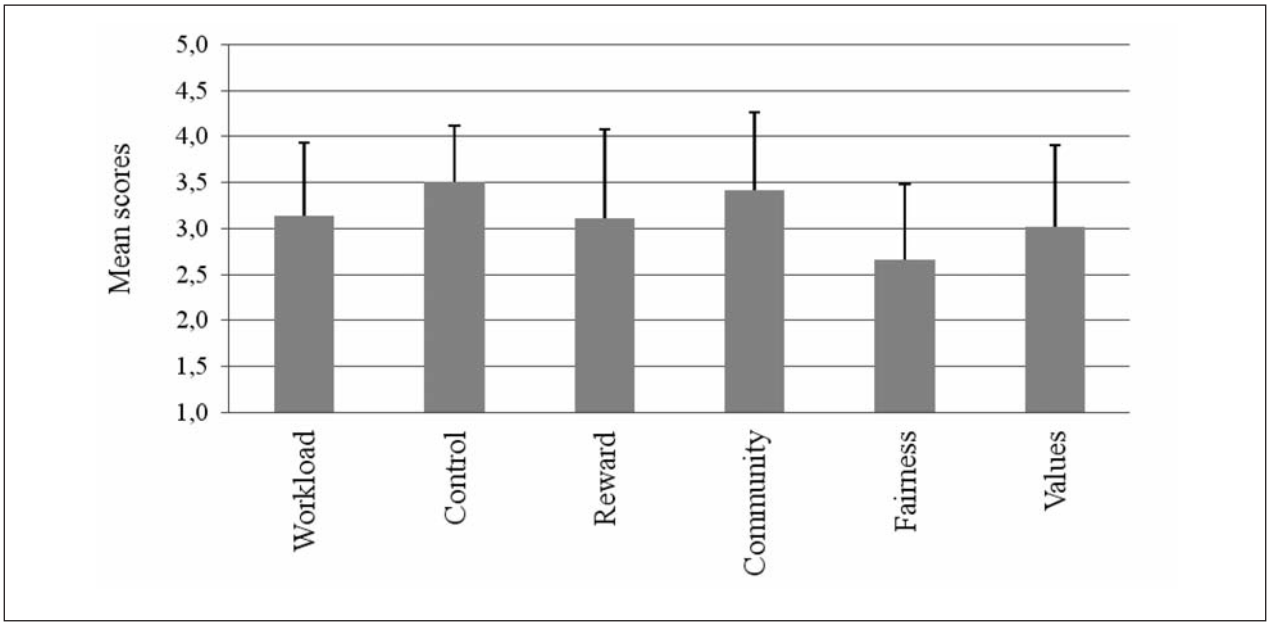

Figure 1 - AWS results: mean scores and standard deviations of organizational risk factors for the total sample
Note: Higher scores = lower risk of work-related stress.

The Control scale positively correlated with the following dimensions: Achievement, value and growth (p<0.01), Organizational design and structure (p<0.001), Organizational processes (p<0.001) and Total job satisfaction (p<0.001). Lastly, Community positively correlated with Achievement, value and growth (p<0.05) and with Organizational design and structure (p<0.001), Personal relationships (p<0.001) and Total job satisfaction (p<0.01).

Stepwise multiple regression analysis was performed using the organizational factors as independent variables to explain total job satisfaction and its sub-dimensions. Results are shown in table 4.

The most important predictor of Satisfaction for achievement, values and growth was Value (p<0.01) followed by Fairness (p<0.05): this model explained 37.8% of the variance. Organizational factors that best predicted Satisfaction for the job itself were Workload (p<0.001) and Fairness (p<0.01), which together explained 28.3% of the total variance. The variables that were identified as predictors of Satisfaction for organization design and structure were Workload (p<0.01), Community (p<0.01) and Fairness (p<0.001): this set of predictors explained 52% of the variance. The predictors of Organizational processes were Workload (p<0.05) and Fairness (p<0.001) with 28% of the total variance explained. Factors that significantly predicted satisfaction for interpersonal relationships were Community (p<0.01) and Fairness (p<0.001), explaining 41% of the variance. Finally, total job satisfaction was significantly associated with Fairness (p<0.001) and with Workload (p<0.05), which together explained 35% of variance.

Discussion

The first objective of this paper was to investigate the sources of occupational stress and their association with job satisfaction in healthcare staff employed in rehabilitation units.

Scientific literature on job satisfaction and stress in rehabilitation staff is very limited. Traditionally, most of the studies conducted in healthcare settings have mainly focused on specific occupational categories (in particular nurses) working in acute care settings (8). This study found that the most important work stressor perceived by the sample was lack of fairness, followed by conflicts between the organization's and the workers' values, lack of reward for one's contribution to the job and heavy

Table 2 - OSI scores and comparison between workers with low and high job satisfaction

Scales	Low job Satisfaction (N=44)		High job satisfaction (N=46)		Total (N=90)		F
	M	SD	M	SD	M	SD	
Sources of pressure[1]							
Factor intrinsic to the job	34.59	5.95	32.13	5.60	33.33	5.87	4.07*
Managerial role	45.28	8.09	42.80	9.05	44.01	8.63	1.86
Relationship with other people	40.45	7.27	37.30	6.51	38.84	7.03	4.69*
Career and Achievement	37.59	6.42	33.02	6.62	35.25	6.88	11.05***
Organizational structure and climate	46.79	10.10	4.50	8.50	44.09	9.65	7.24**
Home-work interface	44.64	9.78	40.33	10.68	42.44	10.42	3.99*
Type A behaviour[2]							
Attitude to living	20.40	4.46	20.45	2.77	20.43	3.67	0.00
Style of behaviour	17.34	5.28	18.15	4.40	17.75	4.84	0.63
Ambition	10.59	2.46	9.43	2.18	10.00	2.38	5.57*
Total Type A	48.65	10.20	48.04	6.40	48.34	8.43	0.11
Work locus of control[3]							
Organizational forces	19.95	3.31	18.15	3.25	19.03	3.38	6.79**
Management processes	14.12	2.22	13.07	2.86	13.58	2.61	3.80*
Individual influences	11.05	3.09	9.54	2.29	10.27	2.80	6.92**
Total locus of control	45.15	5.85	40.45	4.88	42.75	5.84	17.12***
Coping strategies[4]							
Social support	16.33	3.42	16.59	3.19	16.46	3.29	0.13
Task strategies	27.74	4.27	27.70	4.46	27.72	4.34	0.00
Logic	13.04	2.10	12.96	2.41	12.99	2.26	0.03
Home-work relationship	17.61	3.70	17.09	3.79	17.34	3.74	0.44
Effective use of time	16.99	2.65	17.28	2.80	17.14	2.72	0.24
Involvement	26.55	3.51	26.41	4.03	26.48	3.76	0.03
Health[5]							
Mental health	54.02	12.79	54.17	12.45	54.10	12.55	0.00
Physical health	33.81	11.85	30.19	10.14	31.96	11.10	2.42

[1] High score=high stress; [2] High score=type A behaviour pattern; [3] High score=external locus of control;
[4] High score=frequent use of the strategy; [5] High score=higher satisfaction; [6] High score=illness.
**=P<0.05; **=P<0.01; ***=P<0.001*

Table 3 - Descriptive statistics of job satisfaction scales and Pearson's correlation coefficients with organizational factors

	Mean	SD	AWS					
			Workload	Control	Rewards	Community	Fairness	Values
OSI Job satisfaction subscales								
Achievement, value and growth	20.90	5.08	0.35**	0.33**	0.45***	0.25*	0.57***	0.60***
Job itself	16.07	2.87	0.48***	0.10	0.22*	0.20	0.37***	0.32**
Organizational design and structure	14.52	3.48	0.45***	0.39***	0.49***	0.44***	0.67***	0.61***
Organizational processes	11.36	2.14	0.35**	0.40***	0.39***	0.16	0.50***	0.44***
Personal relationships	20.90	5.08	0.39***	0.20	0.40***	0.50***	0.51***	0.55***
Total job satisfaction	80.19	16.67	0.37***	0.39***	0.39***	0.32**	0.57***	0.55***

**=P<0.05; **=P<0.01; ***=P<0.001*

Table 4 - Organizational factors predicting job satisfaction

Organizational factors	Achievement, value and growth[c]				Job itself[c]				Organizational design and structure[c]				Organizational processes[c]				Personal relationships[c]				Total job satisfaction[c]			
	B[a]	Beta[b]	t	R^2	B[a]	Beta[b]	t	R^2	B[a]	Beta[b]	t	R^2	B[a]	Beta[b]	t	R^2	B[a]	Beta[b]	t	R^2	B[a]	Beta[b]	t	R^2
Workload					1.42	0.398	4.15***	0.23	1.23	0.257	3.32**	0.06	0.93	0.214	2.25*	0.04					4.39	0.211	2.33*	0.04
Community									0.84	0.186	2.31**	0.03					0.90	0.360	4.19**	0.12				
Fairness	1.74	0.280	2.25*	0.03	0.87	0.248	2.58**	0.05	2.39	0.509	6.07***	0.44	1.86	0.437	4.59***	0.25	1.06	0.441	5.11***	0.31	10.22	0.500	5.53***	0.32
Values	2.24	0.390	3.14**	0.36																				
	Adjusted R^2= 0.38				Adjusted R^2= 0.28				Adjusted R^2= 0.52				Adjusted R^2= 0.28				Adjusted R^2= 0.41				Adjusted R^2= 0.35			

*=P<0.05; **=P<0.01; ***=P<0.001

[a] Unstandardized coefficients

[b] Standardized coefficients

[c] OSI Job satisfaction subscales

workload. These results are consistent with recent studies (3, 24, 26) which showed that these psychosocial factors are related with increased risk of occupational stress and distress symptoms. Moreover, this study demonstrated a strong association between various aspects of occupational stress and job dissatisfaction, as reported in previous studies (10, 27, 32). Specifically, workers with low job satisfaction had higher work stress scores in regard to various aspects of work, such as cooperation in the team, personal development, work climate, and reported higher levels of external work locus of control. Previous studies demonstrated the importance of individual variables (e.g., locus of control, work engagement, type A personality) in work-related outcomes and employees' health (25, 36). Our results confirmed the association between work locus of control and job satisfaction in a sample of rehabilitation staff: workers who have an external locus of control are more likely to report job dissatisfaction. Muhonen & Torkelson (25) also found that external work locus of control was associated with lower job satisfaction and symptoms of illness suggesting the possible moderating role of this individual variable in the stress-health relationship. In addition, we found that higher levels of ambition, which is a type A personality dimension, were associated with lower levels of job satisfaction. Kirkcaldy et al. (16) suggested that type A personality characteristics and an external locus of control may contribute to the perception of high levels of stress, with negative consequences for job satisfaction and the worker's psycho-physical health. Koener (17) found that employees' satisfaction at medical rehabilitation clinics was strongly associated with mental strain, emphasizing the importance of subjective appraisal of working conditions on workers' health. It could be hypothesized that workers with low job satisfaction are more likely to develop distress and are more vulnerable to the negative consequences of occupational stress: a causal relationship cannot be inferred and further studies are needed to explore this issue (10, 29). Ramirez et al. (29) found that job satisfaction significantly protected hospital consultants' mental health from job stress, and that consultants with lower satisfaction had an increased risk of psychi-

atric morbidity. Contrary to what we expected, in this study no significant differences were found between the two groups of workers in terms of mental and physical health; a possible explanation for this unexpected result is that the negative effects on health may take some time to manifest or may be initially unrecognized by the individual.

The second objective of our study was to investigate the organizational predictors of job satisfaction and its sub-components. Job satisfaction is a critical issue for healthcare services and has been demonstrated as having important implications for the individual's health (burnout, stress, depression) and for his/her work attitude (intention to leave, turnover, absenteeism) (5, 7, 21). Despite its importance, very few studies have investigated job satisfaction in the rehabilitation setting and the existence of some contrasting results has created a need for further research. Our study, the results of which are consistent with the literature (1, 28, 37), found that fairness and workload are the most important predictors of job satisfaction. In particular, the perception of fairness (i.e., fair procedures and fair interpersonal treatment) provided a determining contribution in explaining each of the job satisfaction components. In contrast with our results, Crose (8) found that the job characteristics which influenced job satisfaction in rehabilitation nursing were safety rewards, social interaction with coworkers and responsibility.

When interpreting our results, it is necessary to highlight some limitations. First of all, inferences about causality could not be determined because of the cross-sectional nature of this study design. A longitudinal approach could clarify the nature and direction of the relationships that emerged from this study. A second limitation is related to the small sample size: this was an exploratory study and the results cannot be considered as representative of the general population. Further studies with larger samples are required in order to determinate the relative impact of these variables on different categories of rehabilitation professionals. Third, the response rate of 53 % is not very high and may lower the possibility of generalizing the results, but this is quite frequent in this type of study (8, 27). Fourth, some significant relationships we found in regard to the organizational factors measured by AWS and the job satisfaction components measured by OSI, might be explained as a partial overlap of similar constructs (e.g., values and satisfaction with achievement, value and growth). Lastly, the use of self-administered questionnaires for the data collection process may have introduced some bias in the study due to attitudinal reactions to the job or personality traits of the respondents, which might influence the perception of stress.

Despite these limitations, this is one of the first studies in Italy which investigates occupational stress and job satisfaction in rehabilitation staff, which is a healthcare professional category that needs to be more extensively explored considering the lack of studies in the literature. In addition, one of the significant strengths of this study is that we used internationally well-known and validated instruments, which permit comparison with international scientific research. As a result of the increasing demand for rehabilitation services which has characterized the last decade, knowing which aspects of the psychosocial work environment are important in determining job stress and job satisfaction may help to implement effective organizational changes aimed at improving workers' health and the quality of healthcare standards. Our results suggest that specific interventions should be planned in order to enhance job satisfaction of healthcare staff and prevent job stress, such as improving communication at all organizational levels to facilitate goal sharing, and increase workers' participation by providing training programmes in problem-solving strategies and self-management techniques to enhance coping skills and internal locus of control.

From a practical perspective, this study contributed to exploring the association between job stress and job satisfaction and identifying the psychosocial risk factors useful to guide preventive measures in order to improve occupational health.

Future studies should use qualitative instruments (e.g., interviews, focus groups or observation) in order to confirm the results obtained in this study by means of quantitative methods. It would be helpful to complement the questionnaire data with qualitative elements referred to working condi-

tions, specific job tasks and job stress experienced by rehabilitation staff. Further, longitudinal studies are needed to explore the long-term effects of work-related risk factors on rehabilitation workers' health and to identify the organizational and individual variables which may moderate and influence the stress-illness relationship.

NO POTENTIAL CONFLICT OF INTEREST RELEVANT TO THIS ARTICLE WAS REPORTED

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Errata corrige

Riportiamo l'esatta affiliazione degli autori dell'articolo di A. Falco et al **"Una nuova scala di misura degli effetti psico-fisici dello stress lavoro-correlato in una prospettiva d'integrazione di metodi" erroneamente indicata nel fascicolo n. 4 (Med Lav 2012; *103:* 288-308):**

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