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HSE Management Standards and burnout dimensions among rehabilitation professionals

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Background	The Health & Safety Executive Indicator Tool (HSE-IT) is a standard-based questionnaire commonly used to assess work-related stress in organizations. Although the HSE-IT validity has been well documented and significant relationships have been observed between its scales and several work-related outcomes, to date there is no evidence concerning the relationships between the HSE-IT and burnout among healthcare workers.
Aims	To investigate the relationships between the HSE-IT subscales and burnout dimensions as measured by the Maslach Burnout Inventory (MBI) in a sample of Italian rehabilitation professionals employed in healthcare institutions.
Methods	An anonymous cross-sectional questionnaire was administered to a sample of Italian rehabilitation professionals including physical therapists, occupational therapists, psychiatric rehabilitation technicians and developmental psychomotor therapists. Associations between the HSE-IT and the MBI were analysed with multiple linear regression models.
Results	A total of 432 rehabilitation professionals completed the questionnaire and 14% of them showed high levels of burnout risk. Significant differences in the HSE-IT scores were found between workers at high risk of burnout and workers at low risk of burnout. Hierarchical regressions showed an association between the HSE-IT scales and the MBI factors: emotional exhaustion was associated with 'demands' and 'role', and both depersonalization and personal accomplishment were associated with 'control' and 'role'.
Conclusions	This preliminary study showed the HSE-IT subscales are sensitive to burnout risk as measured by the MBI. The association found between the HSE-IT 'demands', 'role' and 'control' subscales and the MBI dimensions is significant but small. These findings might inform targeted burnout prevention.

Key words: Healthcare workers; HSE Indicator Tool; Maslach Burnout Inventory; work-related stress.

Introduction

Research on work-related stress has been increasingly focussing on the relationship between psychosocial work environment factors and health outcomes [1,2], with the main aim to predict and prevent long-term negative consequences for both individuals and organizations. The UK Health & Safety Executive (HSE) developed the Management Standards as an approach to work-related stress and identified six key areas related to job tasks and environment (namely demands, control, support, relationships at work, role and change) which are deemed to be associated to stress and should be the main targets for recovery and preventive interventions [2]. On the basis of this standards-oriented model, the same agency developed the HSE Indicator Tool (HSE-IT) [3], a measurement instrument that showed good psychometric properties [4] and has been used in several studies [5]. Significant relationships were found between the HSE-IT dimensions and job satisfaction, job-related anxiety and depression, psychological distress and psychological well-being [6–8]. Although the predictive value of job stress models in respect to burnout development has been

Key learning points

What is already known about this subject:

- Although previous studies found significant associations between the Health & Safety Executive Management Standards dimensions, measures of psychological well-being and other work-related outcomes, evidence concerning the relationship between Management Standards dimensions and job burnout is scant and has never been assessed among healthcare workers.
- This study aims at exploring this relationship in a sample of Italian rehabilitation professionals with respect to burnout dimensions defined by the Maslach Burnout Inventory and the Health & Safety Executive Management Standards as measured by the Health & Safety Executive Instrument Tool (HSE-IT).

What this study adds:

- Rehabilitation professionals at high risk of burnout show worse scores on the HSE-IT.
- Controlling for demographic and job-related variables, the Health & Safety Executive Management Standards Indicator Tool 'demands', 'role' and 'control' subscales are weakly but significantly associated with Maslach Burnout Inventory scales measuring emotional exhaustion, depersonalization and personal accomplishment.

What impact this may have on practice, policy or procedure:

- The Health & Safety Executive Management Standards Indicator Tool subscales might be useful as a first-round screening for job burnout.
- The relationship found between HSE-IT subscales and job burnout might inform targeted burnout prevention.

documented [9], a few studies examined the relationship between Management Standards' dimensions and burnout aspects of emotional exhaustion (EE), depersonalization (DP) and personal accomplishment (PA) as defined by Maslach *et al.* [10] and measured by the Maslach Burnout Inventory (MBI). Bruschini *et al.* [11] collected HSE-IT and MBI scores in a sample of Italian rehabilitation professionals employed in healthcare institutions, whereas Ravelier *et al.* [12] demonstrated the utility of the HSE-IT to evaluate burnout risk in a group of British borough council employees, showing an association between the HSE-IT 'demands' and 'control' subscales and EE, between 'change', 'role' and 'demands' subscales and DP and between 'managers' support', 'role', 'control' and 'demands' subscales and PA. These results encourage further investigations about the relationship between the HSE-IT factors and burnout dimensions, in particular with regard to healthcare workers for whom the literature reports significant levels of work-related stress and remarks the need for effective interventions [13,14]. Considering that the MBI dimensions have been extensively examined in relation to physical and mental health [15] and that Maslach *et al.*'s model is widely acknowledged and often employed in the development and evaluation of interventions dedicated to healthcare workers [16], updated results about the relationships between the MBI and the HSE-IT factors could shed light on the areas implied in the development of burnout syndrome among this category of workers. This study was aimed at investigating these relationships in a sample of healthcare workers specialized in rehabilitation (physical therapists, occupational therapists, psychiatric rehabilitation technicians and developmental psychomotor therapists) expanding the scarce data currently available about these professionals [11,17–19]. Thus, the main aims of the present work were as follows:

1. Estimate burnout risk and its association with the HSE-IT scores in a sample of rehabilitation professionals;
2. Evaluate the relationships between single HSE-IT dimensions in the same sample;
3. Investigate the predictive value of the HSE-IT dimensions in respect to the MBI dimensions controlling for the influence of demographic and work-related variables.

Methods

The study was intended to include healthcare workers specialized in rehabilitation working for both private and public institutions in Italy. Participants were recruited from January 2019 to December 2019 in healthcare institutions with a large number of employees and the objectives and aims of the study were presented to the management of each agency. Subsequently, the survey was delivered to the employees of the selected institutions (in paper or e-mail format depending on the institution's preference) and each participant was asked to answer the questionnaires on a voluntary basis with confidentiality assurances.

The study design was cross-sectional and the administered survey consisted of a brief section gathering general socio-demographic information (gender, age, type of job contract, years of employment and working hours per

week) followed by the Italian versions of the HSE-IT [3,20] and the MBI [10,21,22].

The HSE-IT is a 35-item questionnaire with a five-point Likert response scale which measures the domains identified by the HSE Management Standards (HSE-MS) on seven scales: 'demands', 'control', 'relationships', 'managers' support', 'peer support', 'role' and 'change'. On the basis of the scores obtained, the respondent can be placed into one of four categories for each domain: 'excellent level of performance', 'good level of performance', 'interventions needed' and 'urgent interventions needed'. The original version of the questionnaire was validated on a vast sample of workers from the UK and Ireland [4] and the HSE-IT showed good psychometric properties on samples of Italian workers too [20,23].

The MBI is a 22-item questionnaire with a six-point Likert scale measuring the dimensions of burnout proposed by Maslach *et al.* [21] on three scales: EE, which is related to the individual's tendency to feel emotionally exhausted and overwhelmed; DP, which measures cynicism in the relationship with clients and patients; PA, assessing satisfaction with work.

Scores for each subscale are considered as high, medium or low on the basis of a comparison with the validation sample's scores distribution (a value in the upper tertile corresponds to a high score, whereas a value in the lower tertile corresponds to a low score). High scores on EE and DP subscales and low scores on the PA subscale are indicative of high burnout risk [24].

Descriptive and inferential statistical analyses were conducted on collected data using IBM SPSS 25 software. Participants' distribution in burnout risk groups was examined with chi-squared tests. The relationship between burnout risk and continuous variables and the differences between the means of the HSE-IT scores in high and low burnout risk subjects were assessed with parametric (Student's *t*-test) and non-parametric tests (Mann–Whitney *U*-test) according to data distribution.

Kendall's tau-c correlation coefficients were calculated to examine the bivariate relationships between the MBI dimensions and the HSE-IT factors and between the respective subscales. Further elaborating these results to explore the HSE-IT factors predictive value in respect to the MBI dimensions, hierarchical multiple regression analyses were conducted selecting as dependent variables EE, DP, and PA scores. *P* values below 0.05 were considered as statistically significant.

With respect to regression analyses, an *a priori* power analysis was performed with G*Power software [25]. Given 11 independent variables were selected for the models, results indicated that a minimum sample size of 178 would be sufficient to detect a medium effect size ($d = 0.15$) with a power of 90% at $\alpha = 0.05$.

Since all measurement instruments administered were anonymous, ethical approval was not required to be sought for this study. The research procedures respected the principles of the Italian National Board of Psychologists' Deontological Code and the Italian Psychology Association's Code of Ethics. All participants provided written informed consent.

Results

In total 432 rehabilitation professionals were enrolled in the study, including physical therapists, occupational therapists, psychiatric rehabilitation technicians and developmental psychomotor therapists employed in hospitals and clinics in Lazio and Umbria regions. All enrolled healthcare workers answered the questionnaire with no dropouts. Participants ($n = 432$, 102 males and 330 females, mean age: 35.59 ± 10.02 years) were thus divided into professional groups: 189 physical therapists, 72 occupational therapists, 94 psychiatric rehabilitation technicians and 77 developmental psychomotor therapists. Mean weekly working hours were 33.93 (SD 6.66) and mean years of employment were 10.86 (SD 9.45). About 229 professionals were employed with a permanent contract, whereas the other 178 were employed with a fixed-term contract or as freelancers. About 194 participants declared to have at least one son or daughter and 185 lived with a partner when the survey was delivered.

Subjects with at least two high scores (or low scores for PA) on the MBI subscales were considered at high risk of burnout. According to this criterion, 14% ($n = 61$, 95% confidence interval: 11–17%) of the rehabilitation professionals sample showed high levels of burnout risk, without significant differences between professional categories ($\chi^2 = 2.39$; $P = 0.496$). No significant differences were found for gender ($\chi^2 = 0.247$; $P = 0.619$), age ($t = 1.80$; $P = 0.072$), years of employment ($t = 1.54$; $P = 0.123$) and weekly working hours ($t = -0.281$; $P = 0.779$) between high-risk and low-risk professionals. Moreover, no differences in risk were detected between participants with siblings and participants without sons or daughters. Mean scores in the HSE-IT dimensions for subjects at high and low risk of burnout are reported in Table 1. The high burnout risk group showed significant higher scores on 'control' ($t = 3.09$; $P < 0.01$), 'managers' support' ($t = 2.37$; $P < 0.05$), 'peer support' ($t = 2.06$; $P < 0.05$) and 'role' ($t = 5.06$; $P < 0.01$) subscales.

Correlation coefficients between the MBI scales and the HSE-IT factors are reported in Table 2. Significant correlations were observed between EE, DP and PA. In contrast with previous research [23], significant correlations were not found for all the HSE-IT subscales: the relationships between 'demand', 'control', 'peer support', 'role' and 'change', between 'control' and 'relationships' and between 'relationships', 'role' and 'change' were not significant. On the other hand, significant (although

Table 1. Means scores on the HSE-IT subscales for high burnout risk and low burnout risk subjects

	High burnout risk		Low burnout risk		
	Mean	SD	Mean	SD	*t*
Dem	3.32	0.59	3.30	0.78	−0.209
Ctr	3.23	0.78	3.54	0.72	3.094**
Sup-m	2.98	0.97	3.27	0.89	2.374*
Sup-p	3.59	0.82	3.80	0.75	2.064*
Rel	3.33	0.88	3.40	1.05	0.491
Rol	3.86	0.66	4.26	0.56	5.062***
Cha	2.93	0.87	3.10	0.88	1.392

EE, MBI emotional exhaustion; DP, MBI depersonalization; PA, MBI personal accomplishment; Dem, HSE-IT demands; Ctr, HSE-IT control; Sup-m, HSE-IT managers' support; Sup-p, HSE-IT peer support; Rel, HSE-IT relationships; Rol, HSE-IT role; Cha, HSE-IT change.
*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

weak) correlations were observed between the MBI subscales and the HSE-IT factors, except for the couples 'demand' and DP, 'peer support' and PA, 'relationships' and DP.

To better explore the results of bivariate analyses concerning relationships between the HSE-IT factors and the MBI dimensions three hierarchical multiple regressions were conducted with EE, DP and PA scores as dependent variables. For each dependent variable, independent variables were subsequently entered in the model in three steps: 'gender' (with 'female' as baseline), 'age' and 'sons and daughters yes/no' were entered first (Step 1), followed by 'years of employment' and 'weekly working hours' (Step 2) and the HSE-IT scores (Step 3).

In the model predicting EE ($R^2 = 0.14$; adjusted $R^2 = 0.11$; Model F = 5.364, $P < 0.001$) the contribution of 'gender' ($\beta = -0.136$; $P < 0.01$), 'age' ($\beta = -0.313$; $P < 0.01$) and 'years' ($\beta = -0.391$; $P < 0.01$) of work was found to be significant. Controlling for these variables, the HSE-IT 'demand' ($\beta = -0.121$; $P < 0.05$) and 'role' ($\beta = -0.132$; $P < 0.05$) subscales were significantly associated with EE with negative coefficients (high scores on 'demand' and 'role' correspond to lower scores on EE). In the model with DP as dependent variable ($R^2 = 0.10$; adjusted $R^2 = 0.17$; Model F = 7.796, $P < 0.001$), 'age' ($\beta = -0.259$; $P < 0.05$), 'years of employment' ($\beta = 0.254$; $P < 0.05$) and the HSE-IT 'control' ($\beta = -0.149$; $P < 0.05$) and 'role' ($\beta = -0.195$; $P < 0.01$) were found to be significant predictors, with a negative association between the HSE-IT factors and DP scores. Finally, in the model predicting PA ($R^2 = 0.18$; adjusted $R^2 = 0.15$; Model F = 6.893, $P < 0.001$) 'age' ($\beta = 0.364$; $P < 0.01$) and HSE-IT 'control' ($\beta = 0.133$; $P < 0.05$) and 'role' ($\beta = 0.261$; $P < 0.01$) subscales resulted significantly associated with PA. Coefficients and summary statistics of the regression models are reported in Table 3.

Discussion

The main finding of this study is that burnout dimensions as measured by the MBI are significantly associated with the HSE-IT subscales in a group of Italian rehabilitation professionals employed in healthcare institutions, including physical therapists, occupational therapists, psychiatric rehabilitation technicians and developmental psychomotor therapists.

Furthermore, we found that 14% of our sample was at high risk of burnout without significant differences between professional categories, consistently with a previous study conducted on a similar group of rehabilitation professionals [11] and in line with burnout syndrome prevalence rates reported in European Union countries [26]. However, the prevalence we observed is minor than that reported in the literature for healthcare workers [14,26]. In contrast with previous studies [11,27,28], we did not find significant differences in burnout risk due to gender, age, type of employment and weekly working hours.

With respect to the relationships between the MBI dimensions and the HSE-MS factors, we observed worse HSE-IT scores for subjects at high risk of burnout as already reported for a different category of workers [12]. In our sample, we found that subjects at low risk of burnout showed significantly higher scores on the HSE-IT 'control', 'managers' support', 'peer support' and 'role' subscales. Thus, the Indicator Tool subscales might be appropriate for first-round burnout risk screening. Moreover, although correlations observed between the HSE-IT subscales were lower compared to those reported in previous researches [23], the questionnaire showed significant relationships with the MBI subscales. This evidence is consistent with reported relationships between the HSE-IT factors and other measures of work-related stress and psychological well-being [6,8].

Regression models confirmed the results of bivariate analyses. Controlling for the influence of demographic and work-related variables, we found that the HSE-IT 'role' factor significantly predicted EE, DP and PA scores. The HSE-IT 'demands' subscale showed a significant relationship with EE, whereas the 'control' subscale was significantly associated with both DP and PA scores. Thus, a combination of clarity about roles in the work environment, better management of the workload and workers' perceived control on their work seems to be associated with lower EE, lower DP and higher PA.

These results are in contrast with those of the only study that investigated the same relationship [12], finding an association between 'demands', 'control' and EE, between 'demands', 'role', 'change' and DP and between 'demands', 'control', 'managers' support', 'role' and PA. Moreover, our regression models showed weak coefficients and explained 14% of the variance in EE scores, 10% of the variance in DP scores and 18%

Table 2. Kendall's tau-c correlations between the MBI factors and the HSE-IT subscales

	MBI			HSE-IT						
	EE	DP	PA	Dem	Ctr	Sup-m	Sup-p	Rel	Rol	Cha
EE	1									
DP	**0.307*****	1								
PA	**−0.200*****	**−0.226*****	1							
Dem	**−0.123*****	0.005	**0.092****	1						
Ctr	**−0.149*****	**−0.185*****	**0.171*****	0.068	1					
Sup-m	**−0.161*****	**−0.123*****	**0.092****	**0.092***	**0.313*****	1				
Sup-p	**−0.118*****	**−0.067***	0.053	−0.011	**0.125*****	**0.332*****	1			
Rel	**−0.094****	0.007	**0.075***	**0.353*****	0.054	**0.147*****	**0.181*****	1		
Rol	**−0.171*****	**−0.164*****	**0.224*****	0.055	**0.275*****	**0.271*****	**0.224*****	0.046	1	
Cha	**−0.142*****	**−0.104****	**0.100****	0.002	**0.361*****	**0.506*****	**0.222*****	0.056	**0.292*****	1

EE, MBI emotional exhaustion; DP, MBI depersonalization; PA, MBI personal accomplishment; Dem, HSE-IT demands; Ctr, HSE-IT control; Sup-m, HSE-IT managers' support; Sup-p, HSE-IT peer support; Rel, HSE-IT relationships; Rol, HSE-IT role; Cha, HSE-IT change.
*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

Table 3. Multiple regression analyses predicting the MBI factors

	MBI emotional exhaustion			MBI depersonalization			MBI personal accomplishment		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Predictors									
Step 1									
Gender	**−0.165****	**−0.142****	**−0.136****	0.056	0.071	0.068	−0.02	−0.037	−0.063
Age	0.044	**−0.348****	**−0.313****	−0.033	**−0.268***	**−0.259***	**0.182****	**0.433****	**0.364****
Sons/daughters (yes/no)	−0.026	−0.054	−0.044	0.01	−0.005	−0.021	0.087	0.102	0.103
Step 2									
Years of employment		**0.444*****	**0.391****		**0.263***	**0.254***		**−0.277***	−0.233
Working hours		0.094	0.078		0.009	−0.012		0.039	0.064
Step 3									
Dem			**−0.121***			0.072			0.052
Ctr			−0.069			**−0.149***			**0.133***
Sup-m			−0.107			−0.081			−0.047
Sup-p			−0.055			−0.005			0.001
Rel			0.057			0.030			0.036
Rol			**−0.132***			**−0.195****			**0.261*****
Cha			0.015			0.099			0.012
Summary statistics									
Model F	**3.652***	**5.604*****	**5.364*****	0.47	1.133	**3.606*****	**7.796*****	**5.81*****	**6.893*****
R^2	0.027	0.067	0.14	0.004	0.014	0.101	0.056	0.069	0.178
Adjusted R^2	0.02	0.055	0.11	−0.004	0.002	0.073	0.049	0.057	0.152
R^2 change F	**3.652***	**8.330*****	**4.912*****	0.47	2.124	**5.310*****	**7.796*****	2.729	**7.204*****

EE, MBI emotional exhaustion; DP, MBI depersonalization; PA, MBI personal accomplishment; Dem, HSE-IT demands; Ctr, HSE-IT control; Sup-m, HSE-IT managers' support; Sup-p, HSE-IT peer support; Rel, HSE-IT relationships; Rol, HSE-IT role; Cha, HSE-IT change.
*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

of the variance in PA scores. These proportions are significantly inferior to those reported by Ravalier *et al.* [12] and to those found in other studies that examined the relationships between the HSE-IT and different psychological variables [6–8]. This discrepancy might be due in part to the features of our sample that were large but heterogeneous with respect to employment characteristics, job tasks and organizational environments. On the other hand, low coefficients could also be ascribed to the statistical properties of the considered variables (scores derived from discrete scales) that might have produced inflation in residual error

(we observed indeed asymmetric residuals distributions for the model predicting DP).

The strength of this study lies in the fact that it is the first to investigate the relationships between the HSE-IT and the MBI in a sample of healthcare professionals and to explore whether the performance in the Management Standards domains might determine or influence the risk to develop burnout in this category of workers. However, our findings are preliminary and the study had several limitations. First, the sample was neither homogeneous (the professionals who participated had different roles and tasks and were employed in different organizations) neither representative of the occupational population we intended to study (participants were recruited in healthcare institutions from two Italian regions and do not portray the condition of rehabilitation professionals in the whole country where remarkable local differences in healthcare policies and procedures could be observed). Moreover, respondents were all rehabilitation professionals and did not represent the condition of other healthcare workers as nurses and physicians who are particularly at risk of job burnout. Finally, there was a higher proportion of women in our sample (76%, n = 330). Because of these reasons, it is likely that the variability of factors measured by the HSE-IT was higher in our research with respect to the other cited studies that investigated the relationships between the Management Standards and work-related stress measures [6–8,12]. This could limit the generalizability and the relevance of our findings. Furthermore, our study is cross-sectional and this study design is not suitable for exploring causality: long-term longitudinal studies should be conducted to confirm the associations found between the HSE-IT subscales and the MBI dimensions.

In conclusion, our results showed some significant relationships between burnout dimensions identified by Maslach *et al.* [21] and the HSE-IT factors among rehabilitation professionals employed in healthcare institutions. Specifically, 'demand', 'control' and 'role' subscales significantly predicted MBI subscales scores. Although the size of these associations was weak, 'role' and 'control' subscales appear to be consistently related to burnout risk, with rehabilitation professionals at risk reporting more problems in these areas. Altogether these preliminary findings could inform preventive interventions designers and policymakers given the documented role of psychosocial work environment factors in the development of burnout [29,30], but further studies are needed to shed light on the relevance of the relationship between the HSE-MS and work-related stress among healthcare workers.

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Competing interests

None declared.

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