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The influence of work context and organizational well-being on psychophysical health of healthcare providers

Francesco Zaghini[1], Ercole Vellone[2], Massimo Maurici[2], Cristina Sestili[3], Alice Mannocci[3] , Elisa Ercoli[2], Nicola Magnavita[4], Giuseppe La Torre[3], Rosaria Alvaro[2], Alessandro Sili[1]

[1] Department of Nursing Professions, Tor Vergata General Hospital, Rome, Italy
[2] Department of Biomedicine and Prevention, Faculty of Medicine, University of Rome Tor Vergata, Rome, Italy.
[3] Department of Public Health and Infectious Diseases, University of Rome Sapienza, Rome, Italy.
[4] Post-graduate School of Occupational Health, Università Cattolica del Sacro Cuore, Rome, Italy; Department of Woman/Child and Public Health, A. Gemelli Foundation IRCCS, Rome, Italy

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Summary

Background: *A high level of organizational well-being improves employee performance and influences the physical and mental health of healthcare providers and students.* **Objective:** *This study investigates the relationship between the work context, organizational well-being, and the psychophysical health of healthcare providers.* **Methods:** *A multicentre cross-sectional descriptive study was conducted on a sample of healthcare providers (physicians and nurses) and healthcare students (medical students and nursing students). A self-report questionnaire was administered between September and November 2016.* **Results:** *Of the 300 questionnaires administered, 201 (67%) were correctly completed. Overall, both the physical and mental health of the healthcare providers and students are explained by the variables of the organizational context: organizational well-being and socio-demographic/work characteristics. In particular, the results show a dependence on gender and age. Furthermore, decision latitude had a positive effect on physical health (b=.134) while job demands had a negative effect (b=-.160) explaining 21% of the PCS of the healthcare providers and students (R2=.209). Mental health improved via the satisfaction (b=.345), and positivity (b=.222) of healthcare professionals and students of these disciplines.* **Discussion:** *The results are significant because they directly impact the quality of care provided as well as patient safety.*

Riassunto

«La salute mentale e fisica dei professionisti sanitari e degli studenti: l'influenza del contesto lavorativo e del benessere organizzativo» **Contesto:** *Un elevato livello di benessere organizzativo migliora le prestazioni dei dipendenti e influenza la salute fisica e mentale degli operatori sanitari e degli studenti.* **Obiettivo:** *Questo studio indaga la relazione tra il contesto lavorativo, il benessere organizzativo e la salute psicofisica degli operatori sanitari.* **Metodi:** *È stato condotto uno studio descrittivo trasversale multicentrico su un campione di operatori sanitari (medici e infermieri) e studenti di queste discipline (studenti di medicina e studenti infermieri). Tra settembre e*

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Corresponding author: Dr Francesco Zaghini Policlinico di Tor Vergata Viale Oxford, 81 00133 - Roma - E-mail: francesco.zaghini@ptvonline.it - Tel. +39 06 2090 8175 - Cell. 338 39 03 396 - Fax. +39 06 2090 3053 - Orcid ID 0000-0002-3327-5751

novembre 2016 è stato somministrato un questionario self report. **Risultati:** *Dei 300 questionari somministrati, 201 (67%) sono stati completati correttamente. Nel complesso, sia la salute fisica che mentale degli operatori sanitari e degli studenti sono spiegate dalle variabili del contesto organizzativo: benessere organizzativo e caratteristiche socio-demografiche / lavorative. In particolare, i risultati mostrano una dipendenza dal genere e dall'età. Inoltre, la Decision Latitude ha avuto un effetto positivo sulla salute fisica (b=.134) mentre le richieste di lavoro hanno avuto un effetto negativo (b=-.160) spiegando il 21% della salute fisica degli operatori sanitari e degli studenti (R2=.209). La salute mentale, è migliorata grazie alla soddisfazione (b=.345) e alla positività (b=.222) degli operatori sanitari e degli studenti di queste discipline.* **Discussione:** *Questo lavoro apporta nuove conoscenze relative alle relazioni tra il contesto lavorativo e la salute degli operatori sanitari e degli studenti. I risultati sono significativi perché influiscono direttamente sulla qualità delle cure fornite e sulla sicurezza del paziente.*

Introduction

Studies show that work environments significantly impact organizational well-being (29,59) and, in the case of healthcare organizations (34), have repercussions on the health of operators (56) as well as on the quality of care offered to patients (35). When a healthcare organization manages to build an environment promoting and maintaining organizational well-being, positive behaviours and performances are implemented that contribute to improving the quality of care (45). In this study, *organizational well-being* refers to employees' feeling good and functioning well at work (6). When organizations promote and maintain the highest level of organizational well-being, employee performance is improved (5) and stimulating and supportive work environments are established (26). Specifically, an organization can be said to be healthy when its workers are satisfied and consider it effective (5,59). Beneficial effects on individuals and on employee satisfaction have also been identified (37). On the other hand, studies have shown that a lack of job satisfaction may lead to absenteeism (18), while in organizations in which workers are satisfied, the resulting benefits go beyond purely economic ones (46). Indeed, their health (19), happiness, general satisfaction, motivation, productivity, and the absence of negative emotions (12,52) all increase.

In the past, several studies have sought to understand the role of workplace characteristics in determining the organizational well-being of workers (17). A well-known model in the literature is Karasek's Job Demand–Control (JDC) model, which hypothesizes an imbalance between the physical or mental demands made by an organization's job demands (JD)—such as heavy workloads, role conflicts, and excessive responsibility—and a lack of decisional autonomy, or job decision latitude (DL), which refers to the level of control individuals have over the planning and organization of work, can determine 'job strain' (32). Furthermore, studies have shown that when workers experience job strain, their health can be negatively impacted (23) and that emotional exhaustion (66), burnout (44), psychosomatic disorders (31), and work dissatisfaction (7,17) can increase. However, when DL is greater than JD, workers' motivation and performance are enhanced (69).

The literature has also shown, however, that workers can experience work contexts differently and, according to their own individual perceptions, can implement entirely personal behaviours and performances (1). Indeed, when workers have a positive attitude, they tend to consider life and experiences positively and interact differently compared to others with different attitudes (13). This phenomenon, known in the literature as positivity (POS), is related to individual well-being, health, work success, and positive interpersonal relationships (11,39). Therefore, in explaining the health of workers, it could be assumed that POS contributes to the reduction of workplace-induced stress.

If it is true that the characteristics of a work environment can reduce the physical and psychological

health of employees (56,60) and that POS does indeed have a role in this relationship, then it follows that situations not dealt with positively can result in even more noticeable outcomes, particularly in situations involving contact with suffering and that require significant communicative, relational, and emotional commitments, such as the helping professions (15,38). In fact, recent research in the nursing field has shown that the physical and emotional quality of life of healthcare providers can be influenced by high workloads (55), organizational constraints (36), and interpersonal conflicts (70). It is therefore essential to monitor the health of workers, particularly in the healthcare system, where the physical and mental health of workers can affect the quality of care and the safety of patients (68).

Research question

Although the literature has demonstrated the predictive power of some variables in organizational contexts on workers' health (57,63), particularly in the health services sector (34,51), and that increased worker health correlates to increased worker satisfaction with their organization (58). Specifically, the literature seeking primarily to study the differences in the correlation between physical and psychological health and organizational well-being with respect to the gender and age of health workers is poor. These factors have been considered important predictive factors of work satisfaction (10,48), stress, and diabetes mellitus (33).

In light of the above, the main objective of this paper is to investigate the relationship between the characteristics of the work context (JD and DL), organizational well-being (organization [ORG] and satisfaction with the organization [SODD]), and the psychophysical well-being of healthcare workers. Specifically, we set out to verify the following hypotheses (Fig. 1):

H1) The physical and mental health of healthcare providers and healthcare students (Mental Component Summary [MCS] and Physical Component Summary [PCS]), are related to the work context (measured through JD and DL), to organizational well-being (measured through ORG and SODD), and to POS.

H2) The physical and mental health of healthcare providers and healthcare students (MCS and PCS), explained by the work context (measured through JD and DL), organizational well-being (measured through ORG and SODD), and POS, is gender dependent.

H3) The physical and mental health of healthcare providers and healthcare students (MCS and PCS), explained by the work context (measured through JD and DL), organizational well-being (measured through ORG and SODD), and POS, is age dependent.

Methods

Between 1 September 2016 and 30 November 2016, a multicentre cross-sectional descriptive study was conducted on a convenient sample of healthcare providers (physicians and nurses) and student of these disciplines (doctors in specialty training and nursing students) at three Roman University policlinics (Umberto I, Tor Vergata, and Agostino Gemelli).

Subjects and procedure

The healthcare professionals enrolled in the study included physicians, nurses, and students of these disciplines, because they are the professionals who spend a significant amount of time with the sick and are the most involved in the treatment path. Participation was voluntary; therefore, all those who made themselves available were enrolled in the study. The study was approved by the local ethics committee. The research tools were administered in anonymous form, and participants were assured the complete confidentiality of the collected data. Each participant was provided a single questionnaire and was given instructions on how to fill it out. On average (from the time of delivery), it took participants seven days to complete the questionnaire; in each ward, a collection urn was made available for the return of the completed questionnaires. Physicians, medical students, nurses, and nursing students who practiced in the settings of ordinary hospitalization, surgeries, and day hospital were included in the study (regardless of gender, age, education, and function).

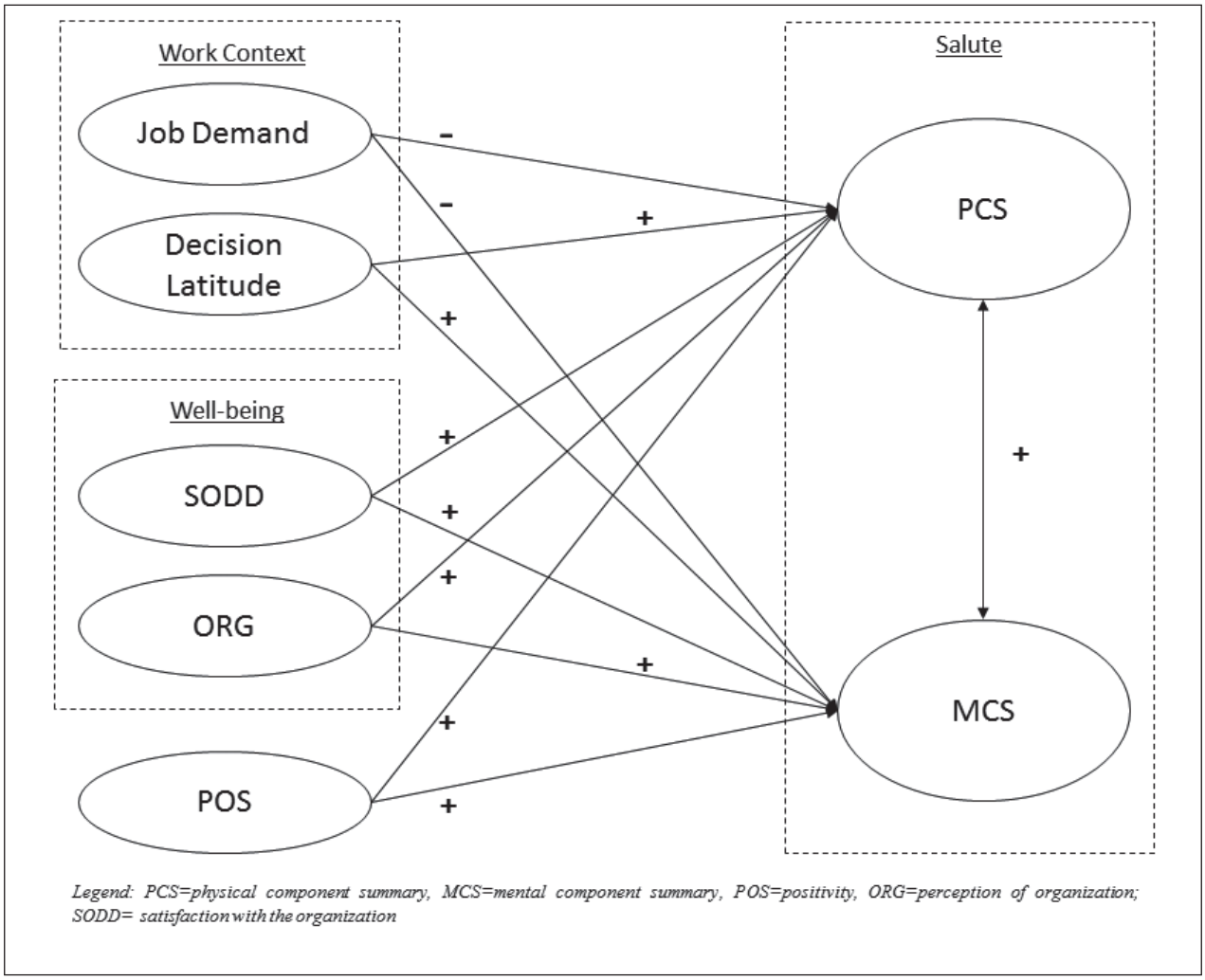

Figure 1 - Model of the variables studied

Instruments

A self-reporting scaled questionnaire, previously validated and found in the literature, was used.

Work context

In order to measure the risk of work stress (8,32), a 15-item Job Content Questionnaire (JCQ), a reduced version of the JCQ, was used since it allows for the evaluation of the two main components (JD and DL) of Karasek's Model. The JCQ's 15 items provide a graduated answer according to a four-point Likert scale ranging from 1 (*definitely not*) to 4 (*definitely yes*). In all the studies and countries in which it has been used, the tool has shown good indices of validity and reliability, including in a nursing context (2). In the JCQ, high JD scores correspond to high JD, and high LD scores correspond to greater job autonomy. The relationship between JD and DL returns the level of strain of individuals. In the present study, the reliability of each scale is evaluated with Cronbach's alpha (47).

Organizational well-being

Organizational well-being of the healthcare providers and healthcare students was measured using two scales of the Nursing Questionnaire for Organizational Health (QISO; 59): the Organizational

Context and Relational Processes Scale and the Positive Indicators Scale, readjusted, after agreement by the authors, to all health professions. The Organizational Context and Relational Processes Scale, which measures the perceptions of health workers in the workplace, consists of 39 items grouped into the following six dimensions: perception of coordinators, perception of organizational efficiency, perception of organizational effectiveness, perception of colleagues, perception of the enhancement of skills, and perception of conflict. The Positive Indicators Scale, which measures the satisfaction of nurses with their organization, consists of three dimensions: overall satisfaction, satisfaction with upper management, and satisfaction with one's operative unit. Using a 4-point Likert scale ranging from 1 (*never*) to 4 (*often*) as a response mode, the QISO scales require participants to indicate the extent to which the statements made correspond to their experience/perception. In the validation study, all the scales used showed good indices of validity and reliability (59). In all QISO scales, high scores correspond to greater organizational well-being. In the present study, the reliability of each scale is evaluated with Cronbach's alpha (47).

Positivity

To measure positivity, the Positivity Scale, which measures the tendency of people to visualize and face life and experiences from a positive perspective, was used (13). Participants were asked to what extent the statements made in its eight items matched their experiences using a 5-point Likert scale as a response mode, ranging from 1 (*not at all*) to 5 (*very much*). The scale showed good indices of validity and reliability (13) and in the validation study on health providers as well (40). On this scale, higher scores correspond to greater positivity. In the present study, the scale is evaluated with Cronbach's alpha (47).

Health

The Short Form 12 (SF-12) was used to measure the health status of the participants (3,65). Using dichotomous type (YES/NO) questions and a Likert scale with 3-, 5-, and 6-point response modalities, the SF-12 is composed of 12 items from which two synthetic indices can be obtained: the physical state (Physical Component Summary [PCS]) and the mental state (Mental Component Summary [MCS]). The SF-12 has demonstrated good validity and reliability indices (25) and in health providers as well (49). For this questionnaire, specific algorithms exist for calculating the health status score that are available for various statistics software. In the present study, the reliability of each scale is evaluated with Cronbach's alpha (47).

Statistical analyses

Statistical analyses were conducted in five phases. In the first phase, the socio-demographic and work characteristics of the study participants were investigated through *(i)* the central trend and dispersion indices such as mean, mode, median, and standard deviation and *(ii)* descriptive statistics such as frequencies and percentages.

In the second phase, to reduce the number of variables studied and to improve the parsimony of the model tested in phase 4, a second-order factor was created with the six dimensions of the Organizational Context and Relational Processes Scale (perception of coordinators, perception of organizational efficiency, perception of organizational effectiveness, perception of colleagues, perception of the valorisation of competences, and conflict perception), renamed ORG. Another second-order factor was created with the three dimensions of the Positive Indicators Scale (overall satisfaction, satisfaction with upper management, and satisfaction with one's operative unit), renamed SODD. A confirmatory factorial analysis (CFA) was performed to confirm the construct validity of the two aforementioned second-order factors (9).

The Pearson correlation (r) was used in the third phase to verify the relationship between all the variables studied, as well as the socio-demographic and quantitative type labour variables. To evaluate the possible associations between health (PCS and MCS) and qualitative socio-demographic and labour variables, a T-test was used for independent samples. Finally, to check for any differences between the PCS and MCS averages compared to the

nominal and ordinal variables (activity performed and its qualification), the non-parametric Kruskal-Wallis test was used.

In the fourth phase, to verify the influence of the context variables, the organizational well-being, and the POS on the health of healthcare providers and students, two multiple linear regressions were performed, specifying PCS and MCS as the dependent variables. In both regressions, the following independent variables were inserted: the working context (JD, DL), organizational well-being (SODD, ORG), positivity (POS), and socio-demographic and labour variables (age, gender, children, smoking, working hours, length of service, educational qualifications, profession, company of belonging, marital status).

After having carried out the analyses on the entire sample, in the fifth phase a stratification was carried out by gender and age. Stratifying the sample for gender allowed for verification of the influence of organizational variables on the health of males and females. In the stratification by age, the median value found, 38 years old, was used as a reference, making it possible to appreciate the differences in health reported by the younger and older subjects of the sample in comparison to the independent variables included in the model.

SPSS Ver 22® software was used for descriptive analyses, correlations, the T-test, and the non-parametric test of Kruskal-Wallis, while for factor analysis the statistical software MPlus® Ver 7.1 was used.

Results

Descriptive statistics of the sample

Of 300 questionnaires, 201 (67%) were correctly completed; 46.8% of the sample is made up of nurses (n=94), 18.9% of physicians (n=38), 15.4% of medical students (n=31), and 14.4% of nursing students (n=29). The sample was predominantly female (67.7%, n=136) with an average age of 37.7 years (standard deviation [SD]=10.7; range 21–64). Nurses employed in in-patient areas (n=142), who worked 7.82 hours a day (SD=1.5, range 5–12), and performed almost 6.5 hours of overtime per week (SD=8.8; range 0–40) made up 46.8% (n=94) of the sample. The sample characteristics are shown in Table 1.

Factorial reduction

The factorial reduction of the six dimensions of the Organizational Context and Relational Processes of the QISO Scale (perception of coordinators, perception of organizational efficiency, perception of organizational effectiveness, perception of colleagues, perception of the valorisation of competencies, and conflict perception), generated the second-order factor ORG. The validation of the construct verified through the CFA returned the following fit indices: χ^2 (126, N=201)=246.273, p<.001; Root Mean Square Error of Approximation (RMSEA)=.069 (90% CI=.056–.082), p (RMSEA<.05)<0.008; Comparative Fit Index (CFI)=.90; and Standardized Root Mean Residual (SRMR)=.056. These fit indices are considerate adequate (62).

The three satisfaction dimensions related to the Positive Indicators Scale (overall satisfaction, satisfaction with upper management, and satisfaction with one's operative unit) were grouped into the second-order factor SODD. The CFA, performed for the validation of the construct, returned the following fit indices: χ^2 (114, N=201)=194.830, p<.001; RMSEA=.060 (90% CI=.045–.074), p (RMSEA <.05)=.131; CFI=.919; and SRMR=.073. These fit indices are considered adequate (62).

Description of the univariate correlation analysis

From the correlation analyses between the variables investigated and the socio-demographic and work characteristics of our sample, we could identify various statistically significant relationships (Tables 2 and 3). The students/trainees were physically healthier (X^2=20.603; p<.001) than the healthcare providers in the sample, while the presence of children (t=2.26; p=.018), age (r=-.23; p=.001), and years of employment (r=-.18; p=.013) were significantly associated with reduced physical health. On the contrary, the number of daily hours worked were positively associated with the physical health reported by the participants (r=.16; p=.025). Finally,

Table 1 - Socio-demographic and working variables of the sample (N=201)

Variables	N	M	Ds	%	Range
Gender					
Male	65			32.3	
Female	136			67.7	
Age	201	37.7	10.7		21-64
Children					0-5
Yes	83			58.3	
No	116			41.7	
Smoke					
Yes	79			39.9	
No	119			60.1	
Education Level					
High School	59			30.7	
College Degree	94			49.0	
Postgraduate	39			20.3	
Marital Status					
Unmarried	82			40.8	
Married	100			49.8	
Separated/Divorced	18			9.0	
Widow/Widower	1			.5	
Profession					
Nurse	94			49.0	
Nursing Student	29			15.1	
Physicians/medical student	69			35.9	
Clinical Setting					
Hospital Stay	142			74.0	
Day Hospital	30			15.6	
Surgery	20			10.4	
Daily Hours	200	7.8	1.5		5-12
Overtime Hours	169	6.5	8.8		0-40
Years of Employment	194	12.7	9.8		0-38
Absences	198	1.9	1.0		0-4

the analysis showed a negative correlation between the hours worked every day and mental health (r=-.18; p=.01).

Univariate correlation analysis between the studied variables (Table 4) verified a positive correlation between PCS and POS (r=.30; p<.001) and a good ORG (r=.24; p=.001) and SODD (r=.22; p=.002). Regarding the MCS of the healthcare providers and students, we verified a positive correlation with increases of DL (r=.16; p=.026), POS (r=.35; p<.001), ORG (r=.26; p<.001), and SODD (r=.38; p<.001) and a negative correlation with JD (r=-.29; p<.001).

Multivariate analysis

Results of the regression analyses on the whole sample indicated that the variables of organizational context (JD and DL), organizational well-being (ORG, SODD), and socio-demographic and work characteristics had a role in explaining both the PCS and MCS of the healthcare providers and students (Tables 5 and 6). A dependence of the results on the gender and age of the study subjects could be verified from the analyses.

Specifically, from the results of the analyses performed on the entire sample (H1), it is possible to

Table 2 - Univariate correlation analysis between the investigated variables and the socio-demographic and labour qualitative variables

Variables (qualitative)	PCS		MCS		POS		ORG		SODD	
	Mean (SD)	p	Mean (SD)	p	Mean (SD)	p	Mean (SD)	p	Mean (SD)	p
Gender										
Male	51.9 (6.6)	.229[a]	44.2 (9.3)	.074[a]	27.0 (4.4)	.490[a]	1.9 (.5)	.535[a]	1.9 (.6)	.289[a]
Female	50.6 (8.1)		41.7 (9.0)		26.7 (4.2)		2.0 (.5)		1.9 (.6)	
Education Level										
High School	51.6 (8.4)	.549[b]	40.8 (1.2)	.131[b]	27.2 (4.7)	.451[b]	2.0 (.5)	.168[b]	2.0 (.7)	.156[b]
College Degree	50.6 (8.0)		42.2 (9.5)		26.6 (4.3)		1.9 (.4)		1.8 (.5)	
Postgraduate	21.5 (5.4)		42.4 (0.7)		27.1 (3.4)		2.0 (.5)		1.9 (.5)	
Children										
Yes	49.7 (8.2)	.018[a]	42.7 (9.3)	.867[a]	26.6 (4.4)	.161[a]	2.0 (.5)	.150[a]	1.97 (.5)	.278[a]
No	52.1 (6.5)		42.5 (9.1)		27.1 (4.1)		1.9 (.4)		1.83 (.6)	
Smoke										
Yes	50.7 (8.2)	.298[a]	41.2 (9.3)	.856[a]	26.6 (4.0)	.380[a]	1.9 (.5)	.535[a]	1.9 (.6)	.741[a]
No	51.1 (7.4)		43.4 (9.1)		27.0 (4.4)		1.9 (.5)		1.9 (.5)	
Activity										
Physicians/medical student	52.9 (6.0)	<.001[b]	41.3 (9.9)	.549[b]	27.1 (3.6)	.001[b]	1.9 (.4)	.001[b]	1.8 (.5)	<.001[b]
Nurse	49.1 (8.5)		43.2 (8.8)		26.0 (4.3)		1.9 (.4)		1.8 (.6)	
Nursing Student	54.0 (6.1)		52.5 (8.7)		29.0 (1.2)		2.2 (.4)		2.4 (.4)	

Legend: PCS=physical component summary; MCS=mental component summary, POS=positivity, ORG=perception of organization, SODD=satisfaction with the organization

Note; [a] =T-test by independent sample; [b] =Kruskall Wallis Test

Table 3 - Correlation analysis between the investigated variables and the socio-demographic and labour qualitative variables

Quantitative Variable	Mean (SD)	PCS		MCS		POS		ORG		SODD	
		r	p	r	p	r	p	r	p	r	p
Age	37.66 (10.74)	-.23	.001	.04	.55	-.13	.068	-.25	<.001	-.29	<.001
Years worked	12.67 (9.80)	-.18	.013	-.05	.50	-.11	.128	-.24	.001	-.26	<.001
Daily working hours	7.82 (1.49)	.16	.025	-.18	.01	-.10	.207	.03	.642	-.11	.116
Weekly working hours	6.48 (8.84)	.02	.800	-.14	.07	-.01	.949	-.07	.358	-.17	.028
Absences	1.91 (.96)	-.04	.610	-.11	.14	.11	.117	.13	.078	.04	.624

Legend: PCS=physical component summary, MCS=mental component summary, POS=positivity, ORG=perception of organization, SODD=satisfaction with the organization

r = represent the Pearson coefficient.

state that 21% of the PCS of the healthcare providers and students (R^2=.209) is explained by DL (β=.134; p=.065), POS (β=.258; p<.001), and hours worked per day (β=.224; r=.007); on the contrary, JD (β=-.160; p=.026) and age (β=-.218; p=.003) negatively affect the PCS of healthcare providers and students. With regards to the MCS of the entire sample, 32% of its variability (R^2=.321) is explained by the satisfaction of the healthcare providers and students (β=.345; p<.001), POS (β=.222; p=.002), practising the nursing profession (β=.177; p=.025), and age (β=.368; p=.011); on the contrary, years of work (β=-.429; p=.003) negatively influenced the MCS of the healthcare providers and students.

Table 4 - Univariate correlation between the variables studied (N=201)

	M (SD)	PCS	MCS	DL	JD	POS	ORG
PCS	51.0 (7.7)						
MCS	42.5 (9.2)	.02					
DL	55.8 (8.2)	.10	.16*				
JD	28.4 (4.4)	-.12	-.29***	-.07			
POS	26.8 (4.2)	.30***	.35***	.20**	-.17*		
ORG	1.9 (0.5)	.24***	.26***	.27***	-.24***	.29***	
SODD	1.9 (0.6)	.22**	.38***	.28***	-.22**	.36***	.63***

Legend: PCS=physical component summary, MCS=mental component summary, DL=decision latitude, JD=job demand, POS=positivity, ORG=perception of organization, SODD=satisfaction with the organization
Note: ***p <.001 (2-code), **p <.01 (2-code), *p <.05 (2-code)

Table 5 - Multivariate analysis. Predictors of PCS 12 in the total population and population stratified by gender and age

Variable	Total Population Beta (p)	Gender Beta (p)		Age Beta (p)	
		Males	Females	<38 years	≥38 years
Age	**-0.218 (0.003)**	**-0.232 (0.072)**	-0.119 (0.229)	---	---
Gender	-0.069 (0.330)	---	---	0.090(0.368)	-0.077 (0.458)
Children Yes/No	-0.085 (0.339)	0.208 (0.180)	**-0.266 (0.001)**	0.041 (0.754)	-0.155 (0.108)
Smoke Yes/No	0.027 (0.704)	0.179 (0.155)	-0.028 (0.719)	-0.021 (0.863)	-0.009 (0.938)
Daily working hours	**0.224 (0.007)**	-0.040 (0.826)	0.073 (0.457)	0.173 (0.241)	0.100 (0.329)
Years worked	0.120 (0.489)	0.444 (0.273)	-0.052 (0.774)	-0.027 (0.887)	-0.019 (0.911)
Degree/Post Degree	**-0.133 (0.094)**	0.009 (0.969)	-0.050 (0.511)	**-0.495 (0.023)**	-0.105 (0.342)
Married Yes/No	0.069 (0.430)	-0.199 (0.230)	0.073 (0.445)	**0.223 (0.033)**	-0.051 (0.665)
Decision Latitude	**0.134 (0.065)**	-0.032 (0.841)	0.112 (0.168)	0.050 (0.671)	0.068 (0.561)
Job demand	**-0.160 (0. 026)**	**-0.350 (0.006)**	0.001 (0.989)	**-0.376 (0.001)**	-0.129 (0.198)
MCS 12	-0.104 (0.172)	0.152 (0.278)	**-0.304 (<0.001)**	-0.069 (0.566)	-0.111 (0.346)
Nurses	-0.080 (0.453)	-0.164 (0.289)	-0.024(0.850)	**-0.280 (0.017)**	-0.026 (0.866)
Students	-0.161 (0.123)	-0.170 (0.317)	-0.151 (0.168)	**-0.473 (0.035)**	0.312 (0.009)
POS	**0.258 (<0.001)**	**0.342 (0.021)**	**0.376 (<0.001)**	**0.196 (0.052)**	**0.355 (0.001)**
ORG	0.135 (0.122)	0.137 (0.448)	**0.360 (<0.001)**	-0.015 (0.930)	**0.329 (0.018)**
SODD	-0.071 (0.463)	**-0.358 (0.019)**	0.049 (0.653)	0.127 (0.253)	**-0.286 (0.023)**
R^2 of the model	0.209	0.263	0.343	0.255	0.282

Legend: PCS=physical component summary, MCS=mental component summary, DL=decision latitude, JD=job demand, POS=positivity, ORG=perception of organization, SODD=satisfaction with the organization
* In bold who remains up to the end in the model

Multivariate analysis on stratified sample

After stratifying the sample by gender, the high PCS scores were explained in men by lower age, JD, SODD, and greater POS, while in women, high PCS scores were explained by not having children, lower MCS scores, and greater POS and SODD. Stratifying the sample by age, high PCS scores in younger participants (<38 years) were explained by less schooling, JD, being a student, working as a nurse,

Table 6 - Multivariate analysis. Predictors of MCS 12 in the total population and population stratified by gender and age

Variable	Total Population Beta (p)	Gender Beta (p)		Age Beta (p)	
		Males	Females	<38 years	≥38 years
Age	**0.368 (0.011)**	**0.850 (0.001)**	0.135 (0.171)	---	---
Gender	**-0.138 (0.037)**	---	---	-0.187 (0.035)	**-0.169 (0.056)**
Children Yes/No	-0.107 (0.192)	-0.229 (0.123)	-0.090 (0.301)	-0.054 (0.630)	-0.080 (0.476)
Smoke Yes/No	-0.079 (0.270)	-0.167 (0.108)	-0.057 (0.489)	-0.152 (0.103)	-0.020 (0.838)
Daily working hours	-0.106 (0.223)	0.039 (0.743)	-0.123 (0.157)	**-0.362 (0.001)**	0.048 (0.688)
Years worked	**-0.429 (0.003)**	**-1.274 (<0.001)**	-0.090 (0.583)	-0.045 (0.700)	-0.195 (0.112)
Degree/Post Degree	0.092 (0.164)	0.023 (0.864)	0.104 (0.169)	0.659 (0.002)	0.032 (0.793)
Married Yes/No	-0.028 (0.733)	0.133 (0.248)	-0.066 (0.496)	0.011 (0.919)	-0.095 (0.284)
Decision Latitude	0.058 (0.446)	-0.008 (0.954)	0.064 (0.458)	0.251 (0.012)	**-0.190 (0.040)**
Job Demand	**-0.117 (0.096)**	-0.061 (0.632)	-0.022 (0.808)	-0.078 (0.449)	-0.105 (0.264)
PCS 12	-0.105 (0.135)	0.175 (0.100)	-0.315(<0.001)	-0.071 (0.470)	-0.102 (0.283)
Nurses	**0.177 (0.025)**	**0.545 (<0.001)**	0.061 (0.578)	0.081 (0.592)	0.036 (0.752)
Students	0.007 0.950	0.052 (0.834)	0.086 (0.513)	**0.349 (0.076)**	0.037 (0.727)
POS	**0.222 (0.002)**	**0.382 (<0.001)**	**0.292 (<0.001)**	0.081 (0.381)	**0.341 (0.001)**
ORG	0.044 (0.639)	-0.135 (0.331)	**0.222 (0.030)**	**0.202 (0.048)**	-0.042 (0.769)
SODD	**0.345 (<0.001)**	0.141 (0.293)	**0.351 (<0.001)**	**0.092 (0.461)**	**0.396 (<0.001)**
R^2 del model	0.321	0.520	0.355	0.400	0.377

Legend: PCS=physical component summary, MCS=mental component summary, DL=decision latitude, JD=job demand, POS=positivity, ORG=perception of organization, SODD=satisfaction with the organization
* In bold who remains up to the end in the model

being married, and a high level of POS. For those who are older (>38 years), greater PCS scores were explained by more POS and ORG and less SODD.

After stratifying the sample by gender, high MCS scores were explained by younger age, years of employment, POS, and ORG for men, while for women, high MCS scores were explained by greater POS, ORG, and SODD and less PCS. Stratifying the sample by age, high MCS scores in younger participants were explained by greater DL, ORG, and SODD, less daily work hours, being male, being a nursing student, and possessing a degree; in the older cohort of the sample, greater MCS scores were explained by high POS and SODD, less DL, and not having children.

Discussion

The aim of this study was to analyse the relationship between the characteristics of the work context (JD and DL), organizational well-being (ORG and SODD), and psychophysical well-being of healthcare workers. The results of our study may be of interest to the scientific community because to our knowledge, only a few studies have investigated these relationships in a model. Overall, we have verified different relationships between the results in the total population and in the sample stratified for age and gender. The differences in some results are due to the characteristics of the socio-demographic and working variables considered, such as profession, or the young age of the nurses and nursing students. Moreover, not significant results were obtained in relation to gender and age, after stratification, showing that the variables are a predictor of health without these distinctions. Specifically, in our results, we found that the physical and mental health of the healthcare providers and students were related to work context, organizational well-being,

and POS (H1), and that these relationships change by gender (H2) and age (H3).

The results of the multivariate analysis performed on the entire sample indicated that the PCS of the healthcare providers and students was explained by DL and POS (a result also identified after stratifying the sample according to gender and age). Being able to make decisions, decide on the objectives to be achieved, and have autonomy in the management of one's work is positive for healthcare providers and students in so far as they improve the working context and consequently workers' health (14,53). On the contrary, JD and age negatively affect the PCS of healthcare providers and students. This result is not surprising and is in line with previous research (53), according to which an increase in workload and organizational demands determine various pathologies, such as myocardial infarction (63) and strokes (24).

After stratifying the sample by gender, it was possible to verify that, exclusively in women, the characteristics of the organization explain PCS, while in men it is the lack of satisfaction. This difference in gender finds its explanation in the nature of the items given to the participants. While for the perception of the organization the scale is oriented to interpersonal relationships, to which women are more sensitive (22), the satisfaction scale refers to the characteristics of the organizational context more generally. The reduction of PCS when the healthcare providers and students are more satisfied contrasts with the previous literature (20). However, this can be explained by the fact that when nurses experience satisfaction with their own organization, they are likely to show greater engagement (28) and commitment (71) and, as a result, work harder, even beyond their institutional mandate (30). Over time, this increased exertion, which involves physical effort, leads to their diminishing health (64). Finally, in women, PCS is reduced by motherhood itself. This finding, if on the one hand is not particularly surprising since women generally take the lead in caring for their children at home (4), inevitably results in fatigue and affects PCS (21), in line with the literature on work–family conflict (41); on the other hand, it is in contrast with the theory of enrichment (43), according to which being engaged on several fronts allows better performances in all activities and produces job satisfaction, affective commitment in workplace, and family satisfaction(50). Therefore, this result deserves to be examined more deeply in a study in which work–family enrichment and work–family conflict is also specifically assessed. Results of the sample stratified by age indicate that, in young people, less PCS is explained by having a university or postgraduate degree and by working as a nurse. That the nursing profession reduces the state of health in young people is explained by the manual nature of some care activities, which, to avoid causing musculoskeletal problems, require experience and expertise that young nurses may not yet have acquired. Being married or cohabiting positively influences the PCS of young people. This may be explained by young people needing more support when facing possible health problems and that being able to count on a spouse or a cohabitant helps to avoid the development of chronic pathologies.

The MCS of the healthcare providers and healthcare students of our sample is explained by an increase in age, job satisfaction, POS, and practising the nursing profession. That job satisfaction and POS play a role in explaining the MCS of the healthcare providers and students is not surprising. This finding is in line with previous research (20), which found that individual factors such as positive thinking can help in managing stressful situations more effectively (54) and thus positively impact one's health. In addition, the findings that satisfaction with work and ORG increases organizational well-being (67) and employee mental health agree with the findings of previous literature (58). Since individuals spend much of their lives in the workplace, so much so that it can be considered a second home, the incidents and emotions experienced in the organization affect their state of health.

On the contrary, it is surprising that nurses report better mental health compared to other professions, especially since recent research shows that the emotional commitment deriving from relationships, communication, and taking care of patients subjects nurses to significant and constant psychological and mental pressures that can undermine their state of mental health (27). It is true, however, that nurses, among healthcare workers, are the

most trained to manage relationships and the ensuing emotional overloads, and it may be possible that they have learned effective coping strategies and resilience (42). It is understandable that years of work negatively affect MCS, since the accumulation of stressful situations could explain a state of psychological and physical wearing out that, in the long run, may lead to pathologies (16). Moreover, an increase in DL was identified as a positive element in young people, whereas in the older participants, DL becomes a negative factor. This result, which contrasts with the existing literature (72), could be explained by the greater resourcefulness of young people, who acquire energy from challenging objectives and the possibility of being able to exploit their skills. Older healthcare providers and healthcare students, though, having lost their initial momentum, are more comfortable in maintaining their status quo (61).

Limitations

The results of this study must be considered in light of the following limitations. The first limitation is that the study sampled only three medium/large university policlinics with their peculiarity of teaching and research duties; smaller hospitals and their healthcare providers are not represented. Furthermore, since it is a sample of convenience, we cannot exclude any possible selection bias. We hope to enlarge this research in the future. A second limitation is represented by the cross-sectional nature of the present study, which prevented changes over time of the variables to be considered. It would thus be useful to undertake future research into the longitudinal effects of the variables, given the relationship between the health of workers, age, and length of service. Third, although the results are statistically significant, some differences and correlations are very small; this could be due to the sample dimensions, so further research with larger samples is necessary. Finally, in reading the results, it is necessary to consider that the mean age of our sample is 10 years younger than the mean age of Italian healthcare professionals in general; therefore, future studies are necessary.

Conclusion

This study brings new information about the relationship between the work context that explains the health of healthcare providers and healthcare students. In particular, in men, the characteristics of the organizational context are related to more physical disorders, while in women to more mental disorders. Mental health problems are more frequent in young people, while in older workers, physical problems are more frequent. Moreover, for all healthcare providers and students, positivity improves the state of their health. Managers of healthcare companies should take the mental and physical health of their healthcare providers and students into serious consideration and should initiate programs to restructure work context, for example by reducing job demands and encouraging decision latitude, since, in addition to directly affecting the quality of care provided and patient safety, employees' health is an indirect indicator of the health of an organization. In particular, by monitoring the characteristics of the organizational context, it is possible to predict whether workers are at risk of developing physical and/or mental disorders that affect their performance, absenteeism, and intention to leave. This information, if known, would allow managers to enact proactive solutions, implementing programs to improve the work context and avoid negatively affecting the health of healthcare providers and healthcare students.

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