An assessment of organizational well-being, organizational health, and work-related stress: A cross-sectional study of nurses involved with COVID-19 interventions

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Abstract.
BACKGROUND: Nurses have been affected by stress, developing many related consequences during the health emergency caused by the SARS-CoV-2 (COVID-19) pandemic. It is essential for healthcare organizations to protect their human resources because there is a strong correlation between the health status of healthcare workers and the quality of care provided.
OBJECTIVE: The aim of the study was to measure the perception of the organizational health level of the workplace among COVID-19 nurses (i.e. nurses who directly dealt with COVID-19 countermeasures) as an influence on work quality and work-related stress.
METHODS: A cross-sectional study was carried out by administering the Nursing Questionnaire on Organizational Health (QISO) to nurses in contact with COVID-19 patients. The search period ranged between August and September 2021 with nurses who work and/or worked in Lazio.
RESULTS: 123 questionnaires were collected. The scores with a value below the recommended level (2,6) are: "Comfort of the working environment" (mean = 2.57; SD = 0.66); "Valorization of skills" (mean = 2.40; SD = 0.62); "Openness to innovation" (mean = 2.46; SD = 0.77); "Satisfaction with top management" (mean = 2.48; SD = 0.81); and the inverse scale "Fatigue" (mean = 2.94; SD = 0.55).
CONCLUSION: Management of healthcare organizations should define action strategies to promote and increase organizational well-being and reduce work-related stress risk factors. Some action strategies that could be used include improving the elements of the work environment to make it more comfortable for workers; strengthening and improving communication; improving the relationship between nurses and senior management; and establishing a team of experts for psychological assistance.

Keywords: Nurses, nursing staff, heath workers, research instruments, organizational climate, organizational well-being, work environment, public health organization, professional satisfaction, workforce

1. Introduction

The mission of healthcare agencies is to increase and maintain health by taking care of their popula-tions. Protecting human resources is of fundamental importance for healthcare organizations because there are links between the health status of the workers and the population they serve, as well as between the quality of life of healthcare professionals and the quality of care they provide [1]. Work-related stress is a problem that primarily affects the helping professions, including nursing. This is due to daily contact

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with suffering, shift work, strong teamwork, the need for high skills, and poor social and economic recognition [1, 2]. Prolonged exposure to stress factors in the workplace may result in physical, psychological, and behavioral consequences including sleep disturbances, digestive disorders, alterations in cardiovascular homeostasis, and cognitive impairment [3, 4]. The repercussions of stress exposure negatively influence the entire organization resulting in an increase of errors, accidents, and injuries, an overall insufficient business performance, and high absenteeism due to illness and high staff turnover [2, 5–7]. A healthy organization must be able to monitor stress factors and promote a healthy work environment [8]. This became more important after the World Health Organization (WHO) declared that SARS-CoV-2 was a global pandemic on March 11, 2020 because all healthcare workers have worked in a constant state of health emergency with an increased risk of developing stress-related consequences [9–14]. Several studies conducted in 2020 related to stressful working conditions confirmed the increase in signs and symptoms in nurses who care for COVID-19 patients [10–12, 15–20]. Therefore, it is evident that organizations must reduce and /or eliminate risk factors contributing to work-related stress and promote organizational well-being [9].

Several systematic reviews suggest the importance of interventions that can improve and increase resilience, mindfulness, and well-being of individual healthcare workers, and as a group [9, 21].

Since organizational well-being is associated with work-related stress risk [22–24], there were two specific objectives of this study:

a) to assess the perception of the level of organizational well-being among COVID-19 nurses;
b) to identify possible actions that could improve organizational well-being and reduce the risk factors of work stress.

2. Materials and methods

2.1. Ethical considerations

This study, as a cross-sectional study, is exempt from Institutional Review Board approval. The study was carried out following the principles of the Helsinki Declaration.

2.2. Informed consent

The participants were informed about the content and purpose of the study. Informed consent was obtained from all subjects involved in the study.

2.3. Study design

A cross-sectional study was conducted following the STROBE Statement [25]. The search period ranged between August and September 2021.

2.4. Participants and context

Nurses who work have worked in Lazio and who were in contact with COVID-19 patients were included in the survey. The questionnaire was written on Google Forms, and then linked into multiple social media like Facebook, WhatsApp, and Telegram. The respondents included nurses employed by various hospitals in Lazio: Teaching Hospital Umberto I of Rome; Teaching Hospital Sant' Andrea of Rome; Lazzaro Spallanzani National Institute of Infectious Diseases; San Camillo Forlanini Hospital; Sandro Pertini Hospital, and Sant' Eugenio Hospital. The nurses who worked on the territory of the Local Health Unit Roma 2 and were in contact with COVID-19 patients were also included. The nurses were assigned to various COVID-19 health service sites performing a variety of duties: drive-in for swabs; territorial operational centers; telemedicine assistance; outpatient clinics. Additional participants were nurses who are a part of the Special Units of Continuity of Care Region (USCA-R Lazio) and nurses assigned to the Rome Convention Center "La Nuvola" who previously worked in COVID-19 departments in Latium Region.

2.5. Survey instruments

A validated questionnaire was administered. The Italian version of the Multidimensional Organizational Health Questionnaire (MOHQ) was repurposed for use on nurses [24]. The instrument is composed of eight sections with a total of 73 questions. The first section collects socio-personal data: gender (M, F); age; post-baccalaureate education (NO, YES); marital status (married and/or cohabiting: NO, YES); children (NO, YES); total work years (<5 years and ≥5 years); work years at current company (<5 years and ≥5 years); time spent commuting to work (<30 minutes and ≥30 minutes); average

number of hours worked per day (<7 hours and ≥7 hours); permanent contract (NO, YES); and clinical work area (critical area, medical area, other). "Critical area" refers to surgical care, emergency room, operating room, and critical care area. "Medical area" refers to medical, oncology, outpatient, and pediatric areas. The category of "other" refers to the services activated by Lazio to counteract COVID-19, inclusive of COVID-19 drive-in locations, District Operating Centers, telemedicine services, and USCA-R Lazio. Information was collected regarding previous work experience (NO, YES), hours worked per day, and weekly hours of overtime.

The next sections of the questionnaire refer to dimensions that influence organizational health, namely: characteristics of the work environment; safety; characteristics of one's job; positive and negative indicators of organizational well-being; psychophysical well-being; openness to innovation. The last section allows the participants to express suggestions to improve their organization.

The questions in the questionnaire require a binary response, although most of them are answered on a 4-point Likert scale (1 = insufficient; 2 = mediocre; 3 = sufficient; 4 = good). Thus, the higher the score, the greater the presence of the phenomenon observed.

From each section, 16 scales are determined. These scores are then dichotomized with a cut-off set at 2.6: higher scores indicate the presence of that characteristic.

The QISO algorithm relative to that of the Health Authorities was used for the calculation of the individual scales, according to the instructions in the QISO manual [24] (Table 1).

Some indicators are considered "positive" (satisfaction, comfort, safety, innovation, etc.) with high scores indicating well-being and health, while others are "negative" (conflict, fatigue, stress, isolation, etc.) with high scores corresponding to poor health.

2.6. Statistical analysis

Data were entered into an Excel database and processed using SPSS 25 statistical software.

A descriptive analysis was conducted with respect to sociodemographic variables and QISO scales, using absolute frequencies and percentages for qualitative variables: mean, median, standard deviation (SD), maximum and minimum for quantitative variables.

The 16 QISO scales were described qualitatively using the 2.6 cut-off [24]. QISO scores were averaged to see the overall level of perceived organizational well-being.

A univariate analysis was performed for assessing the association between sociodemographic, job characteristics, and critical values of the 16 QISO scales.

Scales in which at least univariate significance was found were used as dependent variables in a

Table 1
Representation of dimensions and scales for assessing organizational well-being outcomes

Dimensions	Scales	Items*
Comfort of working environment	Comfort of working environment	From com1 to com10
Organizational context and relational processes	Perception of organizational efficiency and effectiveness	org20, org21, org23, org26, org29, org31, org33, org49, org50
	Perceived valuing of skills	org37, org40, org41, org42, org55, org57, org59
	Perception of colleagues	org22, org25, org39, org43, org45, org46, org52
	Perception of conflict	org24, org34, org44, org54
	Perception of coordinators	org27, org30, org32, org35, org36, org53
Stress factors and task tolerability	Integration and teamwork	car7, car8, car9
	Fatigue	car1, car2, car3, car5, org28, org48
	Isolation and work routine	car4, car6
Safety and accident prevention	Safety and accident prevention	From sic1 to sic7
Propensity and openness to innovation	Propensity and openness to innovation	From inn1 to inn9
Positive and negative indicators	General satisfaction	From pos1 to pos6, and pos8
	Satisfaction for management	pos10, pos13, pos16, pos17, pos18
	Satisfaction with your operating unit	pos10, pos13, pos16, pos17, pos18
	Negative indicators	From neg1 to neg13
Indicators of psychophysical malaise	Indicators of psychophysical malaise	From psi1 to psi8

linear regression model. All scales that reported a statistically significant univariate score of $p < 0.25$ were included as predictor variables in the regression model. The age variable was always included as a possible confounder. The goodness of fit of the model was assessed using the R^2 coefficient. The statistical significance was set at $p < 0.05$.

3. Results

A total of 123 questionnaires were collected. Descriptive statistics for socio-demographic variables are summarized in Table 2. Only 22% of responders are male. A little over half (54.8%) of responders are in the 22–30 year age group, and then 20% are in the 30–40 year age group. Most of the respondents are single or unmarried, and have no children. Two-thirds of the sample have post-basic education. Employment status was reported as 73.2% have permanent contracts; almost all are full-time; half have been working as nurses for more than 5

years; 74.4% worked for less than 5 years in their current company. 36.3% of respondents work in the territory of the Local Health Unit Roma 2. Most respondents work in hospitals: 19.4% in the medical area and 16.1% in the critical area. Almost all had previous work experience. Responses indicate 57% of the sample are able to take less than 30 minutes to get to work. Almost all the nurses reported working between 1 and 10 hours of overtime per week, most frequently with an average of about 7 hours.

Table 3 shows the values obtained from the QISO scores. The scales with scores below 2.6 that report a context of malaise are: "comfort of the working environment" (mean = 2.57; SD = 0.66); "valorization of skills" (mean = 2.40; SD = 0.62); "openness to innovation" (mean = 2.46; SD = 0.77); "satisfaction with top management" (mean = 2.48; SD = 0.81).

The "fatigue" scale, of the reverse type, shows an average score over 2.6 (mean = 2.94; SD = 0.55), meaning that fatigue is perceived by workers in a negative way in the organizational context studied.

Table 2
Descriptive analysis of the sample

Variables		N	%	Missing
Gender	M	27	22	0
	F	96	78	
Post-basic training	No	40	32.5	0
	Yes	83	67.5	
Marital status: married and/or cohabiting	No	78	63.9	1
	Yes	44	36	
Children	No	82	66.7	0
	Yes	41	33.3	
Total working years	<5 years	57	46.7	1
	≥5 years	65	53.3	
Years of work in the current company	<5 years	90	74.4	2
	≥5 years	31	25.6	
Time taken to travel to work	<30 minutes	70	56.9	0
	≥30 minutes	53	43.1	
Average number of working hours per day	<7 hours	40	32.5	0
	≥7 hours	83	67.5	
Open-ended contract	No	33	26.8	0
	Yes	90	73.2	
Clinical work environment	Critical area*	39	31.7	0
	Medical area**	40	32.5	
	Other***	44	35.8	
Previous work experience	No	17	13.8	0
	Yes	106	86.2	
Continuous variables		Mean	SD	
Working hours per day		7.16	1.48	0
Weekly overtime hours		7.18	8.93	0
Age		33.8	9.8	0

*Surgical area, emergency room, operating room, critical care area. **Medical area, oncology area, outpatient area, pediatric area. ***ASL and services that have been activated by Lazio Region to counteract COVID-19, such as COVID-19 drive-in, district operating centers, telemedicine services, USCA-R Lazio.

Table 3
Representation of the descriptive analysis of the results obtained from the QISO scores/indicators

Dimension	N	Minimum	Maximum	Mean	SD
Comfort of working environment	123	1	4	2.57	0.66
Organizational efficiency and effectiveness	123	1	4	2.69	0.6
Perception of colleagues	123	1.43	4	3	0.52
Perception of coordinators	123	1	4	2.76	0.61
Valuing of skills	123	1	3.86	2.40	0.62
Openness to innovation	123	1	4	2.46	0.77
Integration and teamwork	123	1.67	4	3.07	0.51
General satisfaction	123	1	4	2.95	0.59
Satisfaction with top management	123	1	4	2.48	0.81
Satisfaction with own operative unit	123	1.40	4	2.92	0.63
Safety and accident prevention	123	1	4	2.62	0.66
Negative indicators	123	1	4	2.60	0.66
Fatigue	123	1.67	4	2.94	0.55
Isolation and work routine	123	1.50	4	2.58	0.60
Perception of conflict	123	1	4	2.2	0.70
Indicators of psychophysical malaise	123	1	4	2.50	0.69

The scales that report satisfactory scores are: "relationship with one's nursing coordinators" (mean = 2.76; SD = 0.61), "relationship between colleagues" (mean = 3; SD = 0.52), "integration and teamwork" (mean = 3.07; SD = 0.51), "work effectiveness and efficiency" (mean = 2.69; SD = 0.60). The authors would like to note the absence of "conflict" in the contexts considered (mean = 2.2; SD = 0.70): the absence of "isolation and work routine" (mean = 2.58; SD = 0.60) and the absence of "negative phenomena" (mean = 2.60; SD = 0.66). Of additional significance, there is satisfaction with one's organization and work environment (mean = 2.95; SD = 0.59 and mean = 2.92; SD = 0.63, respectively). There is a perception among the participants of "safety and accident prevention" (mean = 2.62; SD = 0.66) and the absence of "psychosomatic disorders" (mean = 2.50; SD = 0.69) in terms of headaches, respiratory disorders, stomach aches, etc.

The mean of the QISO variable was 2.35, below the cut-off.

The univariate analysis performed in order to evaluate the presence of possible associations with the variables collected is reported in Table 4.

Significant differences are observed in 8 scales of the QISO, in particular:

1. The "comfort of the work environment" scale: Those without post-baccalaureate education perceive a higher degree of comfort of the work environment (p = 0.03).
2. The "integration and teamwork" scale: Those who have been working for less than five years perceive a higher level of job integration and teamwork than those who have been working for five years or more (p = 0.01).
3. The "satisfaction with their Operating Unit" scale: Male nurses (as compared to female nurses) are more satisfied with their Operating Unit (p = 0.01).
4. The "safety and accident prevention" scale: Those without post-basic education feel a greater sense of workplace safety than those with post-basic education (p = 0.02).
5. The "job fatigue" scale: Fatigue is felt more by female nurses (as compared to male nurses) (p = 0.02) and by nurses who have post-basic education (p = 0.03). Fatigue is felt more by those who work 7 or more hours per day (p = 0.006), and perceived fatigue increases as the number of hours of work per day increases (p = 0.004). Moreover, fatigue is felt more by those nurses who work in emergency rooms, critical areas, operating rooms and surgeries, as compared to those who work in services for medical, pediatric, outpatient, and oncology. Nurses working in "other" perceived less fatigue as compared to all others (p = 0.01).
6. The "isolation and work routine" scale: Nurses who work in "other" work areas perceive more isolation and routine during their work. Nurses who work in medical, oncology, pediatrics, and outpatient clinics feel less isolation and routine at their work than those who work in emergency rooms, surgeries, operating blocks, and the critical care areas (p = 0.01).
7. The "perception of conflict" scale: Conflict in the workplace is perceived more by those nurses who have children (p = 0.03) and by those

Table 4
Univariate analysis with respect to QISO scales

Scales	Variables		Mean	P
Comfort of working environment	Post-basic training	No	2.78	0.03*
		Yes	2.47	
Integration and teamwork	Total working years	<5 years	3.18	**0.01***
		≥5 years	2.9	
Satisfaction with own operative unit	Gender	M	3.18	**0.01***
		F	2.85	
Safety and accident prevention	Post-basic training	No	2.83	**0.02***
		Yes	2.5	
Fatigue	Gender	M	2.74	**0.02***
		F	3	
	Post-basic training	No	2.8	**0.03***
		Yes	3	
	Average number of working hours per day	<7 hours	2.7	**0.006***
		≥7 hours	3	
	Clinical work environment	Critical area^	3.14	**0.01****
		Medical area^^	2.94	
		Other^^^	2.77	
	Working hours per day		0.25	**0.004*****
Isolation and work routine	Clinical work environment	Critical area^	2.47	**0.01****
		Medical area^^	2.5	
		Other^^^	2.7	
Perception of conflict	Children	No	2.14	
		Yes	2.4	**0.03***
	Total working years	<5 years	2	
		≥5 years	2.3	**0.02***
	Age		0.208	**0.02*****
Indicators of psychophysical malaise	Gender	M	2.15	**0.004***
		F	2.6	
	Clinical work environment	Critical area^	2.7	**0.02*****
		Medical area^^	2.3	
		Other^^^	2.44	
	Working hours per day		0.229	**0.01*****

*p-value Mann-Whitney U test. **p-value Kruskall Wallis. ***p-value Spearman. ^Surgical area, emergency department, operating room, critical care area. ^^Medical area, oncology area, outpatient area, pediatric area. ^^ASL and services that have been activated by the Lazio Region to counteract COVID-19, such as COVID-19 drive-in, district operating centers, telemedicine services, USCA-R Lazio.

nurses who have worked for 5 or more years ($p = 0.02$). The perception of conflict increases as the age of the respondent increases ($p = 0.02$); therefore, younger nurses perceive less conflict in the workplace.

8. The "indicators of psychophysical discomfort" scale: Female nurses present with more indicators of psychophysical discomfort than male nurses ($p = 0.004$). Those nurses who work in the areas including the emergency room, surgery, operating block, and critical care perceive more psychophysical discomfort, presumably due to the greater dynamism, criticality, and overall difficulty of these departments. The next highest ratings for indicators of psychophysical discomfort are by those nurses who work in "other" and those nurses who work in medicine, pediatrics, outpatient clinics, and oncology ($p = 0.02$). As indicated earlier, nurses who work in "other" settings also perceive isolation and work routine the most; and, those who feel a strong sense of isolation and routine will tend to develop indicators of psychophysical distress. Another significant association was found between an increase of work hours and an increase of indicators of psychophysical malaise ($p = 0.01$).

Table 5 shows the eight regression models related to the QISO scales showing at least one significance in the univariate.

The "indicators of psychophysical distress" score is statistically significant associated with gender ($p = 0.01$): psychophysical distress is greater in female nurses than male nurses ($\beta = 0.282$). There is a correlation with hours worked per day on aver-

Table 5
Linear regression models against QISO scales with at least one significance in univariate analysis

Dependent variables		Gender (M*/F)	Post-basic training (Yes/No*)	Average number of working hours per day	Age°	Medical area^	Critical area^^	Total working years (<5years*/≥5years)	Open-ended contract (Yes/No*)	Time taken to travel to work (<30*/≥30)	Children (Yes/No*)	Previous work experience (Yes/No*)	Years of work in the current company (<5 years*/≥5years)	Weekly overtime hours
Indicators of psychophysical malaise (R² = 0.138)	?	**0,282**	–	**0,183**	0,024	**−0,19**	0,092	–	–	0,125	–	–	–	–
	p	**0,001**	–	**0,033**	0,782	**0,029**	0,58	–	–	0,144	–	–	–	–
Perception of conflict (R² = 0.100)	?	0,16	–	0,056	0,08	0,026	0,171	**0,198**	–	0,123	0,023	–	0,003	0,097
	p	0,073	–	0,0537	0,509	0,803	0,057	**0,027**	–	0,167	0,857	–	0,982	0,273
Isolation and work routine (R² = 0.160)	?	–	–	–	−0,054	**−0,24**	**−0,24**	0,009	–	−0,051	0,021	0,12	–	–
	p	–	–	–	0,55	**0,019**	**0,019**	0,939	–	0,596	0,866	0,182	–	–
Fatigue (R² = 0.150)	?	**0,177**	0,135	**0,247**	0,08	0,13	–	**0,197**	–	–	–	–	–	–
	p	**0,039**	0,115	**0,004**	0,35	0,19	–	**0,023**	–	–	–	–	–	–
Comfort of working environment (R² = 0.047)	?	–	**−0,217**	0,068	0,024	–	–	–	–	–	–	–	–	–
	p	–	**0,016**	0,443	0,793	–	–	–	–	–	–	–	–	–
Satisfaction with own operative unit (R² = 0.048)	?	**−0,219**	–	–	0,087	0,133	−0,035	–	−0,126	−0,098	–	–	–	–
	p	**0,015**	–	–	0,349	0,138	0,732	–	0,154	0,267	–	–	–	–
Safety (R² = 0.050)	?	–	**−0,224**	0,007	0,05	0,071	−0,124	–	–	–	–	–	–	–
	p	–	**0,013**	0,938	0,575	0,49	0,168	–	–	–	–	–	–	–
Integration and teamwork (R² = 0.028)	?	–	–	0,167	0,938	0,145	−0,015	0,045	−0,107	–	–	–	–	–
	p	–	–	0,065	0,685	0,106	0,889	0,639	0,239	–	–	–	–	–

*reference group. °included as a potential confounder in the model. ^Surgical Area, Emergency Department, Operating Room, Critical Care Area. ^^Medical Area, Oncology Area, Outpatient Area, Pediatric Area.

age ($p = 0.033$): nurses who work more hours per day present more indicators of psychophysical discomfort ($\beta = 0.183$). There is a correlation with medical specialty area ($p = 0.029$): nurses in medical, pediatric, oncology, and outpatient areas present less discomfort than nurses in other areas ($\beta = -0.19$). The association between the "perception of conflict" score and total years of work can be confirmed ($p = 0.027$): those who have worked for 5 years or more have a greater perception of conflict as compared to those who have worked for less than 5 years ($\beta = 0.198$). "Isolation and work routine" was statistically at a lower value when associated with the critical area ($p = 0.019$) and the medical area ($p = 0.019$); therefore, isolation and work routine was perceived more by nurses working in "other" work environments.

The "fatigue" score shows a significant association with gender ($p = 0.039$); female nurses experience more work-related fatigue than male nurses ($\beta = 0.177$). There is a correlation with the average hours of work per day ($p = 0.004$) since those nurses who work more hours per day experience more work-related fatigue as compared to those who work fewer hours ($\beta = 0.247$). Those nurses who work in the critical area ($p = 0.023$) including operating block, surgery, and emergency department perceive more work-related fatigue as compared to nurses who work in other areas ($\beta = 0.197$).

The "comfort of the work environment" was associated with post-basic training ($p = 0.016$). Those nurses with post-basic training felt less comfort in their work environment as compared to those without post-basic training ($\beta = -0.217$). "Satisfaction with their Operating Unit" was found to be associated with gender ($p = 0.015$). Female nurses present less satisfaction with their Operating Unit than male nurses ($\beta = -0.219$). The "safety and injury prevention" score was found to be significantly associated with post-basic training ($p = 0.013$). Those nurses with post-basic training felt less safe in the workplace as compared to those without post-basic training ($\beta = -0.224$).

Suggestions from respondents about company aspects to improve are summarized in Table 6.

Overall, "staff development" was the suggestion indicated the most times (N = 94). The suggestions to improve the method of assigning resources was next highest in frequency (N = 89). Suggestions were made to improve relations with nursing management (N = 72) and to enhance the circulation and clarity of information (N = 70).

Table 6
Representation of section 8 of the QISO: Suggestions on aspects to improve in your organization

Areas to improve	No.
The comfort of the work environment	41
The safety of the working environment	34
The circulation and clarity of information	70
Professional relations between colleagues	34
Relationships with your nursing coordinator	35
Relationships with your nursing faculty	72
Professional relationships with medical staff	32
Relationships with top management	40
Relationships between the various operating units	21
IT and technological support	44
Flexible working hours	34
Clarity of objectives and tasks	37
Staff development	94
Staff training and refresher courses	58
The incentive distribution system	57
Organizational structure or work processes	27
Staff evaluation systems	48
Allocation of resources	89

4. Discussion

It should be noticed that the study sample, distributed homogeneously in the various work areas, is young (average age 33 years). More than half of the respondents have no children and are not married or cohabiting, and they have a permanent contract and have been working for less than 5 years in the current company.

The QISO scales excellent scores emerged in relation to the general satisfaction with their organization, in the perception of the relationship with the coordinators, the relationship between colleagues, and linked to integration and teamwork.

It should be remembered that the organizational contexts studied are associated with the COVID-19 pandemic. It is reasonable to assume that working long hours in extreme conditions has strengthened and improved the relationships between colleagues. Of significance, there was little opportunity for recreation outside of work.

This study agrees with observations already found in the literature, the gender gap was confirmed, women present more anxiety-related signs and symptoms than men [10, 12, 26].

An unsatisfactory score related to "comfort of the work environment" emerged. The creation of a healthy work environment is fundamental. The work environment should be as clean as possible with good lighting, adequate temperature, quietness, general pleasantness, functional locker rooms, and ergonomic appropriateness of furnishings, and toilets.

The organizational context in which nurses practice is crucial in influencing patient outcomes [27]. The "satisfaction with top management" represents an unsatisfactory score. Satisfaction with top management promotes greater job satisfaction among nurses [28, 29] and improves the quality of care provided [30]. Another critical score found in the study is related to the perception of how open their work environment is to innovation with a significant need for innovation and change among nurses.

Working in an innovative environment is intended to mean working with the latest available Guidelines and Procedures and the newest and safest materials with highly trained staff focused on research to provide the highest possible quality of care. Our study assumes younger nurses feel more than older nurses that these features of their operating environment are important in achieving the highest level of organizational well-being and quality of care.

The strong perception of fatigue is linked to the extreme working conditions while being in contact with COVID-19 patients as well as experiencing fear of contagion and social isolation. Moreover, the fatigue score was higher due to the higher load of work in nurses who worked more hours per day and worked in the critical area, operating block, surgery, and emergency department. Isolation and work routine is linked to less variety in the work context of nurses working in ASLs, COVID-19 drive-in, District Operating Centers, telemedicine services, and USCA-R Lazio.

We present the assumption that nurses who have worked for more than 5 years have a greater perception of conflict because of the probability that they have developed increased work-related stress over their years of employment. The nurses felt undervalued, as reflected in the suggestions on the aspects to change in the working context. Lack of involvement in decision-making processes and lack of clarity of roles are stress factors described in the literature [7, 31].

4.1. Limitations of the study

This study has some limitations that must be acknowledged. Selection bias cannot be ruled out of the sample. We conducted a cross-sectional study that did not allow examination of the variables and how they might change over time.

Although the results were statistically significant, the scores were very small; therefore, the study sample should be expanded for future research. New research could explore why nurses with post-basic training felt less comfort in their work environment and why they felt less safe in their workplace as compared to those nurses without post-basic training. Moreover, it could be interesting to look into why female nurses present with less satisfaction with their operating unit than male nurses.

5. Conclusion

This study brings new knowledge about nurses' perceptions of their work climate. Our research findings add to the body of information about perceived organizational wellbeing. We identified indicators found to be negative attributes and others found to be positive variables. The analysis highlights critical issues which emerged regarding the perception of organizational wellbeing of nurses in Lazio who worked with COVID-19 positive patients. Overall, the nursing population studied does not perceive their work to be a healthy working climate. Some suggested adoption of management action strategies to promote organizational well-being and to reduce risk factors from stress at work. By monitoring indicators of stress in the work context, it is possible to predict risk of developing consequences related to work-related stress reflected through absenteeism, turnover, injuries, and errors [32]. Some action strategies could be aimed at improving the elements of the work environment to make it more comfortable for workers. Additionally, strengthening and improving communication is recommended [7, 33]. The objectives aim at improving the circulation of communication, increasing clarity of information, and reducing misunderstandings and the possible results of nervousness or conflicts [8].

The data indicates a necessity to improve the relationship between nurses and senior management [34]. Management is often perceived as absent or distant from the practical problems related to everyday work. Actions must be taken to encourage workers to feel valued as an active participant of the organization and to feel their value is recognized [2].

Group activities are encouraged for stress management [5, 33] and to strengthen the relationships between colleagues. It could be useful to offer both in-person and remote (telephone, computer chat, etc.) psychological assistance at no charge by a team of experts for all healthcare workers [2, 9, 15, 26, 35–37].

Ethical approval

The study was approved by the Local Ethical Committee of Sapienza University of Rome – Teaching Hospital Policlinico Umberto I – Rome (no. 109/2020).

Informed consent

All participants gave their permission to enter the study at the beginning of filling out the Google form.

Conflict of interest

The authors declare that they have no conflict of interest.

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