

# Workplace policies and quality of working life (QoWL) during the COVID-19 pandemic in Jordanian hospitals

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Received 21 June 2022

Accepted 22 March 2023

## Abstract.

**BACKGROUND:** Many healthcare organizations place a high value on quality of work-life (QoWL). The healthcare system's long-term sustainability and capability to offer high-quality services to patients depend on improving QoWL for their healthcare workers.

**OBJECTIVE:** The study aimed to explore the impact of Jordanian hospitals' workplace policies and measures in three main domains: (I) Infection prevention and control (IPC) measures, (II) Supply of personal protective equipment (PPE), and (III) COVID-19 precautionary measures on the QoWL among healthcare workers during the COVID-19 pandemic.

**METHODS:** A cross-sectional survey was conducted from May to June 2021 through an online self-reported questionnaire (Google Form) targeting hospital healthcare professionals working at Jordanian hospitals (public, private, military, and university). The study used a valid work-related quality of life (WRQoL) scale to study the QoWL.

**RESULTS:** A total of 484 HCWs in Jordanian hospitals participated in the study with a mean age of  $(34.8 \pm 8.28)$  years. 57.6% of the respondents were females. 66.1% were married, with 61.6% having children at home. An average QoWL among healthcare workers in Jordanian hospitals during the pandemic was observed. The study results also showed a significant positive correlation between workplace policies (IPC measures, supply of PPE, and COVID-19 preventive measures) and the WRQoL among healthcare workers.

**CONCLUSION:** Our findings highlighted the vital need for QoWL and psychological well-being support services for healthcare staff during pandemics. Improved IPC systems and other precautionary measures at the national and hospital management levels are required to help minimize the stress and fear that healthcare workers experience and lower the risk of COVID-19 and future pandemics.

Keywords: Quality of work-life, COVID-19, coronavirus, pandemic, health policy, infection prevention and control, precautionary measures

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## 1. Introduction

The quality of work-life (QoWL) is a generic phrase that refers to the favorable or unfavorable work environment for people working in an organization [1,2]. High QoWL is a multidimensional concept that is necessary for human resource empowerment in healthcare settings [3,4]. A better QoWL is essential in lowering tension inside and outside the workplace, anxiety, depression, and stress, and meeting workers' demands [5–8]. However, workplace stress harms QoWL, with severe effects on employees' physical and psychological health. Organizations are increasingly considering QoWL as one of the main variables to act upon to encourage workplace well-being [1,7–9]. In the healthcare sector, the QoWL of healthcare workers (HCWs) is a critical issue since it directly impacts the quality of patient care. Several studies have examined the QoWL impact on the quality of service offered to patients worldwide, as workplace stressors and a lack of adequate coping resources may affect health professionals' mental and physical well-being [10–12].

COVID-19 exacerbates stressful healthcare workplaces. The fast-spreading outbreak has put an enormous strain on global healthcare systems. It has resulted in high healthcare demands, poor clinician-patient ratios, higher patient mortality, mental and physical stress, and rationing of healthcare resources for HCWs. Rapid increases in the number of suspected and confirmed positive cases, low personal protective equipment (PPE) supplies, overburdened work schedules, widespread media coverage of the pandemic, and perceived insufficient organizational support, all these conditions substantially increased burnout and stress among HCWs [13–16]. Alrawashdeh et al. reported that a lack of a sufficient supply of PPE acted as a risk factor for burnout during clinical practice during the COVID-19 pandemic [17]. This finding is consistent with Morgantini et al. who discovered that a sufficient supply of PPE acted as a protective factor against burnout during the COVID-19 pandemic [18]. Fear of disease transmission and quarantine, the possibility of infecting their family and friends, caring for coworkers as patients, feelings of stigmatization, and rejection by others in their community made frontline HCWs vulnerable to temporary and long-term psychological distress issues [15,16,19]. Further, HCWs were physically and emotionally exhausted by the heavy workload, exacerbated by high staff absence rates, which forced those who remained to work longer hours and at a higher intensity [14,20,21]. Despite all these difficulties and challenges, HCWs demonstrated their professionalism and perseverance and showed their resilience during the pandemic [20,22].

Hospitals play a key role in responding to emergencies such as pandemics. During COVID-19, several hospitals have adopted different strategies and policies to protect their HCWs and alleviate anxiety among them, including proper PPE, weekly shifts, period screening of their employees, vaccination, and other infection prevention and control (IPC) measures [23–26]. Despite these precautions, several studies revealed infection among HCWs, posing a concern to other patients, coworkers, and families [27,28]. Wong et al. investigated HCWs' views towards supportive workplace policies during the pandemic and their association with health-related quality of life (HRQoL) in Hong Kong. Their study findings revealed that 16% of 1048 respondents mentioned that their organization had no workplace interventions or guidance related to the COVID-19 pandemic. Those who said they had a workplace policy were dissatisfied with it in terms of comprehensiveness (36%), timeliness (38%), and transparency (63%). Only 68% of respondents stated that their workplace had face masks in terms of the policy measure [29]. Yfantis et al. conducted a nationwide survey to determine the preparedness of hospitals in Greece and Cyprus to cope with the COVID-19 pandemic. Their findings revealed moderate levels of hospital preparedness to cope with the pandemic in both countries [30]. In the U.S., in a long-term care facility in Washington

State, it was found that insufficient infection management protocols led to the spread of infection to 81 residents, 34 employees, and 14 visitors [31].

COVID-19 screening protocols state that HCWs should, at the very least, check themselves for fever and other COVID-19 symptoms and remain at home if they become sick. They can then seek more advice from occupational health. A study conducted among infected HCWs in Washington found that 65% of 48 HCWs with confirmed COVID-19 reported working for a median of two days (range, 1–10 days) while experiencing COVID-19 symptoms [32]. HCWs should also be informed about the importance of reporting all unprotected COVID-19 exposures to occupational health services so that job restrictions, self-quarantine, and monitoring can be determined. Since the beginning of the COVID-19 outbreak, the Jordanian government has followed the WHO's guidelines and alerts to restrict the spread of COVID-19; a variety of preventive and control measures have been implemented at the local and national levels [17,33–35]. However, Suleiman et al. study revealed that only 18.5% of frontline physicians in Jordan had adequate access to PPE in a survey of frontline physicians in Jordan [36]. These precautionary measures and policies were developed to prevent COVID-19 and/or alleviate anxiety and stress in hospitals, but the impact of these policies on QoWL has not been studied in detail, especially in the Middle East and North Africa (MENA) region. To this end, this study aimed to examine the relationship between organizational workplace policies and measures, including infection prevention and control (IPC) policies, supply of PPE, COVID-19 precautionary measures, and the QoWL among healthcare workers in Jordan.

## 2. Methods

### 2.1. Study design and setting

A cross-sectional design was carried out using an online survey from May 10th to the end of June 2021. A structured self-reported instrument was created and used for data collection based on the available literature [29,37–40]. As HCWs in hospitals were at high risk of exposure to the virus, hospitals were among the most critical workplaces during the pandemic. To limit physical contact with HCWs due to the current COVID-19 pandemic and to eliminate geographical boundaries to reach participants from different Jordanian governorates hospitals, a self-reported questionnaire was created as a web-based Google Form<sup>®</sup> (a cloud-based survey tool) in both languages (English and Arabic), with an option of selecting the preferred language at the beginning of the survey (a Google Form feature). It was distributed to HCWs at various public, private, military, and Jordanian university hospitals via online platforms, groups, and pages (Facebook<sup>®</sup>, WhatsApp<sup>®</sup>, Facebook Messenger<sup>®</sup>, and LinkedIn<sup>®</sup>). To promote the self-reported questionnaire to HCWs, the researchers produced, uploaded, and administered it to all healthcare workers' official public and private channels (i.e., official groups and pages for hospital healthcare workers).

### 2.2. Study participants

The research population included different healthcare professionals from various specialties and working in 118 different hospitals in Jordan, including the Jordanian Ministry of Health (JMOH), Jordanian Royal Medical Services (JRMS), University Hospitals (UHs), and Private Hospitals (PHs). The population included physicians (general practitioners, specialists, and consultants), dentists, pharmacists

(pharmacists and clinical pharmacists), nurses, midwives, laboratory technicians, radiology technicians, and other medical staff actively working in any Jordanian hospital. No sampling approach was performed; a non-probability convenient sampling technique was used as COVID-19 pandemic presents unique challenges that made it difficult to conduct a representative sample.

The researcher used the Cochran formula to determine the sample size, which works best for a large population. The Cochran formula calculates an ideal sample size given a desired level of precision, a desired confidence level, and the estimated proportion of the attribute present in the population. Cochran's formula is considered especially appropriate in situations with large populations [41]. A sample of at least 385 was required for this study, considering a 95% confidence level and 5% marginal error. Due to the nature of the online data collection technique, additional samples were enrolled to compensate for potential missing or unintended errors. The adjusted sample size formula is:  $n1 = n/(1 - e)$ , where ( $n$ ) is the required sample size as per the formula, ( $n1$ ) is the adjusted sample size, and ( $e$ ) is the potential missing or unintended sample error. Considering 10% possible missing or unintentional errors, the adjusted sample size was 427.77. Thus, the sample size targeted for this study was at least 428 different healthcare professionals.

The research's target population included all healthcare workers, either on a full-or part-time basis, who had at least six months of experience. Retired HCWs or students were excluded. In addition, those who have deficiencies in completing research information and questionnaires and anyone who does not meet inclusion criteria were also excluded. Clear notes were added at the beginning of the questionnaire to ensure meeting the research inclusion criteria; only HCWs attended the first COVID-19 pandemic wave (September 2020 until January 2021) and the second wave (January 2021 until April 2021) could participate in the study.

### 2.3. Research instrument

The used self-reported questionnaire included four main parts; part one was about sociodemographics and participants' work profiles. Part 2 includes the Work-Related Quality of Life (WRQoL) Scale. The WRQoL (24-items) scale, created by Van Laar et al. is one of the most concise, psychometrically valid, and reliable QoWL measures in the literature [39]. The scale consisted of a questionnaire initially evaluated in a healthcare context before being adapted to various professional settings. The WRQoL scale has been utilized in more than 50 countries and is accessible in more than ten languages [39,40,42]. The scale included six subscales: job and career satisfaction (JCS), general well-being (GWB), control at work (CAW), stress at work (SAW), working conditions (WCS), and the home-work interface (HWI). Each item on the scale is evaluated using 5-point Likert-scale responses from 1 = 'Strongly disagree' to 5 = 'Strongly agree'. Question number 24 asks about the overall quality of working life. Part 3 adopted the views towards workplace policies and measures in terms of comprehensive, timeliness, and transparency using a 5-point Likert scale ranging from "1-very dissatisfied to 5-very satisfied". As for the Infection Prevention and Control (IPC) Program (part 4); this section was divided into three domains; (i) Infection Prevention and Control Program: this domain was divided into subdomains, including (a) Basic indicators, (b) Guidelines in the IPC unit, (c) Healthcare-associated infection monitoring, and (d) Monitoring/auditing of infection control practices and outcomes, (ii) Supply of Personal Protective Equipment (PPE), Availability of Hygiene Materials, and Training and Education, and (iii) COVID-19 Precautionary Measures [37,38,43]. Each domain/subdomain (in parts 3 and 4) provided indicators and objectives for meeting basic requirements for maintaining a safe and clean environment.

#### 2.4. Data collection

To test for readability and understandability, the instrument was distributed to a small number of healthcare professionals and experts for feedback before being generalized to the whole population. Using two different languages to perform the research instrument responded to different HCWs' preferences, as some preferred to fill out English forms and others liked them in Arabic. Using the reverse translation process, English–Arabic–English, we made sure that they matched, whether in Arabic or English, both for the items and their answers. Before completing their surveys, the participants were informed electronically about the study's purpose, the use of data, and the study procedures. Double replies from each responder were avoided using the Google Forms option "limit responses to once per person". Furthermore, the questionnaire was pilot tested with the first 50 responses to ensure its reliability. The overall reliability of the questionnaire was excellent, with a Cronbach's Alpha of 90.4%. The responses to the pilot testing were excluded from the final analysis. Data collected were verified by checking accuracy and completeness, all survey questions were mandatory, there was no missing data. Additionally, all respondents completed all questions because they could not be submitted unless all items were completed.

Data was encoded and analyzed using IBM® SPSS® Statistics software (IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp). Descriptive statistics and frequencies were reported using the custom tables procedure. The data were tested for normality using the Kolmogorov-Smirnov test of normality. A linear regression analysis was performed to examine the relationship between organizational workplace policies and measures and the QoWL.

#### 2.5. Ethics approval and consent to participate

The protocol of this study was reviewed and approved by the Institutional Review Board (IRB) at Jordan University of Science and Technology in Jordan (Reference Number: 2021/140/48). Consent was obtained electronically from all participants before completing their surveys, by clearly stating the study's objectives, the use of data, and the procedures. Besides, their involvement was utterly voluntary, and their identities were kept completely anonymous.

### 3. Results

Table 1 demonstrates the socio-demographics of the participants. Four hundred eighty-four participants filled out the questionnaire, with a retrieval rate exceeding the calculated sample size. The mean age of the respondents was ( $34.8 \pm 8.28$  years), and no statistically significant differences ( $P = 0.140$ ) between males and females were found. The sample consisted of 279 females and 205 males (57.6 and 42.4%, respectively). The majority of the respondents (66.1%) were married, and two-thirds of them (66.6%) had at least one child at home. Moreover, about half of the respondents (49.2%) had elderly parents' care responsibilities, and 45.7% of them were working in public hospitals.

Table 2 summarizes the descriptive data for the six subscales, the WRQoL score, and the overall QoWL score. The mean score for total WRQoL was ( $M = 2.95$ ), and the mean score for overall QoWL was ( $M = 3.00$ ;  $SD = 1.08$ ), showing that HCWs working in Jordanian hospitals had an average level of overall QoWL.

Table 1  
Frequency distribution for the HCWs participants by their socio-demographics (N = 484)

	Mean	(SD)
Age (years)		
<i>Female</i>	34.3	(7.99)
<i>Male</i>	35.4	(8.65)
<i>Total</i>	34.8	(8.28)
	<i>n*</i>	(%)**
Questionnaire language		
<i>Arabic</i>	436	(90.1)
<i>English</i>	48	(9.9)
Gender		
<i>Female</i>	279	(57.6)
<i>Male</i>	205	(42.4)
Marital status		
<i>Single</i>	149	(30.8)
<i>Married</i>	320	(66.1)
<i>Separated, Divorced, Widowed</i>	15	(3.1)
Have children at home		
<i>No</i>	186	(38.4)
<i>Yes</i>	298	(61.6)
Having elderly parents (or partner's) care responsibilities		
<i>No</i>	246	(50.8)
<i>Yes</i>	238	(49.2)
The highest educational degree achieved		
<i>Diploma</i>	89	(18.4)
<i>Bachelor</i>	287	(59.3)
<i>Master/Ph.D./Specialization</i>	108	(22.3)
Workplace hospital		
<i>Military hospital</i>	61	(12.6)
<i>Private hospital/ NGO</i>	159	(32.9)
<i>Public hospital</i>	221	(45.7)
<i>University hospital</i>	43	(8.9)
Job title		
<i>Doctor</i>	88	(18.2)
<i>Nurses and Midwives</i>	164	(33.9)
<i>Pharmacist</i>	114	(23.6)
<i>Other</i>	118	(24.4)

Table 1 (Continued).

	Mean	(SD)
Years of experience		
<i>Under 1 yr.</i>	38	(7.9)
<i>1–5 yrs.</i>	144	(29.8)
<i>6–10 yrs.</i>	105	(21.7)
<i>11–15 yrs.</i>	75	(15.5)
<i>16–20 yrs.</i>	64	(13.2)
<i>More than 20 yrs.</i>	58	(12.0)
Employment status		
<i>Full-time job</i>	425	(87.8)
<i>Part-time job</i>	59	(12.2)
Presence of any chronic disease		
<i>No</i>	415	(85.7)
<i>Yes</i>	69	(14.3)

\*n: Frequency; \*\*(%): Percent.

Table 2  
Descriptive statistics for HCWs QoWL subscales (N = 484)

Variable	Items	M	SD
<i>JCS</i>	6	3.2	(.75)
<i>CAW</i>	3	3.1	(.91)
<i>WCS</i>	3	2.8	(.94)
<i>SAW</i>	2	2.7	(.96)
<i>HWI</i>	3	2.8	(.99)
<i>GWB</i>	6	3.1	(.76)
<i>WRQoL</i>	23	2.95	-
<i>Overall QoWL (OVL)</i>	1	3.0	(1.08)

QoWL: Quality of Work-Life; WRQoL: Work-Related Quality of Life; HCWs: Healthcare Workers; JCS: Job and Career Satisfaction; GWB: General Well-Being; CAW: Control at Work; SAW: Stress At Work; WCS: working conditions; HWI: Home-Work Interface; OVL: Overall Quality of Working Life; SD: Standard Deviation; M: Mean.

Table 3 demonstrates various demographic effects on the WRQoL. It is clear that age, gender, having children at home, education, job title, experience, employment status, and suffering from a chronic disease significantly affected the WRQoL scale.

### 3.1. Workplace policy and measures and quality of work-life

The below model (Table 4) shows a significant positive effect of satisfaction components on WRQoL. Satisfaction with the comprehensiveness, timeliness, and transparency of workplace policies was positively correlated with WRQoL. In general, workplace quality of life is highly correlated with satisfaction;

Table 3  
Regression analysis between WRQoL scale and socio-demographics

Independent variable: Socio-demographic	<i>Dependent variable: WRQoL</i>						
	Unstandardized coefficients		Standardized coefficients	t	Sig.	95.0% confidence interval for B	
	B	Std. Error	Beta			Lower	Upper
Age (years)	.019	.007	.215	2.576	.010	.004	.033
Gender	.146	.069	.071	2.103	.036	.010	.281
Marital status	.122	.091	.071	1.347	.179	-.056	.300
Do you have children at home?	.218	.096	.119	2.266	.024	.029	.407
Do you have elderly parents (or partner's) care responsibilities?	.050	.069	.025	.719	.473	-.086	.185
The highest educational degree you have achieved	.217	.049	.151	4.442	<0.001	.121	.313
Your workplace hospital	-.004	.044	-.004	-.099	.921	-.091	.082
Job title	.127	.032	.113	3.937	<0.001	.064	.191
Years of experience	-.084	.039	-.076	-2.179	.030	-.160	-.008
Employment status	.571	.098	.217	5.823	<0.001	.379	.764
Do you have any chronic diseases?	.248	.100	.096	2.482	.013	.052	.445
<b>R<sup>2</sup></b>				<b>0.943</b>			
<b>Adj. R<sup>2</sup></b>				<b>0.942</b>			
WRQoL = 0.215*Age + 0.071*Gender + 0.119*Children at home + 0.151*Education + 0.113*Job Title – 0.076*Experience + 0.217*Employment Status + 0.096*Presence of Chronic Disease.							

WRQoL: Work-Related Quality of Life; R<sup>2</sup>: R-Squared; Adj. R<sup>2</sup>: Adjusted R Squared.

the higher the level of satisfaction with workplace policies, the higher the level of workplace quality of life ( $\beta = 0.957$ , 95%; CI: 0.906–0.962;  $P < 0.001$ ).

Table 5A shows that the presence of the IPC program (Item 1), clarity of its objectives (Item 2), presence of procedures and policies for disinfection (Item 4), presence of procedures and policies for waste management (Item 6), and monitoring (Item 11) were significantly positively correlated with WRQoL. Similarly, Items 1 through 4 in Table 5B relative to supply, use, accessibility, and adherence to the use of protective equipment were positively correlated and had a positive effect on WRQoL. In addition, all related items to COVID-19 precautionary measures (Items 1–6 Table 5C) were positively related to WRQoL. They all had a positive correlation with WRQoL, which means that presence and adherence to these measures resulted in improved work quality of life.

#### 4. Discussion

This is the first study to investigate the influence of hospital workplace policies and measures from different perspectives (infection prevention and control, supply of PPE, and COVID-19 precautionary measures) on the QoWL among Jordanian HCWs during the current pandemic. Our study examined the overall QoWL of HCWs in various hospital settings. The results revealed that the overall WRQoL and sub-scale scores were average. This result is consistent with many previous studies conducted in different countries during the pandemic [44,45], with lower reported scores in WCS, HWI, and SAW dimensions.

Table 4  
Regression analysis between WRQoL and hospital workplace policies in terms of comprehensiveness, timeliness, and transparency

<i>Hospital workplace policies</i>	<i>Dependent variable: WRQoL</i>						
	Unstandardized coefficients		Standardized coefficients	t	Sig.	95.0% confidence interval for B	
	B	Std. Error	Beta			Lower	Upper
1. "Your satisfaction with the comprehensiveness of these infection control and prevention policies and measures."	.345	.083	.360	4.177	<0.001	.182	.507
2. "Your satisfaction with their timeliness."	.371	.107	.385	3.483	.001	.162	.581
3. "Your satisfaction with the transparency."	.216	.082	.219	2.622	.009	.054	.377
<b>R<sup>2</sup></b>				<b>0.916</b>			
<b>Adj. R<sup>2</sup></b>				<b>0.916</b>			
Model: WRQoL = 0.360*satisfaction with comprehensiveness of ICP + 0.385*Satisfaction with timeliness + 0.219*satisfaction with transparency.							

WRQoL: Work-Related Quality of Life; R<sup>2</sup>: R-Squared; Adj. R<sup>2</sup>: Adjusted R Squared.

Other studies found that the quality of work life among different healthcare professionals was low during the pandemic [46–48]. Our linear regression analysis showed a significant relationship between participants' socio-demographics and WRQoL. Among the current study participants' socio-demographics, age, gender, educational degree, job title, and employment status were statistically significant predictors for the WRQoL. Our model also showed that years of experience, having children, and having a chronic disease(s) were associated with the WRQoL.

Age, marital status, education, work experience, position, department, shifts, and employment status are all significantly correlated with work-life quality [45]. Relatively high positions and more professional experience, especially those in the medical and diagnostic divisions, had greater WRQoL [49]. Prolonged occupation, household income, institutional and administrative consideration, social interactions, and vocational activities would be uniquely associated with WRQoL [50].

No significant association exists between the degree of education or years of experience and the quality of nursing work life (QNWL) [44]. These findings are congruent with the results of the Almalki et al. (2012) study [51] but contradicted those of Moradi et al. (2014) who found that nurses with associate degree had a better quality of life than others [52].

Higher-level nurses had lower QNWL scores because they have greater professional expectations and could be emotionally exhausted when their work environment does not satisfy those expectations [52]. Regarding participants' experience, our finding contradicts with Mordai et al. who found that more than 15 years of professional expertise had higher QoWL than others [52], justified that more work experience has less occupational stress and better employment stability, which may contribute to a higher QoWL. Unlike the situation during COVID-19, decreased WRQoL may be attributed to the present emergency circumstances and increased work pressure and stress caused by undiscovered aspects of the infection [53].

Table 5A  
Regression analysis between WRQoL and the IPC program

<i>Infection Prevention and Control (IPC) program</i>	<i>Dependent variable: WRQoL</i>						
	Unstandardized coefficients		Standardized coefficients	t	Sig.	95.0% CI for B	
	B	Std. Error	Beta			Lower	Upper
Item 1. "Do you have an IPC program at the hospital?"	.150	.060	.120	2.515	.012	.033	.267
Item 2. "IPC objectives are clearly defined in the hospital."	.107	.041	.081	2.600	.010	.026	.187
Item 3. "The hospital has policies and procedures for standard precautions."	.080	.105	.049	.767	.444	-.126	.286
Item 4. "The hospital has policies and procedures for disinfection and sterilization."	.307	.098	.187	3.130	.002	.114	.500
Item 5. "The hospital has policies and procedures for health care worker protection and safety."	.137	.096	.079	1.422	.156	-.052	.326
Item 6. "The hospital has policies and procedures for waste management."	.432	.095	.265	4.554	<0.001	.245	.618
Item 7. "Health care workers receive specific training related to new or updated IPC guidelines introduced in the hospital."	-.058	.089	-.031	-.654	.513	-.234	.117
Item 8. "The implementation of at least some of the IPC guidelines in the hospital are regularly monitored."	.095	.090	.053	1.062	.289	-.081	.272
Item 9. "In the hospital, surveillance is conducted for epidemic-prone infections (for example, norovirus, influenza, tuberculosis [TB], severe acute respiratory syndrome [SARS], and COVID-19)."	-.020	.090	-.011	-.225	.822	-.197	.156
Item 10. "Hand-hygiene compliance (using the WHO hand hygiene observation tool or equivalent) is monitored regularly."	.154	.084	.079	1.846	.066	-.010	.319

Table 5A (Continued).

<i>Infection Prevention and Control (IPC) program</i>	<i>Dependent variable: WRQoL</i>						
	Unstandardized coefficients		Standardized coefficients	t	Sig.	95.0% CI for B	
	B	Std. Error	Beta			Lower	Upper
Item 11. "Monitoring and feedback of IPC processes and indicators performed in a "blame-free" institutional culture aimed at improvement and behavioral change."	.239	.093	.125	2.575	.010	.057	.421
<b>R<sup>2</sup></b>							<b>0.955</b>
<b>Adj. R<sup>2</sup></b>							<b>0.954</b>
Model: WRQoL = 0.120*Item 1 + 0.081*Item 2 + 0.098*Item 4 + 0.265*Item 6 + 0.093*Item 11.							

WRQoL: Work-Related Quality of Life; R<sup>2</sup>: R-Squared; Adj. R<sup>2</sup>: Adjusted R Squared; IPC: Infection Prevention and Control.

Marital status did not correlate with any WRQoL subscale, similar to [44,49]. Unlike [51,54], studies found a significant correlation between QNWL and marital status. And in our research, having parents' responsibilities didn't have any prediction for any subscales. In contrast to Suleiman et al.'s results on HWI, the work-life-home-life subscale was moderately pleased by the majority of respondents. The majority of respondents (62.9 percent) said they did not have appropriate policies for parental leave, and they considered that childcare facilities should be offered (68.8 percent) [44]. Dependent adult variable was significantly related to QoWL; those who had dependent individuals were less satisfied with their QNWL than those who did not have dependent adults [51]. The study discovered that nurses who had kids were more satisfied with their QoWL than those who did not [51]. Unlike Suleiman et al.'s study, there was no significant association between total QNWL scores and dependent children and adults [44].

A systematic review provided an in-depth examination of the factors contributing to a person's QoWL while living with chronic physical disease. In line with our results, employees who suffer excessive exhaustion, concentration issues, distress, or mobility problems, might have a detrimental effect on QoWL [55]. In line with our findings Suleiman et al. determined no substantial variation in QNWL between private and public hospital sectors. Regardless of the type of hospital in Jordan, nurses have similar working conditions and obstacles [44].

Our findings also demonstrated that hospital workplace policies and measures were significantly associated with better QoWL. Satisfaction with workplace policies and measures in terms of comprehensiveness, timeliness, and transparency was positively connected to WRQoL, with a good fit for the proposed model (*Adj. R<sup>2</sup>* = 0.916). This finding is consistent with Wong et al. who suggested that workplace policies and measures could improve work-life outcomes and reduce HCWs' perceived risk of infection [29]. Those who are concerned about the risk to themselves and their loved ones would benefit from comprehensive, timely, and transparent information about the COVID-19 pandemic and infection control guidelines in their workplace. Wong et al. also demonstrated the importance of workplace policies and measures in mitigating the enormous stress caused by the COVID-19 pandemic, as well as the importance of accurate information in mitigating uncertainty.

Table 5B  
Regression analysis between WRQoL and the supply of personal protective equipment

Supply of Personal Protective Equipment (PPE)	Dependent variable: WRQoL						
	Unstandardized coefficients		Standardized coefficients	t	Sig.	95.0% confidence interval for B	
	B	Std. Error	Beta			Lower	Upper
Item 1. "Health care providers (HCP) that use personal protective equipment (PPE) receive training on how to use them properly."	.431	.089	.238	4.842	<0.001	.256	.606
Item 2. "Compliance in using PPE is routinely reviewed and monitored."	.235	.086	.123	2.739	.006	.066	.404
Item 3. "Suitable and sufficient PPEs are easily reached by health care providers."	.427	.087	.239	4.908	<0.001	.256	.598
Item 4. "Supplies needed for adherence to hand hygiene (for example, soap, water, paper towels, alcoholic hand scrubs) are readily available to health care providers in patient care areas."	.655	.080	.386	8.147	<0.001	.497	.813
<b>R<sup>2</sup></b>				<b>0.947</b>			
<b>Adj. R<sup>2</sup></b>				<b>0.947</b>			
Model: WRQoL = 0.238*Item 1 + 0.123*Item 2 + 0.239*Item 3 + 0.386*Item 4.							

WRQoL: Work-Related Quality of Life; R<sup>2</sup>: R-Squared; Adj. R<sup>2</sup>: Adjusted R Squared; PPE: Personal Protective Equipments.

In this study, the highest satisfaction with IPC programs was found to be associated with a higher quality of life in the workplace. Measures to improve IPC have been shown to minimize the spread of infections, notably in healthcare facilities. IPC measures such as adequate handwashing points can immediately improve HCWs' satisfaction and productivity by reducing the transmission of COVID-19. Therefore, dissatisfaction with the hospital's IPC measures may result in a negative work attitude, which may have a negative impact on patient care quality [56]. In accordance with the present findings, previous studies have confirmed that the existence of transparent protocols and comprehensive IPC programs significantly improved psychological impact measures such as workplace safety and satisfaction with institutional strategies; this demonstrates the crucial significance of institutionalizing international and local protocols and guaranteeing their effective usage to keep HCWs healthy and operational [57–59]. HCWs who are stressed or depressed may experience significant mental health consequences that jeopardize their capacity to provide high-quality treatment [60,61]. The psychological health of Jordan's frontline doctors was found to be concerning. According to their results, Suleiman et al., only 28.2 percent of physicians were satisfied with their hospital's infection control policy, and only 19.8 percent felt safe at their workplace. More than 90% of clinicians were concerned about the risk of illness spreading to their uninfected patients or their families [36].

Table 5C  
Regression analysis between WRQoL and the COVID-19 precautionary measures

COVID-19 precautionary measures	Dependent variable: WRQoL						
	Unstandardized coefficients		Standardized coefficients	t	Sig.	95.0% confidence interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
Item 1. "All hospital staff are trained in the emergency program."	.174	.047	.118	3.706	<0.001	.082	.267
Item 2. "Health workers receive special training regarding COVID-19."	.367	.070	.193	5.221	<0.001	.229	.505
Item 3. "Health workers in the hospital receive regular checks for COVID-19."	.107	.042	.080	2.566	.011	.025	.190
Item 4. "Any medical staff member treating COVID-19 patients is allowed to mix with the rest of the hospital staff."	.221	.031	.153	7.074	<0.001	.159	.282
Item 5. "Hospital staff with COVID-19 symptoms, like fever and coughing, are asked to ..."	.381	.041	.317	9.209	<0.001	.299	.462
Item 6. "There is a monitoring and registration record for all workers infected with the virus."	.259	.072	.154	3.602	<0.001	.118	.400
<b>R<sup>2</sup></b>				<b>0.955</b>			
<b>Adj. R<sup>2</sup></b>				<b>0.955</b>			
Model: WRQoL = 0.118*Item 1 + 0.193*Item 2 + 0.080*Item 3 + 0.153*Item 4 + 0.317*Item 5 + 0.154*Item 6.							

WRQoL: Work-Related Quality of Life; R<sup>2</sup>: R-Squared; Adj. R<sup>2</sup>: Adjusted R Squared; IPC: Infection Prevention and Control.

In addition to other IPC measures, HCWs rely on PPE to keep themselves and their patients safe from being infected and infecting others. During the pandemic, even developed countries have experienced shortages in PPE. Thus, this is not uncommon in a resource-constrained context. The WHO has previously warned that increased demand, panic purchasing, stockpiling, and abuse would cause severe and escalating disruption to the worldwide supply of PPE [62]. Another important finding of the current study was that all items relative to supply, use, accessibility, and adherence to the use of PPE were positively correlated with WRQoL. Protective measures, such as the availability of PPE in the healthcare workplace, were critical variables in improving QoWL during pandemics. This finding broadly supports the work of other studies in this area. For example, during the peak of the COVID-19 epidemic in China, a study designed to examine healthcare staff conditions and job satisfaction, as well as their associated predictors, revealed

that PPE access predicted improved physical health and job satisfaction, demonstrating its importance beyond physical protection [63]. Inadequate PPE supply may leave HCWs dangerously ill-equipped to care for COVID-19 patients, placing them at risk of infection and impeding COVID-19 prevention and control. Different studies showed the implications of PPE shortages, as, during the COVID-19 outbreak, inadequate PPE supplies contributed to clinical practice burnout [17,18,64].

Healthcare workers must take additional precautions to protect themselves and prevent disease spread in the workplace. Several studies indicated the importance of COVID-19 precautionary measures to the quality of work-life [65–67]. This research study found that the existence and adherence to COVID-19 preventive measures were positively connected to WRQoL. This result was confirmed by earlier research conducted by Zhang et al. who found it is important to raise health awareness and educate HCWs about health to develop preventative beliefs, build healthy attitudes, and support beneficial behaviors [67]. These factors, in turn, positively affect work satisfaction. Medical education and training should be regularly conducted by healthcare facility management to guarantee that knowledge is easily communicated to all staff types [68,69]. Also, our results were consistent with previous studies that established it is critical that all HCWs worldwide have an appropriate understanding of COVID-19 - its clinical presentation, diagnosis, recommended therapy, and known preventative and precautionary measures [67,70]. HCWs caring for COVID-19 patients should take additional precautions to protect themselves and prevent disease spread in the workplace, which in turn could enhance WRQoL among healthcare providers. Such precautionary measures include wearing proper personal protective equipment and receiving training on appropriately dressing, removing, and disposing of this equipment.

However, our findings are consistent with what is known about job satisfaction, broadly and during the pandemic. Afulani et al. examined signs of significant stress and burnout among HCWs in Ghana and a perceived low level of preparedness to respond to the COVID-19 pandemic. Their results indicated that greater fear of infection partially contributes to the effect of perceived preparedness on stress and burnout [71]. That is, insufficient preparation leads to fear of infection, which leads to high stress and burnout. As a result of its association with stress and burnout, inadequate preparedness may have cascading impacts on HCW job satisfaction, productivity, quality of care, and workforce turnover [71,72]. All of which would impair HCWs' efforts toward COVID-19 containment. Existing research indicates that characteristics related to preparedness include the availability of PPE, transparent procedures and isolation wards, training, and excellent management communication [36,73]. Improving these would boost perceived preparedness, reduce infection fear, and reduce stress and burnout. The development of national and regional mitigation strategies and plans to reduce the time required to provide the necessary equipment and testing; the provision of adequate test kits and PPE; disease tracking systems; availability of inexpensive point-of-care initiatives; disaster management and response training for HCWs; and the establishment of a medical reserve corps of licensed individuals are all recommended steps toward preparedness [74,75]. These initiatives would assist in improving HCW preparedness for COVID-19.

#### *4.1. Practical implications*

Following the Ebola crisis in West Africa, the WHO reported that HCWs' infection risk was between 21 and 32 times that of the general population at the outbreak's start due to a lack of PPE, hygiene supplies, IPC measures, and occupational safety and health (OSH) management. The infection rate among HCWs was dramatically reduced when these measures were implemented [76]. HCWs on the frontlines, in particular, were exposed to an excessive risk of infection owing to a lack of OSH measures and PPEs. Due to widespread fear and misinformation, HCWs faced anxiety, psychological trauma, burnout, and

work stress during and after the crisis, and violent assaults against them happened in many cases. So, our study results are intended to offer health decision-makers and health managers a thorough perspective on the contributing variables that impact the QoWL in hospitals. These variables are expected to help alleviate HCWs' quality of their working lives by modifying the workplace policies and measures in hospitals. They also include expanding the healthcare workforce and developing pandemic-related unified and clear protocols for healthcare professionals. As the fight against the current pandemic is physically and psychologically exhausting for HCWs, as a token of gratitude, institutional decision-makers should provide emotional, psychological, and financial assistance to HCWs.

Furthermore, our findings highlighted the vital need for psychological well-being support services for HCWs during the COVID-19 pandemic. In times of crisis, workplace health initiatives aimed at safeguarding and developing the psychological well-being of healthcare workers are crucial. HCWs, policymakers, and decision-makers in the healthcare system may benefit from workshops led by experts to understand workplace policies and preventive measures. HCWs' QoWL may be improved by providing them with regular training on IPC measures, hand hygiene practices, and stress management during stressful circumstances. These training sessions might be delivered in person following pandemic control measures (i.e., physical distancing) or through web-based webinars. Based on the current information, the current IPC measures should be enhanced and strictly enforced. Evidence-based IPC guidelines and standards are needed to stop or slow the transmission of infections in health facilities. These include having an IPC program or at least a trained and qualified IPC focal point, engineering and environmental controls, administrative controls, standard and transmission-based precautions, screening and triage for early identification of cases and source control, comprehensive monitoring, and vaccination of health workers. Finally, the adequate utilization of PPE and safety measure compliance are critical in protecting HCWs and resulting in better WRQoL.

#### 4.2. Limitations

While the online questionnaires guarantees pace and immediacy, it also has some drawbacks. The survey distributed online via social media, allowing only those who use those platforms to complete the questionnaires. The difficulty in assessing causality correlations and the temporality of incidents in a cross-sectional approach is another drawback. Another potential limitation of online surveys is that individuals with bias might be overrepresented in online samples [77]. Nonetheless, because we requested respondents to submit just one response and did not offer any incentives, motivation to complete the questionnaire more than once seemed improbable.

### 5. Conclusion

The findings revealed that satisfaction with workplace policies was a significant predictor of WRQoL. Their absence might raise the risk of disease transmission and impact healthcare professionals' QoWL, thereby affecting the safety of patients. Unfortunately, the present study found that HCWs at Jordanian hospitals had an average WRQoL scale and subscale levels. It is worth focusing on workplace policies to improve the QoWL. Efforts by healthcare decision-makers at the national and corporate levels should attempt to ensure the availability of protective standards and guidelines in workplaces to alleviate workplace infection risk while also focusing on improving the QoWL. Improving hospital policy management can also help minimize the stress and fear that HCWs experienced during the pandemic, which will enhance their work conditions and improve their performance and the quality of health service. We

strongly encourage hospitals to scale up training on IPC measures, notably hand washing techniques and proper use of PPE, and the construction of effective risk management points of care with a high concern index to adequately protect HCWs' physical and psychological well-being and improve their working circumstances. Finally, the findings of this study provide a baseline for determining the quality of HCWs' work lives in hospitals, specifically in Jordan. Further studies might investigate new measures to improve HCWs' WRQoL during pandemics. The study also recommends that hospital human resource departments regularly conduct such a survey to evaluate the level of their HCWs' QoWL and develop initiatives to improve it.

### Acknowledgement

This research project was funded by the Deanship of Research, Jordan University of Science and Technology (Research grant no. 20210256).

### Conflict of interest

The authors declare no conflict of interest in the development of this manuscript.

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