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Facing the Unknown: Healthcare Workers' Concerns, Experiences, and Burnout during the COVID-19 Pandemic—A Mixed-Methods Study in an Israeli Hospital

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Abstract: The aim of this study was to describe the experiences of healthcare workers during the first wave of the coronavirus crisis. In a mixed-methods study, data were collected through an online survey completed by 263 hospital staff members, as well as 10 semi-structured, in-depth interviews with physicians, nurses, and medical technologists working on coronavirus wards. Respondents expressed extremely high levels of concern for family members, but they were less apprehensive about their own health and safety. Nurses displayed more apprehension and burnout compared to healthcare workers in other professional roles. The in-depth interviews reinforced and supplemented the survey findings and deepened our understanding of the experience of healthcare workers directly involved in the first wave of coronavirus patient care. The findings of this study illuminate the main concerns of hospital staff during the first wave of the COVID-19 pandemic and deepen our understanding of issues that require systemic attention in order to strengthen mental resilience among hospital staff. The steps required to continue fighting the virus include the development of a mental and emotional support network for healthcare workers to safeguard them and their health, as they care for patients, and to provide ongoing psychosocial support. As later waves of COVID-19 continued, these recommendations are even more pertinent.

Keywords: coronavirus wards; healthcare systems; social alienation; concerns; burnout; healthcare workers



Citation: Dopelt, K.; Bashkin, O.; Davidovitch, N.; Asna, N. Facing the Unknown: Healthcare Workers' Concerns, Experiences, and Burnout during the COVID-19 Pandemic—A Mixed-Methods Study in an Israeli Hospital. *Sustainability* **2021**, *13*, 9021. <https://doi.org/10.3390/su13169021>

Academic Editors: Serik Meirmanov and Lotfi Aleya

Received: 26 June 2021

Accepted: 10 August 2021

Published: 12 August 2021

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1. Introduction

As of mid-May 2021, the novel coronavirus (SARS-CoV-2) has infected more than 166 million people worldwide and has caused the deaths of more than 3.5 million people through the disease it causes, COVID-19. In Israel, over 839,000 people have been infected with the virus [1]. The spread of the coronavirus presents difficult and complex challenges for healthcare systems, with various medical teams on the frontlines fighting the virus and its associated outcomes.

Reports from around the world have revealed that thousands of healthcare workers in hospitals across Europe have been infected with coronavirus and many died. In Italy, as of April 2020 during the first wave, more than 12,000 healthcare workers were infected with the virus, 105 of whom have died, growing to more than 95,000 infected and 198 deaths as of 5 January 2021 [2]. It is possible that the true numbers of infections are higher than reported since many healthcare workers have not been tested [3]. In Israel, more than 2000 healthcare workers have been infected [1].

Assessing the mental health and perceptions of healthcare workers dealing with health crises is essential in gaining control over large-scale epidemics [4]. Recent research

in China has examined the immediate consequences of the fight against coronavirus on the mental health of healthcare workers [5]. This study found that, of 2299 healthcare workers, 30% reported symptoms of stress, 24% reported symptoms of anxiety, and 13.5% reported depression; healthcare workers working directly with coronavirus patients had double the risk of suffering symptoms of anxiety and depression. A study conducted in Taiwan, among 1795 healthcare workers during the coronavirus crisis, found that, although some respondents had previously experienced the SARS and MERS epidemics, 40% reported burnout and 78% reported high levels of anxiety. Most of the respondents who reported burnout worked in emergency units and treated coronavirus patients directly. A repeated cross-sectional study in a hospital in Rome, conducted during the first wave of the pandemic in April 2020, and again in December 2020, during the second wave, found that Workers reported a further increase in workload, which had already risen during the first wave. Moreover, the number of workers manifesting symptoms of depression increased significantly to exceed 60% [6]. In a similar study conducted in Turkey among 920 healthcare workers, 80% of respondents reported that the coronavirus crisis had affected their mental health, 71% of healthcare workers said that their departments had adequate levels of personal protective equipment (PPE) but expressed concern about its effectiveness, and a majority of respondents expressed high rates of emotional exhaustion [7].

Healthcare workers have expressed high levels of concern about being infected with coronavirus and about infecting family members, patients, and colleagues. A survey conducted among 4357 healthcare workers in China revealed that 72.5% expressed concern for unprotected colleagues who might be infected, 63.9% expressed concern about infecting family members, and 52.3% expressed concern about the effectiveness of protective measures [8]. In many healthcare systems, healthcare workers do not undergo preparation for working in isolated coronavirus wards or for providing psychological support to isolated coronavirus patients [9]. Suicides among healthcare workers in India and Italy have been reported, due to stress and mental strain [10,11].

In Israel, since the spread of COVID-19 beyond the original outbreak in China, a strategy was implemented to prevent the spread of the disease (prevention), and later, once the virus reached Israel, to contain the spread (containment). These strategies provided more time to prepare for the opening of isolated inpatient wards in hospitals and to find quarantine solutions for patients in the community. Preparations included defined procedures for isolating and protecting healthcare workers and preventing widespread infection among healthcare teams (which could have led to a collapse of the healthcare system). However, ways to address the psychological needs of healthcare workers on the frontlines have yet to be tested. Safeguarding medical professionals, both in terms of protecting them from infection and preventing physical and mental burnout, is one of the most important principles when it comes to epidemics like COVID-19 [12]. Examining the emotions of the healthcare workers handling this pandemic is essential to improve the ability of healthcare systems to continue fighting the virus.

The aim of this study was to examine the perceptions and experiences of healthcare workers about coping with the coronavirus crisis at a personal, family, national, and systemic level. We hypothesized that positive associations will be found between personal-level concerns, family-level concerns, national-level concerns, system-level concerns, and burnout. We hypothesize that negative associations will be found between those variables and the amount of support for the way the government is handling the crisis, that women will be more concerned than men, and that nurses and other professions will express greater concern than physicians.

2. Methods

This was a mixed-methods study, employing two types of tools: an online survey of hospital staff, followed by in-depth interviews with physicians, nurses, and medical technologists who worked on coronavirus wards during the crisis. The study received approval from the Ashkelon Academic College Ethics Committee (approval #13-2020) and the hospital leadership.

(a) Online survey of hospital staff

Research population and sample: the survey was conducted among staff at the Barzilai University Medical Center in Israel, which provides services to a population of approximately 500,000 people. The medical center has 567 beds and an additional 60 day-patient beds, and the facility employs around 2000 staff members, including approximately 300 physicians. A dedicated coronavirus ward was established in the facility and operated in the first wave from 8 March–20 April 2020. The ward was set up within a period of four days, under the guidance of the Israeli Ministry of Health, and was designed to treat 30 patients, including 10 on ventilators. Around 90 patients with varying degrees of illness severity passed through the ward during its period of operation. There were three teams working in the ward in 12-h shifts to reduce exposure to other members of the hospital staff.

A link to the survey was sent to all staff members at the hospital via email from the hospital's human resources department on 5 April 2020. After 10 days, a reminder was sent to increase the response rate. The survey closed on 24 April 2020. Within the convenience sample, 263 staff members from all sectors who completed at least 80% of the survey (13% response rate) were included in the study. After checking data from the hospital administration, we established that the characteristics of non-respondents (gender, age composition, and profession) were not statistically different.

Study tools: The online survey comprised 30 questions, which were composed by the authors and validated, using the content validation method, by 8 employees (2 physicians, 2 nurses, 4 employees from other professions, e.g., administrative, social work, pharmacy) at a different hospital, to ensure that they were relevant to hospital staff during the crisis. The questionnaire developed for this study is provided as Supplementary. The questionnaire included several sections, as per the following details:

- (1) Have you cared for/provided services to a coronavirus patient who had been tested, was in isolation, or had been infected?
- (2) Demographic details—gender, age, profession, family status, has children.
- (3) Concerns regarding the coronavirus crisis on a personal, family, systemic and national level—13 questions. Range of answers on the Likert Scale, ranging from (1) not at all concerned to (5) greatly concerned, plus the option “not relevant.” Questionnaire reliability $\alpha = 0.88$. Sample question: *“I am concerned about being infected with coronavirus/I am concerned about the rate of increase in the number of coronavirus patients in Israel.”*
- (4) Support for how the crisis was handled —3 questions. Range of answers on the Likert Scale, from (1) not at all to (5) to a very great extent. Questionnaire reliability $\alpha = 0.80$. A high score indicates more support. Example question: *“I support the way in which the country has handled the crisis so far.”*
- (5) Burnout—3 questions examining emotional exhaustion. Range of answers on the Likert Scale, from (1) not at all to (5) to a very great extent. Questionnaire reliability $\alpha = 0.84$. A high score indicates a high level of burnout. Example question: *“I feel worn out from dealing with the coronavirus crisis.”*

Analysis of data: The data were processed anonymously using the SPSS v.25 program. The exploratory data analysis demonstrated that the data was normally distributed and parametric statistical tests were used. Relationships between the variables were tested using the Pearson correlation, variance between genders was tested using a *t* test for independent samples, and variance between professions were tested using a one-way ANOVA. The results of the post-hoc evaluation were calculated using Scheffe's method.

(b) In-depth interviews with staff who worked on coronavirus wards

The sample: Following the survey, 10 in-depth semi-structured interviews were conducted in May 2020 with 4 physicians (specialists in internal medicine, pulmonology, and intensive care), 4 nurses (initially from the internal medicine, neurology, cardiac intensive care, and pediatric intensive care wards), and 2 medical technologists. The interviewees comprised 2 males and 8 females. Two interviewees were not married and living alone (though one was in a relationship), and the remainder were married with children and even grandchildren. The sample was a deliberate sample combined with a snowball sample. The interviews were conducted over the phone by a research assistant (M.A. student in Clinical Psychology), who was guided by the researchers. There was no relationship established prior to study commencement between the researchers and the interviewees. Every staff member we asked to be interviewed agreed, and the interviews lasted between 30–40 min. The questions were written by the researchers and addressed the interviewees' experiences, concerns, and feelings regarding their work on the coronavirus ward. A pilot interview was conducted with a physician who worked in the coronavirus ward at another medical center. The interview guide developed for this study is provided as Supplementary.

Data analysis: The interviewees signed a consent form agreeing to the recording and transcription of the interviews. The transcripts were not returned to participants for comment or corrections, and participants were not asked to provide feedback on the findings. The transcript files were entered into the ATLAS.ti v.8 software for organizing and analyzing qualitative material by the two first authors. After an in-depth reading of the texts, the interviewees' statements were categorized into themes according to their content. The analysis was carried out according to the grounded theory qualitative approach [13].

3. Results

(a) Online surveys of medical center staff

Table 1 shows the characteristics of the sample who responded to the online survey. As Table 1 illustrates, most respondents were female, in a relationship, and had children. Twenty-one percent provided services or treated coronavirus patients, and 11% had spent time in quarantine.

Table 1. Study sample characteristics (n = 263).

Characteristic	n	%
Male	62	24
Female	201	76
In a relationship	192	73
No children	35	13
Children aged 0–10	98	37
Children aged 11–18	90	34
Children over 18	124	47
Provided services/treated coronavirus patients as part of their job	56	21
Spent time in quarantine	28	11
Tested	37	14
No, test not required	131	50
No, even though a test was requested/required	95	36
Role:		
Physician	40	15
Nurse	78	30
Paramedic	43	16
Other (administrative and housekeeping, computing, auxiliary staff, laboratory)	72	39

Table 2 shows the relationships between the study variables. The results of the analysis reveal positive relationships between burnout and the respondents' concerns at a personal, family, system, and national level. Negative correlations were found between support for how the crisis was handled and family-, national-, and system-level concerns.

Table 2. Pearson correlations between the study variables (n = 263).

	Family-Level Concerns	National-Level Concerns	System-Level Concerns	Support for How the Crisis Was Managed	Burnout
Personal-level concerns	0.59 ***	0.45 ***	0.44 ***	−0.26 ***	0.13 *
Family-level concerns		0.50 ***	0.59 ***	−0.19 **	0.26 ***
National-level concerns			0.66 ***	NS	0.37 ***
System-level concerns				−0.17 **	0.34 ***
Support for how the crisis was handled					NS

$p < 0.05$ *, $p < 0.001$ **, $p < 0.001$ ***.

Table 3 shows variances between the professions in the study variables. The results show significant variances between professional roles across all variables, with the exception of burnout. Across all variables, physicians reported the lowest rate of concern, followed by nurses, and finally by respondents in other professional roles, who expressed the strongest degree of concern. A Scheffe follow-up test showed that physicians held significantly less personal-level concern than nurses ($p < 0.05$) and other professionals ($p = 0.001$); less family-level concern than nurses ($p < 0.05$) and others ($p = 0.001$); less national-level concern than nurses ($p < 0.01$) and others ($p < 0.001$); less system-level concern than others ($p < 0.05$); less support for how the crisis was handled than others ($p = 0.05$).

Table 3. Results of a one-way ANOVA test of variances between physicians, nurses and other professions.

		N	Mean	SD	95% Confidence Interval for Mean		F	p
					Upper Bound	Lower Bound		
Personal-level concerns	Physician	40	3.48	0.61	3.67	3.28	6.97	0.001
	Nurse	78	3.86	0.71	4.02	3.7		
	Other	145	3.92	0.65	4.02	3.81		
	Total	263	3.83	0.68	3.92	3.75		
Family-level concerns	Physician	40	3.94	0.71	4.17	3.71	7.41	0.001
	Nurse	78	4.22	0.64	4.36	4.07		
	Other	145	4.33	0.46	4.41	4.26		
	Total	263	4.24	0.58	4.31	4.17		
National-level concerns	Physician	40	3.6	0.73	3.83	3.37	9.54	<0.001
	Nurse	78	4.08	0.64	4.22	3.93		
	Other	145	4.15	0.72	4.27	4.03		
	Total	263	4.04	0.72	4.13	3.95		
System-level concerns	Physician	40	3.51	0.97	3.83	3.2	3.4	0.035
	Nurse	78	3.94	0.98	4.16	3.72		
	Other	145	3.95	0.95	4.11	3.79		
	Total	263	3.88	0.97	4	3.76		
Support for how crisis was handled	Physician	40	3.07	1.16	3.44	2.7	3.04	0.049
	Nurse	78	3.46	1	3.69	3.23		
	Other	145	3.48	0.86	3.62	3.33		
	Total	263	3.41	0.96	3.53	3.29		
Burnout	Physician	40	2.81	0.88	3.09	2.52	1.5	0.226
	Nurse	78	3.09	1.13	3.35	2.84		
	Other	144	2.87	1	3.04	2.71		
	Total	262	2.93	1.03	3.05	2.8		

An examination of variance between the genders found no difference in the level of personal and family concerns and level of burnout. However, women expressed higher national-level concern than men (means = 4.16 and 3.68, respectively, $t = 4.69$, $p < 0.001$) and greater system-level concern (means = 4.03 and 3.39, respectively, $t = 4.68$, $p < 0.001$). However, women expressed a higher level of support for the way the crisis was managed than men (means = 3.48 and 3.18, respectively, $t = 2.18$, $p < 0.05$).

(b) Analysis of in-depth interviews

Analysis of the interviews revealed 7 distinct themes:

Theme 1: A sense of mission and responsibility as “going to war” to defend one’s homeland.

All of the interviewees expressed a sense of mission, which intensified during the coronavirus crisis. Particularly noticeable was the use of words describing a sense of going to war to defend their homeland: *battlefield, front, fighters, danger to life, sacrifice*:

“The system functioned well. Like in a war. I felt like we were at war”. (Interviewee 1, male, physician)

The motif of “fighters on the frontlines” was repeated, in different words, in almost all the interviews. Like soldiers preparing for battle, the interviewees felt they were unable to refuse joining the coronavirus ward as staff, despite the inherent risks:

“There was no dilemma, actually. I didn’t think that I could refuse. It was a job that needed to be done”. (Interviewee 1, male, physician)

Interviewee 6 (female, physician) described the support she felt from the general population:

“You know how exciting it is, the support of the population . . . how many people wanted to support us and help us. We felt that this wasn’t just any old effort. It was clear that you were saving lives, even if you helped just one person, it’s not just nothing. It’s worth a lot.”

Theme 2: Concern for patients, for family, and for fellow citizens.

The interviewees often used the words: *fear, danger, catastrophe*. As a result of their sense of sacrifice, and their trust in the system to take care to protect them, they were less concerned about their own health and safety, and more concerned for the lives of patients, family members, their fellow citizens in general, and even for colleagues who worked outside the coronavirus ward and were not as protected as they were.

Interviewee 2, a female physician, shared her concerns:

“Of course, I was worried. And I wouldn’t believe anyone who told me they weren’t. I’m often exposed to infections. But here, we didn’t know how it spread, what it is exactly . . . I was worried for my kids, for older people, for my mother for example.”

The interviewees also talked about distancing from their families, mainly from their parents and grandchildren. Interviewee 7 (female, nurse) explained:

“My relatives were worried that I would get infected and infect them.”

There were also concerns about colleagues. Interviewee 8 (female, nurse) said that:

“I wasn’t scared for myself, because I knew that I was protected at all times. On other wards—you could be treating a patient and you don’t know whether he has coronavirus, or whether you are protected or not. My parents are in their eighties, so of course I didn’t see them.”

At a national level, the interviewees voiced concerns about a second wave of infections. Interviewee 6 (female, physician) clarified the extent to which the sight of the patients impacted her concern over the potentially impending catastrophe:

“Seeing it from the inside, it’s not the same as hearing about it from the outside. When you see it from the inside, it’s something else. Fear. Fear about family. We see the danger. They say that physicians get used to death. That’s not the case. It’s not possible to get used to death. It felt like a fantasy movie about something catastrophic.”

Theme 3: Changes in routine work—the challenges of “remote” treatment.

The interviewees described work on the coronavirus ward as very different from routine work in the hospital, even if that routine work involved being exposed to infection. The unique nature of COVID-19, a novel disease without evidence-based treatment, required continuous updates with colleagues in Israel and abroad, and the collating and updating of protocols and guidelines that did not previously exist. Furthermore, the fact that all professions had to wear PPE was a dramatic change. All the interviewees talked about the problematic nature of the many layers of PPE, which interfered with functioning, and especially impaired their ability to quickly reach distressed patients. Interviewee 1 (male, physician) explained that:

“The most stressful thing is that a patient can deteriorate without you being aware of it. And if you weren’t wearing PPE, you weren’t kitted up, and if something happened—it takes time for you to get kitted up, for the team to get ready.”

Interviewee 2 (female, physician) added:

“The PPE situation really disrupted patient care. It’s really not comfortable, it’s uncomfortable to breathe, it’s uncomfortable to see, it’s uncomfortable to talk. That, and there were patients who needed a lot of attention and we couldn’t always be by their side.”

In addition to PPE, a further change was that of remote treatment. Interviewee 1 (male, physician) said that:

“You have to manage a patient’s treatment remotely. You don’t know what is going on with the treatment at any given time. There weren’t cameras in all of the rooms.”

Compounding this was the lack of human contact. Interviewee 7 (female, nurse) gave details:

“We’re usually in more contact with patients. Now on the coronavirus ward, we put on PPE and go in to see the patients, they don’t know who we are, and there were a lot of patients who felt lonely. They were looking for some warmth. Their families weren’t able to visit them.”

Theme 4: Burnout and the need for emotional support.

Some interviewees felt exhausted and drained. Interviewee 5 (female, nurse) said that:

“It’s terribly hard to keep going for so long. Two months like this, and we are already exhausted. Although towards the end they brought in more teams, and that helped a lot.”

In the wake of the burnout and stress, looking back- they expressed a need for emotional preparation before entering the coronavirus ward, during and after the crisis. Interviewee 5 (female, nurse) explained:

“I had moments where I wanted to talk about it with someone, but I didn’t want them to feel sorry for me. You can buy the most sophisticated equipment in the world, but if you don’t take care of the people who operate it, then it won’t work.”

In contrast, there were interviewees who did not feel burnout, either because they were accustomed to working under pressure, or because it was a new and different situation that aroused their interest. For example, Interviewee 3 (female, medical technologist) said:

“I could have kept going for a long time, I didn’t have a hard time. Our day-to-day jobs aren’t easy either, we have to make decisions every single day. This is work under pressure, and human lives are in our hands”

Theme 5: Feelings of loneliness versus a sense of challenge and empowerment.

The interviewees expressed feelings of loneliness and of being distanced from people. Interviewee 7 (female, nurse) said:

“The people I know were scared to go near me. No, no, don’t infect us, they said. But they didn’t understand that they’re infecting me more than I’m infecting them.”

They felt that their colleagues distanced themselves from them and left them to fight alone on the frontlines:

“It wasn’t clear if anyone was going to replace us and what was going to happen to us. There was a feeling that everyone had fled and left us to fight on the frontlines alone . . . Many physicians avoided coming to the hospital at all. On the one hand you felt that you were doing something important and that you were saving lives in this difficult situation, but on the other hand, it was a bit frustrating to know that you’d been left alone on the battlefield and that not everyone was willing to lend a hand equally”. (Interviewee 2, female, physician)

Despite the loneliness and the fatigue, the interviewees felt empowered and that they had made history as part of a unique, unusual experience, through continuous learning and mutual assistance. Interviewee 4 (male, physician) said:

“Everyone had a unique experience, both because of the whole thing about entering an infected zone and because of the nature of the patients. The second that you feel you are part of a group and everyone is all together, like a single fist, then that really gives you strength.”

Interviewee 8 (female, nurse) explained that:

“It empowered me. It really gave me something. It gave me more independence. Suddenly I discovered that I could manage and that I could be someone with a can-do attitude. I felt special.”

Interviewee 9 (female, nurse) added that:

“It was a very, very intensive period. But really, really, it was an experience. In actual fact what we did made history.”

Theme 6: The functioning of the system.

The interviewees expressed a lack of trust regarding the management of the crisis. They agreed that the healthcare system was not prepared for a pandemic outbreak of this kind, but that hospitals managed to make emergency preparations to absorb coronavirus patients. Nurses from all types of wards were trained in ICU respiratory patient care, a ward was established, advanced medical equipment, PPE, and drugs were purchased, teams were formed, and coronavirus patients began to be admitted. Interviewee 2 (female, physician), explained:

“The system wasn’t prepared, and this is one of the things that was most stressful. Every day there was a new announcement. Every day they found new equipment. The lucky thing about this healthcare system is its human resources . . . The hospital manager worked really hard during that time period and came to support us. But I’m also disappointed that we were not ready, and we could have been ready; we were really lucky. But aside from luck, we had both the human resources and the capabilities of those human resources.”

Theme 7: From heroics to routine: “Once you’ve served your purpose, you can leave”.

The interviewees expressed a certain sense of frustration. Like fighters on a battlefield, they underwent an experience that was unique and empowering, but also intense and

exhausting. During the crisis, everyone embraced and praised them, from proclamations by the healthcare system's top leaders, down to hospital management and members of the public. However, when there was a lull in the rates of infection, the support disappeared. Interviewee 2 (female, physician) expressed this as follows:

"I feel that with all the joy and support that we supposedly received during the coronavirus outbreak, everything went away, was forgotten, stopped. More at the level of the management and the managers, but also from the general population, the feeling is of 'you've served your purpose, now leave.' After everything is over, you expect that at least they would remember that you contributed a little bit more than other people and that you were willing to go a bit further than others."

The above-described themes relate to different levels of coping: at the individual, team, patient-centered, and national level. Some of the descriptions are positive and relay empowering experiences (e.g., Theme 1), and some illustrate stressful and even traumatic experiences. The complexity of these experiences is a reflection of the conflicting emotions among healthcare workers in a coronavirus ward.

4. Discussion

The coronavirus epidemic has become one of the most severe health crises of recent decades. This study examined the perceptions and experiences of healthcare workers in a hospital in Israel, with regards to coping with coronavirus pandemic. The survey revealed that, out of the four levels of concern that were examined, personal concerns were the lowest among all respondents (mean = 3.83 out of 5), while concerns about family were the most burdensome (mean = 4.24 out of 5). Furthermore, we found that nurses expressed higher levels of concern than physicians across all four of the levels tested. Similar to the findings of the quantitative survey, analysis of in-depth interviews revealed that one of the major themes, expressed at high intensity, involved concerns and worries about family members, patients, and the wider population. These findings are consistent with previous studies [14,15]. Healthcare workers who participated in discussion groups at the start of the outbreak in the United States [14] noted that they did not expect a quick solution for every need that arose during this time. However, they did want to feel that their voices were being heard, and that their needs and expertise were an inseparable part of the discourse around the organizational and systemic preparations for dealing with the pandemic. The respondents also noted the importance of expressions of gratitude by healthcare managers, which had a vital impact on uplifting the healthcare workers during the crisis. Similarly, in the in-depth interviews conducted as part of this study, healthcare workers expressed frustration and disappointment at the fact that they had not received recognition and appreciation from the system, after endangering their health for the benefit of patients and colleagues. Expressing feelings of gratitude and empathy towards healthcare workers is critical during this period, since it helps mitigate their concerns around providing treatment under difficult and extraordinary circumstances [16].

In line with other recent studies [7,8], interviewees in this study expressed concerns around PPE and its efficacy and use. Similar to the interviewees in this study, nurses in China, who were asked about their experiences during the coronavirus crisis, reported that wearing protective suits, and other items of PPE, for many hours caused physical distress that compounded the feelings of stress they experienced while working in isolation wards [5].

In addition to the use of PPE, coronavirus treatment protocol also included guidelines for remote care, a challenge that the interviewees in this study described as negatively impacting the relationship between healthcare workers and patients and causing feelings of alienation during treatment. The battle against coronavirus necessitates maintaining social distancing, isolating patients, and the donning of PPE during patient care, all of which pose substantial challenges to providing medical care to patients [17–19].

In line with previous studies, the findings of this survey indicated relatively low burnout rates (mean = 2.93 out of 5). Nurses reported higher feelings of burnout than

physicians [20,21]. An umbrella review of systematic reviews and meta-analyses, concerning burnout syndrome and SARS/MERS/SARS-CoV-2 outbreaks, showed that in previous SARS and MERS outbreaks, about one-third of health care workers manifested burnout. This prevalence rate is similar to the figure recorded in some categories of health care workers exposed to chronic occupational stress and poor work organization during non-epidemic periods [22].

Furthermore, we found that, as the personal, family, national, and systemic concerns of healthcare workers increased, so did their feelings of burnout. Moreover, analysis of the in-depth interviews conducted for this study showed that the interviewees expressed feelings of burnout, exhaustion, and loneliness during the acute phase of the crisis, as well as mental stress. Subsequent to that, staff felt the need for a cocoon of emotional support. However, the interviews also revealed that a sense of empowerment, teamwork, and awareness of their role during this historical period was heartening to healthcare workers and evidently contributed to preventing burnout. A qualitative study conducted among 14 physicians and nurses in Hubei Province in China found that healthcare workers felt a strong sense of being on a mission and having a responsibility to treat patients during the crisis. Despite concerns about infecting relatives with the virus and about unexpected dangers and workloads, healthcare workers focused on their responsibilities as professionals to fight the virus, demonstrated a sense of unity and professional dedication, and expressed a high degree of empowerment and self-efficacy in coping with the epidemic [5].

The negative correlations between support for how the crisis was handled and family-, national-, and system-level concerns are in line with the interviews results. The reports of the interviewed workers indicate that many of them do not have full confidence in the system, and they are worried to their family members, colleagues, and general population. The concept of organizational justice is particularly important for the mental well-being of workers and is inversely related to stress, concerns, and mental disorders. This association has been demonstrated in previous studies [23].

The current study was conducted during the first wave in a hospital in the south of Israel, not far from Gaza. Interestingly, though Barzilai Medical Center has long experience with emergencies, mainly due to long-term missiles attacks and military operations, the experience during the first wave of COVID-19 was different. The frustration emerging from the tension between the sense of mission and lack of confidence in how the pandemic has been treated by the government and policymakers is an important point that should be addressed. Our study showed the different levels of uncertainty and concerns: personal, family, system, and national levels. Maintaining mental resilience via open, honest, ongoing communication between crisis managers and healthcare workers as well as expressing gratitude, and offering a realistic and optimistic plan for coping, strategies that emerged from other studies, might answer the concerns raised in our study. Teams should be provided with up-to-date and comprehensive information regarding the crisis, which permits a sense of control while reinforcing the staff's professional skills. Lastly, maintaining the mental and physical wellbeing of staff should be a priority: ongoing support should be provided to healthcare workers, and they should be encouraged to express their concerns; peer support programs should be developed [24]. There is no doubt that, during times of crisis like the current COVID-19 pandemic, health service leaders must maintain direct, ongoing connections with healthcare workers in order to collaborate on decision-making and develop treatment strategies, to monitor staff's physical and mental health, and to make supportive tools and resources available to them [25].

Our study also shows that healthcare teams should not be considered as one monolithic entity: difference exists among the different professions, as well as within professions (e.g., according to gender). Interventions should thus be tailored to take both the inter and intra professional differences adopted to the local institutional and national context.

5. Study Limitations

This study has several limitations. First, the survey was conducted among a relatively small sample of healthcare workers from a single hospital. A large-scale sample, taken from several hospitals, is required in order to reinforce these findings. Second, due to the frenzied nature of the early months of the COVID-19 crisis, it was very hard to obtain higher participation rates. Third, for this study, we did not carry out any follow-up or evaluation of the support services provided to healthcare staff during the pandemic, nor did this study employ psychological evaluation tools to assess depression and anxiety.

6. Conclusions

The results of this mixed-methods study shed light onto the main concerns of frontline healthcare workers during the coronavirus crisis and illustrate, in depth, the main issues that require immediate systemic attention in order to reinforce healthcare workers' mental resilience in times of crisis. Health services management need a good understanding of concerns felt by healthcare workers, and what drives those concerns. Furthermore, health services management must acknowledge these concerns and develop strategies to address the sources of stress and worry. Conversations with healthcare workers working directly with coronavirus patients may reduce their anxiety and could help shed light on the actions required to support and reinforce staff [15].

To improve the preparedness of health services to cope with the ongoing coronavirus pandemic, various steps are required. These include developing a mental and emotional support network for frontline healthcare workers, ensuring their protection and health as they care for patients, and providing continuous psychosocial support. These steps will help safeguard the human resources that are critical to winning the battle against the novel virus that has spread around the world. Moreover, further examination and monitoring of healthcare workers' concerns and needs will contribute to the development of effective response plans for future health crises. As Israel is conducting a successful vaccination campaign, we are still far from herd immunity, the long-term effects of COVID19 are still an ongoing challenge, and there are signs that the current burden on healthcare workers has become even greater. This is especially so since, unlike in the first wave of infection when citizens were forced to refrain from elective treatments at hospitals, hospitals now treat both COVID and non-COVID-related illnesses.

Supplementary Materials: The following are available online at <https://www.mdpi.com/article/10.3390/su13169021/s1>, Supplementary S1: Questionnaire, Supplementary S2: Interview Guide & Consent Form.

Author Contributions: K.D., O.B., N.D. and N.A. contributed substantially to the conception and the design of the study. O.B. and K.D. carried out data collection and statistical analysis and analysis of the in-depth interviews. K.D., O.B. and N.A. interpreted the data. K.D., O.B., N.D. and N.A. drafted and revised the manuscript. All authors have read and agreed to the published version of the manuscript.

Funding: The project has not received any financial support or grant from any research or academic institutes.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by Ethics Comity, Ashkelon Academic College, approval #13-2020 from 30 March 2020.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author.

Conflicts of Interest: The authors declare that they have no competing interest.

Ethics Approval and Consent to Participate: Ethical approval of the current study was obtained from the Ethics Comity, Ashkelon Academic College, approval #13-2020. Permission to conduct the

research was obtained from the authorities in the study settings. All participants were informed of the aims of the study and their participation was on a voluntary basis. Interviewees signed an informed consent form. As for the confidentiality of the information, the participants were not required to write their identifying information in the questionnaire. Identifying details of the interviewees were not published. The participants had the right to refuse participation or withdraw from the study.

Abbreviations

Covid-19	Coronavirus disease 2019
PPE	Personal Protective Equipment
ANOVA	Analysis of variance

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