The organizational atmosphere in Israeli hospital during COVID-19: concerns, perceptions, and burnout

**Abstract:**

The COVID-19 crisis posts challenges for healthcare systems and requires organizational adaptations in micro and macro levels. The study examined organizational atmosphere in Israeli hospital by measuring workers' perceptions and concerns with the coronavirus crisis and its management. Five hundred forty-seven healthcare workers from a large university medical center in Israel responded to an electronic survey at the end of the first phase of the pandemic in Israel (May 2020). The survey included demographics, concerns with COVID-19 at individual and family levels, perceptions at the national and organizational level, perceptions towards the crisis management, self-assessment of coping with the crisis, and burnout. Healthcare workers expressed high rates of concerns for family members and apprehensions at a national level. Respondents noted that they are coping well with the crisis while expressing negative perceptions towards the crisis management. A Regression model showed that medical staff members' low self-assessment of personal dealing with the crisis, deep concerns at the organizational level, negative perceptions toward the crisis management, and providing medical care for COVID-19 patients were predictors of burnout. The findings emphasize the importance of developing supportive organizational culture for frontline medical staff. Examining medical staff concerns and perceptions is essential to improve organizational culture and healthcare systems' readiness to continue fighting the virus and confronting future health crises.

Keywords: COVID-19, Coronavirus wards; Concerns; Perceptions; Burnout; Healthcare systems; Organizational culture, management.

משבר הקורונה הפוקד את העולם בשנה האחרונה יצר אתגר משמעותי עבור מערכות בריאות ואנשי הצוות העובדים בהן. מלבד הסוגייה המרכזית הנוגעת לניהול הטיפול בחולים ואסטרטגיות למניעת התפשטות המגיפה, מערכות בריאות נדרשות לעשות התאמות ארגוניות בכל הרמות כדי להתמודד עם המגפה. לדוגמה, ברמת העובד הוארכו מספר השעות בכל משמרת משמונה שעות ל- 12, מחלקות קיימות הוסבו למחלקות קורונה, עובדים עברו הכשרות ואופי עבודתם השתנה, ברמה הלוגיסטית צריך היה להתאים את כל מערך ההסעות, ברמת התרבות הארגונית צריך היה להתמודד עם הטמעה של נהלים חדשים לקליטת מטופלים, שימוש בציוד מיגון ושמירה יתירה על היגיינה, שונו נוהלי הליווי והביקור של החולים והותר רק מלווה/מבקר אחד בלבד ועוד. סוגיות אלו הכרחיות בניהול העבודה במצב החירום המתמשך תוך הגנה על אנשי צוות רפואי, הן במניעת הדבקה והן במניעת שחיקה פיזית ונפשית (Cook, 2020). עובדי בית החולים נמצאים בחזית המאבק במגיפה, מתמודדים עם מצב חירום בעל השלכות פרסונליות בריאותיות ותעסוקתיות כאחד, צריכים ליישם שינויים ארגוניים רבים ובנוסף, חשופים לגורמי לחץ עבודה (job stressors) באופן מתמשך אשר מוביל לסימפטומים נפשיים ועשוי להשפיע גם על רמת השירות ואיכות הטיפול הרפואי הניתן לחולים (Adams & Walls, 2020).

Latest studies show that medical staff expresses high levels of concerns related to a range of aspects of Covid-19. A survey conducted among 4,357 medical staff 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 (Dai et al., 2020). A recent study conducted in Taiwan among 1,795 medical staff during the crisis found that, although some respondents had previously experienced the SARS and MERS epidemics, 40% reported feelings of burnout, 78% reported high levels of anxiety, most of them worked in emergency units treating coronavirus patients (Sung et al., 2020). In a similar study conducted in Turkey among 920 medical staff, 80% of respondents reported that the Covid-19 crisis had affected their mental health, expressing high rates of emotional exhaustion (Sahin et al., 2020). In line with recent studies, past studies on earlier pandemic outbreaks, such as the SARS outbreak in 2002 and the MERS outbreak in 2015, suggests that health crises highly affect health care workers through creating job stressors that cause strain symptoms (Brooks et al., 2018; Lee et al., 2018).

During a health crisis such as the Covid-19, common job stressors include high physical and mental workloads, hazardous work environments, uncertainty in work instructions, ambiguous infection control guidelines, and rapidly changing policies (Tam et al., 2004).

חשיפה מתמשכת לגורמי לחץ בינאישיים ורגשיים במקום העבודה היא הגורם המרכזי לתחושת שחיקה (Laiter & Maslach, 2000). עפ"י מודל JD-R (Demand/Resources model of stress) של Demerouti and Bakker (2007) שחיקה עשויה להתפתח באמצעות עליה בדרישות עבודה (work demands) המובילה לתשישות, ומחסור במשאבים המוביל לירידה במחויבות לעבודה (work engagement). דרישות העבודה וזמינות המשאבים הם חלק מהתרבות הארגונית של מקום העבודה. בהמשך לכך, קיימים אספקטים של תרבות ארגונית אשר נמצאו כעשויים למנוע שחיקה כגון עבודת צוות, תמיכה ממנהלים, אוטונומיה בקבלת החלטות, ותנאי עבודה נאותים (Karadzinska-Bislimovska, 2014). מחקר אשר בחן את הקשר בין שחיקה, דרישות עבודה ותרבות ארגונית בקרב אחיות בבית חולים במקדוניה, מצא קשר חיובי בין דרישות עבודה ברמה הארגונית לבין שחיקה, וקשר שלילי בין דרישות עבודה לבין מחויבות לעבודה. בקרב רופאים נמצא קשר חיובי בין דרישות עבודה ברמה הרגשית לבין שחיקה (Mijakoski, 2015).

בתקופה הנוכחית של התמודדות גלובאלית עם משבר הקורונה, אנשי צוות רפואי נדרשים להתמודד עם דרישות עבודה ייחודיות הן ברמה הארגונית והן ברמה הרגשית. דרישות עבודה גוברות, לחצי זמן, סביבת עבודה כאוטית ותפיסה ביקורתית כלפי התרבות הארגונית – נמצאו בעבר קשורים לשחיקה, ירידה בשביעות רצון, סטרס וכוונות עזיבה בקרב רופאים (Linzer et al., 2009). עם זאת, מחקר אשר נערך לאחרונה בסין ובחן שחיקה בקרב עובדי בריאות בתקופת המגיפה, מצא כי דיווחים על תחושות שחיקה היו בשיעורים נמוכים יותר בקרב צוותים רפואיים אשר טיפלו ישירות בחולי קורונה, לעומת צוותים רפואיים אשר עבדו במחלקות השגרה שלהם (Wu et al., 2020). עולה כי העבודה הרפואית בחזית המאבק במגיפה מביאה עימה תחושת מעורבות ושליטה בסיטואציה ייחודית, אשר מעלה את תחושת המחויבות ומפחיתה את שכיחותה של שחיקה (Raudenská et al., 2020).

עד כה הספרות מראה כי בקרב עובדי בריאות ישנו חשש נרחב להידבק בנגיף אשר מוביל לתחושות לחץ (Zhu et al., 2020). העבודה היומיומית מלווה בתנאי לחץ נוספים כאשר המשאבים לטיפול בחולים אינם מספיקים לקצב התפשטות המגיפה (Wrightet al.,2020). כמו כן תפיסות שליליות הנוגעות לחוסר תמיכה ארגונית בעובדים בזמן המגיפה, נמצאו קשורות לסימפטומים של לחץ ולחשש לבריאות אישית ומשפחתית (Rudolph et al., 2020). הדרישות הגוברות מעובדי בריאות במהלך המגיפה עשויות לעלות על יכולותיהם להתמודד עם השלכות המשבר המתמשך ולהוביל לחרדה, לחץ ושחיקה (Restubog et al., 2020). על כן, יש הכרח לבחון את תחושותיהם ותפיסותיהם של אנשי צוות רפואי בהתמודדותם עם המגיפה, על מנת לשפר את ההיערכות הארגונית של מערכת הבריאות להמשך המאבק בנגיף הנוכחי ובמשברי בריאות עתידיים. מטרת המחקר הנוכחי הייתה לבחון חששות ותפיסות ארגוניות וניהוליות בקרב אנשי צוות רפואי בזמן משבר הקורונה, ואת הקשר לשחיקה.

**Materials & Methods**

**Procedure**

The study was carried out in Soroka University Medical Center in Israel, a large hospital in Israel's southern peripheral area, which provides services to a population of approximately one million people. The study received approval from the Hospital Ethics Committee (approval #0164-20-SOR). A total of 4000 staff members received a questionnaire via an email from the Human Resources department on July 9, 2021, out of which 547 have answered them. Participants gave their informed consent for inclusion in the study and were informed about anonymity, data protection, and privacy. Data analysis was carried out using IBM SPSS statistics 25.0 software. The exploratory data analysis demonstrated the normal distribution of the data, and parametric statistical tests were used. Reliability was examined using Cronbach's alpha. Pearson Correlations, t-tests for independent samples, one-way ANOVA, and multiple regression model were applied. The results of the post-hoc evaluation were calculated by using Tukey's method.

**Participants**

The research sample consisted of 547 medical staff members working at the hospital. Among them, 75% women, 88% are partnered, and 86% have children. The average age is 44 (SD=11.6), approximately half of the respondents provided services or treated coronavirus patients. Table 1 shows a detailed description of the sample, including frequencies and percentages.

**Table 1.** Demographic characteristics of the sample (n=547)

|  |  |  |
| --- | --- | --- |
| **Variable** | **N** | **%** |
| Gender | ManWomen | 137 | 25% |
| 410 | 75% |
| Marital status | In a relationshipNot in a relationship | 446101 | 82%18% |
| Children | No childrenChildren aged 0-10Children aged 11-18 and above | 73219249 | 13%40%46% |
|  |
|  |
| Provided services/treated coronavirus patients as part of their job | YesNo | 249298 | 46%54% |
|  |
| Quarantined | YesNo | 66481 | 12%88% |
|  |
| Covid-19 test | TestedNo, a test was not requiredNo, even though a test was requested/ required | 24923365 | 46%42%12% |
|  |
|  |
| Role | PhysicianNurseOther (administrative and housekeeping, computing, auxiliary staff, laboratory) | 91177279 | 17%32%51% |
|  |
|  |

**Instrument**

The online survey comprised 30 questions composed by the authors and validated using content validation method by eight employees at a different hospital, to ensure that they were relevant to hospital staff during the crisis. 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, have children tested for Covid-19, been Quarantined.
3. Self-assessment of personal coping with the pandemic - 2 questions. Range of answers on the Likert Scale, ranging from (1) not at all to (5) a very great extent, plus the option "not relevant." Questionnaire dimension reliability α = 0.88. Example question: "*I am coping well on a personal level with the pandemic."*
4. Concerns regarding the coronavirus crisis on an Individual level - 2 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 dimension reliability α = 0.55. Example question: "*I am worried about getting infected with the virus."*
5. Concerns regarding the coronavirus crisis on a family level - 3 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 dimension reliability α = 0.65. Example question: "*I am worried about my family members' health during the pandemic."*
6. Concerns regarding the coronavirus crisis on an organizational level - 4 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 dimension reliability α = 0.82. Example question: "*I am concerned about the shortage of beds to accommodate all patients."*
7. Concerns regarding the coronavirus crisis on a national level – 4 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 dimension reliability α = 0.63. Example question: *I am concerned about the rate of increase of the number of coronavirus patients in Israel."*
8. Perceptions towards the crisis management—3 questions. Range of answers on the Likert Scale, from (1) not at all to (5) to a very great extent. Questionnaire dimension reliability α= 0.73. A high score indicates more positive perceptions. Example question: *"I support the way in which the country has handled the crisis so far."*
9. Burnout—3 questions examining emotional exhaustion dimension. Range of answers on the Likert Scale, from (1) not at all to (5) to a very great extent. Questionnaire dimension reliability α = 0.82. A high score indicates a high level of burnout. Example question: *"I feel worn out from dealing with the coronavirus crisis."*

**Results:**

The current study survey consisted of seven dimensions describing self-assessment of coping, concerns, perceptions, and burnout. Table 2 shows the means and standard deviations of the survey dimensions. The analysis shows that respondents expressed high rates of concerns for family members and apprehensions at a national level (for example, worries with economic crisis accompanied to the pandemic and increased spread of the virus). Respondents noted that they are coping well with the crisis while expressing negative perceptions of crisis management at the national level.

**Table 2.** means and standard deviations of the survey dimensions.

|  |  |  |
| --- | --- | --- |
| **Dimension** | **Mean** | **SD** |
| Personal coping with the crisis | 3.94 | 0.80 |
| Individual-level concerns  | 3.78 | 0.92 |
| Family- level concerns | 4.22 | 0.76 |
| National-level concerns | 4.19 | 0.81 |
| Organizational-level concerns | 3.57 | 0.99 |
| Perceptions toward crisis management | 2.48 | 0.91 |
| Burnout | 2.98 | 0.94 |
|  |  |  |

Table 3 shows the correlations between the survey dimensions. The analysis results reveal a positive association between the respondents' concerns at an individual, family, organizational, national levels and burnout. Negative correlations were found between self-assessment of personal coping with the crisis and burnout and between perceptions toward crisis management and burnout.

**Table 3**. Pearson correlations between the survey dimensions (n=547)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Personal - level concerns | Family- level concerns | National- level concerns | Organizational-level concerns | Perceptions toward crisis management | Burnout |
| Personal coping with the crisis | -0.12\* | -0.20\*\* | -0.21\*\* | -0.23\*\* | 0.15\*\* | -0.23\*\* |
| Personal - level concerns |  | 0.63\*\* | 0.46\*\* | 0.51\*\* | 0.19\*\* | 0.12\*\* |
| Family- level concerns |  |  | 0.49\*\* | 0.62\*\* | 0.06 | 0.26\*\* |
| National-level concerns |  |  |  | 0.67\*\* | 0.06 | 0.21\*\* |
| Organizational-level concerns |  |  |  |  | 0.10\* | 0.29\* |
| Perceptions toward crisis management |  |  |  |  |  | -0.13\* |

p<0.05\*, p<0.001\*\*

Table 4 shows inter-gender means comparison for survey dimensions. The analysis reveals gender differences across all dimensions, except for self-assessment of personal coping with the crisis and burnout. Women expressed more significant concerns than men at individual, family, national and organizational levels. However, women expressed slightly more positive perceptions of how the crisis was managed compared to men.

**Table 4**. Intergender means comparison for survey dimensions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Dimension** | **Women** | **Men** | **t** | ***p*** |
|  | **M** | **SD** | **M** | **SD** |  |  |
| Personal coping with the crisis | 3.93 | 0.78 | 3.98 | 0.86 | 0.69 | NS |
| Individual-level concerns | 3.87 | 0.89 | 3.49 | 0.94 | -4.23 | 0.000 |
| Family-level concerns | 4.30 | 0.71 | 3.97 | 0.83 | -4.55 | 0.000 |
| National-level concerns | 4.25 | 0.78 | 3.99 | 0.89 | -3.24 | 0.000 |
| Organizational-level concerns | 3.66 | 0.98 | 3.29 | 0.99 | -3.85 | 0.000 |
| Perceptions toward crisis management | 2.55 | 0.87 | 2.27 | 0.98 | -3.09 | 0.000 |
| Burnout | 3.02 | 0.94 | 2.86 | 0.94 | -1.65 | NS |

Table 5 shows variances between the professions in the survey dimensions. The results show significant variances between professional roles across all variables, except for self-assessment of personal coping with the crisis, national-level concerns, and burnout. The analysis indicates that physicians reported a positive self-assessment of individual coping with the crisis and the lowest concerns across all levels. Also, nurses showed more positive perceptions towards crisis management than physicians.

**Table 5.** variances between the professions in the survey dimensions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***P*** | **F** | **95% Confidence Interval for Mean** | **SD** | **Mean** |  |
| **Lower Bound** | **Upper Bound** |
| NS | 0.61 | 3.76 | 4.10 | .09 | 4 | Physicians | Individual coping with the crisis |
| 3.88 | 4.12 | .06 | 3.93 | Nurses |
| 3.82 | 4.01 | .05 | 3.91 | Other |
| 0.001 | 19.14 | 3.07 | 3.44 | .09 | 3.25 | Physicians | Individual-level concerns |
| 3.73 | 4.00 | .07 | 3.86 | Nurses |
| 3.8 | 4.01 | .05 | 3.90 | Other |
| 0.001 | 10.22 | 3.75 | 4.06 | .08 | 3.90 | Physicians | Family-level concerns |
| 4.19 | 4.42 | .06 | 4.31 | Nurses |
| 4.19 | 4.37 | .05 | 4.28 | Other |
| NS | 2.05 | 3.88 | 4.21 | 0.09 | 4.04 | Physicians | National-level concerns |
| 4.13 | 4.38 | 0.06 | 4.25 | Nurses |
| 4.11 | 4.31 | 0.05 | 4.21 | Other |
| 0.004 | 5.38 | 3.08 | 3.49 | 0.10 | 3.29 | Physicians | Organizational-level concerns |
| 3.56 | 3.85 | 0.07 | 3.70 | Nurses |
| 3.48 | 3.71 | 0.06 | 3.59 | Other |
| 0.001 | 13.56 | 1.86 | 2.23 | 0.09 | 2.05 | Physicians | Perceptions toward crisis management |
| 2.36 | 2.62 | 0.07 | 2.49 | Nurses |
| 2.50 | 2.72 | 0.05 | 2.61 | Other |
| NS | 2.08 | 2.79 | 3.18 | 0.10 | 2.98 | Physicians | Burnout |
| 2.96 | 3.24 | 0.07 | 3.10 | Nurses |
| 2.80 | 3.03 | 0.06 | 2.92 | Other |

An examination of variance between demographic variables and burnout found that respondents who provided medical care for coronavirus patients reported high burnout levels than those who did not (means = 3.29 and 2.86 respectively, F=23.04, p<0.001). Also, respondents who were not tested for coronavirus but wanted to be tested reported high levels of burnout compared to those who were tested, and those who thought a test wasn't required (means = 3.29, 3.02, and 2.84 respectively, F=6.27, p<0.001).

Table 6 shows a multiple regression model for study variables and survey dimensions as predictors of burnout. The model presented in table 6 included only variables which showed significant contribution to the prediction. The analysis of the assumed regression model shows that medical staff members' low self-assessment of personal coping with the crisis, serious concerns at the organizational level, negative perceptions toward the crisis management, and providing medical care for coronavirus patients explained 18.6% of burnout (*p*<0.001).

**Table 6.** Multiple regression model for study variables and survey dimensions as predictors of burnout.

|  |  |  |  |
| --- | --- | --- | --- |
| **Dimension/Variable** | **B** | **Beta** | ***P*** |
| Personal coping with the crisis | -0.16 | -0.14 | 0.000 |
| Organizational-level concerns | 0.21 | 0.22 | 0.000 |
| Perceptions toward crisis management | -0.12 | -0.12 | 0.003 |
|  |  |  |  |
| cared for/provided services to a coronavirus patient | -0.48 | -0.23 | 0.000 |

**Discussion**

The current study aimed to examine different aspects of the organizational atmosphere and their association with burnout during the global Covid-19 pandemic. The empirical data analysis allows us to draw conclusions about the significant importance of medical staff concerns and organizational perceptions in explaining burnout during the current crisis. Medical staff expressed high rates of worries for family members and apprehensions at a national level. However, they noted that they are coping well with the crisis and expressed moderate burnout levels, with women and nurses expressing higher burnout levels (M=2.98 among the total sample, M=3.10 among nurses). Our findings go in line with recent research conducted at the Houston Methodist Hospital (HMH) during the Covid-19 pandemic, which found that physicians and nurses had significant concerns for their families, hesitated to go home in fear of exposing family members to infection, and expressed emotional exhaustion, especially been seen among intensive care staff and frontline workers (Sasangohar et al., 2020).

סטרס ברמה גבוהה ולתקופה ממושכת עשוי להוביל לשחיקה (Leiter & Maslach, 2003) אשר בתורה משפיעה על איכות הטיפול הרפואי (Guo et al., 2018). מחקרים קודמים בנוגע לגורמי לחץ ושחיקה בקרב אחיות חשפו גורמים משפיעים כמו סגנון ניהול ומנהיגות, עומס עבודה והתמודדות עם צרכי המטופל ובני משפחתו (McGowan, 2001; Bahadori et al., 2014; Espinosa et al., 2010). מחקרים בקרב רופאים (West at al., 2018; Dimou et al., 2016) מצאו כי גורמי לחץ תעסוקתיים (עומס עבודה, משמרות ארוכות וקונפליקטים בעבודה) תורמים לעליה בשחיקה אשר מובילה לירידה באיכות הטיפול הרפואי (Dewa et al., 2017).

Nonetheless, a recent qualitative study conducted among 14 physicians and nurses in Hubei Province in China found that medical staff felt a strong sense of mission and responsibility to provide good care to patients during the crisis. Despite concerns about infecting relatives with the virus and about unexpected dangers and workloads, medical staff focused on their responsibilities as professionals to fight the virus, demonstrated a sense of unity and professional dedication, and expressed a high sense of empowerment and self-efficacy in coping with the epidemic (Liu et al., 2020). It seems that the sense of playing a significant medical role during this extraordinary period reinforced medical staff, creating feelings of empowerment and moderated burnout.

At the same time, medical staff who participated in the current study expressed negative perceptions towards crisis management, and these perceptions were associated with burnout. In addition, the regression model showed that medical staff members' low self-assessment of personal coping with the crisis, high concerns at the organizational level, negative perceptions toward crisis management, and directly providing medical care for coronavirus patients were predictors of burnout. Frontline medical staff working in emergency wards and intensive care units have a greater risk of developing mental outcomes such as stress and burnout compared to those of other departments, as they are directly exposed to the patients in a highly demanding environment such as in the Covid-19 crisis (Naushad, 2019). In a cross-sectional study examining coping strategies and concerns of medical staff during Covid-19 pandemic, researchers have found that healthcare workers showed concern for their families and organizational aspects such as workers' safety, availability of equipment and guidelines, and recognition of their efforts by hospital management. Also been mentioned, the workers' expectations of receiving support from seniors and leaders, management monitoring of workers' wellness, and proactively addressing concerns related to safety (Cai et al., 2020). Medical staff who participated in discussion groups at the beginning of the outbreak in the United States (Shanafelt et al., 2020) noted that they did not expect a quick solution for every need that arose during this time. However, they did want their needs and expertise to be an inseparable part of the discourse around the organizational and systemic preparations for dealing with the crisis. Managers have a vital role in addressing medical staff concerns of COVID‐19 by supporting their mental and emotional health through supportive organizational plans and maintenance of a safe and secure work environment, which will assist healthcare workers facing the challenges brought about by the coronavirus crisis (Labrague & De Los Santos, 2020).

Healthcare organizations must understand the main stressors during COVID-19 and the main moderating factors that may mitigate the impact of the COVID-19 on medical staff mental health. There is an urgent need to develop plans and strategies to address the sources of stressors and concerns and maintain efficient and rapid communication with health workers, transparency, and support.

**Limitations**

This study has several limitations. First, the survey was conducted among a relatively small medical staff sample taken from a single hospital. A large-scale sample taken from several hospitals is required to reinforce these findings. Second, due to the COVID19 situation, it was tough to get higher participation rates. Third, within this study, we did not carry out any follow-up or evaluation of support services provided to healthcare staff during the coronavirus crisis. This study did not include a psychological assessment of aspects such as depression and anxiety using accepted psychological evaluation tools.

**Conclusions and recommendations**

The current study results shed light on the main concerns and perceptions of frontline medical staff during the coronavirus crisis and illustrate in depth the main issues that require immediate systemic attention to reinforce medical staff's mental resilience in times of crisis. Recent research offered three dimensions of moderators which may reduce adverse mental outcomes such as emotional exhaustion and burnout among healthcare workers: organizational moderators such as occupational safety and health management, institutional moderators such as government programs that aim to provide financial and psychological support to workers, and individual moderators such as social support and wellbeing (Hamouche, 2020).

Various steps are required to improve the preparedness of health services to cope with the ongoing coronavirus pandemic. These include developing supportive organizational culture, providing psychosocial support network for frontline medical staff, ensuring their protection and health as they care for patients, and implementing continuous plans to reduce burnout. These steps will help safeguard the human resources critical to winning the battle against the novel virus that is spreading around the world.

**Bibliography**

Adams, J. G., & Walls, R. M. (2020). Supporting the health care workforce during the COVID-19 global epidemic. *Jama, 323*(15), 1439-1440. doi:10.1001/jama.2020.3972

Bahadori, M., Ravangard, R., Raadabadi, M., Mosavi, S. M., Fesharaki, M. G., & Mehrabian, F. (2014). Factors affecting intensive care units nursing workload. *Iranian Red Crescent Medical Journal*, *16*(8).‏

Bakker AB, Demerouti E. The Job Demands-Resources model: state of the art. Journal of Managerial Psychology. 2007;22(3):309-28.

Brooks, S. K., Dunn, R., Amlot, R., Rubin, G. J., & Greenberg, N. (2018). A systematic, thematic review of social and occupational factors associated with psychological outcomes in healthcare employees during an infectious disease outbreak. *Journal of Occupational and Environmental Medicine, 60*, 248-257. doi:10.1097/JOM.0000000000001235

Cai H, Tu B, Ma J, Chen L, Fu L, Jiang Y, Zhuang Q. Psychological Impact and Coping Strategies of Frontline Medical Staff in Hunan Between January and March 2020 During the Outbreak of Coronavirus Disease 2019 (COVID‑19) in Hubei, China. Med Sci Monit. 2020 Apr 15;26:e924171. doi: 10.12659/MSM.924171. PMID: 32291383; PMCID: PMC7177038.

Dai, Y., Hu, G., Xiong, H., Qiu, H., & Yuan, X. (2020). Psychological impact of the coronavirus disease 2019 (COVID-19) outbreak on healthcare workers in China. *MedRxiv*.‏

Dimou, F. M., Eckelbarger, D., & Riall, T. S. (2016). Surgeon burnout: a systematic review. *Journal of the American College of Surgeons*, *222*(6), 1230.‏

Dimou, F. M., Eckelbarger, D., & Riall, T. S. (2016). Surgeon burnout: a systematic review. *Journal of the American College of Surgeons*, *222*(6), 1230.‏

Espinosa, L., Young, A., Symes, L., Haile, B., & Walsh, T. (2010). ICU nurses' experiences in providing terminal care. *Critical care nursing quarterly*, *33*(3), 273-281.‏

Guo, Y. F., Luo, Y. H., Lam, L., Cross, W., Plummer, V., & Zhang, J. P. (2018). Burnout and its association with resilience in nurses: A cross‐sectional study. *Journal of clinical nursing*, *27*(1-2), 441-449.‏

Hamouche, S. (2020). COVID-19 and employees' mental health: stressors, moderators and agenda for organizational actions. *Emerald Open Research*, *2*.‏

Karadzinska-Bislimovska J, Basarovska V, Mijakoski D, Minov J, Stoleski S, Angeleska N, Atanasovska A. Linkages between workplace stressors and quality of care from health professionals' perspective - Macedonian experience. Br J Health Psychol. 2014;19(2):425-41.

Labrague, L. J., & De los Santos, J. A. A. (2020). COVID‐19 anxiety among frontline nurses: Predictive role of organisational support, personal resilience and social support. *Journal of nursing management*, *28*(7), 1653-1661.‏

Lee, S. M., Kang, W. S., Cho, A.-R., Kim, T., & Park, J. K. (2018). Psychological impact of the 2015 MERS outbreak on hospital workers and quarantined hemodialysis patients. *Comprehensive Psychiatry, 87*, 123-127. doi:10.1016/j.comppsych.2018.10.003

Leiter MP, Maslach C: Burnout and health. In: Baum A, Revenson T, Singer J, eds. Handbook of health psychology. Hillsdale, NJ: Lawrence Earlbaum; 2000. Retrieved from http://cord.acadiau.ca/publications.html.

Leiter, MP., & Maslach, C. (2003). Areas of worklife: A structured approach to organizational predictors of job burnout. In *Emotional and physiological processes and positive intervention strategies*. Emerald Group Publishing Limited.‏

Linzer M, Manwell LB, Williams ES, et al. Working conditions in primary care: physician reactions and care quality. Annals of Internal Medicine. 2009;151(1):28-36.

Liu Q, Luo D, Haase J, Guo Q, Wang X, Liu S et al. The experiences of healthcare providers during the COVID-19 crisis in China: a qualitative study. Lancet Glob Health. 2020;8(6):e790-e798. Available from: doi:10.1016/S2214-109X(20)30204-7

McGowan, B. (2001). Self-reported stress and its effects on nurses. *Nursing Standard (through 2013)*, *15*(42), 33.‏

Mijakoski, D., Karadzinska-Bislimovska, J., Basarovska, V., Montgomery, A., Panagopoulou, E., Stoleski, S., & Minov, J. (2015). Burnout, engagement, and organizational culture: Differences between physicians and nurses. *Open Access Macedonian Journal of Medical Sciences*, *3*(3), 506.‏

Naushad, V. A., Bierens, J. J., Nishan, K. P., Firjeeth, C. P., Mohammad, O. H., Maliyakkal, A. M., ... & Schreiber, M. D. (2019). A systematic review of the impact of disaster on the mental health of medical responders. *Prehospital and disaster medicine*, *34*(6), 632-643.‏

Raudenská, J., Steinerová, V., Javůrková, A., Urits, I., Kaye, A. D., Viswanath, O., & Varrassi, G. (2020). Occupational burnout syndrome and posttraumatic stress among healthcare professionals during the novel Coronavirus Disease 2019 (COVID-19) pandemic. *Best Practice & Research Clinical Anaesthesiology*.‏

Restubog, S. L. D., Ocampo, A. C. G., & Wang, L. (2020). Taking control amidst the chaos: Emotion regulation during the COVID-19 pandemic. *Journal of Vocational Behavior*. doi:10.1016/j.jvb.2020.103440

Rudolph, C.W., Allan, B., Clark, M., Hertel, G., Hirschi, A., Kunze, F., Shockley, K., Shoss, M., Sonnentag, S., & Zacher, H. (2020). Pandemics: Implications for Research and Practice in Industrial and Organizational Psychology. *Industrial and Organizational Psychology: Perspectives on Science and Practice.*

Sahin, T., Aslaner, H., Eker, O. O., Gokcek, M. B., & Dogan, M. (2020). Effect of COVID-19 pandemic on anxiety and burnout levels in emergency healthcare workers: a questionnaire study.‏ DOI: https://doi.org/10.21203/rs.3.rs-32073/v1

Sasangohar, F., Jones, S. L., Masud, F. N., Vahidy, F. S., & Kash, B. A. (2020). Provider burnout and fatigue during the COVID-19 pandemic: lessons learned from a high-volume intensive care unit. *Anesthesia and analgesia*.‏

Shanafelt T, Ripp J, Trockel, M. Understanding and addressing sources of anxiety among health care professionals during the COVID-19 pandemic. Jama. 2020;323(21), 2133-2134.‏ Available from: doi:10.1001/jama.2020.5893

Sung, C. W., Chen, C. H., Fan, C. Y., Su, F. Y., Chang, J. H., Hung, C. C., ... & Lee, T. S. H. (2020). Burnout in Medical Staffs During a Coronavirus Disease (COVID-19) Pandemic. *Available at SSRN 3594567*.

Tam, C. W. C., Pang, E. P. F., Lam, L. C. W., & Chiu, H. F. K. (2004). Severe acute respiratory syndrome (SARS) in Hong Kong in 2003: stress and psychological impact among frontline healthcare workers. *Psychological Medicine, 34*, 1197-1204. doi:10.1017/S0033291704002247

West, C. P., Dyrbye, L. N., & Shanafelt, T. D. (2018). Physician burnout: contributors, consequences and solutions. *Journal of internal medicine*, *283*(6), 516-529.‏

Wright, A. L., Meyer, A. D., Reay, T., & Staggs, J. (2020). Maintaining places of social inclusion: Ebola and the emergency department. *Administrative Science Quarterly*. doi:10.1177/0001839220916401

Wu Y, Wang J, Luo C, et al. A comparison of burnout frequency among oncology physicians and nurses working on the front lines and usual wards during the COVID-19 epidemic in Wuhan, China. J pain symptom Manag 2020;60(1):e60e5.

Zhu, Z., Xu, S., Wang, H., Liu, Z., Wu, J., Li, G., . . . Sun, W. (2020). COVID-19 in Wuhan: Immediate Psychological Impact on 5062 Health Workers. *medRxiv*. doi:10.1101/2020.02.20.20025338