# **Chelonian Conservation And Biology**



Vol. 17No.2 (2022) | <u>https://www.acgpublishing.com/</u> | ISSN - 1071-8443 DOI:doi.org/10.18011/2022.04(1) .3440.3453

# **COVID-19 PANDEMIC: CHALLENGES FACED HEALTHCARE PROVIDERS**

Hatem Shabbab Almutairi, Abdulelah Gasim Hamali, Abdullah Mutlaq Alqthami, Marzouqha Aqeel Al Shammary, Nuran Mohammed Albarqi, Ghazal Ghassan Badroon, Reham Kalaf Alanizi, Athbah Mohammed Alwedehi, Nuran Mohammed Albarqi, Ghazal Ghassan Badroon, Mosfer Saleh Almoreah, Abdullah Mahdi Alzamanan, Abdullah Awad Mohamed Almasfuh, Mohammad Fehaid Al Mansour, Mohammed Fahad Alotaibi, Khalid Hamoud Alharbi

## Abstract:

Globally, the Covid-19 pandemic has posed hitherto unheard-of difficulties for management and healthcare professionals. This research looks at how the pandemic affected the front-line healthcare providers and how managers handled the situation. Key issues and management techniques were discovered through qualitative analysis of manager and healthcare professional interviews. The results show that healthcare workers experienced social stigma, psychological discomfort, increasing workloads, and a lack of necessary resources. Challenges pertaining to insufficient readiness, decision-making procedures, and resource distribution were faced by managers. But by putting methods like public awareness campaigns, educational programs, and managerial role reform into practice, managers showed resiliency and creativity. It became clear that cooperation, communication, and adaptability were essential for effective crisis management. In order to be ready for future pandemics, it is advised to make investments in human resource management, interdisciplinary teamwork, and healthcare infrastructure. Additionally, managers and employees should be encouraged to seek mental health support services.

**Key words:** Covid-19 pandemic, healthcare professionals, managers, challenges, management strategies, resource allocation, resilience, collaboration, preparedness.

## Introduction:

A major turning point in the conversation about public health was reached on March 11, 2020, when the COVID-19 outbreak was officially declared a global pandemic (1). The adoption of social distancing measures is a crucial strategy for reducing the spread of COVID-19, but its implementation presents significant obstacles, especially for medical professionals who must come into close contact with patients, increasing their risk of contracting the virus (2). The frontline healthcare personnel are in a particularly vulnerable position during this pandemic because of their unshakable commitment to halting the disease's spread (3). As of October 15,



All the articles published by Chelonian Conservation and Biology are licensed under a Creative Commons Attribution-NonCommercial4.0 International License Based on a work at https://www.acgpublishing.com/

CrossMark

2020, 4,797 COVID-19 instances involving physicians and nurses had been reported from country like Bangladesh; more than 100 physician fatalities had also been reported (4). In addition to the physiological risks, a public health emergency of this kind has significant psychological effects on medical staff, which include stress at work, fear of infection, and a feeling of powerlessness (5).

The scarcity of doctors in most public health facilities—an estimated 5.26 doctors per 10,000 people—makes it more difficult for healthcare professionals to offer care, as many are forced to work long shifts, often lasting up to 17 hours a day, including heavy telecounseling responsibilities (6). In May 2020, the government appointed 2,000 more doctors to its healthcare personnel in order to remedy this situation (7). In addition, medical professionals faced severe shortages of personal protective equipment (PPE), masks, and gloves-all of which are necessary to prevent the spread of COVID-19 (8). Furthermore, investigations show that PPE, masks, and similar equipment made in the country that authorities purchase are of inferior quality and do not effectively protect medical staff from infection hazards (9). Healthcare workers dealt with a wide range of mental health issues, such as depression, social isolation, insomnia, and sleep difficulties brought on by their demanding workloads and related stressors (10). There were many reports of anxiety attacks and frustration brought on by concerns about the pandemic, changes in the surroundings, and the threat of infection, for both them and their family (11). In order to minimize the spread of infection, healthcare personnel are currently required to keep a physical distance from their families, which exacerbates psychological anguish (12). Therefore, it is critical to exercise increased caution while managing the mental health of the high-risk population that has been exposed to COVID-19 (13).

The difficulties faced by healthcare workers in the context of the COVID-19 pandemic highlight fundamental problems resulting from inadequate governance. A worrying increase in infections among medical staff has been caused by the government's poor supply of personal protective equipment (PPE) and inadequate training on how to use it (14). Current studies highlight the necessity of supporting healthcare governance in development countries by ensuring that resources are distributed fairly between public and private sectors, between urban and rural areas, by enhancing the role of the media, by encouraging the recruitment of healthcare workers, and by giving priority to the purchase of life-saving medical equipment like oxygen concentrators and intensive care units (15-17). In the midst of the COVID-19 pandemic, development countries' physicians face difficult professional obstacles (18). However, medical personnel have proven to be flexible in handling the demands of the current health emergency. Previous studies have demonstrated the potential effectiveness of therapies such as music therapy, relaxation techniques, and meditation in reducing day-to-day stressors (19). Based on their experiences during the 2005 severe acute respiratory syndrome (SARS) outbreak, medical professionals developed coping mechanisms that included avoiding news related to the pandemic, attending social gatherings after work to provide support to one another, and engaging in recreational activities (20). Even while providing sufficient medical treatment, PPE, and training is essential for enhancing healthcare resilience (6), these resources are still hard to come by in several countries.

#### **Challenges Facing Healthcare Providers:**

### **High Workload:**

The healthcare providers brought attention to the ongoing problem of understaffing in the healthcare industry, which is made worse by the fact that a sizable percentage of registered physicians are not actively practicing medicine. As a result, the active medical personnel in both public and commercial healthcare facilities bears a disproportionate amount of the burden, leading to increased workloads. In private practice, doctors usually only have one day off per week, and long shifts that stretch into holidays are made possible by telecommunications. This long and rigorous schedule not only negatively impacts physical health but also increases psychological stress. In addition, the lack of nurses means that nurses must work longer hours— they frequently put in 16 to 17-hour shifts. Concerns about infection also prevent healthcare professionals from performing their jobs, which puts an additional burden on the resources that are available. An excessive workload was a defining feature of the early stages of the epidemic, according to 87% of healthcare providers. Numerous factors contributed to this workload, including an increase in the number of patients, difficulties using protective gear properly, a persistent rise in severe cases, and high death rates.

#### Ambiguity:

A widespread sense of uncertainty was also mentioned by the healthcare providers, with 73.80% mentioning contradicting data from scientific sources. Furthermore, eighty-eight percent of them voiced discontent with the regular changes made to protocols, preventive techniques, and treatment plans, which had a negative effect on their performance. The unpredictability of the disease's course and the incapacity to treat patients successfully added to this ambiguity.

#### **Losing Control Over Situations:**

In addition, 70.23% of healthcare providers reported feeling less confident and in control of their existing situation. This sentiment was highlighted by medical professionals in particular, who noted that there was a loss of control over treatment plans and patient outcomes, particularly in the early phases of the pandemic. In the past, patients who did not have serious consequences from infectious infections were rarely deadly. However, healthcare providers experienced a deep sense of powerlessness due to the extraordinary impact of COVID-19. Their sense of being out of control was exacerbated by the heavy caseload of patients, high hospitalization rates, increasing mortality, and the belief that they could not rescue any more lives.

#### **Limited Protective Equipment:**

All healthcare providers reported experiencing a widespread lack of protective gear and the difficulties that come with using it. Everyone agreed that N95 masks, protective clothes, gloves, face shields, and gowns are insufficient, and several people said they felt uncomfortable wearing them. This highlighted structural flaws in the healthcare system, where conventional precautions and standards for pandemic conditions could not be easily or effectively adopted.

#### **Futile Care:**

Additionally, some healthcare providers—particularly nurses working in intensive care units—struggled with a deep sense that the treatment they were doing was pointless. A large percentage (73.80%) believed that their efforts were nearly ineffective, particularly in situations where patients passed away in spite of intensive treatments.

#### A sense of Sacrifices:

A recurrent sub-theme that highlighted healthcare personnel' selflessness and conscientiousness surfaced while facing several challenges. The number of healthcare personnel has decreased over the last ten years, which has been made worse by financial hardships and the departure of employees who had comorbid conditions during the epidemic. Staff shortages worsened as a result, forcing many to put in longer hours and perform more shifts without receiving the appropriate pay or safety precautions. They persisted still because of a pervasive dedication to honoring professional obligation, the sacredness of the medical oath, and a sense of self-sacrifice motivated by religious beliefs. Of the healthcare providers, 61.90% felt that it was their professional duty to carry out their responsibilities, and 36.90% expressly mentioned that their motivation sprang from their commitment to the medical oath. Moreover, 17.85% of respondents stated that their religious duty and sense of self-sacrifice were the driving forces behind their dedication.

#### **Challenges in Daily Life:**

The study's healthcare providers all agreed that the disease's start had caused significant changes in their lives, with 95.23% of them doubting that their lives would ever return to normal. These shifts affected social relationships, family dynamics, and work obligations, among other facets of day-to-day living. A major effect of this disruption was a marked reduction in emotional ties and an increased experience of sensory deprivation, which felt like being locked in and taken away from family members. Because of the high rate of transmission, the lack of clarity surrounding the nature of the sickness, and the fear of unintentionally spreading the virus, 96.42% of healthcare providers chose to completely isolate themselves, cutting off contact with their families. This sudden decline in family involvement highlighted how much the pandemic affected interpersonal interactions. The main concern among all healthcare providers was the possibility that they may unintentionally infect their family members with the sickness. Furthermore, 76.19% of respondents stated that they had a severe dread of getting sick and dying of their illness alone, away from their loved ones. This anxiety was exacerbated by worries about dying without the consolation of family and the potential for a funeral devoid of customary religious ceremonies, which made the situation even more distressing, especially for medical

professionals who had tested positive for COVID-19. 80.95% of individuals reported experiencing feelings of regret and guilt, especially in relation to the possible harm to their family members. Many medical professionals who lost loved ones to COVID-19 blamed themselves deeply and felt terrible about themselves. Many people were nevertheless plagued by residual feelings of guilt even after testing negative for the virus and finding other sources of exposure.

### **Challenges Facing Organization and Mangers:**

Previously, when multiple trauma patients were admitted at the same time, healthcare providers skillfully handled the situation by increasing the number of beds available and enlisting more help. In such urgent situations, managers may quickly assign sufficient space, tools, and staff. The briefness of these crises, however, made it possible to quickly assign patients and determine their illnesses. On the other hand, healthcare providers experienced severe shortages of physical, human, and material resources during the Covid-19 crisis. Most healthcare providers agreed that there was a shortage of the equipment needed to open new departments in the midst of the Covid-19 pandemic. Personal protective equipment (PPE) was extremely scarce, especially early in the crisis. The country's restrictions and limited economic environment made it difficult to get the money needed to buy vital equipment. During the Covid-19 crisis, healthcare providers identified a compounding lack of human resources within healthcare organizations. There was a severe shortage of nurses and specialists as a result of prospective applicants for hospital posts being discouraged by the unknown and deadly nature of the sickness. As a result, administrators turned to using non-nursing staff, like anesthesiologists and operating room personnel, even though these positions came with extra obstacles. In the middle of the extraordinary crisis, managers struggled to provide a safe workplace for both personnel and patients. Once Covid-19 clinics were fully booked, patients were sent to other hospitals. In addition, the infrastructure of the hospital was found to be inadequate to support the addition of new wards and intensive care units (ICUs), further burdening the limited resources.

The majority of healthcare providers admitted that staff members had concerns about working on Covid-19 wards. Workers demonstrated against the wards' closure, merging, and reassignment to Covid-19 units. Patients also voiced displeasure at the Covid-19 patients' admission to trauma centers and the closing of elective surgical units. Staff and doctor tensions increased as a result of the higher death rate among Covid-19 patients, which provoked hostile responses from their companions. Patients' families were reluctant to adhere to visitation restrictions since they were unaware of them. The increase in Covid-19 cases led to the suspension of clinical training, which infuriated medical students. Higher-level administrators put pressure on the hospital to open Covid-19 wards as soon as possible despite the facility's lack of preparedness for the management of infectious diseases, even though the hospital specialized in surgical and trauma care. Staff opposition increased when resources were further stretched due to the anticipation that workers would be distributed to other Covid-19 sites. Staff effort increased dramatically as a result of the huge number of trauma and Covid-19 patients admitted

at the same time. Healthcare practitioners were additionally burdened by the complicated medical treatment that Covid-19 patients, who frequently had precarious health, required. Unprecedented patient deaths continued to occur every day in spite of treatment attempts, which exacerbated staff frustrations and led to hostile conduct by patients' companions.

The severity of the illness was still not well understood by authorities or the general public, which made patient companions unaware of visitation limitations. Relatives of trauma victims who were afraid of infection acted aggressively and provoked conflicts as a result of persistent refusal to comply, despite warnings. The majority of healthcare providers noted that hospital administrators were ill-prepared for the unknown nature of the pandemic due to a lack of managerial understanding of biological crisis management. In the early phases of the Covid-19 outbreak, managers frequently reacted too late, meaning that previous initiatives did not sufficiently address issues. This lack of readiness was a factor in the crisis' ineffective resolution. healthcare providers emphasized how hospitals and wards were not properly supplied, leaving some institutions with acute shortages while others had enough supplies. Furthermore, most of the hired laborers were allocated to particular Covid-19 centers, which resulted in a staffing shortage at other hospitals. To handle the issues posed by COVID-19, managers employed a range of tactics, with a particular emphasis on planning, organizing, leading, motivating, monitoring, and controlling. Along with public awareness initiatives through educational advertising and patient education programs, instructional and consulting programs were designed to improve managerial and employee performance. Job descriptions and work divisions were formed in order to streamline operations, and care guidelines and protocols were established in order to accelerate decision-making and increase the quality of care.

Healthcare providers were able to overcome concerns including staff shortages, poor managerial expertise, and gaps in public awareness, leading to lower mortality rates, by anticipating challenges and creating educational content. Effective information dissemination was achieved through the use of virtual networks, educational initiatives, and training courses. The healthcare providers examined previous Covid-19 peaks to pinpoint outstanding problems and put fixes in place to enhance management going forward. In addition, proactive steps were taken to address the shortage of medication and equipment, including modifying budget projections, interacting with the ministry, and requesting philanthropic gifts. In summary, managers were able to improve knowledge and performance, care quality, and mitigate challenges related to Covid-19 by implementing adaptive strategies, educational initiatives, and proactive planning. This ultimately resulted in a decrease in disease mortality rates and more efficient utilization of resources.

#### **COVID-19: A step for more Healthcare Awareness:**

Our research suggests that frontline healthcare workers in development countries were overworked during the COVID-19 pandemic, and there may be systemic issues in the healthcare industry as a whole. A dearth of healthcare workers, a lack of knowledge about the virus, and

inadequate training add to the heavy workload, which in turn causes psychological stress, a tendency that has been documented in the literature (21, 22). Previous studies have shown the detrimental impacts of extreme job pressure on mental health, including anxiety, sleeplessness, physical weakness, and fear of infection in healthcare workers (23). The frequency of subpar Personal Protective Equipment (PPE) in healthcare settings is another finding of our study that raises the danger of infection for medical personnel. Many studies have found a connection between higher viral transmission among healthcare personnel and inadequate personal protective equipment (PPE) (24,25). Furthermore, healthcare providers face a great deal of difficulty when wearing PPE for extended periods of time, which may jeopardize their immune system and hydration (26). Healthcare facilities with poorly coordinated operations create a disorganized atmosphere that increases the danger of infection and leaves patients and medical professionals unsure of safety procedures. Inadequate medical personnel and equipment exacerbate workload and safety risks (27). The individuals' significant psychological stress is further compounded by their ongoing dread of infection, which affects both themselves and their families (11).

During public health emergencies, social support from peers, colleagues, and communities is essential for reducing psychological stress in healthcare personnel. Our findings, however, point to a widespread negative social reaction against the medical workforce, which exacerbates the difficulties experienced by healthcare workers during the epidemic and causes social isolation. Healthcare practitioners employ coping mechanisms like faith-based coping, kindness, and peer support to reduce stress to some level. In line with earlier studies, our study emphasizes how important it is for healthcare workers to have enough rest and protective gear (28). During public health emergencies, psychological stress that affects healthcare personnel includes worries about spreading the illness to loved ones, dread of dying, anxiety about patients who are seriously ill, and anxiety about their own safety (29,30). In line with previous study, healthcare personnel who work with children report higher levels of emotional suffering as a result of having to keep their distance from their families in order to lower the chance of COVID-19 transmission (20). Like doctors, nurses also express discontent with their workload and lack of gratitude despite their important contributions to healthcare delivery (31).

In most development countries, neighbors and family stigmatized healthcare workers because they believed that their contact with patients put them at risk for illness. Healthcare personnel have occasionally become demotivated to serve patients as a result of social exclusion and severe social treatment. Nonetheless, earlier research has demonstrated how important social support from neighbors, family, and relatives is for medical professionals. Healthcare workers may experience anxiety and despair as a result of a lack of this support (32,33). We believe that financial assistance, continuous oversight, the supply of suitable protective gear, and a staff that is large enough could all serve as incentives to encourage healthcare workers to participate more in pandemic scenarios. Unfortunately, healthcare workers sometimes do not have access to these facilities, and a number of infected professionals have reported not receiving the government's

promised financial incentives. Empirical parallels with other SAARC nations are evident. These nations, which are distinguished by fragile economies and inadequate medical infrastructure, frequently find it difficult to offer their citizens access to quality healthcare, let alone the essential psychological support for medical workers (34). Aside from their already hectic schedules, societal stigma, lack of access to Personal Protective Equipment (PPE), and violent incidents all contribute to psychological stress among healthcare personnel (35). Furthermore, healthcare workers with differing age, gender, and socioeconomic backgrounds encounter different psychological problems, which calls for customized interventions based on their mental health condition (36). The National Health Policy of country such as Bangladesh (2011) made promises about the supply of labor and logistics to government-run hospitals, as well as the cooperation of several agencies involved in healthcare, but in practice, these pledges have not been fulfilled. Consistent with previous research, a recurring problem influencing the quality of healthcare services in the nation is the absence of coordination and competent labor (37,38).

Healthcare workers may experience psychological trauma as a result of an epidemic (10, 35), which makes good coping mechanisms necessary. Consistent with the results of this study, studies have recommended self-care techniques, confidence-building, teamwork, and peer support as effective strategies to reduce mental strain, work-related stress, and PTSD experiences among caregivers during emergencies (39,40). According to established pathophysiological processes, extended stress responses in healthcare workers may result in physical illness (41,42). Consequently, in order to lessen the physical and psychological difficulties that healthcare workers may encounter while the epidemic continues, they need to receive extra care and assistance.

### **Difficulties in Facing Challenges:**

The study's conclusions showed that managers faced serious challenges during the pandemic, which were typified by a lack of preparation, a serious scarcity of supplies and equipment, and inefficient tactics. Numerous nations have reported facing comparable difficulties, such as a lack of money, insufficient PPE, a high patient referral rate, a labor shortage, and a lack of systemic readiness to deal with the pandemic [9]. Many healthcare professionals became infected with Covid-19 due to its extremely contagious nature and the uncertainty regarding its mechanics of transmission, especially in the early phases of the outbreak [43]. Containment attempts were made more difficult by the possibility of transmission throughout the incubation period, which made crisis management difficult for managers. The difficulties were further compounded by organizational and public pressures that limited managerial options. During infectious disease epidemics, trust became an important component that shaped public views and behaviors, including following physical distance measures and information-seeking inclinations [44]. However, a number of Covid-19-related factors, such as incomplete understanding of the disease's genesis, mechanisms of transmission, course of therapy, and high death rates, made it difficult to establish confidence. It has been demonstrated that innovative organizational structures put in place before the pandemic improve managers'

capacity for readiness and reaction [5]. But because the research hospital, which focused mostly on trauma care, had never dealt with biological emergencies before, its current organizational setup was insufficient to handle the pandemic.

The difficulties in managing crises were exacerbated by managers' lack of expertise with biological pandemics, inadequate past responses, difficulties in making decisions during crises, inappropriate resource management, underestimating, and delays in decision-making. Healthcare businesses today recognize knowledge management as a strategic necessity that improves crisis preparedness and response. The ubiquity of ineffective crisis management strategies during the Covid-19 pandemic highlighted the necessity for original and creative thinking in order to achieve positive outcomes in the face of numerous obstacles and setbacks.

#### **Reforming and Changing Management Views:**

The results of the study showed that managers used a variety of approaches to deal with the difficulties caused by the Covid-19 epidemic. The planning and decision-making issues that managers faced included creating training and advisory programs, raising public awareness through campaigns, creating policies and procedures, and reorganizing staff and managerial roles. The usefulness of staff training as a strategy to alleviate Covid-19-related issues has been highlighted by earlier studies [45]. Additionally, research supporting learner-centered educational initiatives emphasizes the need for flexibility and balance in order to address the many demands of educational activities throughout the pandemic [46]. Furthermore, it has been acknowledged that educating staff members and medical professionals in financial and human resource management is essential for overcoming the obstacles presented by the pandemic [47]. It has been demonstrated that using algorithms to predict ventilation needs in Covid-19 patients improves patient outcomes [48], and that using specialized resources and involving skilled risk analysis experts has made it easier to make strategic decisions and build capacity in response to the crisis [44].

Effective resource allocation and activity classification were essential in addressing issues brought on by a lack of workers, an increase in workload, outdated equipment, and poor working conditions. Creating thorough HRM planning, and staff support packages specific to Covid-19 conditions are among the recommendations [49]. The pandemic has been fought off in large part by open organizational structures, quick reaction systems, and improved information sharing [44]. During the crisis, increased workplace safety, productivity, and mental health have all been linked to effective HRM practices [50]. Additionally, managers have used communication techniques, conflict resolution techniques, and ongoing support to handle employee stress, motivation, and reluctance to change [51]. During the epidemic, cooperation, clear communication, and adherence to policies and procedures have been highlighted as crucial components of dynamic workflow [52]. Additionally, management have put policies in place to minimize sick leave, prevent sickness, and distribute resources as efficiently as possible. The spread of disease has been stopped via quick detection of probable cases, the installation of

infrared cameras, visitor restrictions, and improved cleanliness [22]. On the other hand, few studies have looked closely at management approaches to Covid-19 problems from the standpoint of management duties including organizing, planning, motivating, and making decisions. Alternative approaches including volunteer training for non-medical positions and requesting financial support from benefactors have not received as much attention as their more conventional counterparts, such as departmental administration, visiting limitations, and human resource management. To improve crisis management initiatives, policymakers and managers are recommended to consider these alternative approaches, which include hiring risk analysis specialists with strategic planning experience.

#### **Conclusion:**

In conclusion, the discussion underscores the multifaceted challenges faced by healthcare professionals and managers in navigating the unprecedented Covid-19 pandemic. The study findings illuminate the profound impact of the crisis on frontline healthcare workers, ranging from increased workloads and psychological distress to shortages of essential resources and equipment. These challenges were further compounded by factors such as social stigma, fear of transmission, and insufficient support systems, exacerbating the strain on healthcare professionals' well-being and ability to deliver quality care. Managers, tasked with orchestrating crisis responses and resource allocation, confronted a myriad of hurdles in effectively addressing the evolving demands of the pandemic. From inadequate preparedness and decision-making processes to organizational pressures and limited resources, managers grappled with the complexities of managing a public health crisis of unprecedented scale and scope. However, amidst these challenges, managers displayed resilience and innovation, implementing various strategies to mitigate the impact of the pandemic on healthcare delivery and organizational resilience. Key strategies employed by managers included the development of educational programs, enhancement of public awareness initiatives, reformation of managerial roles, and efficient resource allocation. These efforts aimed to bolster planning, decision-making, organizational coordination, and workforce management, thereby enhancing the healthcare system's capacity to respond to the crisis effectively. Moreover, collaboration, communication, and adaptation emerged as critical components of successful crisis management, facilitating the alignment of organizational objectives, stakeholder engagement, and community resilience. While considerable progress has been made in addressing the immediate challenges posed by the pandemic, several lessons and recommendations emerge for future pandemic preparedness and response efforts. These include the importance of investing in healthcare infrastructure, human resource management, risk analysis expertise, and interdisciplinary collaboration. Additionally, there is a need for ongoing evaluation and refinement of crisis management strategies, as well as the promotion of mental health support services for healthcare workers and managers. Overall, the Covid-19 pandemic has underscored the critical role of effective leadership, proactive planning, and collaborative action in addressing public health emergencies. By learning from the challenges and successes experienced during this crisis, healthcare systems can better prepare for

and respond to future pandemics, ensuring the resilience and well-being of both healthcare professionals and the communities they serve.

### **References:**

- 1. WHO. Rolling updates on coronavirus disease (COVID-19). 2020.
- Liu Q, Luo D, Haase JE, Guo Q, Wang XQ, Liu S, et al. The experiences of health-care providers during the COVID-19 crisis in China: a qualitative study. *The Lancet Global health*. (2020) 8:e7908:20ncet Glo1016/S2214-109X(20)30204-7
- Kola L, Kohrt BA, Hanlon C, Naslund JA, Sikander S, Balaji M, et al. COVID-19 mental health impact and responses in low-income and middle-income countries: reimagining global mental health. *Lancet Psychiat*. (2021). doi: 10.1016/S2215-0366(21)00025-0
- 4. Dhaka-Tribune. Bangladesh sees 100th death of doctors from Covid-19. Kazi Anis Ahmed. Dhaka: Bangladish (2020).
- 5. O'Boyle C, Robertson C, Secor-Turner M. Nurses' beliefs about public health emergencies: fear of abandonment. *Am J Infect Control.* (2006) 34:351ect Controln1016/j.ajic.2006.01.012
- a.R.F.S. GBD 2017 Injuries. Global, regional, and national incidence, prevalence, and mortality of HIV, 1980-2017, and forecasts to 2030, for 195 countries and territories: a systematic analysis for the Global Burden of Diseases, Injuries, and Risk Factors Study 2017. *Lancet HIV*. (2019) 6:e831–59. doi: 10.1016/S2352-3018(19)30196-1
- Islam MT, Talukder AK, Siddiqui MN, Islam T. Tackling the COVID-19 pandemic: The Bangladesh perspective. J Public health Res. (2020) 9:1794–1794. doi: 10.4081/jphr.2020.1794
- 8. Mahmood SU, Crimbly F, Khan S, Choudry E, Mehwish S. Strategies for rational use of personal protective equipment (PPE) among healthcare providers during the COVID-19 crisis. *Cureus*. (2020) 12:e82482e8248. doi: 10.7759/cureus.8248
- Tanim A. Ensuring quality of PPE and other protective components. The Financial Express (2020). Retrieved from: <u>https://thefinancialexpress.com.bd/views/ensuring-quality-of-ppe-and-other-protective-components-1587744428</u>
- Su TP, Lien TC, Yang CY, Su YL, Wang JH, Tsai SL, et al. Prevalence of psychiatric morbidity and psychological adaptation of the nurses in a structured SARS caring unit during outbreak: A prospective and periodic assessment study in Taiwan. J Psychiatr Res. (2007) 41:119–30. doi: 10.1016/j.jpsychires.2005.12.006
- 11. Sun N, Wei L, Shi S, Jiao D, Song R, Ma L, et al. A qualitative study on the psychological experience of caregivers of COVID-19 patients. *Am J Infect Control.* (2020) 48:592ect Controld1016/j.ajic.2020.03.018
- 12. WHO. *Mental health and psychosocial considerations during the COVID-19 outbreak*. Switzerland: World Health Institution Geneva (2020).
- 13. Botchway S, Fazel S. Remaining vigilant about COVID-19 and suicide. *Lancet Psychiatry*. (2021) 8:552–3. doi: 10.1016/S2215-0366(21)00117-6

- Shammi M, Bodrud-Doza M, Islam AR, Rahman MM. COVID-19 pandemic, socioeconomic crisis and human stress in resource-limited settings: A case from Bangladesh. *Heliyon*. (2020) 6:e04063. doi: 10.1016/j.heliyon.2020.e04063
- 15. Shammi M, Bodrud-Doza M, Islam AR, Rahman MM. Strategic assessment of COVID-19 pandemic in Bangladesh: comparative lockdown scenario analysis, public perception, and management for sustainability. *Environ Dev Sustain*. (2020) 18:1–44. doi: 10.20944/preprints202004.0550.v1
- Bodrud-Doza M, Shammi M, Bahlman L, Islam AR, Rahman M. Psychosocial and socioeconomic crisis in Bangladesh due to COVID-19 pandemic: a perception-based assessment. *Front Public Health*. (2020) 8:341. doi: 10.3389/fpubh.2020.00341
- Islam AR, Islam MN, Hossain MS, Prodhan MT, Chowdhury MH, Al Mamun H. Mass media influence on changing lifestyle of community people during COVID-19 pandemic in Bangladesh: a cross sectional survey. *Asia Pac J Public Health*. (2021). doi: 10.1177/10105395211011030. [Epub ahead of print].
- 18. Gerada C. Beneath the white coat doctors, their minds and mental health. *Routledge*. (2020) 305. doi: 10.4324/9781351014151
- G.E.M.R.H.A. Collaborators. Trends in HIV/AIDS morbidity and mortality in Eastern Mediterranean countries, 1990–2015: findings from the Global Burden of Disease 2015 study. *Int J Public Health*. (2018) 63:123blic Health G1007/s00038-017-1023-0
- 20. Lee SH, Juang YY, Su YJ, Lee HL, Lin YH, Chao CC. Facing SARS: psychological impacts on SARS team nurses and psychiatric services in a Taiwan general hospital. *Gen Hosp Psychiatry*. (2005) 27:352 Psychiatryu1016/j.genhosppsych.2005.04.007
- 21. C. Xiao. A novel approach of consultation on 2019 novel coronavirus (COVID-19)-related psychological and mental problems: structured letter therapy. *Psychiatry Investig.* (2020) 17:175ry Investig(30773/pi.2020.0047
- 22. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 Coronavirus Disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health*. (2020) 17:1729. doi: 10.3390/ijerph17051729
- 23. Greenberg N, Docherty M, Gnanapragasam S, Wessely S. Managing mental health challenges faced by healthcare workers during covid-19 pandemic. *BMJ*. (2020) 368:m1211. doi: 10.1136/bmj.m1211
- 24. Wang J, Zhou M, Liu F. Reasons for healthcare workers becoming infected with novel coronavirus disease 2019 (COVID-19) in China. *J Hosp Infect.* (2020) 105:100fectn China.1016/j.jhin.2020.03.002
- 25. T.M. Cook. Personal protective equipment during the coronavirus disease (COVID) 2019 pandemic paa narrative review. *Anaesthesia*. (2020) 75:920sia review. 1111/anae.15071
- 26. Kang HS, Son YD, Chae S-M, Corte C. Working experiences of nurses during the Middle East respiratory syndrome outbreak. *Int J Nurs Pract.* (2018) 24:e12664:e12664. doi: 10.1111/ijn.12664

- 27. Shoja E, Aghamohammadi V, Bazyar H, Moghaddam HR, Nasiri K, Dashti M, et al. Covid-19 effects on the workload of Iranian healthcare workers. *BMC Public Health*. (2020) 20:1636. doi: 10.1186/s12889-020-09743-w
- 28. Chen Q, Liang M, Li Y, Guo J, Fei D, Wang L, et al. Mental health care for medical staff in China during the COVID-19 outbreak. *The lancet Psychiatry*. (2020) 7:e1517:20ncet Ps1016/S2215-0366(20)30078-X
- 29. Liu JJ, Bao Y, Huang X, Shi J, Lu L. Mental health considerations for children quarantined because of COVID-19. *The Lancet Child & Adolescent Health*. (2020) 4:347cet Child & 1016/S2352-4642(20)30096-1
- 30. J.M. Drazen. SARS–looking back over the first 100 days. N Engl J Med. (2003) 349:319Med SARS–loo1056/NEJMp038118
- 31. Laurant M, van der Biezen M, Wijers N, Watananirun K, Kontopantelis E, van Vught AJ. Nurses as substitutes for doctors in primary care. *Cochrane Database Syst Rev.* (2018) 7:CD001271. doi: 10.1002/14651858.CD001271.pub3
- 32. Anjos KFd, Boery RNSdO, Pereira R, Pedreira LC, Vilela ABA, Santos VC, et al. Association between social support and quality of life of relative caregivers of elderly dependents. *Ciencia & Saude Coletiva*. (2015) 20:1321–30. doi: 10.1590/1413-81232015205.14192014
- 33. Adams JG, Walls RM. Supporting the health care workforce during the COVID-19 global epidemic. *Jama*. (2020) 323:1439–4393:JG, Wal1001/jama.2020.3972
- 34. Banerjee D, Vaishnav M, Rao TS, Raju MS, Dalal PK, Javed A, et al. Impact of the COVID-19 pandemic on psychosocial health and well-being in South-Asian (World Psychiatric Association zone 16) countries: A systematic and advocacy review from the Indian Psychiatric Society. *Indian J Psychiatry*. (2020) 62:S343. doi: 10.4103/psychiatry.IndianJPsychiatry 1002 20
- 35. Gupta S, Sahoo S. Pandemic and mental health of the front-line healthcare workers: a review and implications in the Indian context amidst COVID-19. *General Psychiatry*. (2020) 33. doi: 10.1136/gpsych-2020-100284
- 36. Chatterjee SS, Chakrabarty M, Banerjee D, Grover S, Chatterjee SS, Dan U. Stress, sleep and psychological impact in healthcare workers during the early phase of COVID-19 in India: A factor analysis. *Front Psychology*. (2021) 12:473. doi: 10.3389/fpsyg.2021.611314
- 37. Murshid ME, Haque M. Hits and misses of Bangladesh National Health Policy 2011. J Pharm Bioallied Sci. (2020) 12:83–93. doi: 10.4103/jpbs.JPBS\_236\_19
- 38. The health workforce crisis in Bangladesh: shortage inappropriate skill-mix and inequitable distribution.
- 39. Islam A, Biswas T. Health system in Bangladesh: challenges and opportunities. *Am J Health Res.* (2014) 2:366–74. doi: 10.11648/j.ajhr.20140206.18
- 40. Liu H, Liehr P. Instructive messages from Chinese nurses' stories of caring for SARS patients. *J Clin Nurs*. (2009) 18:2880–880:9 Nursr1111/j.1365-2702.2009.02857.x

- 41. Honey M, Wang WY. New Zealand nurses perceptions of caring for patients with influenza A (H1N1). *Nurs Crit Care*. (2013) 18:63it CareWY. N1111/j.1478-5153.2012.00520.x
- 42. H. Ursin. The development of a Cognitive Activation Theory of Stress: from limbic structures to behavioral medicine. *Scand J Psychol.* (2009) 50:639Psycholevelop1111/j.1467-9450.2009.00790.x
- 43. Eriksen HR, Murison R, Pensgaard AM, Ursin H. Cognitive activation theory of stress (CATS): From fish brains to the Olympics. *Psychoneuroendocrinology*. (2005) 30:933–8. doi: 10.1016/j.psyneuen.2005.04.013
- 44. Pan L, Wang L, Huang X. How to face the novel coronavirus infection during the 2019–2020 epidemic: the experience of Sichuan Provincial People's Hospital. Intensive Care Med. 2020;46(4):573–5.
- 45. Balog-Way DHP, McComas KA. COVID-19: reflections on trust, tradeoffs, and preparedness. J Risk Res. 2020;23(7–8):838–48.
- 46. Arabi YM, Murthy S, Webb S. COVID-19: a novel coronavirus and a novel challenge for critical care. Intensive Care Med. 2020;46(5):833–6.
- 47. Bell DJ, Self MM, Davis C III, Conway F, Washburn JJ, Crepeau-Hobson F. Health service psychology education and training in the time of COVID-19: Challenges and opportunities. Am Psychol. 2020;75(7):919.
- 48. Lee I, Wang C, Lin M, Kung C, Lan K, Lee C. Effective strategies to prevent coronavirus disease-2019 (COVID-19) outbreak in hospital. J Hosp Infect. 2020;105(1):102–3.
- 49. Burdick H, Lam C, Mataraso S, Siefkas A, Braden G, Dellinger RP, et al. Prediction of respiratory decompensation in Covid-19 patients using machine learning: the READY trial. Comput Biol Med. 2020;124:103949.
- 50. Yusefi AR, Sharifi M, Nasabi NS, Rezabeigi Davarani E, Bastani P. Health human resources challenges during COVID-19 pandemic; evidence of a qualitative study in a developing country. PLoS ONE. 2022;17(1):e0262887.
- 51. Azizi MR, Atlasi R, Ziapour A, Abbas J, Naemi R. Innovative human resource management strategies during the COVID-19 pandemic: a systematic narrative review approach. Heliyon. 2021;7(6):e07233.
- 52. Heath C, Sommerfield A, von Ungern-Sternberg BS. Resilience strategies to manage psychological distress among healthcare workers during the COVID-19 pandemic: a narrative review. Anaesthesia. 2020;75(10):1364–71.