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CHALLENGES FACED BY HEALTHCARE WORKERS IN MANAGING INFECTIOUS DISEASE OUTBREAKS – EXPLORING THE PSYCHOLOGICAL BURNOUT, ETHICAL DILEMMAS, AND ORGANIZATIONAL SUPPORT SYSTEMS-A QUALITATIVE STUDY

Original Research

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ABSTRACT

Background: Infectious disease outbreaks place immense pressure on healthcare systems, particularly frontline healthcare workers who face complex psychological, ethical, and institutional challenges. Burnout, moral conflict, and insufficient organizational support often co-occur, yet are rarely explored holistically in the context of low- and middle-income countries.

Objective: To explore the psychological burnout, ethical dilemmas, and effectiveness of organizational support systems experienced by healthcare workers during infectious disease outbreaks in Pakistan.

Methods: This qualitative study employed a phenomenological design, conducted over eight months across five major healthcare institutions in Pakistan. Thirty participants—including physicians, nurses, and paramedics—were selected through purposive sampling. Semi-structured interviews were conducted and transcribed verbatim. Thematic analysis was performed using NVivo software to identify recurring patterns and subthemes under each core domain.

Results: Three major themes were generated: *Psychological Burnout*, *Ethical Dilemmas*, and *Organizational Support*. Subthemes under burnout included emotional exhaustion, depersonalization, and loss of professional efficacy. Ethical dilemmas encompassed risk to family, resource allocation, and conflict of duty. Subthemes under organizational support revealed inadequate communication, neglect of mental health services, and occasional supportive leadership. Participants described high emotional fatigue, internal moral conflict, and disappointment in institutional preparedness. A few also noted that supportive management reduced distress and improved coping.

Conclusion: The study highlights the intertwined psychological, ethical, and systemic burdens on healthcare workers during outbreaks. Findings emphasize the need for integrated mental health services, clear ethical protocols, and responsive leadership to strengthen workforce resilience during future health crises.

Keywords: Burnout, Ethical Dilemmas, Healthcare Workers, Infectious Disease Outbreaks, Mental Health, Organizational Support, Pakistan, Qualitative Research.

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INTRODUCTION

Infectious disease outbreaks have long posed significant challenges to healthcare systems, not only in terms of clinical management and resource allocation but also with respect to the psychological and ethical burdens borne by healthcare workers. From the SARS epidemic to the Ebola crisis, and most recently the COVID-19 pandemic, frontline healthcare professionals have consistently found themselves at the epicenter of global health emergencies (1). These events underscore the complex and often overwhelming realities they face—not just in caring for patients but also in safeguarding their own well-being and moral integrity. The persistent exposure to high-risk environments, intense workloads, and the emotional toll of patient suffering contribute to a constellation of challenges that demand deeper exploration, particularly from a human-centered and systems-based perspective (2,3). Psychological burnout among healthcare workers is one of the most pervasive and well-documented consequences of prolonged exposure to crisis conditions. Burnout, characterized by emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment, has been observed at alarming rates during major outbreaks (4). A growing body of literature highlights how factors such as inadequate rest, extended work shifts, fear of infection, and witnessing patient mortality contribute to a chronic state of psychological distress (5,6). For instance, studies conducted during the COVID-19 pandemic revealed significant levels of anxiety, depression, and post-traumatic stress symptoms among physicians and nurses, often exacerbated by shortages of protective equipment and ambiguous clinical protocols (7-9). While quantitative data has illuminated the scale of the issue, qualitative insights into the lived experiences of healthcare workers offer an essential complement, revealing the deeper emotional and moral complexities that statistical models alone cannot capture.

Beyond psychological strain, infectious disease outbreaks also present intricate ethical dilemmas for healthcare workers. These dilemmas often arise in situations where professional obligations conflict with personal safety, or when resources are scarce and difficult decisions must be made regarding patient care (10). Healthcare workers may be forced to navigate between prioritizing critically ill patients and adhering to triage guidelines, sometimes in the absence of clear ethical frameworks. They may also experience guilt over transmitting infections to loved ones or perceive themselves as complicit in systemic failures when institutions fall short in providing adequate support. Such ethical distress can compound burnout and lead to long-term moral injury, particularly when workers feel unsupported or unheard by their organizations (11,12). While ethical challenges are inherent in healthcare, the intensity and frequency of these dilemmas during outbreaks necessitate focused inquiry to better understand how they affect decision-making, job satisfaction, and long-term professional commitment. Organizational support systems, or the lack thereof, play a crucial role in mediating the psychological and ethical impact of outbreaks on healthcare workers (13). Support structures such as mental health services, clear communication channels, leadership transparency, and access to personal protective equipment are vital in promoting resilience and reducing distress. However, the effectiveness of these systems varies widely across institutions and geographic contexts. Research suggests that many healthcare workers feel underprepared and inadequately supported during crises, leading to a perception of institutional neglect (14,15). On the other hand, environments where organizational leadership is proactive and responsive tend to report lower levels of staff burnout and higher morale. Understanding how these systems function—both in success and failure—can inform policy changes and institutional practices that prioritize healthcare worker well-being in times of crisis (16).

Despite the wealth of studies that document individual aspects of psychological burnout, ethical distress, and organizational support during health emergencies, there remains a significant gap in integrative, qualitative research that explores how these challenges intersect and are experienced holistically by healthcare workers. Most existing literature tends to compartmentalize these domains, potentially missing the nuanced interplay between emotional, ethical, and systemic dimensions. A qualitative approach offers the opportunity to capture these intricacies through the voices of those directly involved in outbreak response, providing rich, narrative-based data that can inform more empathetic and effective policy and organizational interventions. This study aims to explore the lived experiences of healthcare workers during infectious disease outbreaks, focusing specifically on the psychological burnout they endure, the ethical dilemmas they navigate, and the perceived effectiveness of the organizational support systems available to them. By delving into these interconnected dimensions, the research seeks to uncover insights that can help build more resilient healthcare environments and inform ethical and institutional preparedness for future global health crises.

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METHODS

This qualitative study employed a phenomenological research design to explore the psychological burnout, ethical dilemmas, and effectiveness of organizational support systems experienced by healthcare workers during infectious disease outbreaks. The phenomenological approach was deemed appropriate due to its focus on understanding lived experiences and uncovering the meanings individuals assign to their challenges, decisions, and coping strategies. The study was conducted across three tertiary care hospitals and two public sector healthcare facilities in major urban regions of Pakistan, including Karachi, Lahore, and Islamabad, which were among the most significantly impacted areas during recent outbreaks such as COVID-19 and dengue epidemics. Participants were selected through purposive sampling to ensure representation of various healthcare roles involved in direct patient care during outbreaks. The inclusion criteria comprised registered physicians, nurses, and paramedical staff aged between 25 and 60 years who had at least one year of experience working in an infectious disease ward or during a declared public health emergency. Individuals who were no longer active in clinical roles, or who had been on administrative leave for more than six months during the outbreak period, were excluded to maintain the relevancy and immediacy of lived experiences. The sample size was determined based on the principle of data saturation, with an initial target of 25 participants and a final sample size of 30 participants achieved over the course of the study. Saturation was identified when successive interviews yielded no new themes or variations in responses (5,6).

Data collection spanned a period of eight months and was conducted using semi-structured in-depth interviews. Each interview lasted between 45 to 60 minutes and was carried out either in person or through secure video conferencing platforms, depending on the participants' availability and comfort levels, particularly given the residual safety protocols from ongoing health concerns. An interview guide was developed based on existing literature and expert consultation, comprising open-ended questions designed to elicit narratives related to emotional and mental strain, moral conflicts in clinical decision-making, and perceptions of institutional support (17). Questions were framed to encourage detailed reflection, for instance: "Can you describe a moment during the outbreak when you felt overwhelmed or emotionally exhausted?" and "How did your workplace support you in handling the pressures of the outbreak?" Probing questions were used as necessary to deepen and clarify responses. To ensure data accuracy and integrity, all interviews were audio-recorded with participants' consent and transcribed verbatim. Transcripts were then translated into English where necessary, maintaining fidelity to the original meaning and expressions. Data analysis followed a thematic analysis approach as outlined by Braun and Clarke, involving six key phases: familiarization with the data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. NVivo qualitative data analysis software (version 12) was used to organize and manage coding. Two independent researchers coded the data initially to enhance reliability and reduce bias, with discrepancies resolved through discussion and consensus. The analysis focused on emergent themes related to psychological burnout (e.g., emotional fatigue, depersonalization), ethical dilemmas (e.g., duty versus personal risk, resource rationing), and organizational support (e.g., access to mental health resources, communication effectiveness).

Ethical approval for the study was obtained from the Institutional Review Board (IRB) of relevant institutions. All participants were provided with detailed information sheets explaining the purpose, procedures, risks, and benefits of the study. Informed consent was obtained prior to data collection, and participants were assured of their right to withdraw at any point without consequences. Confidentiality was strictly maintained, with pseudonyms assigned to all interviewees and all identifiable information removed from transcripts and publications. Audio recordings and transcripts were stored securely in encrypted digital formats, accessible only to the primary research team. Outcome measurement in this qualitative exploration was rooted in capturing depth and variation of lived experiences rather than quantifying responses. Nonetheless, thematic categories such as emotional exhaustion, ethical strain, and perceived organizational support were conceptually aligned with established frameworks such as the Maslach Burnout Inventory (MBI) for interpreting emotional burnout, and the Ethical Framework for Pandemic Health Care Response for analyzing ethical conflicts. Although not applied as rigid instruments, these frameworks informed the interpretation and contextual grounding of the themes emerging from participants' narratives. Through this rigorous methodological approach, the study aimed to provide a comprehensive, contextually grounded understanding of the multifaceted challenges faced by healthcare workers during infectious disease outbreaks in Pakistan, thereby contributing valuable insights to both national and global efforts in strengthening healthcare workforce resilience.

RESULTS

The analysis of the qualitative interviews revealed three overarching themes: psychological burnout, ethical dilemmas, and organizational support, each encompassing multiple subthemes that reflected the nuanced experiences of healthcare workers during

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infectious disease outbreaks in Pakistan. The first major theme identified was *psychological burnout*, which emerged strongly across all participant narratives. Within this theme, *emotional exhaustion* was the most commonly described subtheme. Many healthcare workers expressed a state of persistent fatigue and mental depletion resulting from prolonged exposure to high-pressure environments. One participant noted, *"Every day felt like running a marathon without knowing when it would end. We were too tired to think, let alone care for ourselves."* Depersonalization also surfaced frequently, with several respondents describing a psychological detachment from patients and colleagues. Some admitted to developing a sense of numbness to cope with the repeated trauma. The loss of professional efficacy was the final subtheme, where participants reported feeling helpless and inadequate despite their efforts. As one nurse stated, *"No matter how hard we worked, the situation never improved. It made me question my purpose."*

Ethical dilemmas formed the second major theme and encapsulated the moral conflicts that healthcare workers encountered. The most dominant subtheme was the *perceived risk to family*, where participants reported emotional distress over potentially infecting loved ones. One doctor confessed, *"I isolated myself for weeks, but the guilt of bringing the virus home was always there."* Resource allocation also emerged as a pressing concern, especially when critical care resources were limited. Respondents recalled agonizing decisions regarding ventilator access and ICU beds. The subtheme of *conflict of duty* highlighted the tension between professional obligations and self-preservation, with several participants questioning the boundaries of their responsibilities. This tension frequently led to internalized guilt, particularly in the absence of clear ethical guidance.

The third theme, *organizational support*, revealed significant gaps and variability in institutional response. *Inadequate communication* was the most frequent subtheme, with participants citing inconsistent updates and lack of clarity regarding evolving protocols. One physician remarked, *"Policies changed every day, but no one explained anything. We were left to figure things out on our own."* Mental health neglect was also widely reported. Despite the evident psychological toll, very few participants had access to counseling or debriefing services. Conversely, a minority of respondents described experiences of supportive leadership, where open dialogue and visible empathy from administrators made a meaningful difference. However, such instances were rare and not systemically implemented. Together, these themes and subthemes provide a comprehensive portrait of the multidimensional challenges faced by healthcare workers. The data illustrate not only the emotional and ethical weight of working through infectious disease outbreaks but also the critical role that institutional behavior plays in shaping healthcare workers' resilience or distress.

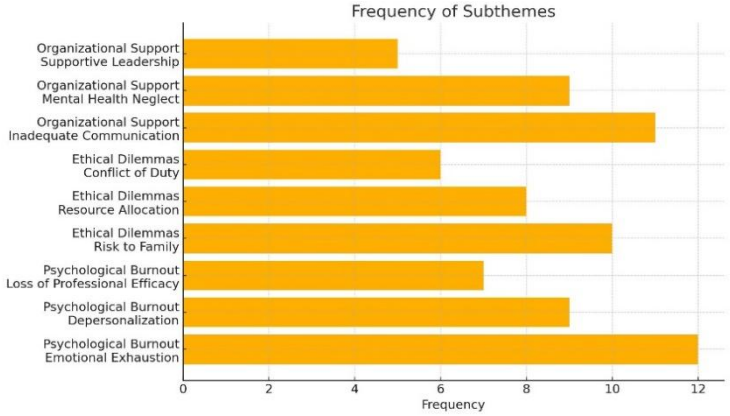

Figure 1 Frequency of Subthemes

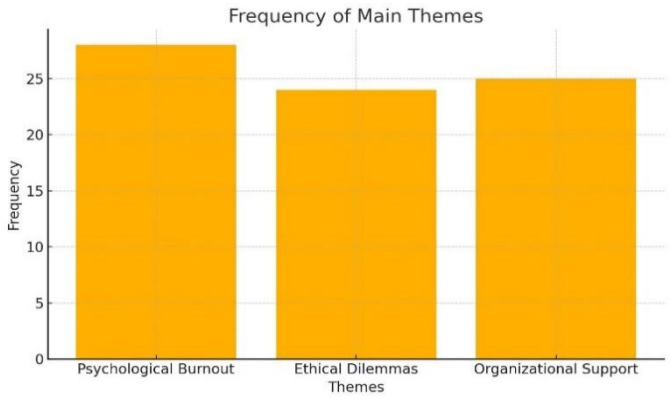

Figure 2 Frequency of Main Themes

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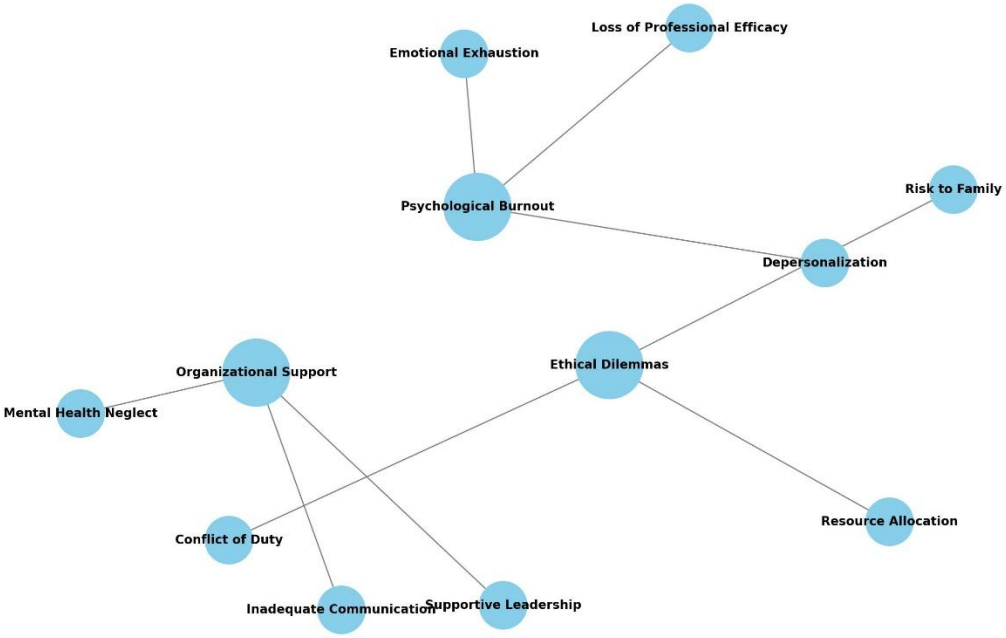

DISCUSSION

The findings of this qualitative study offer a detailed lens into the multifaceted experiences of healthcare workers during infectious disease outbreaks, aligning closely with emerging global literature on the psychological and ethical toll of such events. Psychological burnout, as demonstrated in the current study, was a dominant theme across participants, with emotional exhaustion and loss of professional efficacy standing out as core subthemes. This resonates with the broader evidence highlighting that prolonged exposure to high-stress environments, especially during pandemics like COVID-19, significantly elevates burnout levels among healthcare professionals (18,19). Factors such as long shifts, limited rest, and the intensity of patient loss mirrored findings from studies conducted across European and Asian healthcare settings. The ethical dilemmas reported—ranging from fear of infecting family members to decisions around limited resource allocation—also find echoes in global literature. These experiences have been well-documented, especially in intensive care and emergency medicine contexts where physicians have been forced to ration care and balance conflicting moral duties (20,21). The emotional conflict participants described when navigating these decisions under systemic pressure suggests a persistent gap in ethical support frameworks. Organizational support emerged as a critical modulator of healthcare workers' resilience. A significant portion of participants criticized the absence of clear communication, mental health resources, and proactive leadership. This corresponds to multiple international studies that have shown how the presence or absence of institutional support directly impacts emotional exhaustion and job retention rates (22-24). Even modest measures such as peer-support groups and transparent updates have been shown to significantly reduce psychological distress during crises.

The strength of this study lies in its grounded exploration of lived experiences, capturing not just what healthcare workers endured but how they interpreted and coped with their realities. By focusing on healthcare workers in the Pakistani healthcare system—where infrastructural fragility is often more pronounced—the study contributes unique, localized insights to the global discourse, particularly from a low- to middle-income country perspective. Furthermore, the use of a thematic structure supported by verbatim quotations strengthens the validity and emotional resonance of the findings. However, certain limitations must be acknowledged. The study sample was limited to urban healthcare centers, potentially excluding rural voices where access to resources and exposure to ethical tensions might differ significantly. Additionally, although saturation was achieved, the sample size and self-reported nature of the data could introduce response biases or limit generalizability. Participants might have underreported emotional strain due to cultural stigmas surrounding mental health or professional identity.

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Another limitation is the cross-sectional nature of the interviews, which do not capture how these experiences evolved over time or during subsequent phases of the outbreak. Longitudinal follow-up studies would offer richer understanding of the prolonged psychological impact and the sustainability of organizational interventions. Moreover, while the study focused on three interconnected dimensions—psychological, ethical, and organizational—it did not explore their possible interactional dynamics in detail, which future research could investigate through more integrative analytic frameworks. In light of these findings, future research should explore intervention effectiveness across different cultural and organizational settings. Research is also needed to assess the long-term psychological outcomes among healthcare workers post-outbreak and to identify protective psychological traits or training protocols that enhance resilience. Institutional readiness models should be empirically tested for their ability to mitigate burnout and ethical strain under real-time crisis conditions. These findings collectively reinforce the urgent need for healthcare systems to embed ethical clarity, emotional support, and leadership responsiveness into outbreak preparedness strategies. As highlighted by systematic reviews, burnout, moral injury, and organizational mistrust not only impair individual well-being but may compromise the broader safety and functionality of healthcare systems (25,26). Healthcare professionals are the backbone of any outbreak response, and their well-being must be prioritized as a matter of ethical obligation and systemic necessity.

CONCLUSION

This study concluded that healthcare workers managing infectious disease outbreaks face significant psychological burnout, profound ethical dilemmas, and highly variable organizational support. Key themes—**Psychological Burnout** (*emotional exhaustion, depersonalization, loss of efficacy*), **Ethical Dilemmas** (*risk to family, resource allocation, duty conflict*), and **Organizational Support** (*communication gaps, mental health neglect, supportive leadership*)—highlight critical areas for systemic intervention. These insights underscore the urgent need for structured mental health programs, ethical guidance frameworks, and proactive institutional support to safeguard frontline resilience in future public health emergencies.

AUTHOR CONTRIBUTION

Author	**Contribution**
Lubna Jafir*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Anam Shahzadi*	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Nagina	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Amber Rehman	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Misbah Aalia	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published

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