



**AN INVESTIGATION OF THE IMPACT OF THE COVID-19
PANDEMIC ON FRONTLINE
DOCTORS WORKING IN URBAN AND RURAL HOSPITALS
ACROSS THE UK:
SYSTEMATIC REVIEW**

by

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Declaration

I, Navjot Singh, declare that this dissertation has been composed by myself, that the work contained herein is entirely my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or qualification, in whole or in-part, except as specified.

Signed: Navjot Singh

Date: 02/02/2026

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Abstract

Introduction

The study investigates the impact of covid-19 among frontline doctors as a part of the pandemic and working at frontline staff during this time. This study aims to evaluate the effects on healthcare workers' physical health, including risks of infection and mental health through stress and burnout. This research has thus set objectives to investigate these risks in the urban and rural UK regions and also assess the impacts of these risks on the UK's frontline doctors and care-workers. Finally, depending on key challenges and risks found in the rationale, the research has also set objectives to recommend viable solutions further.

Method used

As method, this research has applied a systematic literature review as a secondary source, and the publication was used. The research method has included research philosophy, method, design, and strategy undertaken to how it met the ethical demands. This study has preferred to adopt interpretivism philosophy, deductive approach, systematic review design, qualitative strategy, secondary data collection and thematic data analysis. The secondary qualitative assessment with systematic review has helped conduct a thorough data procurement that helped discuss the impact of the pandemic on the UK's frontline workers more conceptually.

Results

The key findings of the research have highlighted that fragile transport system, institutional lack and lack of policy support created issues for the frontline health care workers such as doctors in the UK's rural locations during the pandemic. 18 relevant articles were used for analysing the impact of the COVID-19 pandemic on frontline doctors working in urban and rural hospitals across the UK through three separate themes in this systematic review. It has been discussed the major findings from a systematic review of the chosen articles to figure out the effects of the pandemic on the urban and rural healthcare staff.

Conclusion

The research has concluded that doctors during the COVID-19 pandemic were disproportionately affected by the physical illness and also psychological distress compared to the other occupational groups. The research creates future scope for analysing this matter, considering first-hand data from primary research.

Table of Contents

Chapter 1: Introduction.....	8
1.1. Establish the current research topic	8
1.2 Background information.....	8
1.3 Literature based background	9
1.3.1 Relevance to broader issues and debates.....	10
1.4 Rationale	10
1.5 Research questions and objectives	11
1.5.1 Overview of the structure of the dissertation.....	11
Chapter 2: Literature review	13
2.1 Introduction.....	13
2.2 Context of doctors working in UK hospitals.....	13
2.3. The COVID-19 pandemic explained	14
2.4 Impact of long COVID-19 pandemic on doctors in urban and rural hospitals	15
2.5 Effects of COVID-19 on hospitals doctor's mental health particularly in urban and rural areas	18
2.6 Anxiety, depression, stress, burnout, and professional quality of life among the hospital workforce during pandemic.....	20
2.7 Theoretical Framework	21
2.8 Literature Gap	23
2.9 Summary	23
Chapter 3: Methodology.....	25
3.1: Inducing the general approach of this research	25
3.2: Research paradigm/ philosophy	25
3.3: Research approach	25
3.4: Strategy undertaken for this research	26
3.5: Design undertaken for this study	26
3.6: Data collecting method	27

3.7: Strategies for searching and terms used.....	27
3.8: Framing the Research Question	29
3.9: Procedures for searching the database	29
3.10: Criteria for inclusion and exclusion	30
3.11: Data-extraction process.....	32
3.12: Thematic analysis.....	33
3.13: Ethical considerations.....	33
3.14: Limitations of this study	33
3.15: Summary	34
Chapter 4: Results and discussion	35
4.1 Introduction.....	35
4.2 PRISMA framework	35
4.3 Characteristics of all table.....	36
4.4 Data synthesis	45
4.5 Summary	50
Chapter 5 Discussion	51
5.1 Introduction.....	51
5.2 A critical evaluation of findings.....	51
Theme 1	51
Theme 2	51
Theme 3	52
5.3 Critical discussion of the theme in relation to the research objectives.....	52
5.4 Implications of Future Research	54
5.5 Strengths and Limitations	54
5.6 Summary	55
Chapter 6: Conclusion and Recommendation	56
6.1 Conclusion.....	56

6.2 Linking with objectives	57
6.3 Recommendations.....	58
6.4 Limitations	59
6.5 Future Implications and Practical Benefits	59
References	61
Appendices	75
A. Quantitative generic data extraction	75
B. Qualitative generic data extraction	81

List of Tables

Table 3.1: Boolean Operation-based Keyword Search.....	31
Table 3.2: Techniques used for Searching	32
Table 3.3: Inclusion and exclusion criteria.....	35
Table 4.1: Results	39

Chapter 1: Introduction

1.1. Establish the current research topic

The COVID-19 pandemic marked one of the challenging global health emergencies within the 21st century that is severely testing healthcare systems across the world. The doctors within the UK are serving as frontline workers, faced the unprecedented physical, emotional and also psychological challenges during the crisis (Sumner and Kinsella, 2021). In the UK medical doctors are considered as practitioners that obtain the medical degree or qualification and are responsible for diagnosis, care as well as treatment of illness, disease, infections or wellbeing of the patients (British Medical Association, 2008). The research further focuses on exploring the influence of the COVID-19 pandemic within UK doctors who managed the pandemic's immediate as well as long-term effects of healthcare delivery. The frontline defenders, doctors have experienced heightened exposure for infection, exhaustion as well as moral injury (Campbell, 2023). Therefore, understanding these multifaceted impacts is essential for strengthening healthcare resilience with ensuring adequate support systems for the medical professionals during the future crises. Furthermore, the literature shows the differences but also the similarities within the UK hospital practices during the pandemic. The doctors working within urban hospitals experienced a higher volume of cases with specialised support while doctors working within rural hospitals experienced a broader scope of practice and more direct patient relationships (Raman *et al.* 2024). There is limited research comparing the experiences of frontline healthcare workers, namely medical doctors within urban and the rural UK hospitals during the COVID-19 pandemic, particularly regarding long-term psychological or social impacts. This gap is of interest within the research through focusing on the specific profession and also identifying the public health related suggestions that are used for tailoring responses and also improving health outcomes within medical doctors.

1.2 Background information

The UK's NHS found itself within the centre of the unparalleled public health emergency. The research helps is examining the effect of the COVID-19 pandemic on hospital doctors in both urban and rural settings in the UK. The doctors have faced high stress burnout, infection risks, emotional exhaustion and also insufficient PPE, those affected both physical and mental wellbeing during COVID-19 environment (Galbraith *et al.* 2021). The COVID-19 outbreak led towards the massive surges within the hospital admissions, creating the extreme pressure within

healthcare infrastructures with personnel (GOV UK, 2022). The doctors, nurses as well as other healthcare professionals are exposed to significant risks because of insufficient resources such as the limited personal protective equipment (PPE) which impacted the clinical guidelines.

Alongside physical exhaustion, several faced emotional trauma from further witnessing the patient mortality, long working hours and also ethical dilemmas regarding the resource allocation (Kinman *et al.* 2023). The reports show that nearly 39% of the doctors experienced higher-than-normal stress levels during the peak of the pandemic with the burnout rates exceeding 66% (Tonkin, 2022). The pandemic has also amplified existing systemic weaknesses within the NHS, for example workforce shortages and the resource inequities between urban & rural regions. The main pressures led towards increased rates of absenteeism, mental health decline as well as early retirement among the medical practitioners (UK Government, 2025). Therefore, the COVID-19 crisis is not only straining individuals' resilience but is also challenging the sustainability of the UK healthcare system as a whole.

1.3 Literature based background

The existing literature has further the emotional, psychological as well as occupational implications for medical doctors during pandemics. The research has focused mainly on psychological stress as well as workload, but gaps remain within exploring the regional differences and long-term effects, coping strategies as well as institutional support systems for a sustainable recovery (Kinman *et al.* 2023). The earlier outbreaks for example SARS as well as MERS revealed the frontline workers are prone to stress anxiety and the burnout because of the overwork as well as inadequate protection. During the COVID-19, UK-based research has found that the doctors have experienced infection rates within 3 times higher than the general population (British Medical Association, 2024). The doctors are disproportionately affected by the physical illness and also psychological distress compared to the other occupational groups (British Medical Association, 2024). Furthermore, prolonged exposure to high-risk environments increased vulnerability for depression as well as anxiety. Moreover, earlier literature prioritised clinical outcomes over the doctors' well-being (NHS England, 2024). Therefore, the current research contributes through adoption a holistic lens for evaluating both the direct and also indirect effects of the pandemic on doctors.

1.3.1 Relevance to broader issues and debates

The COVID-19 pandemic has exposed the systemic fragilities within the UK healthcare system, provoking the debates about occupational health, workforce sustainability as well as crisis preparedness. Approx. 25% of the doctors reported worsening mental health because of the professional responsibilities during the pandemic (World Health Organization, 2022). It further reflects on broader issues concerning the doctors' well-being and the ethical obligation of the institutions towards safeguarding those providing crucial services. Therefore, the research aligns well with the global health policy discussions of nations that can enhance the healthcare resilience especially within preventing the burnouts and to support mental health within future emergencies.

The studies contribute to the ongoing debate about the morale injury, aligned with psychological distress that is caused while doctors struggle with the ethical standards because of their systemic constraints. Moreover, it also reinforces the significance of the integrating occupational health support frameworks as well as proactive mental health interventions within the healthcare institutions (NHS England, 2023). Furthermore, examining the specific experiences of the UK doctors, the research provides the empirical insights relevant for policymakers, medical boards and the public health leaders. Therefore, striving is to strengthen healthcare system sustainability and also workforces the morale within crises situations.

1.4 Rationale

Overall, the impact of healthcare professionals is well documented, the dissertation narrows the focus specifically for doctors working within the UK's frontline healthcare settings, for example emergency medicine, respiratory care as well as intensive care units. These professionals faced the greatest physical as well as psychological exposure to COVID-19, making it an essential group for in-depth analysis (Aughterson *et al.* 2021). The study further explores three key dimensions of the pandemic's impact on physical health hazards as well as the risk of Long COVID. The psychological as well as emotional well-being includes stress, depression as well as burnouts. Furthermore, by centring the UK doctors, the study contextualizes findings within the NHS structure, examining the disparities between urban and the rural hospitals and also effectiveness of the institutional responses (Parbery-Clark *et al.* 2024). The research uses systematic literature review for synthesis qualitative evidence identifying the patterns as well as themes of the pandemic's complicated influences on medical practitioners' professional and

personal lives. Therefore, narrower focuses on allowing for a deeper understanding of the interconnectedness between mental health, physical resilience as well as job performance during the national health crisis in doctors.

1.5 Research questions and objectives

Research Question

What was the impact of the COVID-19 pandemic on doctors in urban and rural hospitals in the UK?

Aim: The aim of the research is to examine the effects of the COVID-19 pandemic within hospital doctors within urban and the rural settings within the UK, examining the physical and the mental health as well as work activities, to develop interventions that support wellbeing and sustainability of the workforce.

Objectives:

- Investigate and assess the physical health risks, includes the incidence and the effects of Long COVID-19, of hospital doctors situated in urban and rural hospitals within the UK during the COVID-19 pandemic
- Investigate and assess the effects of COVID-19 on the mental health of the hospital doctors (stress, depression, anxiety) in urban and rural hospital settings within the UK
- Provide recommendations that can support hospital leaders and policy makers to adapt support and workload strategies to support doctors in urban and rural hospitals.

1.5.1 Overview of the structure of the dissertation

The dissertation is structured within six chapters; chapter 1 introduces the research background, rationale, objectives as well as structure. Chapter 2 presents an in-depth literature review, examining the existing studies within the physical, psychological as well as occupational impacts on the COVID on doctors. Chapter 3 outlines the research methodology, detailing the philosophical stance, data collection process, inclusion criteria as well as analysis framework. This chapter also explains the methodological framework, including the interpretivism philosophy,

systematic literature review approach and PRISMA-based screening. Chapter 4 discusses the results of the findings within the research. The chapter 5 explores the discussion of the results findings with their own interpretations and accurate sources cited. This chapter presents and analyses the thematic findings derived from the secondary data. The last chapter 6 concludes the dissertations through summarising the key insights, offering policy recommendations for the NHS as well as suggesting the directions for the future research within healthcare workforce resilience.

Chapter 2: Literature review

2.1 Introduction

This chapter is going to provide a review of the existing literature on the impact of COVID-19 pandemic on doctors working in rural and urban hospitals in the UK. First, it examines the scale and the nature of challenges faced by frontline doctors, involving increased workload, infection risks, emotional strain and the ethical dilemmas (Sumner and Kinsella, 2021). The chapter then explores the psychological, professional and the social consequences arising from the prolonged exposure to pandemic-related stressors. The attention is provided to contextual differences between rural and the urban healthcare settings for instance resource availability, patient volume and the organizational support. The gaps within the existing research are identified, particularly concerning long-term thereby establishing the rationale for the present study.

2.2 Context of doctors working in UK hospitals

In the UK medical doctors are considered as practitioners those obtain the medical degree or qualification and are responsible for diagnosis, care as well as treatment of illness, disease, infections or wellbeing of the patients (British Medical Association, 2008). The research further focuses on exploring the influence of the COVID-19 pandemic within UK doctors who managed the pandemic's immediate as well as long-term effects of healthcare delivery. The frontline defenders, doctors have experienced heightened exposure for infection, exhaustion as well as moral injury (Campbell, 2023). Furthermore, the literature shows the differences but also the similarities within the UK hospital practices during the pandemic. The doctors working within urban hospitals experienced a higher volume of cases with specialised support while doctors working within rural hospitals experienced a broader scope of practice and more direct patient relationships (Raman *et al.* 2024). This gap is of interest within the research through focusing on the specific enhance and also identifying the public health related suggestions those are used for tailoring responses and also improved health outcomes within medical doctors.

Doctors working as a frontline medical staff face complex team dynamics and challenges while working in an environment that lacks resources. Lack of resources in hospitals accompanied by uncertainties and constantly dynamic-environment during the pandemic obstructed the infection-

control measures by the doctors (Harris *et al.* 2021). A survey has also revealed that most doctors were exposed to an unfairly unsafe working environment that increased the chances for getting infected. As per Brennan *et al.* (2023), there were more than 110,748 licensed doctors in the UK during 2021. However, the poor condition at workplaces, increased work pressure and doctors' exposure to an unhealthy environment jeopardised their well-being. Many doctors even considered leaving their hospitals and moving to other places to ensure their safety.

There is an increasingly high population in the urban areas like London who require their healthcare-needs to be met (Beaney *et al.* 2022). Hence, the urban population seeks a more integrated and patient's centric care approach by the NHS (Beaney *et al.* 2022). This high amount of total population in urban-areas in England increased the risk of local people being diagnosed with COVID-infections. Moreover, it fuelled the demands for doctors and other medical-care staff during the pandemic. On the contrary, Gobburi *et al.* (2025) have stated the inequalities in the rural environment regarding poor medical-infrastructure, transport-issues, restricted-access plus staff-deficiency cause delays in care with negative health-outcomes. These inefficiencies in rural healthcare system have been the precursors of more negative health-outcomes during pandemic

2.3. The COVID-19 pandemic explained

COVID-19 came up with a multitude of health-risks such as internal injuries, neuromuscular issues, inflammations and digestive issues which affected millions of lives internationally with an exponential-increase in infections. As per Booth *et al.* (2021), COVID-19 has increased the risks of infections with severe symptoms like dyspnoea, cough and fever with gradually developing tastelessness in the tongue. Even though, many patients quickly recovered, COVID-infection left them with long-term negative health-effects like heightened anxiety, mood-disorders, chest-pain and cognitive-issues (Caliman-Sturdza *et al.* 2025). COVID-19 has also introduced transport-challenges that decreased the access of patients to get proper care while needed. Elliott *et al.* (2021), while demonstrating how older and non-white-population were severely affected by the COVID-infection and caused over 60,000 deaths in the UK. Determining the long-term medical health impact is critical exploring the current health issues and issue of death in UK. Additionally, heart-diseases, hypertension, diabetes and kidney-issues have increased the morbidity-risks.

On a different yet exclusive note, the UK government has taken prompt actions to control COVID-19 infections with its Health Protection Regulations (2020) (Office For National Statistics, 2025). As per this regulation, the public stores, cafes, restaurants, and places for entertainment were

bound to close. According to Klumpp *et al.* (2022), the UK government announced a lockdown on 24th March, 2020 to restrict people from social-gatherings and facilitate social-distancing for ensuring public-safety. Even though the UK delayed promulgating its regulatory actions for COVID-control compared to France or Italy. Additionally, there was a huge shortage of skilled medical practitioners to treat an increasing number of patients in hospitals, leading to poorer performance in treating UK-citizens.

2.4 Impact of long COVID-19 pandemic on doctors in urban and rural hospitals

The purpose of the research is the impact of the COVID-19 pandemic that is examined across the three key areas that is general mental health functioning, mental health outcomes and also the longer-term implications. The population labels states that the pandemic led to the significant rise within anxiety, depression as well as stress-related disorders that are driven by prolonged uncertainty, social isolation and the fear of infection (World Health Organization, 2022). Therefore, the widespread psychological effects are creating additional pressure within healthcare services that are intensified demands placed on the medical professionals.

The long COVID-19 pandemic has severely affected doctors serving both urban and rural hospitals across the UK, by the nature of impacts differing by location. Charan *et al.* (2025) explained that in urban hospitals, doctors experience extreme workloads driven by wide patient inflow, ICU shortages, and the rapid deployment demands. Several urban healthcare workers have reported physical exhaustion, burnout, anxiety, and post-traumatic stress as these have struggled to balance overwhelming caseloads with rapid evolution of clinical protocols. In contrast to Jerjes and Majeed, (2025) stated that the doctors within rural hospitals faced critical stressors, those involving insufficient staffing, limited medical suppliers, and delays in receiving updated treatments. The limitations intensified pressure on rural doctors who often function beyond the usual scopes of practices. Furthermore, Abel *et al.* (2021) claimed that both the settings doctors reported that prolonged mental health impact involves chronic fatigue, sleep disturbances and fear of infecting the family members. The urban doctors are furthermore exposed for viral transmission because of the high patient density; rural doctors encounter long-term emotional strains because of the isolation and the lack of institutional support. Therefore, long COVID-19 has resulted within broad yet region-specific burdens on the healthcare professions.

During the long pandemic, doctors were at the frontline to treat and care for the patients with proper medication available even risking their own health. Doctors were exposed to SARS-COV-

2 virus at the healthcare centres. According to Galanis *et al.* (2021), a large number of patients and hospitalized adults were detected as healthcare workers during the pandemic who got infected due to repeated encounters with the COVID-infected patients. Many of these doctors even lost their lives while saving others in both the urban and rural hospitals. On the other hand, lacking the proper training and equipment to deal with COVID induced a rising mortality rate of doctors globally (Frenk *et al.* 2022). Thus, practitioners in otorhinolaryngology, dentistry, and anaesthesiology were even more susceptible to catching the virus as their tasks included multiple nasal or oral intubation procedures.

A large number of healthcare workers in the urban medical settings experienced a high volume of patients and a higher exposure to the virus. The risks of infection were also much higher in and around urban hospitals due to the high traffic in the urban areas. As stated by Samanyet *al.* (2021), the large population in the cities, vast number of patients and their frequent transactions around the hospitals helped spread the virus aggressively. Hence, urban hospitals almost acted as the epicentres for exposing people, including doctors to COVID. However, Janke *et al.* (2021) opposed that urban hospitals lacked adequate healthcare staff-support compared to the increasing number of patients in urban hospitals. Therefore, hospital resources were also depleting, causing major challenges for hospital doctors and management to procure sufficient beds and medications.

Compared to urban settings, rural areas were less exposed to the infections (UK Government, 2023). As per Paul *et al.* (2021), only a few percent of population reside in the rural areas where neither there is sufficient skilled healthcare workforce, nor infrastructure like the urban hospitals have. This disparity in accessing Medicare facilities is also obstructed by people's religious beliefs and other social factors, making it difficult for the doctors to provide proper care support for patients. Huang *et al.* (2021) stated that there is a huge difference in the healthcare-capacity and life-expectancy in rural areas compared to urban localities, causing healthcare staff-shortages and hospital closures, risking both rural patients and doctors' lives.

It can be argued that adopting virtually aided systems to access healthcare remotely has enhanced the Medicare services. Henceforth, this arrangement created a great opportunity for the telehealth physicians and nurses to keep a social distance while serving needy patients.

As demands for telehealth facilities spiked during the pandemic, it created chances for the doctors to guide the patients to get proper treatments. In this context, there was a huge surge in demands

for doctors to visit patients in both urban and rural areas (The Guardian, 2022). In both urban and rural areas, telehealth facilities saved patients from hesitations to face-to-face interactions. Telehealth thus bridged the gap between doctors, creating more accessibility and flexibility in treatment procedures. At the same time, Vaezi *et al.* (2025) argued that the high demand for healthcare workers and doctors escalated their workloads with immense work-related stress, risking both their physical and psychological health. Additionally, the fear of contaminating their family members or losing the job, psychologically distressed the doctors, making it difficult for them to manage the situation. Moreover, social distancing mandates restricted the scope for regular training for both surgical and medical staff (Laloo *et al.* 2021). Hence, it created chances for major skill gaps of doctors regarding apt supervision during COVID.

COVID-19 forced healthcare workers to work in a highly contagious environment which caused large-scale cases of infected physicians globally (BMA, 2022). Over three million of healthcare staff around the world were infected with COVID virus with a significant amount of death risk. Mid-aged physicians including internal specialists of medicine, respirologists, emergency doctors and anaesthesiologists died due to infections (Marsh, 2020). In addition, Somville *et al.* (2021) argued the fact that healthcare professionals are concerned about workplace-violence, stress and physical hazards due to chemical exposure, latex allergy, or radiation during the pandemic. Doctors in many places also face life-threatening physical violence (Bhatti *et al.* 2021). This was caused due to distrust factors affecting the patient about COVID diagnosis. A higher rate of infection and death also affected doctors because of PPE unavailability. Fatigue and PTSD also gripped the life of medical practitioners during pandemic, leading them to commit suicide (Awan *et al.* 2022). Therefore, this research wants to determine what support post pandemic is needed to enhance questioned healthcare professionals' quality of life and basic human rights.

The trends of doctors to maintain mental health are more pronounced because of the frontline exposure, the UK doctors experienced the increased levels of burnout, emotional exhaustion and the moral distress that result in excessive workloads and the ethical; decision-making under the resource constraints (Campbell, 2023). Several doctors have reported sleep disorders with reduced coping capacity and the fear of transmitting the virus to family members and further undermining wellbeing. Subsequently, in the longer term, the pandemic has reshaped the hospital practices and the workforce sustainability, the persistent staff shortages increased the sickness absence and also reduced morale that have been observed across both the rural and urban hospitals (British Medical Association, 2024). In addition, the psychological burns experienced by doctors have highlighted the need for trauma-informed organisational responses. Therefore, the

improved mental health support and the resilient healthcare systems are better for preparing for future public health emergencies.

2.5 Effects of COVID-19 on hospitals doctor's mental health particularly in urban and rural areas

The outbreak of Novel Corona Virus in the year 2019 has presented a challenging phase for global healthcare workers especially within urban as well as rural areas. As per the opinion of Hoerold *et al.* (2021), social tension as well as mental burden has been interacting with a perceived lack of preparedness soon after the advent of pandemic situations in recent times. Additionally, it has been recognised that increasing workload pressure during pandemic has been a challenging phase for healthcare workers, including doctors, particularly in urban as well as rural areas. The rise in poor working conditions has highly impacted practitioner's mental health stability to a great extent (Lunnay *et al.* 2024). On the other hand, Ben Saida *et al.* (2025) have contradicted that dealing with infected patients as well as facing the immediate issues of combating critical contagious infection has led to painful experiences such fear, social prejudice as well as stigma. It has been recognised that lack of PPE kits, insufficient communication and updated information as well as lack of social support has highly demoralised the healthcare professionals, including doctors in urban and rural regions (Awan *et al.* 2022).

The advent of COVID-19 pandemic has precipitated lasting as well as profound changes within the global healthcare system that has highly affected personal and professional lives of healthcare workers working within urban and rural areas. As per the key findings of Gronkiewicz *et al.* (2024) the increasing mortality rate and social isolation due to the advent of pandemic has increased trauma among doctors. It has been recognised that the percentage of death due to pandemics has increased to a great extent. It has been reported that the Doctors have experienced depression, anxiety as well as sleeplessness due to the increasing workload during the pandemic situation. On the contrary, Mathias *et al.* (2023) have represented an argument which shows that the rising mental health issues have highly impacted on Doctors competency as well as motivation level to a great extent. Additionally, the necessity for structured training within emergency preparedness, coordination skills as well as mental health support with policy implication is crucial for urban health system resilience.

Majority of the community-based health workers within large urban settings have adopted an intersect oral collaboration mechanism in terms of improving healthcare services during the time

of crisis. As per the key findings of Jeleff *et al.* (2022) shortage of doctors within the system has been a challenging phase for both urban and rural healthcare practitioners during pandemic situations. Apart from this, the necessity of effective pandemic response through integrating multisectoral preparedness coordination requires diverse stakeholder collaborations in terms of enhancing health preparedness emergencies. On the other hand, Hinton *et al.* (2021) have argued that Multisectoral collaborations are considered to be useful for reducing economic as well as social impacts of disruption within healthcare functions. Thus, the effect of pandemic has highly affected the practitioner's mental as well as physical health aspects.

The Doctors working frontline are considered to be a risk due to the exposure of COVID virus within hospital segments that were highly transmitted. Cruz-Asenjo *et al.* (2023) have highlighted that increasing transmission of virus within the hospital promises has highly affected frontline healthcare workers to a great extent. This has resulted in declining healthcare workers' working performances as well as reducing the services qualities towards care seekers. The advent of pandemic situation has increased the level of workers burnout, psychological stress as well as suicidal attempts. On the other hand, Gupta *et al.* (2021), have contradicted that the increasing responsibilities of healthcare workers within urban and rural areas due to shortage of staff has been the ultimate reason behind increasing transmission of Corona virus during the pandemic situation. Thus, the effect of pandemic has increased burnout among medical staff, especially among urban staff working in hospital's frontline.

It has been recognised that the increasing mental pressure among healthcare professionals due to the pandemic is mostly faced by urban staff as compared to rural areas. For instance, Zhang *et al.* (2021) have illustrated that mental health disparities among urban residents were 9.15, whereas 10.57 for rural areas Doctors. The advent of COVID-19 has increased respiratory diseases among practitioners as well as population that have resulted in social distancing as well as travel restriction across the global region (Cruz-Asenjo *et al.* 2023). This signifies that, practitioners living within rural areas have faced the most challenging phase of pandemic as compared to the urban areas. Thus, the pandemic severely impacted the mental health of doctors in both urban and rural areas, but the specific stressors and access to support varied significantly between the two settings.

Urban doctors experienced higher infection exposure, while rural doctors faced more pronounced resource scarcity and professional isolation (Jeleff *et al.* 2022). As per the opinion of Shafique *et al.* (2024) densely populated urban centres, especially slum areas with poor sanitation, are

hotspots for infectious diseases such as COVID-19, SARS, dengue as well as typhoid. However, urban physicians often face challenges in co-ordinating care for patients who might consult multiple specialists across different, competing healthcare systems (Saida *et al.* 2025). Thus, high patient mobility can make follow-up care and community engagement difficult to track effectively.

2.6 Anxiety, depression, stress, burnout, and professional quality of life among the hospital workforce during pandemic

Understanding the hospital workforce as well as providers during the time of pandemic has showcased a challenging situation that arose due to increasing work life disruption as well as poor working conduction. As per the opinion of Kelly *et al.* (2022) the advent of pandemic situations has highly impacted on hospital staff's mental health stability that results in increasing anxiety, depression and sleeplessness. The increasing number of patients affected by COVID virus has raised the transmission level to a great extent. Similar to the context, Smallwood *et al.* (2022), healthcare workers are considered to be at high risk of contracting COVID-19 due to the constant exposure to the infected patient. Moreover, the stage of overall lockdown situation across the global region has resulted in social isolation particularly for frontline healthcare workers (Gupta *et al.* 2021).

Common mental health issues for doctors in both settings included anxiety, depression, post-traumatic stress disorder (PTSD), and burnout. Mattila *et al.* (2021) have highlighted that healthcare workers experienced a significant as well as widespread increase in anxiety during the COVID-19 pandemic, with numerous studies reporting high prevalence rates of anxiety and related mental health issues. It has been recognised that frontline workers were mostly affected as they were directly involved in the care of COVID-19 patients. On the other hand, Jemal *et al.* (2021) has contradicted that women healthcare workers often reported more severe anxiety symptoms due to the increasing transmission of COVID virus within hospital premises. This signifies that, higher levels of anxiety and psychological distress are found in frontline healthcare workers as compared to other healthcare or non-healthcare workers. Thus, the frontline healthcare workers are considered to be the most mentally affected persons facing several issues related to anxiety, depression as well as professional quality of life.

It has been recognised that younger workers who are doctors or those with less professional experience tended to report more anxiety, possibly due to less-developed coping skills. As per the opinion of Kelly *et al.* (2022), increasing anxiety level within healthcare professionals leads to

diminished work performance, decreased quality of life, and negative health outcomes such as physical and psychological illnesses. Anxiety can interfere with mental reasoning, abstract thinking as well as attention that further leads to coordination issues. Apart from this, Mattila *et al.* (2021) have argued that anxiety can negatively affect problem-solving abilities, which may reduce the effectiveness of patient care. This signifies that increasing anxiety among healthcare professionals, including doctors during the time of pandemic can negatively affect both the physical and psychological health of healthcare workers. Thus, anxiety is considered to be significantly linked to burnout, a psychological response to chronic workplace stress.

The transmission of COVID virus among the practitioners has increased depression level to a great extent. As per the opinion of Shafique *et al.* (2024), during the pandemic, Doctor experienced significantly higher rates of depression compared to the general public, due to factors such as inadequate resources, lack of training, poor preparedness, and overwhelming work conditions. Apart from this, increasing depression in doctor is linked to factors such as compassion fatigue from constant stress, long hours, and patient-related trauma. Additionally, other contributing factors include unhealthy lifestyle behaviours such as insufficient sleep, poor diet as well as lack of physical activity. On the other hand, Gupta *et al.* (2021) have argued that Doctor are more prone to health risk behaviours such as insufficient physical activity, poor sleep as well as heavy drinking, which are all linked to an increased risk of depression. It has been recognised that long hours as well as the demanding nature of healthcare work contribute to burnout and mental strain.

COVID-19 negatively impacted healthcare workers' professional quality of life through increased stress, anxiety, insomnia, and burnout from factors such as trauma, fear of infection, and social stigma. As per the argument of Ben Saida *et al.* (2025), healthcare workers faced social stigma, as well as loneliness and isolation, due to quarantine measures and social distancing. Some workers felt positive reinforcement from expressions of gratitude from patients as well as families and from improving patient outcomes. It has been recognised that the pandemic led to emotional and physical exhaustion for many healthcare workers. Repeated exposure to high-stress as well as traumatic situations leads to emotional exhaustion and a decreased ability to empathize with patients. Hinton *et al.* (2021) have contradicted that the constant exposure to trauma as well as a heavy workload led to burnout syndrome. Apart from this, ethical dilemmas, such as rationing care or witnessing patients die alone, took a heavy emotional toll.

2.7 Theoretical Framework

Sense of Safety Theoretical Framework

The current study is underpinned by the Sense of Safety Theoretical Framework, a trauma-informed and the healing-oriented approach that emphasizes safety as a fundamental prerequisite for target wellbeing, effective functioning and recovery. Phiri *et al.* (2021), the framework proposes that individuals; psychological and emotional. Dall'Ora *et al.* (2023) stated that physical health is deeply influenced by the perceived sense of safety across the personal protective environment and the organizational contexts. Importantly, the Sense of Safety framework is also highlighting the role of organization and the synthetic factors that are either restoring or are undermining safety. De Weger *et al.* (2022) explained that the clear communication from the leadership, access to PPE, peer support, psychological services as well as recognition of doctors' contributions are critical within fostering the sense of safety during the pandemic. The key aspects are determined to be aligned with the supporters of lacking doctors reported increased feelings of abandonment, vulnerability and also injustice towards healthcare institutions. Moradi *et al.* (2025) featured that the application of the framework, the study further moves beyond viewing doctors' distress as the individual weaknesses and instead situates the broader structural values. Therefore, the Sense of Safety theoretical framework provides a robust foundation for analysing COVID-19 disrupted doctors, wellbeing and for informing future policies aimed at protecting the frontline healthcare workers. Therefore, safety is disrupted by chronic stress or trauma, and individuals are more vulnerable towards anxiety, burnout, moral injury and long-term psychological harm.

The Power Threat Meaning Framework

The application of doctors working within the frontline during the COVID-19 pandemic within the UK, provides the valuable lens to the service by understanding the experiences. Gallichan *et al.* (2023) examined that during the pandemic, the doctors faced sustained threats to the sense of safety, including high exposure for infection. Carbone *et al.* (2022) argued that shortage of the personal protective equipment (PPE), rapidly changing clinical and the fears of transmitting the virus to the family members. Therefore, these conditions eroded both the physical and the psychological safety contributing to the heightened stress, emotional exhaustion and the trauma responses.

The trauma-informed perspective within the Framework recognises that the frontline doctors are not only able to manage. Garcia *et al.* (2025) stated that the medical crisis is also operating within

environments characterized by uncertainty, and more conflict. For instance, doctors are often needed for making ethically challenging decisions, in regards to resource allocation and end-of-life care that compromise moral and emotional safety. Furthermore, as opined by Angelis *et al.* (2023), these experiences have been linked to the moral distress as well as moral injury, that is particularly that doctors felt unable to provide the standard of the care by the believed patients deserved. The framework is particularly useful for examining between urban and rural hospital settings. Shanahan *et al.* (2022) investigated that the doctors within urban hospitals have often encountered extremely high patient volumes, overcrowded intensive care units. Holland *et al.* (2024) mentioned that the frequent exposure to deaths has intensified emotional fatigue as well as desensitization. Conversely, the rural doctors typically managed within a broader scope of the responsibilities. As opined by (Gobburiet *al.* 2025), the fewer specialist resources as well as reduced staffing leading to professional isolation with heightened personal accountability. Therefore, the threats to safety manufactured differently but accounted for similar outcomes within including burnout, anxiety as well as reduced wellbeing.

2.8 Literature Gap

As the pre-existing literature has highlighted the vulnerable conditions of healthcare practitioners during the pandemic in both urban and rural areas, there remains several gaps in the context. As discussed, it was observed that available literature mostly focused on physical and mental stress faced by the doctors, infrastructural differences in urban and rural healthcare set-ups and the death-consequences due to the virility of the pandemic. However, how the prolonged effects impacted their well-being, by deteriorating their physical or mental health have not been mentioned. Therefore, this gap determines a need for further research with an in-depth investigation.

2.9 Summary

The above-mentioned chapter highlights the challenges faced by the doctors following the COVID-19 pandemic. Practitioners have reported physical exhaustion, burnouts, anxiety and post-traumatic stress as these have struggled to balance overwhelming caseloads with rapid evolution of clinical protocols. It has been recognised that the urban doctors are further more exposed for viral transmission because of the high patient density; rural doctors encounter long-term emotional strains because of the isolation and the lack of institutional support. It needs building multi-disciplinary staffing models that allocate floating clinical support teams during the

crisis peaks and also specialist call-in systems. The Healthcare workers working frontline are considered to be a risk due to the exposure of COVID virus within hospital segments that were highly transmitted. Apart from this, the advent of COVID-19 has increased respiratory diseases among practitioners as well as population that have resulted in social distancing as well as travel restriction across the global region. This signifies that higher levels of anxiety and psychological distress are found in frontline healthcare workers, including doctors as compared to other healthcare or non-healthcare workers. Thus, doctors working in the frontline are considered to be mentally affected persons facing several issues related to anxiety, depression as well as decreased professional quality of life.

Chapter 3: Methodology

3.1: Inducing the general approach of this research

The systematic-review methodology adopted in this study has helped in advance with gathering necessary data for undergoing the research-study with a detailed and bias-free data analysis. This research has followed a research-design based on systematic review which is a well-calculated framework that focuses on measuring the concepts and developing strategies for enhancing a research's proficiency. Using the predefined methods to identify the evidence and rigorously analysing them, systematic review has helped strengthen the comprehensiveness about the impact of COVID-19 on the UK's frontline healthcare workers. The current study has utilised the deductive research approach, extracting evidence from the extensive medical literature to evaluate both rural and urban perspectives on this topic. Using this approach, this research explores the differences in hospital practices in diverse settings, the severe physical and mental issues the UK doctors faced and underscored tailored strategic importance.

3.2: Research paradigm/ philosophy

Research philosophy is mainly a set of pre-defined convictions that helps the researcher to build understanding about a topic step-by-step. According to Bergmann (2023), choosing the suitable philosophy for the research can include a diverse array of perspectives for analysing any research introducing better complexity. This research has achieved great consistency between the chosen objectives and methods and enhanced the credibility of the research findings by creating a coherent-network of contextual data by selecting Interpretivism philosophy. As per Ikram and Kenayathulla (2022), interpretivism helps conduct an in-depth study by delving into an in-depth understanding about human behaviour through the social constructions. Providing the justification for chosen approach, interpretivism has also created an opportunity for intense knowledge development in this research. It has also supported research design to be aligned with the objectives of explaining the significance of impacts of the pandemic on UK's healthcare workers. Using interpretivism, the diverse parallels of COVID's impact regarding health risks have also been explored.

3.3: Research approach

Research approach can be simply defined as the overall framework to guide a research-study to be conducted. Selecting an inductive research approach for a research study helps in collecting

the data, analysing them and interpreting research-topic logically. Hence, the chosen research approach has helped enable this study to capture the core-objectives of the study while aligning with the topic about the effect of pandemic on the UK doctors' overall health. Distinctively, this research has purposefully chosen the inductive approach to assess the collected data about the topic. As per Kumar and Ujire (2024), an inductive research approach helps conduct a qualitative-study by developing a new-theoretical outlook which is generated from the data-collected and assessed. Thus, selecting an inductive approach for this research has helped generate new-perspectives on the existing theories about the effects of COVID-19 pandemic among the frontline doctors in the UK.

3.4: Strategy undertaken for this research

Research strategy is a structured blueprint that roughly outlines how research is going to be conducted while meeting all the research questions. Focusing on methods, designs and other necessary data-searching competencies, this blueprint guides to collect, analyse and elaborate data systematically. Choosing a well-defined research strategy has thus been crucial in exploring the impact of pandemic on UK's doctors in this research. A systematic-review approach has proven to be quite supportive in assessing the non-numerical research-data in this research to unravel the deeper contexts about the chosen topic with fair and logical reasoning. As per Bazan *et al.* (2021), the major strength of using a systematic review lies in its insider information that gives a deeper understanding on the motivators and behaviours of a context. A systematic-review has also focused on exploring in-depth perceptions and experiences rather than only relying on numerical data about pandemic's effects on UK's frontline doctors.

3.5: Design undertaken for this study

A secondary research design following a systematic review approach is a method for rigorous research that helps the researcher to find, evaluate and synthesise the evidence available on the topic to meet the research questions. Cevikbas *et al.* (2023), systematic review design aids the researcher to get scientific evidence with a state-of-the-art method and close the research gap as much as possible. This research has thus used a design focused on systematic review that vividly conceptualised the multivariate impacts of the COVID-pandemic on frontline healthcare workers in the UK. Using systematic review as a design, this research has clearly answered the research questions, followed the systematic methods and appraised the study within a comprehensive framework. As systematic review is objective and reduces biases to a large extent; utilising this

design has amplified the credibility of the data on the healthcare workers' issues faced during pandemic. It also has helped combine evidenced findings from multiple studies through a thematic analysis, allowing identifying the consistent patterns and gaps in knowledge.

3.6: Data collecting method

A secondary data collection approach has been adopted in this research which is the process of collecting information about a topic, drawing information from peer-reviewed journals. This method provides the advantage of collecting second-hand data that is already peer-reviewed rather than first-hand information from primary research through a survey or interviews. According to Taherdoost (2021), opting for a secondary data collection for research helps minimise the time for conducting a study from existing articles, journals and books easily available. Secondary data collections for this research also have lessened overall downtime and easily access the data from the most recent reports and journals from biomedical science or social science using PubMed and Google Scholar. The primary method takes much time for attending surveys or interviews in person or might have depended on participant's consent (Taherdoost, 2021). Therefore, secondary data collection through online platforms has been a dogmatic choice to explore various impacts of pandemic on UK doctors' well-being which alleviated these dependencies.

3.7: Strategies for searching and terms used

Searching data for the current research on the pandemic's impacts faced by frontline doctors in the UK would have been time-efficient by using search keywords. Therefore, the process began by identifying specific search terms or keywords which aligned with the study's focus. This research utilised keywords such as frontline doctors, health issues in the UK, COVID-19, psychosocial impact on frontline health, social care professionals. According to Ugwu and Opah (2023), Boolean operators "AND" and "OR" help the researcher to find exactly available information from the database. Boolean operators like AND or OR operations have thus been also helpful in this study to find specific data on wellbeing of UK doctors was questioned due to severity of COVID-19. These keywords aided in locating the most relevant literature from PubMed and Google Scholar through easy online access. Choosing these target-focused keywords has helped address the research aims directly and provided reliable evidence to support the assessment.

Utilised Database

Keywords	Boolean Operators (AND)	Boolean Operators (OR)
"Peer support among healthcare workers in the UK during pandemic".	"Peer support among healthcare workers in the UK" AND "Support system among frontline healthcare workers during pandemic"	"Peer support among healthcare workers in the UK" OR "Support system among frontline healthcare workers during pandemic"
"Impact of COVID-19 on the physical health of doctors"	"Physical health of doctors" AND "Impact of COVID-19 on frontline healthcare staff"	"Physical health of doctors" OR "Impact of COVID-19 on frontline healthcare staff"
"Telemedicine in the UK to improve access to healthcare"	"Telemedicine in the UK during COVID". AND "Telehealth to improve access in a pandemic".	"Telemedicine in the UK during COVID". OR "Telehealth to improve access in pandemic"
"Pandemic-related risks in urban hospitals"	"Pandemic-related risks of doctors" AND "Urban hospitals facing risks during pandemic"	"Pandemic-related risks of doctors" OR "Urban hospitals facing risks during pandemic"

Table 3.1: Boolean Operation-based Keyword Search

3.8: Framing the Research Question

PICO	Search-terms Used
Population	The involved populations are the doctor and frontline staff working in the urban and rural healthcare settings.
Intervention	COVID-19 pandemic exposed the healthcare frontline workers to infection-risks, stress, burnout and anxiety.
Comparison	Healthcare staff faced higher-volume of COVID-cases whereas rural doctors faced comparatively lesser volumes but more direct interaction with patients.
Outcomes	Infection spread extensively, causing immense pressure on frontline healthcare staff.
Settings	UK's urban and rural healthcare settings.

Table 3.2: Techniques used for Searching

3.9: Procedures for searching the database

This research has followed a systematic review on analysing the influence of COVID-19 pandemic on healthcare staff in the UK. Data has been collected by using major medical databases using portals like Google Scholar and PubMed. Mainly 18 studies have been selected by using “AND” and “OR” Boolean operators for extracting high-quality and reliable information. The articles chosen are published within the last five years just to keep up with the relevance of the data provided most recently. Each of the taken articles has provided solid evidence on how pandemic affected UK doctors' well-being. According to Smith *et al.* (2025), CASP is a methodological tool for assessing data of qualitative studies, meeting the required criteria for research. CASP tool

thus helps the researchers greatly to maintain the quality of a study, fulfilling the research purpose. Therefore, the CASP appraisal tool has been used for this study also and it has helped confirm the relevance and quality of the selected articles.

3.10: Criteria for inclusion and exclusion

Research findings (PICO)	Inclusion criteria	Exclusion criteria	Justifying factors for selection
Language	Only articles published in the English language have been preferred.	Non-English articles have been excluded	Selected for comprehensiveness and clarity on meeting research questions and objectives.
Population selection	Only medical practitioners and the frontline healthcare staff have been chosen.	People from non-medical backgrounds have been excluded.	Population choice is justified with the objectives of this study.
Accessibility	Frontline medical staff had direct engagement with the pandemic scenarios in urban and rural settings.	Non-medical staff that have no direct access with handling COVID situations.	Determining the impacts of pandemic scenarios on physical and mental health of the healthcare workers.
Intervention	Physical and mental impacts of pandemic on UK healthcare staff have been analysed.	Scenarios not related to pandemic have been avoided.	Assessing diverse situations handled by frontline medical staff during COVID-19 and their impacts.

Comparison	Articles which provided comprehensive comparison between urban and rural hospital scenarios in the UK have been preferred.	Articles which have not compared the urban and rural health risks have been avoided in many cases.	This selection has justified the research objectives and chosen population.
Settings	Included only the healthcare setups in the UK.	Non-UK scenarios have been excluded.	Justified with the chosen area for this research.
Year	Articles published between 2021 to 2026 are included	Articles published before 2021 are included	The five years have been placed in preference as it will help to include most recent set of articles, ensuring current data in fulfilling the research objectives

Table 3.3: Inclusion and exclusion criteria

3.11: Data-extraction process

A table that is formulated in the fourth chapter mentions the aim, country of study, methods, designs, target population authors' names, publication-years, and research outcomes. Organising this information through table form has helped extract and analyse the data with ease. All extracted data on effects of COVID on UK's healthcare staff has been presented in a clear tabular format, followed by a written summary of the results. This data-representation with tabulation has organised the important data about the important aspects of how the pandemic impacted frontline healthcare-workers in the UK. An organised format thus has provided this researcher with

enhanced clarity, allowing for a quick-comparison across diverse studies, highlighting similarities and differences in data-findings. This structured approach ensures greater-transparency in this research process and solidifies the credibility of this study on frontline' doctors' and social-care-workers getting affected by the COVID-19 pandemic.

3.12: Thematic analysis

Data analysis is crucial for investigating, filtering, converting and interpreting the collected data systematically. Tumiran (2024) in this regard has stated that data analysis in research helps assess the data effectively to yield more intricate findings that are able to strengthen the credibility and validity of research. This research will follow a thematic analysis for interpreting different significant aspects of the impacts of pandemic on UK doctors' well-being. Themes were identified and created following the research objectives. These themes thus allowed for a comprehensive comparison of the taken pieces of evidence with better clarity. Additionally, a PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta Analysis*) framework has also been selected to conduct data-search, selection and analysis transparently.

3.13: Ethical considerations

Ethical considerations in research refer to the guiding principles ensuring the rights of the researchers for data usage and its protection and privacy for upholding data-integrity (Ali *et al.* 2025). This research has also ensured that all the ethical approaches have been maintained for collecting data to analyse them and protecting author's information. The GDPR Act (2018) of the UK has been accorded with the entire study by giving the authors their deserved credits through in-text citations. Moreover, to avoid the copyright issues, no data has been directly copied from articles. Taken articles are secured in a pass code-encrypted folder and will be destroyed after three months. Additionally, confidentiality has been prioritised throughout this study, ensuring all the sensitive data remains inaccessible to unauthorised individuals. Ethical approval standards were consistently respected and transparency in reporting was maintained to strengthen the credibility of findings. These measures collectively protect accountability, trustworthiness and integrity of the research outcomes.

3.14: Limitations of this study

Key limitation of this study identified as choosing only the secondary method for data collection. As per Taherddost *et al.* (2022) a mixed method of research gives the research study a

wholesome comprehensive view that covers both primary and qualitative methods of study. Mixing and comparing the primary data collected through surveys or interviews with the secondary data helps measure reliability and relevance of data with the real-time scenario much better. However, due to time and resource-constraints primary data collection has been avoided, which creates a gap in this study.

However, a systematic review design effectively supports the examination of observations related to the research's topic based on the effects of pandemic on the doctors in the UK. It has also helped identify the related factors which have impacted physical and mental well-being of the healthcare workers in the UK's urban and rural settings. Using a deductive approach in secondary qualitative study, this research has allowed drawing a conclusion from an expanded UK perspective to urban and rural areas particularly.

3.15: Summary

On a concluding note, this systematic review has been of great help to advance further with a scientifically organised approach. Using the interpretivism philosophy has helped create an immersive discussion about COVID's multilateral impacts on frontline doctors. Taking an inductive approach has helped test out the new hypotheses about study data through a constructive data interpretation and analysis. Through a qualitative strategy accompanied by a systematic design of study this research got a well-conceptualised data-presentation that answered the research questions and met the objectives. Ethical consideration has furthermore protected the data and its credibility with honesty and transparency. This research has contributed academic literature enriched with valuable information about the pandemic's effect on the UK's frontline healthcare-workers. Furthermore, this study has bridged the theoretical points of view of previous studies with practical realities experienced by the healthcare staff. This research has also helped lay out the baseline for the policymakers to strategize effective interventions, ensuring a better-preparedness and resilience in future health-emergencies due to uncertainties.

Chapter 4: Results and discussion

4.1 Introduction

This chapter will focus on assessing the results through a systematic review that demonstrates how COVID-19 affected frontline doctors working in both urban and rural locations in the UK. The findings will be reviewed through a systematic database searching process. Afterwards, the PRISMA flow diagram will be used to elaborate on the sample selection process. The major propaganda themes from all the included studies will be summarised in a well-organised and comprehensive chart, with an additional column highlighting emerging themes from each of the chosen article samples. Data extraction and synthesis will be discussed, comparing similarities and differences across the studies and identifying overarching themes and trends.

4.2 PRISMA framework

18 peer reviewed articles have been selected for this research in terms of accumulating topic relevant information's. It has been recognised that total recorded screened was 1300 out of which only 18 articles were selected for this research. The PRISMA framework highlights the inclusion and exclusion criteria of the research.

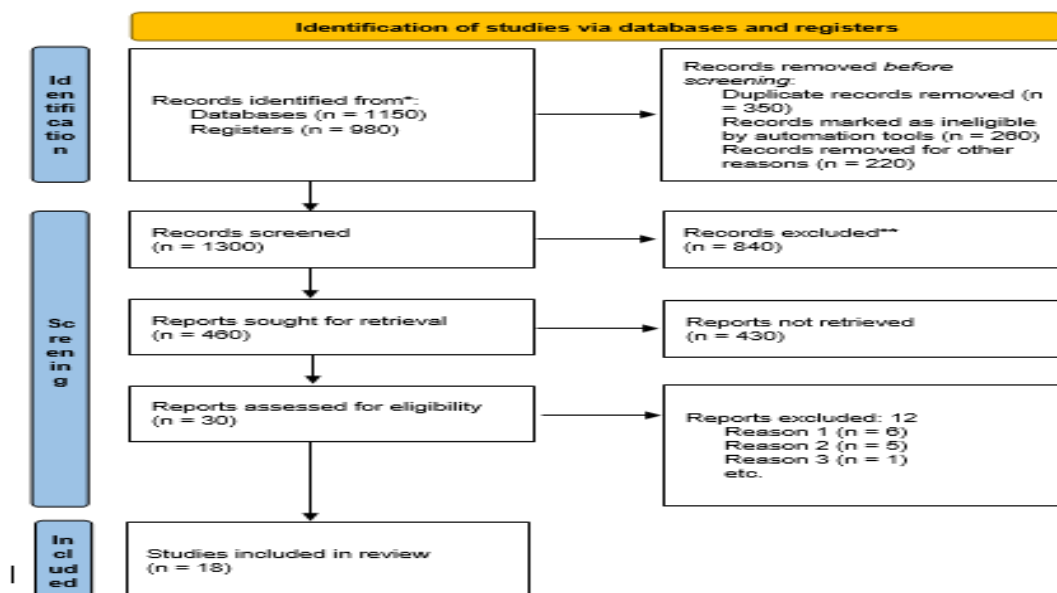


Figure 4.1: PRISMA Framework

The systematic search procedure involved a keyword-based data search with keywords like poor working conditions during the pandemic, psychological burden, overall wellness of healthcare workers, and more, through portals such as PubMed and Google Scholar. Ultimately, 18 articles were identified that met the set criteria for selection. A chain of sequenced methodological approaches has further helped identify which articles adhered closely to the chosen topic of the pandemic's effects on urban and rural frontline doctors in the UK. Mostly, the non-numeric data was searched to create specific themes, aligning with the diverse aspects related to the research topic. The 18 articles were chosen by following the inclusion and exclusion criteria. The inclusion criteria were to consider articles written only in the English language, based on the healthcare sector, highlighting the physical and mental distress of UK frontline care staff, focusing on urban and rural healthcare conditions. Articles published before 2021 were excluded.

4.3 Characteristics of all table

Author's name and title	Objective/Purpose	Settings/Sample	Methodology	Strengths	Weaknesses	Results	Conclusion
Charan <i>et al.</i> (2025) 'Challenges faced by doctors and nurses in the emergency department: An integrated review'	To explore multifaceted challenges faced by ED healthcare professions	NA	Systematic review using PRISMA, appropriate for objectives with global ED settings and peer-reviewed studies	Broad database coverage, strong screening reproducibility	English-only bias, no primary data collection	Identified overcrowding, burnout, ethics, technology	Highlighting need for policy and educational reform
Jerjes and Majeed (2025) "Transforming GP training in the UK: the lasting impact of COVID-19 on telehealth and hybrid care models"	To analyse the viewpoint of undergraduate and postgraduate pathways across the UK	NA	This is narrative review design has been appropriate for highlighting systemic financial pressures	Strengths included policy relevance depth, and transferability to systems	Weaknesses involved absence of primary data and potential selection	Findings reflected enhancing debt, compulsory training costs, reduced morale and retention risks	The study has concluded urgent reform which is needed to ensure equity and sustainability
Abel <i>et al.</i> (2021) 'Association of SARS-CoV-2 infection with psychological distress, psychotropic prescribing, fatigue, and sleep problems among UK primary care patients'	To assess the incident or recurrent outcomes and demographic variations	Cohort study of 11 923 499 individuals aged 16 years or older	The matched cohort design has been chosen here	Strengths included large sample, adjustment and negative controls	Weaknesses included residual confounding and limited follow-up	Results has highlighted the enhanced fatigue and sleep problems after infection, but psychiatric risk has been similar in test-negative controls and higher after influenza	This article has concluded COVID-19 likely causes fatigue and sleep disturbance, while psychiatric associations may show unmeasured confounding.
Gobburi <i>et al.</i> (2025)	To investigate telemedicine's role in reducing rural healthcare	NA	Rural UK populations included studies with systematic literature	Strong search strategy, transparency selection and strong	Heterogeneity, digital exclusion bias with no primary data	Telemedicine reduces travel barriers, improved mental health access and	Equitable access needs infrastructure, literacy and regulation improvements

‘Telemedicine use in rural areas of the United Kingdom to improve access to healthcare facilities: A review of current evidence’	inequities in the UK.		review and thematic analysis with PRISMA screening aligning to the aim.	policy relevance		enhanced engagement	
Dall’Ora <i>et al.</i> (2023) ‘The association between multi-disciplinary staffing levels and mortality in acute hospitals: a systematic review’	To synthesise evidence on multidisciplinary hospital staffing and mortality	Acute hospital settings with 12 included studies	Systematic review design appropriate	Strengths ha included comprehensive databases and quantitative focus	Weaknesses have been limited allied health evidence and heterogeneity	Results have shown higher physician and registered nurse staffing reduced mortality, while nursing assistants increased risk	The review has concluded allied health roles are plausible but under researched
Dall’Ora <i>et al.</i> (2023) ‘The association between multi-disciplinary staffing levels and mortality in acute hospitals: a systematic review’	To synthesise evidence on multidisciplinary hospital staffing and mortality	Acute hospital settings with 12 included studies	Systematic review design appropriate	Strengths ha included comprehensive databases and quantitative focus	Weaknesses have been limited allied health evidence and heterogeneity	Results have shown higher physician and registered nurse staffing reduced mortality, while nursing assistants increased risk	The review has concluded allied health roles are plausible but under researched
Carbone <i>et al.</i> (2022) ‘Peer support between healthcare workers in hospital and out-of-hospital settings: a scoping review’	To clarify key concepts and implementation of peer support for second victims	49 articles	Scoping review using Joanna Briggs Institute approach, appropriate with emergency 38nhan38 l38 and hospital contexts	Broad timeframe, multidisciplinary inclusion and pandemic relevance	Lack of outcome comparison and limited intervention evaluations	Results have been highlighted with peer support benefits emotional normalization, stress reduction and coping especially during the COVID-19 pandemic	The review has concluded peer support with valuable, but needs evaluations
Garcia <i>et al.</i> (2025) ‘Future-proofing cities against	To investigate the way urban transport systems, influence resilience to	3 cities have been modelled	The system dynamics modelling study has been appropriate	The strengths have been included comparative cities,	The limitations have been included modelling assumption	Results have shown reduced flood-related deaths across all scenarios, with 4-50%	This study has concluded that ambitious active travel transitions

negative city mobility and public health impacts of impending natural hazards: a system dynamic modelling study'	infectious disease outbreaks and extreme weather events		for scenario testing	forward-looking scenarios, and integration of health and mobility outcomes	s and lack of real-world validations	prevented and only the most ambitious mobility shift reduces IDO mortality by 6-19%.	improve resilience
Angelis <i>et al.</i> (2023) 'A structured methodology for essential medicines lists and health emergency stockpiles: experience with the Emergency Medicines Buffer Stock in the United Kingdom'	To build and apply a methodology for selecting medicines for essential lists and emergency stockpiles	Primary data collection through expert interviews (n = 4), a workshop with DHSC decision-makers (n = 13), and an online survey with National Clinical Directors and relevant experts (n = 24)	Multi-attribute value theory and portfolio decision analysis, appropriate	Strengths have been included structured framework, stakeholder input, and uncertainty analysis	Weaknesses have been included small expert samples and context specificity	Results have been produced ranked therapeutic areas using a population health loss index, with antiseptics and diabetes drugs highest	Conclusion have been shown the approach supports transparency prioritization under uncertainty
Shanahan <i>et al.</i> (2022) 'The institutional mismatch of state civil courts'	To analyse needs within the state civil court cases	Court cases, interviews	Mixed-methods combining case data, courtroom observation and interviews appropriate	Strengths have been included national scope, rich qualitative insight and theoretical contribution	Weaknesses involved limited causality and potential observational bias	Results have reflected courts addressing unmet social needs while active coercively	Courts function as violent actors and unseen collective policymakers
Capone <i>et al.</i> (2022) "Mental well-being and job satisfaction of hospital physicians during COVID-19: relationships with efficacy beliefs, organizational support, and organizational non-technical skills"	The article aims to evaluate "the psychological and organisational factors that contributed to physicians' well-being during the pandemic."	A convenience sampling strategy has been used among the UK's population.	A mixed method has been used in this research.	The strength of the article has investigated practitioner well-being from a positive psychology perspective	The collection of data using a cross-sectional method has exposed a true cause-and-effect relationship.	"The levels of psychosocial well-being experienced by hospital physicians were high, as were those of job satisfaction".	The article concludes that "the role of the participants' individual and organizational resources in coping with COVID-19 suggests healthcare managers adopt strategies to promote and sustain physicians' well-being."

Ayar <i>et al.</i> (2022) “Work-Life Balance and Mental Health Needs of Health Professionals During COVID-19 Pandemic in Turkey”	The article aims to determine the balance between work commitment as well as the health of professionals during the pandemic situation.	The sample size was 129, and the participants belong from Turkey.	Primary quantitative methods have been used within this article.	The use of medium size samples has been a potential strength of the article.	The use of cross-sectional methods has resulted in achieving a low reliability score.	“Health professionals had difficulties, such as the experience of being stigmatised as a result of having to provide care services regarding COVID19”	The article concludes that married people experience more psychological distress.
Awan <i>et al.</i> (2022). “Suicide in Healthcare Workers: Determinants, Challenges, and the Impact of COVID-19”	The article aims to evaluate the potential impact of COVID-19 on healthcare workers	NA	The secondary qualitative method has been used in this research.	The use of secondary information has been a potential strength of this article.	A lack of empirical evidence has been a potential limitation in this article.	The article findings highlight that the outbreak of the pandemic has a high impact on the population's economic condition, resulting in increasing societal attempts.	The article concludes that the advent of COVID has increased suicidal case all across global countries.
Yu <i>et al.</i> (2022) “Healthcare worker trauma and related mental health outcomes during the COVID-19 outbreak in New York City.”	The article aims to evaluate the impact of post covid on healthcare professionals.	A sample of 23 peer-reviewed journals has been selected for this research. The research was placed in New York.	Systematic review has been used within this research.	The use of both peer-reviewed articles has been a potential strength of these articles.	“Gender differences, types of HPs, and cultural and geographical constraints were not considered in exploring PTSD.”	The article highlights that “During the COVID-19 pandemic, health systems collided with a crucial challenge in organising human and technical resources”	The article concludes that the advent of COVID has highly impacts of healthcare professionals' mental and physical condition.
Sfeir <i>et al.</i> (2022). “Work fatigue among Lebanese physicians and students during the COVID-19 pandemic: validation of the 3D-Work Fatigue	The article aims to evaluate the impact of covid on Lebanese physicians and students.	A snowball sampling method has been used in this research among the Lebanese population.	Cross sectional method has been used within this research	The implication of evidence-based evidence has been the40nhanc e40l strength of this article.	Being a cross-sectional study, “causality effect between work fatigue and associated factors	The article's findings highlight that “Chronic and acute interpersonal stressors were associated with higher work Fatigue”.	The article concludes that “Work fatigue in Lebanese physicians seems to be associated with higher level of everyday stress, high workload and depression”

Inventory (3D-WFI) and correlates"					cannot be established"		
Sfeir <i>et al.</i> (2022). "Work fatigue among Lebanese physicians and students during the COVID-19 pandemic: validation of the 3D-Work Fatigue Inventory (3D-WFI) and correlates"	The article aims to evaluate the impact of covid on pandemic on Lebanese physicians and students.	A snowball sampling method has been used in this research among the Lebanese population.	Cross sectional method has been used within this research	The implication of evidence-based evidence has been the potential strength of this article.	Being a cross-sectional study, "causality effect between work fatigue and associated factors cannot be established"	The article's findings highlight that "Chronic and acute interpersonal stressors were associated with higher work Fatigue".	The article concludes that "Work fatigue in Lebanese physicians seems to be associated with higher level of everyday stress, high workload and depression"
Saladino <i>et al.</i> (2022) "Healthcare Professionals, Post-traumatic Stress Disorder, and COVID-19: A Review of the Literature"	The article aims to determine the impact of post-traumatic stress disorder among healthcare professionals that leads to post-traumatic stress disorder.	A sample of 13 peer reviewed articles has been selected among the UK population	A systematic literature review has been selected within this research	The use of both peer-reviewed articles has been a potential strength of these articles.	"Gender differences, types of HPs, and cultural and geographical constraints were not considered in exploring PTSD."	The article highlights that "During the COVID-19 pandemic, health systems collided with a crucial challenge in organising human and technical resources"	The article concludes that the advent of COVID has highly impacts of healthcare professionals' mental and physical condition.
Crocker <i>et al.</i> (2023). "" The impact of COVID-19 on the mental health workforce: A rapid review"	The article aims to evaluate impact of the pandemic on mental healthcare workers	A sample of 55 peer-reviewed articles has been selected for this article	A systematic review has been applied within this research	The methodological approach has been the potential strengths of this article	"A limitation of the current review is the lack of comparative data for many of the identified outcomes collected prior to the pandemic."	The article's findings highlight that "support from management is vital to ensure MHWs can continue to thrive"	The article concludes that "many. MHWs of varying professions and in a range of settings were significantly impacted by the pandemic by increased workload, constant changes in roles and reported increased vicarious trauma and

							workplace violence.”
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Table 4.1: Results

The study characteristics have depicted the objectives, methodology, strengths, weaknesses, results, conclusion and driven thematic points from objectives as well (refer to Appendix). As per the first theme, Charan *et al.* (2025), this first article has explored multifaceted challenges faced by ED healthcare professions with systematic review using PRISMA, appropriate for objectives with global ED settings and peer-reviewed studies. The broad database coverage, strong screening reproducible are the strengths and the weaknesses are English-only bias, no primary data collection. This has been identified as overcrowding, burnout, ethics, and technology. This has highlighted the need for policy and educational reform, workload pressures and emotional strain, technology integration and ethical dilemma.

From the second article, Jerjes and Majeed (2025) mentioned the analysis of the viewpoint of undergraduate and postgraduate pathways across the UK. This narrative review design has been appropriate for highlighting systemic financial pressures. The major strengths included policy relevance depth, and transferability to systems and the weaknesses involved absence of primary data and potential selection. The findings have reflected enhancing debt, compulsory training costs, reduced morale and retention risks. This article has concluded urgent reform which is needed to ensure equity and sustainability. The driven thematic points are objective extraction, financial cost types and impacts on well-being, progression and workforce stability.

Based on the third article, Abel *et al.* (2021) mentioned that the assessment of the incident or recurrent outcomes and demographic variations has been done with cohort study of 11 923 499 individuals aged 16 years or older. The matched cohort design has been chosen here acknowledging the strengths included large sample, adjustment and negative controls and weaknesses included residual confounding and limited follow-up. The results have highlighted the42nhanceed fatigue and sleep problems after infection, but psychiatric risk has been similar in test-negative controls and higher after influenza. This article has concluded COVID-19 likely causes fatigue and sleep disturbance, while psychiatric associations may show unmeasured

confounding. The thematic points from objectives are post-infection mental health outcomes and sub-group differences and temporal risks.

Coming to the fourth article, Gobburi *et al.* (2025). This article has investigated telemedicine's role in reducing rural healthcare inequities in the UK. The rural UK populations included studies with systematic literature review and thematic analysis with PRISMA screening aligning to the aim. The major strengths of this article have strong search strategy, transparency selection and strong policy relevance and weaknesses are heterogeneity, digital exclusion bias with no primary data. The findings have suggested that the telemedicine reduces travel barriers, improved mental health access and enhanced engagement. The equitable access needs infrastructure, literacy and regulation improvements with evidence of improved healthcare access in rural contexts and barriers and facilitators to telemedicine implementations.

In the second theme, Dall'Ora *et al.* (2023) has synthesised evidence on multidisciplinary hospital staffing and mortality. Acute hospital settings with 12 included studies with systematic review design. The major strengths have included comprehensive databases and quantitative focus, and weaknesses have been limited allied health evidence and heterogeneity. The results have shown higher physician and registered nurse staffing reduced mortality, while nursing assistants increased risk. This fifth article has concluded allied health roles are plausible but under researched with staffing-mortality associations and professional group differences.

As per the sixth article, Gallichan *et al.* (2023) the evaluation has PED professional's confidence, experience and awareness in managing traumatic dental injuries with 94 ED health professionals. Cross-sectional online survey design appropriate. The major strengths have included real-world staff insight and multi-site sampling, and weaknesses included self-report bias and limited generalisability. This result has been shown often TDI exposure, minimal undergraduate training, low confidence and demand for online tools. The study has concluded enhanced training and signposting are needed with confidence and knowledge levels and training gaps with service barriers.

From the seventh article, Carbone *et al.* (2022) have clarified the key concepts and implementation of peer support for second victims with 49 articles on scoping review using Joanna Briggs Institute approach, appropriate with emergency departments and hospital contexts. The strengths are broad timeframe, multidisciplinary inclusion and pandemic relevance and weaknesses are lack of outcome comparison and limited intervention evaluations. Results have

been highlighted with peer support benefits emotional normalization, stress reduction and coping especially during the COVID-19 pandemic. The review has concluded peer support is valuable but needs evaluations on characteristics of peer support models and implementation methods and context in this article.

As per the third theme, Garcia *et al.* (2025) has investigated the way urban transport systems influence resilience to infectious disease outbreaks and extreme weather events 3 cities have been modelled with the system dynamics modelling study that has been appropriate for scenario testing. The strengths have included comparative cities, forward-looking scenarios, and integration of health and mobility outcomes. The weaknesses have included modelling assumptions and lack of real-world validations. The results have shown reduced flood-related deaths across all scenarios, with 4-50% prevented and only the most ambitious mobility shift reduces IDO mortality by 6-19%. This eighth has concluded that ambitious active travel transitions improve resilience with transport-health impact relationships and resilience differences as per the scenarios.

Furthermore, Angelis *et al.* (2023) mentioned that this study has built and apply a methodology for selecting medicines for essential lists and emergency stockpiles with Primary data collection through expert interviews (n = 4), a workshop with DHSC decision-makers (n = 13), and an online survey with National Clinical Directors and relevant experts (n = 24). This multi-attribute value theory and portfolio decision analysis. This ninth article has strengths including structured framework, stakeholder input, and uncertainty analysis and the weaknesses including small expert samples and context specificity. The results have produced ranked therapeutic areas using a population health loss index, with antiseptory and diabetes drugs highest. The conclusion has been shown the approach supports transparency prioritization under uncertainty with criteria for therapeutic area prioritization along with value-for-money and supply vulnerability considerations.

Based on the tenth article, Shanahan *et al.* (2022) has provided insights on the analysis required within the state civil court cases with interviews. The mixed methods combine case data, courtroom observation and interviews. The strengths have included national scope, rich qualitative insight and theoretical contribution and the weaknesses involved limited causality and potential observational bias. The results have reflected courts addressing unmet social needs while active coercively. Likewise, courts function as violent actors and unseen collective policymakers with categories of social needs presented in civil litigation and institutional mismatch effects on democratic governance.

As per the analysis of Capone *et al.* (2022), the levels of psychosocial well-being that has been experienced by hospital physicians has been high due to poor job satisfaction. Healthcare practitioners experienced significantly reduced job satisfaction during the COVID-19 pandemic, driven by extreme work-related stress, high rates of burnout, and inadequate resources. Similarly, Ayar *et al.* (2022) have argued that majority of the healthcare professionals had faced difficulties, such as the experience of being stigmatised while providing care services regarding COVID19. However, Awan *et al.* (2022) had highlighted that the outbreak of the pandemic had highly impacted on the population's economic condition, resulting in increasing societal attempts.

As per the key findings of Yu *et al.* (2022), the advent of covid-19 pandemic has been a challenging phase for healthcare professional as it has increased work pressure which leads to poor work-life balance. A lack of, or inadequate access to, Personal Protective Equipment (PPE) created significant fear of infection and anxiety about transmitting the virus to family members. On the other hand, Sfeir *et al.* (2022), chronic as well as acute interpersonal stressors were associated with higher work fatigue. Similar to the context, Fournier *et al.* (2022) have argued that 56.9% of healthcare professionals has been suffering from mental distress, whereas 21.2% had signs of PTSD for more than 1 month after the peak of the initial COVID-19 pandemic. Many practitioners reported low salaries, lack of compensation for risk, and inadequate recognition for their efforts, particularly in government-run facilities.

Saladino *et al.* (2022) have stated that the context of gender differences, types of HPs as well as cultural and geographical constraints were not considered in exploring PTSD. Moral distress from witnessing high patient mortality and working under intense pressure significantly reduced job satisfaction. On the other hand, Crocker *et al.* (2023) have highlighted that high support from management is considered to be vital in terms of ensuring MHWs can continue to thrive. This signifies that low satisfaction directly correlated with a high intention to leave the profession or change jobs.

4.4 Data synthesis

Theme 1: Physical Health Risks and Long COVID-19 among Frontline Doctors

The threat to physical health was of utmost concern to the frontline physicians in hospitals in the UK because of the extended work and the busy medical setting of the COVID-19 pandemic. High-incidence and acute care environments worsen the risks of infections, long working hours, and physical stress, in specific instances when the staff is identified as short in terms of the number

and high turnover rates (Charan *et al.* 2025). The complaints of physicians were long shifts, low recovery time, musculoskeletal stress, sleeping disorders, and immunity vulnerability. The conditions were also intensified in high-pressure units like the emergency/acute wards that require higher work intensity in relation to infection control. Long COVID has been defined as one of the long-term physical health problems of healthcare workers (Dall'Ora *et al.* 2023). It was found by the researchers that SARS-CoV-2 infection had a strong positive correlation with long-term fatigue and sleeping problems and slowed functional capacity (Abel *et al.* 2021). These symptoms adversely impact the performance of physicians in a stable state of clinical condition, and inefficiency leads to leaving.

The physical manifestations were also chronic, which resulted in the chronic instability of the workforce, to the already limited staff hospitals (Dall'Ora *et al.* 2023). The level of staffing had a lot to do with physical health. High mortality rates and physical burden on the remaining clinicians were associated with low ratios of the multidisciplinary staffing (Dall'Ora *et al.* 2023). The amount of physical strain was more predominant among the doctors in the under-resourced hospitals because of task overload and the addition of responsibilities to the ones that were undertaken daily. The rural hospitals were more sensitive because they lacked workforce provisions, worsening physical exhaustion and recovery time (Gobburi *et al.* 2025). In addition to this, training needs and redeployment of the junior doctors contributed to the physical burnout among the doctors. The circumstances that caused the development of chronic fatigue and lack of resilience among the participants included the training discontinuities and the demands of long service (Jerjes and Majeed, 2025). There were also deficiencies in the recovery mechanisms that would ensure that the physical risks were not arranged in a structured manner. The literature demonstrates that the new physical health issue of the frontline doctors is also the result of COVID-19. Long COVID-19 is one of the most problematic occupational health problems that demand a unique institutional reaction.

Terrestrial medics complained of physical exhaustion because on-the-job medics are required to work extended hours in putting on PPE and have no time to rest. The long working time in the hospital emergency environment exacerbated the degree of dehydration, headache, and breathing pain among the doctors. Reinfection was considered a problem due to the exposure to COVID-19 multiple times, since it increases the physical burden and occupational health anxiety (Abel *et al.* 2021). The physicians with long-COVID-19 stated that they were weaker, they could not concentrate, and they were not healed physically as quickly. The symptoms reduced the clinical production and made the other employees more reliant on the hectic shifts. Work overload

was also caused by staffing shortage because the physicians had to replace absent team members (Dall'Ora *et al.* 2023). The patient to physician ratio was also on the increasing trend that resulted in the physical exhaustion and musculoskeletal stress of the acute hospital environment.

The level of physical load among doctors in rural settings was also high because these professionals did not have flexibility in staffing and had slow employee recruitment (Gallichan *et al.* 2023). The issues of re-deployment when the cases of infection are observed disrupt regular patterns of healing and physically frail state. The junior doctors were especially put under pressure by the overworking hours and lack of supervision especially during the high pandemic periods. The conditions during the poor recovery periods subjected the front-line clinicians to chronic fatigue syndromes. The long version also caused inaccessibility to occupational health for the diagnosis and treatment of the symptoms of COVID-19. The physicians who had contact with the patients during a long period were biomedically prone and had a cardiovascular load, which the frontline physicians of the hospitals had (Charan *et al.* 2025). It introduced physical exhaustion since the regular eruptions of the COVID-19 outbreaks were found to reduce minor illnesses, as confirmed by the doctors.

COVID-19 symptoms that lasted longer than a year led to a decline in stamina, and physicians were no longer able to work in the more challenging, clinically demanding jobs (Abel *et al.*, 2021). The problem of the persistent shortness of breath presented itself to the doctors who were on duty in the acute emergency hospital environment and under high pressure. The reversion to new clinical assignments implied physical overworking and lesser productivity of the work (Jerjes and Majeed, 2025). Yu *et al.* (2022), Poorly satisfied staff were linked to higher rates of medical errors and diminished quality of patient care. Saladino *et al.* (2022) have stated that the Effective communication and support from management, along with adequate training, were associated with higher job satisfaction. The health issues encountered by the body following the infection did not end in the same period, and there was a need to keep supervising these issues and offer some occupational health services at the institutional level.

Theme 2: Mental Health Impact of COVID-19 on Hospital Doctors

The psychological well-being of the doctors in the UK hospitals has been largely affected by the COVID-19 pandemic. Stress and anxiety, depression, and emotional exhaustion were reported regularly, which was especially common when the participants worked in the emergency facility

and acute care settings (Charan *et al.* 2025). Loss of lives of many patients, moral issues, and the risk of contracting the virus were other reasons that heightened the magnitude of psychological stress. Medical professionals were prone to burnout due to the situation of the crisis and excessive working hours without rest. Protection was offered by the peer support systems. According to Carbone *et al.* (2022), the positive impact of peer support programs well-organised on emotional resilience, feeling isolated and psychological recovery on the overall well-being of healthcare providers. This assistance was not as much offered in Hospitals. In fact, formal wellbeing programmes were more prevalent in urban hospitals at the cost of rural hospitals as they had limited resources (Gallichan *et al.* 2023). In total, the examined evidence shows that the effect of COVID-19 on the psychological well-being of the physicians was colossal, and the psychological impacts of COVID-19 were quite high.

The mental health issues of the physicians in the hospital accrued because of the constant ambiguity and the exposure to traumatic patient outcomes. The quality of anxiety increased among the frontline clinicians since they feared infecting relatives (Abel *et al.* 2021). The emotional burnout was also added since the doctors were forced to weigh between the professional and personal safety issues. Moral distress was brought about by high mortality rates and professional helplessness (Charan *et al.* 2025). Emotional control and stress tolerance were worsened by sleeping problems and constant fatigue. The other symptom of unmet mental health needs in medical workers was the higher frequency of prescription of psychotropics, which predetermined the increase in the level of stress and doubt in a decision taken in emergency clinical situations (Dall'Ora *et al.* 2023). The deficiency in supervision predetermined the increase in the stress level in relation to making a decision under the circumstances of an emergency.

The psychological isolation of the doctors in the rural setting was more isolating since the doctors were less likely to engage with their colleagues (Gobburi *et al.* 2025). Formal wellbeing programs and counselling were beneficial to the hospitals of the city. The peer support-based interventions minimised the emotional loneliness rates and posing ability (Carbone *et al.* 2022). The inability to be universally adopted by interventions became an obstacle to its application in hospitals. This was a predisposing factor to burnout and the desire to leave the occupation as a result of the constant stress on the psyche. The results indicate that there is a need to give mental health intervention on a long-term level, retention of manpower, and incorporation of peer-support programs into the hospital systems. Health care professionals with a rural work setting also mentioned that they were more psychologically burdened by professional isolation and were unable to communicate with colleagues (Gobburi *et al.* 2025). It was determined that the mental

health resource and well-being programs were more available in the urban settings. Peer support programmes were used to help in the validation of emotions and perceived stigma over the mental health issues (Carbone *et al.* 2022). The programme also lowered the accessibility and sustainability because organisations were not committed to the programme.

According to the secondary findings, healthcare practitioners experienced significantly reduced job satisfaction during the COVID-19 pandemic, driven by extreme work-related stress, high rates of burnout, and inadequate resources. As per the analysis of Capone *et al.* (2022), the levels of psychosocial well-being that has been experienced by hospital physicians has been high due to poor job satisfaction. However, Yu *et al.* (2022) have illustrated that the advent of covid-19 pandemic has been a challenging phase for healthcare professional as it has increased work pressure which leads to poor work-life balance. A lack of, or inadequate access to, Personal Protective Equipment (PPE) created significant fear of infection and anxiety about transmitting the virus to family members. On the other hand, Crocker *et al.* (2023) have highlighted that high support from management is considered to be vital in terms of ensuring MHWs can continue to thrive. This signifies that low satisfaction directly correlated with a high intention to leave the profession or change jobs.

Theme 3: Urban–Rural Disparities in Health Outcomes and Working Conditions can be managed by Organisational Support, Workload Management, and Policy Response

Health outcomes are greatly impacted because of the medical infrastructure differences between urban and rural settings. As COVID-19 posed huge risk-impacts with massive outbreak-hazards followed by death-tolls, comparing cases between urban and rural locations showed a significant difference. According to Garcia *et al.* (2025), rapid urbanisation has resulted in an overcrowded population in cities. This has a congested transport system and healthcare centres, where the system capacity is expected to be expanded to provide a seamless service to the citizens. Congestion in the urban area acted as one of the major epicentres for the COVID-19 outbreak, as social distancing was not maintained as required.

The rural transport system is susceptible to being halted during floods or heavy rainfall to support patients' transport. Additionally, the railway infrastructure is also vulnerable to heat during the increasing heat. However, in peri-urban or rural areas, no stern measures for creating climate-resilient transport infrastructure to support patients with medications or treatment have been evident. Angelis *et al.* (2023), although opposed that the UK government had structured to provide

essential medicines for citizens and stockpile an extra amount to buffer during acute needs. Compared to the massive need for medicines during the pandemic, the drugs available indicated a shortage due to supply-chain disruption.

Shortage of drugs became a global concern during the COVID-19 outbreak, and the supply chain played a major role in fuelling this issue on a larger scale. The entire world was lacking a sufficient amount of antibiotics, amoxicillin, or even penicillin to alleviate infection symptoms (Angelis *et al.* 2023). The medicine shortage might be a common phenomenon that occurred during COVID-19, irrespective of urban or rural healthcare settings and seems to dissolve barriers regarding treatment infrastructure. However, even though cities and the NHS-led organisations there could stock the available medicines, rural areas were less likely to get drugs in stock in time.

Furthermore, the above-mentioned transport issues in rural areas must have created delayed drug deliveries in rural healthcare centres. Shanahan *et al.* (2022), in this regard, have mentioned a comparison between the best and worst places to work in the USA. This discussion has revealed that the metropolitan cities, such as Washington, New Jersey, California, Massachusetts and Connecticut, were some of the best places to work during the pandemic. The worst states to work were the suburbs and rural regions in the USA, such as Alabama, Missouri, Wyoming, Mississippi and Georgia, due to infrastructural weaknesses.

4.5 Summary

It can be concluded from the above discussion that the threat to physical health was the main concern to the frontline physicians in UK hospitals as it extended work and promoted the busy medical setting of the COVID-19 pandemic. The UK rural hospitals were more sensitive due to lack of workforce provisions, worsening physical exhaustion as well as recovery time. On the other hand, the symptoms reduced the clinical production as well as made the other employees more reliant on the hectic shifts. The medicine shortage is recognised as one of the common phenomena that occurred during COVID-19 as well as irrespective of urban and rural healthcare settings that seems to dissolve barriers regarding treatment infrastructure.

Chapter 5 Discussion

5.1 Introduction

This chapter discusses the core findings from the chosen articles of the systematic review critically to evaluate the impact of the COVID-19 pandemic on the UK's frontline doctors in urban and rural settings. This critical discussion focuses on integrating evidence from studies, addressing challenges in emergency departments and medical transport during the pandemic, the need for medical training, mental distress, and the role of digital support.

5.2 A critical evaluation of findings

Theme 1

The above findings unravelled the major infrastructural differences between the urban and rural locations globally, which impacted not only the treatment, but also delayed patient-addressed and drug stockpiling. The article authored by Garcia *et al.* (2025) highlighted the urgent need to address the intertwined crisis regarding transport issues in citadel vs. rural settings and how not having a climate-resilient infrastructure affects it. The discussion in the table also emphasises that disparities in health systems in urban and rural areas are denoting a huge infrastructural discrepancies in rural areas. This is deteriorating the quality healthcare provision in rural settings and increasing mortality rates. From LR findings, Gobburi *et al.* (2025), however, has opined about a lack of healthcare-infrastructure, workers and transport-facilities, to deliver poor care-services. Such lack in efficiency in the rural-care support system has propelled the negative physical health-outcomes during the COVID-19.

Theme 2

A strong cross-sartorial collaboration, governance mechanisms and investment into climate-resilient infrastructure are needed to protect the population from any uncertain health risks. Angelis *et al.* (2023) focused on designing a transparent, evidence-based framework to prioritise therapeutic areas and list needful drugs for keeping in stock during the COVID-19 pandemic. This discussion in the table highlighted gathered evidence from surveys, interviews and workshops across the UK healthcare settings has revealed how the population faced a health-loss as an increase in diabetic-medicines and anti-secretory drugs during COVID-19 pandemic. A population health loss index in this study helps to combine national utilisation data with expected health loss from drug-shortages. These uncertainties have created major stress among the clinicians across

the UK. Booth *et al.* (2021), in the LR section, has emphasised how physical health risks have taken a toll on clinicians' mental health by enhancing their anxiety-levels and deteriorating cognitive-issues. Thus, mental-health issues in accordance with physical health risks during the pandemic have elevated their morbidity-risks.

Theme 3

An assessment of the data based on these two articles pointed out a solid gap in policy implementation, especially in rural areas, for making risk-resilient infrastructure and allocating resources effectively. The further assessment of Shanahan *et al.* (2022) in the table showcased US-urban localities that served as some of the best places to work, and compared to them, rural areas lagged. The index assessed 3 areas- protection for workers, unemployment supports and healthcare policies, in which urban areas were likely to excel. Most of the urban areas like Washington, New Jersey, California, Massachusetts and Connecticut provided strong unemployment benefits, worker-protections, housing protections and relief funds. Compared to this, the rural regions like Alabama, Missouri, Wyoming, Mississippi and Georgia had poor worker protection policies, minimal housing or unemployment benefits or protection for businesses from COVID regulations. On the contrary, Garcia *et al.* (2025) in the literature-review section emphasised more on overcrowded urban-population acted as a major-contributor to COVID-infections. Moreover, people in many urban-localities did not maintain social-distancing protocols as expected.

5.3 Critical discussion of the theme in relation to the research objectives

Theme 1 linking with objective 1

The first theme has been created to meet the first objective and research question on investing in physical health risks that emerged due to the impact of prolonged exposure of the UK's urban and rural frontline doctors to COVID-19 infections. Charan *et al.* 2025, in this regard, supported this statement by pinpointing how prolonged work-hours and physical stress devastated the UK doctors mentally, causing higher turnover rates. The data study has showcased a huge discrepancy in the rural healthcare system compared to the urban settings. The doctors seemed to have tried to address this issue to the authorities, but the pressure seemed to have persisted, and more doctors were affected by the infection due to prolonged contact with contamination in hospitals.

Apart from that, long COVID emerged as a major health challenge from an occupational perspective. Abel *et al.* (2021) also mentioned this, emphasising how the COVID-19-led infection caused physical distress through long-term fatigue, sleep issues and deteriorated functional capacity. Doctors suffering from these symptoms further experienced diminished stamina, concentration difficulties and slower recovery, which impacted doctors' overall productivity. Dall'Ora *et al.* (2023) strengthened this claim by adding another issue regarding healthcare staff shortage in hospitals. These limited staff were not able to handle the regularly rising cases of COVID-19 infections, causing elevated death tolls. As these issues in hospitals during the pandemic put immense pressure on the existing care-support staff, risking their lives, the theme justifiably satisfied objective 1.

Theme 2 linking with objective 2

The second theme has focused on meeting objective 2 and the research question, which is assessing the pandemic's effects on the psychological health of hospital physicians located in both rural and urban settings. The critical discussion has unravelled the wretched mental conditions of the UK's frontline doctors due to anxiety, stress and depression, which were amplified because of burnout. Carbone *et al.* (2022) identified that doctors were feeling completely detached from the regular work process and emotional distress at hospitals, which needed to be resolved with peer support programs. Peer support programs were found to strengthen emotional resilience and alleviate the isolation caused by mental distress among the physicians.

Rural doctors, compared to urban physicians, were reported with greater isolation and weaker access to mental health counselling during the pandemic. Gallichan *et al.* (2023) further added to this by stating that even though urban hospital doctors were getting access to such programmes, rural hospital staff was depriving such necessary measures. This issue contributed to higher burnout and intentions to leave the profession. Dall'Ora *et al.* (2023) also strengthened this fact by highlighting increasing psychotropic prescriptions by physicians to cope with stress in high-pressure work environments during the pandemic. Overall, the findings reflected how COVID-19 exacerbated stress, anxiety and depression among the physicians, highlighting both urban and rural perspectives, which met objective 2.

Theme 3 linking with objective 3

The third theme differentiated the health outcomes and work environment provided for the physicians during the pandemic to justify the third objective and research question of suggesting

recommendations to support the clinicians. According to Garcia *et al.* (2025), a quick adoption of urban culture facilitated the overcrowding of the urban population and congested transport, leading to the spread of people to disease. However, the plus point is that, despite the intense susceptibility to infection in city areas, urban healthcare centres could at least provide viable resolutions. Angelis *et al.* (2023) mentioned how the UK government tried to support the hospitals by stockpiling medicines. This measure was to buffer the massive requirement of life-saving drugs during the pandemic.

The disparity between urban and rural healthcare settings stood distinctively large regarding infrastructure, transport facilities to facilitate recovery treatment, or policy support to be enacted for alleviating COVID-19 impacts. Such disparities directly affected doctors by overwhelming them with work overloads, scarcity of resources and professional isolation. Shanahan *et al.* (2022) shared how metropolitan cities in the USA, like California or New Jersey, were found to be the best working sites, whereas Missouri or Alabama was spotted as the worst working locations during the pandemic. Thus, this disparity in policy gaps regarding drug provision, treatment facilities and policy implementation seems to have aligned with objective 3.

5.4 Implications of Future Research

This chapter finally examined the findings of the systematic review, highlighting the multifaceted impact of the pandemic on frontline doctors in urban and rural UK hospitals. Evidence revealed challenges in emergency departments, hidden costs of medical training, and significant psychological distress among healthcare workers. Telemedicine was found to have emerged as a viable digital solution to resolve the transport and infrastructural issues in rural healthcare settings. Staffing levels and peer support were shown to influence infrastructural resilience in healthcare and also health outcomes. Comparisons across studies demonstrated both convergence and divergence in created themes, underscoring systemic pressures, coping mechanisms, and future preparedness.

5.5 Strengths and Limitations

This discussion has provided comprehensive insights into mental, physical and institutional impacts of the pandemic on doctors. It has also highlighted the strengths, including peer support, drug stockpiling and the UK government's proactive actions helped fight the devastating impacts of COVID-19. However, the discussion also pointed out the weaknesses in support provision through strong policy implementations in rural areas where both physicians and citizens were

affected. Systematic review has helped analyse the major concepts with strong evidence and justification, but variability in methodologies and over-reliance on self-reported outcomes may introduce biases. Moreover, it was also difficult to get country-specific information that distinctly differentiated urban and rural healthcare risks for doctors, creating a major gap in the study.

5.6 Summary

The systematic review of the chosen articles has expressed how the frontline physicians in the UK hospitals experienced extreme mental and physical health issues during the pandemic. This in-depth discussion has pointed out that burnout due to long work hours, staff inadequacies and prolonged exposure to COVID-19 infection jeopardised doctors' well-being requirements. Besides these physical challenges, physicians also faced psychological impacts such as anxiety, stress or depression, which were further intensified by fear or dilemmas of contaminating families. Although peer support programs seemed to be effective in addressing mental issues to a certain extent, the policy implementations and infrastructure seemed to be weakened or sometimes absent in rural healthcare scenarios.

Chapter 6: Conclusion and Recommendation

6.1 Conclusion

This research has studied the impact of the COVID-19 pandemic on the mental health of the frontline doctors in the UK's urban and rural healthcare settings. The notion was set on how an unprecedented situation like the pandemic can cause an increasing risk to physical or mental health among doctors and collapse the entire healthcare system. Frontline doctors, who are lifesavers during medical emergencies, were facing a lack of support regarding workloads, pressure and burnout. Moreover, the risk of infection among families of these was an added concern for them in exacerbating the distress. Thus, this research has set objectives to deeply investigate the pandemic's impact on doctors by assessing risk factors and providing recommendations.

The study also vastly explored the scale and nature of challenges faced by physicians during the pandemic. It was found that there was a stark difference between urban and rural healthcare scenarios during the pandemic due to challenging transport, infrastructural discrepancies and shortages in staff. Moreover, the multiple collateral impacts of COVID-19 infection regarding mood disorders, depression or anxiety have also been found to deteriorate doctors' mental health. Theoretical applications of the sense of safety theoretical framework and the power threat meaning framework, thus, have been suggested to understand doctors' experiences through the perception of safety needs.

This systematic review used interpretivism philosophy, a deductive approach and a qualitative strategy followed by a thematic analysis to interpret the secondary data collected with a conceptual establishment. This methodological process has helped conduct the research with a nuanced, comprehensive analysis that focused not only on the issues but the implemented solutions. Overall, the systematic review has successfully confirmed that the frontline doctors faced severe physical and mental burdens due to a lack of supportive staff and overcrowding patients daily. Furthermore, the systematic design, PRISMA screening and ethical considerations ensured data transparency and maintained all the ethical codes of conduct in this research. The inclusion and exclusion criteria helped maintain information integrity by taking recent data not before 2021.

This study further bridged the gap between theoretical perspectives with practical realities to explore the wretched conditions of the doctors in both rural and urban centres. The findings satisfy

the research objectives largely by demonstrating the pandemic's multifaceted impact and offering evidence-based recommendations. Hospital leaders and policy makers must have prioritised multi-disciplinary actions for keeping adequate staff, equitable peer support systems and resilient drug supply, including rural areas. However, a significant gap was evident in the rural healthcare scenario, where doctors suffered due to the above-identified risk factors. It has summarised the research methodologies and key findings of the literature review and stated the research gap. On a concluding note, these disparities have highlighted the need for strong policy support for enhancing healthcare infrastructure in rural areas.

6.2 Linking with objectives

Link with objective 1

The first objective of this research has been to examine the physical health risks associated with the impact of prolonged COVID-19 on the UK's rural and urban hospital doctors. This objective has been discussed in almost every part of this board discussion, including introduction, literature review, data analysis, results and findings, except methodology. Evidence highlighted long working schedules, physical fatigue, mental strain, anxiety, sleep disorders, breathlessness and staff shortages as the major occurrences due to COVID. Compared to urban healthcare settings, rural physicians seemed to have faced additional burdens due to resource shortages or the lack of resilient care support infrastructure.

Link with objective 2

The second objective of this research was to analyse the impacts of the pandemic on the UK clinicians' mental health. This objective was vastly met in the literature review, results, and discussion sections, which found anxiety, stress and depression to be the major negative health outcomes of the frontline doctors in the UK's rural and urban areas. In the rationale, it was linked with the fact that COVID-19 caused severe emotional distress among the doctors in both rural and urban hospitals due to a large number of cases and task pressures. Later in the further discussion, even the cases of homicide of the physicians were mentioned, supporting the negative impacts of the pandemic on frontline doctors.

Link with objective 3

The third objective was to suggest recommendations for enhancing policy support in favour of the UK's rural and urban hospitals' frontline care-workers. Further discussion on this objective has

highlighted the global health policy adherence in many countries, but in many articles taken for systematic review, strong data support was missing, identifying a gap in studies. However, the available data showed the UK government's genuine efforts to back up hospitals (NHS) with additional peer support initiatives to support doctors' physical and mental health.

6.3 Recommendations

Recommendation 1: Hospitals must adopt multidisciplinary staffing models to streamline care-support systems

Inadequate staffing in the UK hospitals has been found to be one of the major issues during the unprecedented medical emergencies. Hence, to address this issue, Ziemann *et al.* (2023) suggested optimising the multidisciplinary framework by staffing sufficiency with a balanced mix of skills. The rapidly increasing need for skilled healthcare workers in the UK hospitals is expected to rise further in the upcoming years. This situation in the near future will change the scope for the care support workers and also healthcare authorities' practices to build a substantially effective workforce. This will help configure professional roles to increase staff members by better leveraging their education, competencies and licences. Chovanec and Howard (2021) have also solidified the recommendation by mentioning that implementing interdisciplinary staffing by collaborating with different skills ensures quality care delivery and patient safety. This also considers technological integration in the interprofessional teams to streamline care services with effective communication and strategic planning.

Recommendation 2: Policies must address the poor health conditions of frontline doctors through peer-support programs and provide work-life balance during emergencies

As the research findings have pinpointed the poor physical and mental health conditions of the frontline doctors during the pandemic, it necessitates elevating and strengthening policy implementations. Simms *et al.* (2023) have thus suggested reviewing policy programs, ensuring the overall wellness of the healthcare workers to understand the gaps and address them with the needful changes. Moreover, understaffing, under appreciation of workers, workload and burnout challenges can be lowered by restructuring the healthcare policies through staff motivation, counselling, resourcing and creating a flexible work culture. Additionally, the UK hospitals must also support the mental well-being of the physicians, nurses, and other support staff with wellness initiatives department-wise and by improving interpersonal communication. Regularly examining the workload of the staff, workforce inadequacy and taking actions for recruitment with better

referral resources are also necessary to bridge the gap in staffing. The culture of wellness can thus be created through a strong, supportive organisational authority to become resilient for handling medical emergencies like the pandemic in future.

Recommendation 3: The UK Government must strengthen rural healthcare support by deploying strict regulations

The UK government should also take decisive action to solidify the rural healthcare infrastructure by creating and deploying a strict regulatory support system. As per Adam (2025), creating a risk-resilient healthcare infrastructure in rural areas backed by the government can ensure equitable access to treatment during emergencies. The discussion of the pandemic's negative impact on rural physicians has highlighted the collapsed drug supply due to transport issues as well. Hence, the UK government also requires to creation of an investigation committee that will look after real-time healthcare scenarios in rural areas and address challenges. Furthermore, regulations should also mandate fair drug distribution in rural areas, enforce sufficient staffing and enable resilient transport facilities. These recommended policies must be developed under a strict oversight mechanism led by the UK government, in association with the rural healthcare centres.

6.4 Limitations

This research study faced a few limitations, which can be acknowledged. The entire study has been conducted through a systematic review, through a thematic assessment, which heavily relied on secondary data. This restricted access to first-hand experiences through the primary study of the frontline doctors using surveys or interviews. Variability in the sample sizes and study designs was much aligned with the research strategy and needs; however, the self-supported results might introduce minimal biases in data interpretation. Additionally, the absence of UK-specific information in articles, the pandemic's long-term impacts on doctors and having limited interpretation of urban-rural discrepancies in the healthcare system, creates insufficient support.

6.5 Future Implications and Practical Benefits

This research highlights the urgency in creating a robust and resilient rural healthcare infrastructure to support frontline healthcare staff there. Future implications include strengthening equitable resource distribution and embedding peer support programs. Practical benefits involve reducing burnout, improving workforce retention through motivation and recognising staff efforts and enhancing preparedness, ensuring sustainable service delivery in further emergencies.

These measures will not only safeguard UK doctors' wellbeing but also ensure cautious care support with substantial patient outcomes against future crises. The study would provide benefits for managing increased anxiety and depression due to COVID-19, with managing risk in the workforce training program. The research would retain the motivation of healthcare staff for measuring the success of healthcare in the support program. Furthermore, the research gap can be mitigated in future studies by practising a mixed method with primary data collection to include first-hand data from the UK's healthcare staff who experienced the pandemic.

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Appendices

A. Quantitative generic data extraction

Details of the study	Study 1	Study 2	Study 3	Study 4	Study 5
Date of extraction	23/12/2025	24/12/2025	23/12/2025	23/12/2025	24/12/2025

Title	Association of SARS-CoV-2 infection with psychological distress, psychotropic prescribing, fatigue, and sleep problems among UK primary care patients.	Management of traumatic dental injuries: a survey of paediatric emergency department health professionals.	Future-proofing cities against negative city mobility and public health impacts of impending natural hazards: a system dynamic modelling study.	A structured methodology for essential medicines lists and health emergency stockpiles: experience with the Emergency Medicines Buffer Stock in the United Kingdom	
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Source	Google Scholar	Google Scholar	PubMed	Google Scholar	
Purpose	To analyse the risks of COVID-19.	To analyse health professionals' confidence and awareness in managing emergencies.	To examine urban transport, mobility, and assess its impacts on the health outcomes.	To understand the UK government's policy support for medicine stockpiling.	
Study design	Cohort study	Cross-sectional online survey.	System dynamics modelling	Portfolio Decision Analysis	
Population	Individuals aged 16 years or older	Healthcare professionals	Cities (Belfast, UK; Belo Horizonte, Brazil; and Delhi, India)	Healthcare executives	
Sample size	11 923 499	94	3	4,13,24=41	

Diagnosis criteria	Clinical Set-up	Clinical Set-up	Transport systems	Clinical Set-up	
Setting	Community	Community (Online)	Outdoor (road trip)	Community	
Intervention	Multiplicative interaction	Online survey	Outdoor survey	Interviews, workshops, and an Online survey	
Comparator	TAU	TAU	NA	NA	
Outcomes	Increased anxiety and depression due to COVID-19, with elevated risks of fatigue and sleep deprivation.	Most respondents experienced trauma several times a month.	Public transport played a significant part in preventing deaths in diverse scenarios, especially during IDO shocks.	Better buffer support through drug stockpiling for treating UK patients.	

Adverse effects	A large increase in infection and mental issues.	Recurring symptoms of infections.		Not reported	
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B. Qualitative generic data extraction

Details of the study	Study 1	Study 2	Study 3	Study 4	Study 5	Study 6
Date of extraction	23/12/2025	23/12/2025	24/12/2025	24/12/2025	24/12/2025	24/12/2025

Title	Challenges faced by doctors and nurses in the emergency department: An integrated review	The unseen costs of medical training in the UK: a growing crisis, Frontiers in Medicine	Telemedicine use in rural areas of the United Kingdom to improve access to healthcare facilities: A review of current evidence	The association between multi-disciplinary staffing levels and mortality in acute hospitals: a systematic review.	Peer support between healthcare workers in hospital and out-of-hospital settings: a scoping review.	The institutional mismatch of state civil courts, Columbian Law Review
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Source	PubMed	PubMed	Google Scholar	Google Scholar	Google Scholar	Google Scholar
Purpose	To enhance healthcare delivery in emergencies .	To assess the financial, psychological and systemic challenges associated with clinical training.	To analyse the use of telemedicine in the UK's rural areas.	To investigate multi-disciplinary staffing levels in acute hospitals and their relation to patients' mortality.	To explore the role of peer support programs in enhancing the mental well-being of healthcare workers.	To examine structural and institutional mismatch within the USA civil courts.
Study design	Comprehensive review methodology	Systematic Review	Systematic literature review	Systematic Review	Scoping review	Qualitative legal analysis

Population	Healthcare workers in the emergency department	Doctors and junior students	Patients and healthcare professionals.	Healthcare staff	Healthcare staff	State civil courts
Sample selection	PRISMA	NA	PRISMA	PRISMA	NA	NA
Sample size	NA	NA	NA	NA	NA	NA
Age	NA	NA	NA	NA	NA	NA
Education/ethnicity	NA	NA	NA	NA	NA	NA
Setting	Clinical	Clinical	Clinical	Clinical (Acute Hospitals)	Clinical	State Civil Courts across the U.S.
Primary diagnosis	NA	NA	NA	NA	NA	NA

Exposure	Medical community	Medical community	Local Medical Community	Medical Community	Medical Community	Legal community
Outcomes	Identified key challenges regarding stress, burnout, workload, language and cultural differences, communication, resource shortages, and ethical dilemmas.	Identified monetary constraints, mental health challenges, staff shortage and retention issues.	Enhanced healthcare access for patients, reduced travel burden and better patient satisfaction.	Improved patients' health outcomes with higher staffing ratios.	Improved mental health of healthcare staff.	Mentioned urban locations as the best and rural locations as the worst places in the USA to work during the pandemic.

Adverse effects	High risk of physical and psychological distress for healthcare staff.	Anxiety, stress, burnout, financial hardship and risk of attrition.	Lack of infrastructure limited digital literacy and travel time.	Increased mortality of patients and excess staff workload.	Lack of specific guidelines for implementing programs.	Indirectly portrays the adverse impacts on working conditions in other industries (including healthcare) as well.
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