

## The Influence of Stress Management Strategies on Mental Health Outcomes in the Pakistani Healthcare Sector: A Systematic Review

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### Abstract

This systematic review explores the influence of stress management strategies (SMSs) on mental health outcomes (MHOs) among healthcare professionals (HCPs) in Pakistan, particularly during the COVID-19 pandemic. Data from eleven studies were synthesized using thematic analysis to identify key themes related to stress management strategies, mental health outcomes, barriers, facilitators, and contextual factors. The review identifies significant mental health challenges faced by HCPs, including psychological distress, burnout, and anxiety. Effective stress management strategies (SMSs) included coping mechanisms, organizational support, and resilience-building practices. Barriers such as inadequate support systems and systemic inefficiencies were noted, while facilitators included community support and personal coping strategies (Zaman et al, 2021). Contextual factors like organizational readiness and cultural considerations influenced the effectiveness of these strategies. There is an urgent need for enhanced stress management interventions (SMIs) to improve mental health outcomes among HCPs in Pakistan. Recommendations emphasize strengthening organizational support, increasing mental health awareness, and addressing contextual challenges. Future research should further explore these areas to develop comprehensive support strategies.

**Keywords:** Stress management, mental health outcomes, healthcare professionals, Pakistan, systematic review.

### Chapter 1: Introduction

In the field of healthcare provision, especially in the dynamic panorama of Pakistan, the intersection of stress management strategies (SMSs) and mental health consequences among healthcare professionals display an important place of inquiry (Gillani & Zahid, 2023). The challenging nature of the healthcare work center, (Muhammad et al., 2023) intensified by socio-financial demanding conditions (Khan et al., 2016) and resource constraints, (Ahmed et al., n.d.) underlines the significance of expertise in how stress management strategies

(SMSs) influence mental health consequences in this industry (Abbas et al., 2021; Abbaspour et al., 2020; Hameed et al., 2022).

### **Background and Rationale**

Healthcare specialists or workers in Pakistan face many demanding situations that make it adverse and beyond medical obligations (Siddiqui et al., 2020). The pressures of patient care, long working hours, and organizational needs often cause heightened stress among practitioners (Farooq et al., 2023; Fayyaz et al., 2020; Khalid et al., 2016). Studies in international perspectives, have consistently highlighted the pervasiveness of tension and strain among healthcare workers and its unfavorable consequences on both; non-public well-being and professional performance (Balakrishnan et al., 2022; Malti et al., 2017; Sharma, 2020). In Pakistan, where healthcare infrastructures are frequently strained and resources constrained, the effect of stress on healthcare staff and experts is particularly acute. The necessity for effective stress control techniques is paramount now; not only for mitigating immediate mental health risks but also for increasing overall healthcare provider delivery and sustainability (Fayyaz et al., 2020; Zaman, Irfan & Khattak, 2021).

### **Research Aim and Objectives**

The primary goal of this systematic overview is to synthesize current literature on stress or strain control strategies employed by healthcare specialists or workers in Pakistan and their effect on mental health consequences. The key objectives are as follows:

- a) To identify and analyze the various stressors faced by healthcare professionals in Pakistan.
- b) To systematically review and evaluate the effectiveness of different stress management strategies (SMSs) utilized within the Pakistani healthcare sector.
- c) To explore the influence of these strategies on the mental health and well-being of healthcare professionals.
- d) To provide recommendations for future research and practical implications for healthcare policy and practice in Pakistan.

### **Significance of the Study**

This examination holds sizable implications for healthcare directors, policymakers, and researchers in Pakistan. By broadly examining the relationship between stress management strategies (SMSs) and mental health effects, the findings will contribute to the improvement of proof-based interventions aimed at improving the operating conditions and psychological resilience of healthcare workers. Moreover, the synthesis of pioneering literature will fill present gaps in know-how and guide future research endeavors in this critical place.

## Structure of the Review

This systematic overview incorporates five chapters mentioned as follows:

**Chapter 1: Introduction** - Delineates an outline of the study's subject matter, rationale, targets, and significance of the research.

**Chapter 2: Literature Review** - Suggests comprehensive evaluation of applicable literature on stress management, mental health effects, and healthcare experts in Pakistan.

**Chapter 3: Methodology** - Offers the systematic evaluation technique employed, which includes the seek method or search strategies, inclusion criteria, data extraction, and analysis.

**Chapter 4: Results** - Describes the findings of the systematic evaluation, synthesizing key topics and results related to stress control strategies and intellectual health inside the Pakistani healthcare region.

**Chapter 5: Discussion and Conclusion** - Deliberate the inferences of the findings, conclude, and give recommendations for future studies and practice.

## Ethical Considerations

Ethical concerns get top priority in this study, particularly regarding the privacy and confidentiality of individuals in the reviewed research. The ethical tips mentioned with the aid of KUST and applicable regulatory bodies are strictly adhered to for the duration of the research method.

## Limitations

This study recognizes certain boundaries inherent in systematic evaluations, consisting of potential publication bias, variability in examine methodologies, and the scope of available literature. These barriers are addressed transparently in the succeeding chapters. In the end, this evaluation endeavors to contribute to the growing body of know-how on stress management and mental health within the context of Pakistani healthcare. By exploring the effectiveness of stress control techniques, this study pursues to foster a healthier and more resilient healthcare team of workers, in the end improving patient care effects and organizational performance.

## Chapter 2: Literature Review

### Stress Management in Healthcare Settings

The healthcare area in Pakistan faces unique demanding concerns or situations that contribute significantly to the stress felt by healthcare experts. These demanding situations

consist of excessively affected patient loads, restrained sources, inadequate infrastructure, and socio-political pressures (Atif et al., 2021; Muhammad et al., 2023). The consequences of stress on the mental health and well-being of healthcare professionals is an essential problem, influencing each person's practitioners and the excellence of the affected person's care (Hameed et al., 2022; Steinmetz et al., 2021).

### **Stressors Faced by Healthcare Professionals in Pakistan**

A wide-ranging knowledge of stressors; precisely to Pakistani healthcare experts is vital for contextualizing the effectiveness of stress control strategies. Commonly reported stressors encompass workload pressures, rising interpersonal conflicts, ethical dilemmas, loss of help and support structures, and exposure to demanding shocking, and distressing occasions. These stressors contribute to burnout, compassion fatigue, and reduced job satisfaction among healthcare workers in the industry (Alkhawaldeh et al., 2020; Khalid et al., 2016; Khan et al., 2016).

### **Theoretical Frameworks of Stress Management**

Many theoretical frameworks support the observation of stress management in healthcare settings; especially in Pakistan. Models inclusive of the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984) and the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007) propose perceptions and intuitions into how stressors engage with private and organizational elements to influence stress consequences. These frameworks guide the choice and assessment of stress management interventions (SMIs) in empirical and pragmatic studies (Bakker & Demerouti, 2017; Lazarus & Folkman, 1984).

### **Stress Management Strategies**

Studies discovering stress management tactics or strategies (SMS) in Pakistani healthcare settings have centered on quite several interventions (Deen et al., 2023). These consist of individual-targeted techniques such as mindfulness-based stress reduction (MBSR), cognitive-behavioral therapy (CBT), and resilience schooling (Balbinot & Bordignon, 2022; Mbidoaka, 2017). Organizational strategies along with supportive management, workload control, and place of work well-being applications also are outstanding in the literature. Evaluations of those strategies spotlight their varying efficacy in mitigating stress and improving mental fitness outcomes amongst healthcare experts and sectors (Asghar et al., 2017; Farooq et al., 2023).

## Mental Health Outcomes (MHOs) Among Healthcare Professionals

The mental health consequences connected with stress and strain amongst healthcare staff in Pakistan include a variety of problems, such as anxiety, sadness, emotional exhaustion, and decreased job satisfaction (Asif et al., 2020; Bidlan & Sihag, 2013; Hameed et al., 2022). Research has proven a clear correlation between high levels of stress and damaging psychological signs and symptoms, accentuating the urgent want for robust stress management interventions (SMIs) (Afshan et al., 2022; Siddiqui et al., 2020).

### Gaps in Current Knowledge

Despite the developing frame of literature on stress management (SMS) in healthcare, several research gaps persist. These encompass variations or discrepancies in intervention efficacy across specific healthcare settings (Nazir et al., 2022), restricted studies on the long-term sustainability of stress management applications (Afshan et al., 2022; Ali et al., 2020), and the need for culturally tailored methods to cope with stress amongst Pakistani healthcare specialists or staff. Highlighting these gaps is essential for advancing evidence-based practices and enhancing the overall well-being of healthcare carriers (Asghar et al., 2017; KHAN et al., 2017; Nazir et al., 2022).

In the current literature, several MHSs of healthcare professionals are associated with stress, and stress management strategies (SMSs) have been proposed to address these issues. One significant outcome is **burnout**, where stress leads to emotional exhaustion and depersonalization among healthcare workers. However, while the immediate effects of burnout are well documented, the long-term impact on healthcare professionals' overall career trajectories is less understood. Furthermore, there is a lack of research on the effectiveness of targeted SMS interventions for reducing burnout specifically in the Pakistani healthcare sector (Zaidi & Tabassum, 2023; Aslam et al., 2014). This highlights a gap in understanding how SMS can be customized to address burnout in this context.

**Anxiety** is another prevalent mental health outcome (MHO), often triggered by high job demands in healthcare settings. While the relationship between stress and anxiety is acknowledged, there remains a gap in knowledge regarding how anxiety specifically affects job performance across different healthcare environments. Additionally, SMSs tailored to alleviate anxiety, particularly in Pakistan, have not been thoroughly explored (Khalid et al., 2016; Awan et al., n.d.). More research is needed to develop and assess interventions that target this issue.

Similarly, **depression** among healthcare professionals has been linked to prolonged stress, affecting both their professional and personal lives. While the connection between stress and depression is evident, the extent to which SMSs can prevent or mitigate depression in healthcare workers in Pakistan remains unclear. This gap underscores the need for studies investigating the effectiveness of culturally relevant SMSs in reducing depression symptoms (Awan et al., n.d.; De Giorgi & Dinkelaar, 2021). The literature also acknowledges that **emotional exhaustion** negatively impacts patient care, with stressed healthcare workers exhibiting decreased empathy. However, limited research exists on how SMSs, especially organizational-level interventions, can reverse emotional exhaustion, particularly in the post-COVID-19 context. The lack of studies addressing emotional exhaustion within the Pakistani healthcare system highlights a significant gap (De Giorgi & Dinkelaar, 2021; Suleman et al., 2022).

Another major outcome is **decreased job satisfaction**, which is closely tied to high levels of stress and often leads to increased turnover. Although the connection between stress and job satisfaction is recognized, there is insufficient research on how specific SMSs can enhance job satisfaction among healthcare workers in Pakistan (Aslam et al., 2014; Khan & Huda, 2016). More targeted studies are required to investigate the role of SMS in improving job satisfaction.

**Impaired job performance** is another adverse outcome of stress, as it can hinder cognitive functions and lead to errors in patient care. Despite the well-established link between stress and job performance, there is a gap in understanding which specific coping strategies are most effective at mitigating stress-induced performance issues in healthcare professionals. Few studies have explored how SMS directly contribute to job performance improvement in healthcare settings, particularly in Pakistan (Ruotsalainen et al., 2016; Yasmin et al., 2022).

Finally, **increased turnover rates** are a consequence of excessive workplace stress, further exacerbating the challenges faced by healthcare organizations. While high turnover rates due to stress are well-documented, the role of SMS in reducing turnover rates, especially in the healthcare sector of Khyber Pakhtunkhwa, has not been adequately explored (Khan & Huda, 2016; Ahmad et al., 2024). This gap in the literature suggests the need for empirical research on SMS implementations that successfully reduce turnover in Pakistan's healthcare industry.

In conclusion, while the detrimental effects of stress on various mental health outcomes are widely acknowledged, there are significant gaps in the literature, particularly regarding the



application and effectiveness of stress management strategies in the Pakistani healthcare sector. Addressing these gaps can lead to better mental health outcomes and improved organizational performance.

Table 1: Reseach Gap of Mental Health Outcomes

Mental Health Outcome	What is Known	What is Not Known	Existing Gap	References
<b>Burnout</b>	Stress leads to emotional exhaustion and depersonalization among healthcare workers.	The specific long-term effects of burnout on healthcare professionals' overall career trajectory.	The role of targeted SMS in reducing burnout in the Pakistani healthcare context is under-researched.	Zaidi & Tabassum (2023); Aslam et al. (2014)
<b>Anxiety</b>	High job demands cause significant anxiety among healthcare workers.	The relationship between anxiety and job performance in different healthcare settings.	Limited studies exploring SMS interventions specifically designed for anxiety reduction in Pakistan.	Khalid et al. (2016); Awan et al. (n.d.)
<b>Depression</b>	Prolonged stress results in depression, impacting job performance and personal life.	The extent to which SMS can prevent depression in Pakistani healthcare professionals.	Lack of evidence on the effectiveness of culturally relevant SMS in alleviating depression symptoms.	Awan et al. (n.d.); De Giorgi & Dinkelaar (2021)
<b>Emotional Exhaustion</b>	Emotional exhaustion contributes to decreased empathy and patient care.	The effectiveness of SMS in reversing emotional exhaustion post-COVID-19 in healthcare workers.	Insufficient studies on how organizational-level SMS impact emotional exhaustion specifically in Pakistan.	De Giorgi & Dinkelaar (2021); Suleman et al. (2022)
<b>Decreased Job Satisfaction</b>	High stress levels are linked to decreased job	The direct impact of specific SMS on improving job	Limited research on SMS and their	Aslam et al. (2014); Khan &

	satisfaction and increased turnover.	satisfaction in healthcare professionals.	role in improving job satisfaction in healthcare workers in Pakistan.	Huda (2016)
<b>Impaired Job Performance</b>	Stress impairs cognitive functions, leading to errors in patient care.	The specific coping strategies that most effectively mitigate stress-induced job performance issues.	Few studies explore the direct link between SMS and job performance improvement in healthcare settings in Pakistan.	Ruotsalainen et al. (2016); Yasmin et al. (2022)
<b>Increased Turnover Rates</b>	Excessive workplace stress contributes to higher turnover among healthcare professionals.	How SMS can reduce turnover rates in the healthcare sector of Khyber Pakhtunkhwa.	Lack of empirical data on SMS implementations that successfully reduce turnover in the Pakistani healthcare context.	Khan & Huda (2016); Ahmad et al. (2024)

The literature highlights several mental health outcomes associated with stress among healthcare professionals, such as burnout, anxiety, depression, emotional exhaustion, decreased job satisfaction, impaired job performance, and increased turnover rates. While these outcomes are well-documented, significant gaps remain in understanding the long-term effects of burnout and the specific effectiveness of stress management strategies (SMSs) in reducing these outcomes, particularly in the Pakistani healthcare sector. There is limited research on culturally relevant interventions tailored to alleviate anxiety, depression, and emotional exhaustion in this context. Furthermore, the role of SMSs in improving job satisfaction, enhancing job performance, and reducing turnover rates in Pakistan’s healthcare industry remains underexplored. Addressing these gaps can help develop effective strategies to improve mental health and organizational outcomes.

### Chapter 3: Methodology

#### Introduction to Systematic Review Methodology

A systematic review method is adopted to meticulously synthesize and examine current literature on stress management techniques (SMTs) and mental health effects amongst healthcare specialists in Pakistan. This chapter delineates the research layout, technique,



exclusion and inclusion criteria, search strategy approach, information extraction methods, thematic analysis of qualitative records, and related ethical considerations etc.

### Research Design and Approach

This systematic evaluation follows an inclusive approach to identify pertinent research and studies that inspects stress management strategies (SMSs) and mental health consequences among healthcare staff in Pakistan. The methodology follows to connected and related suggestions for engaging in systematic literature reviews (SLRs) in healthcare research (e.g., Cochrane Handbook for Systematic Reviews of Interventions).

### Inclusion and Exclusion Criteria

Inclusion criteria for studies incorporate peer-reviewed articles available online or printed in English from databases including Google Scholar, PubMed, Scopus, and Web of Science. Studies focusing on stress management interventions (SMIs), mental health results, and healthcare professionals (docs, nurses, allied health experts) in Pakistani healthcare context are selected. Exclusion standards apply to to studies out of the boundaries of the healthcare zone or not performed inside Pakistan.

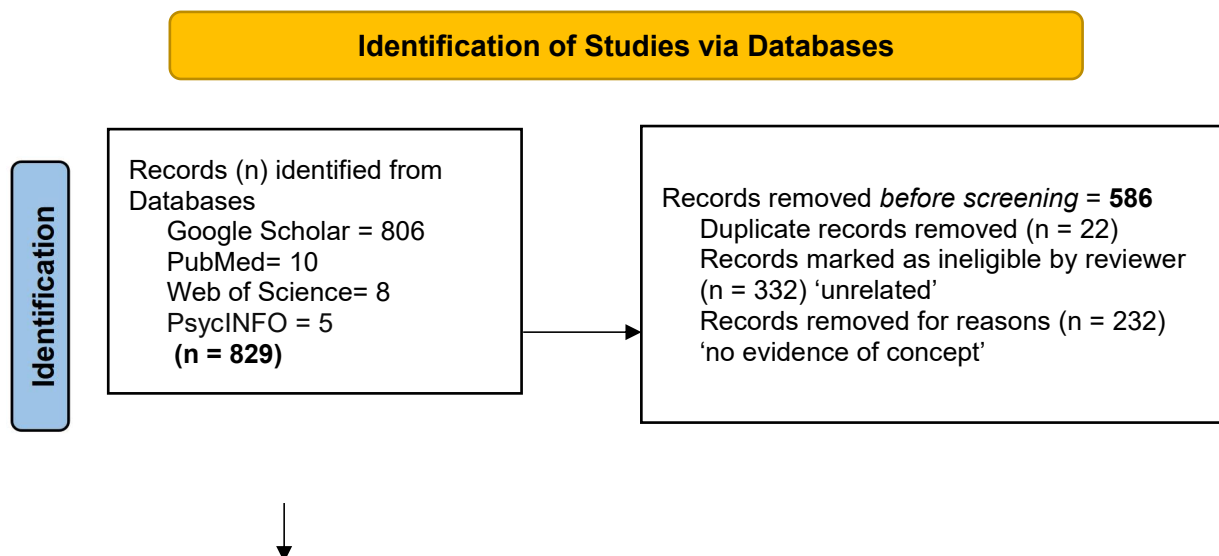
Table 2: Inclusion and Exclusion Criteria

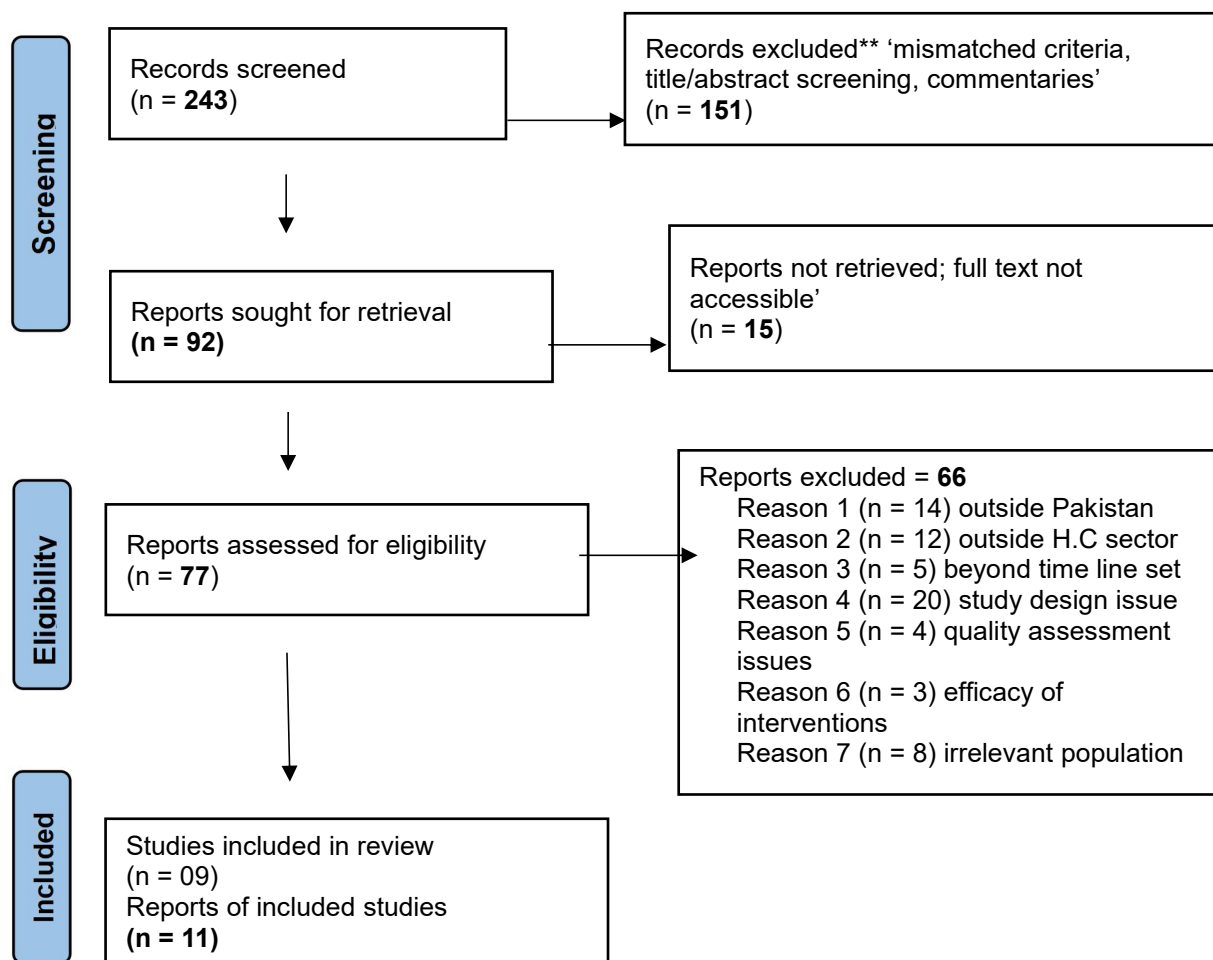
Category	Inclusion Criteria	Exclusion Criteria
Study Design	Cross-sectional studies, qualitative studies, systematic reviews/meta-synthesis.	Quantitative studies or other non-qualitative research methodologies.
Subject	Healthcare professionals working in various roles within healthcare settings in Pakistan (e.g., doctors, nurses, pharmacists, allied health professionals, administrative staff).	Individuals not employed in healthcare professions, non-Pakistani residents, individuals not residing or working within Pakistan's healthcare sector.
Intervention	Studies investigating stress and stress management interventions designed for healthcare professionals.	Research articles unrelated to stress, stress management, or healthcare settings.
Geographical Location	Studies conducted specifically in healthcare settings located within	Studies conducted outside Pakistan.

	Pakistan.	
<b>Outcome Measures</b>	Studies that assessed the impact of stress management interventions on relevant outcomes (e.g., stress levels, psychological well-being, job satisfaction, burnout, resilience, coping strategies, job performance).	Studies that do not assess the impact of stress management interventions or do not focus on relevant outcomes.
<b>Publication Date</b>	Studies published between 2014-2024.	Studies published outside the specified timeframe.
<b>Language</b>	Studies published in English.	Articles not published in English.
<b>Accessibility</b>	Studies for which the full text is accessible.	Studies for which the full text is not accessible.

### Search Strategy and Database Selection

A systematic search method is established using appropriate Medical Subject Headings (MeSH) phrases and key phrases related to stress management, mental health, healthcare specialists or workers, and Pakistan. Databases are decided and selected on primarily based on their relevance to healthcare research and reporting of Pakistani literature.





PRISMA 2020 flow diagram 1: For new systematic reviews which included searches of databases, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372: n71. Doi: 10.1136/bmj. n71

### Data Extraction and Synthesis Methods

Data extraction entails an established technique to take out key information and evidence from selected studies, together with a look at characteristics, articipants, stress management techniques (SMTs) assessed, mental health effects measured, and qualitative information associated with thematic evaluation. Qualitative information from the included research goes through thematic analysis to perceive frequent themes and patterns associated with stress management techniques (SMTs) and their impact on mental health effects amongst healthcare workers in Pakistan.

References*	Q.1	Q.2	Q.3	Q.4	Q.5	Q.6	Q.7	Q.8	Q.9	Q.10	Result (%)
1. Gilani et al.	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	09/10

(2022)											(90%)
2. Sajid et al. (2021)	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	09/10 (90%)
3. Afshan et al. (2022)	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	09/10 (90%)
4. Choudhry et al. (2020)	Y	Y	Y	U	Y	Y	U	U	Y	Y	07/10 (70%)
5. Hameed et al.* (2022)	Y	Y	Y	NA	Y	NA	U	Y	Y	Y	07/10 (70%)
6. Rashid et al. (2020)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10 (100%)
7. Talat et al. (2023)	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	09/10 (90%)
8. Shahbaz et al. (2021)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	09/10 (90%)
9. Khadka et al. (2021)	Y	Y	U	Y	Y	Y	U	U	Y	Y	07/10 (70%)
10. Steinmetz et al. (2021)	Y	Y	U	Y	Y	U	U	Y	Y	Y	07/10 (70%)
11. Hameed Feroz et al. (2022)	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	09/10 (90%)

Table 3 : Quality Assessment of included 11 studies in accordance with CASP Tool

Table 3 a: Criteria for Evaluating the Quality of Research Studies (Modified Cochrane Tool)

Studies / Authers	No of Participants (Studies)	Relative effect from CASP Table 4 (% Age)	Outcomes	Certainty of the Evidence (Grading)	Comments
1. Gilani et al. (2022)	Healthcare workers (23)	09/10 (90%)	Stress, SMIs	Moderate Quality	Study Retained;
2. (Sajid et al., 2021)	Healthcare workers and Students (22)	09/10 (90%)	Stress, SMIs	Moderate Quality	Retained;
3. Afshan et al. (2022)	Interviewed 12 doctors	09/10 (90%)	Stress, SMIs	Moderate Quality	Retained;
4. (Munawar & Choudhry, 2021)	A total of 15 HCWs for semi structured interview	07/10 (70%)	Stress, SMIs	Low Quality	Retained;
5. Hameed et al. (2022)	Telephonically conducted 47 in-depth interviews (HCPs)	07/10 (70%)	Stress, SMIs	Low Quality	Retained;

6. Rashid and Faisal et al. (2020)	Thirteen resident doctors (13)	10/10 (100%)	Stress, SMIs	High Quality	Retained;
7. (Talat et al., 2023)	A total of 32 HCWs for semi structured interview	09/10 (90%)	Stress, SMIs	Moderate Quality	Retained;
8. Shahbaz et al. (2021)	Interviews were conducted with 22 female HCPs.	09/10 (90%)	Stress, SMIs	Moderate Quality	Retained;
9. Khadke et al. (2021)	11 clinical frontline pharmacists	07/10 (70%)	Stress, SMIs	Low Quality	Retained
10. Steinmetz et al. (2021)	Healthcare professionals (72) with a positive RT-PCR.	07/10 (70%)	Stress, SMIs	Low Quality	Retained;
11. Hameed Feroz et al. (2021)	In-depth interviews (56) healthcare providers.	09/10 (90%)	Stress, SMIs	Moderate Quality	Retained;

### Thematic Analysis of Qualitative Data

Thematic analysis of qualitative information and material extracted from selected research is carried out following Braun and Clarke's (2006) technique. This includes labeling, coding, and categorizing textual information to highlight overarching themes and sub-themes associated with stress management techniques (SMTs), coping mechanisms, perceived efficacy of interventions, barriers to implementation, and contextual elements influencing mental health consequences among healthcare professionals in Pakistan (Braun & Clarke, 2006).

### Ethical Considerations

Ethical concerns emphasize the security of human subjects' privacy and observance of ethical recommendations throughout the systematic assessment technique. Institutional evaluation board approval, which is relevant, guarantees compliance with moral standards governing studies related to human subjects.

### Limitations

Limitations of the systematic overview (SR) encompass latent publication bias, inconsistency in related methodologies, language limitations (English), and the scope of existing literature. These barriers or limitations are focussed transparently to offer a balanced interpretation of findings.

Results Chapter

Overview of the Included Eleven Studies

This phase gives a top-level view of the eleven research studies covered in the integrative synthesis, emphasizing on the stress and coping mechanisms among healthcare specialists or professionals (HCPs) in Pakistan at some stage in the COVID-19 pandemic. The research utilized qualitative methodologies to explore the lived experiences, stressors, coping strategies, and mental health consequences of HCPs. The members of the study covered doctors, nurses, and different frontline healthcare people (Allied Staff) from numerous healthcare establishments in Pakistan.

Themes Emerging from Qualitative Integrative Synthesis

The thematic analysis of the 11 studies found numerous key themes and sub-themes related to stress and handling mechanisms among HCPs. These themes are provided in Table 4.1.

Table 4 : Key Themes and Sub-Themes

Key Themes	Sub-Themes	Description
Mental Health Outcomes	Psychological Distress	Experiences of anxiety, depression, and emotional strain among HCPs.
	Burnout	Physical and emotional exhaustion due to prolonged stress and overwork.
	Fear of Infection	Persistent fear of contracting and spreading COVID-19 to family members.
Influence of Stress Management Strategies	Faith-Based Coping	Reliance on religious practices and spirituality for emotional relief.
	Personal Satisfaction from Professional Roles	Deriving a sense of purpose and fulfillment from professional duties.
	Preventive Measures and Compliance with Guidelines	Adherence to safety protocols and use of PPE to mitigate stress.
Barriers and Facilitators	Lack of Organizational Support	Insufficient infrastructure, PPE, and systemic inefficiencies.
	Family and Community	Emotional and social support from

Key Themes	Sub-Themes	Description
	Support	family and community members.
	Social Stigma	Negative societal attitudes towards HCPs contribute to stress and isolation.
Contextual Factors Influencing Strategies	Socio-Economic Impacts	Financial strain and economic challenges faced by HCPs during the pandemic.
	Cultural Norms and Expectations	Influence of societal norms and expectations on HCPs' stress and coping mechanisms.
	Organizational Readiness	Preparedness and responsiveness of healthcare institutions in supporting HCPs.

### Types of Mental Health Outcomes Among HCPs

The mental health consequences observed and felt by HCPs in Pakistan, as recognized in the eleven research, consist of mental misery (psychological distress), burnout, and fear of infection. Psychological distress incorporates anxiety, despair/depression, and emotional vulnerability worsened by the different illnesses and pandemic challenges. Burnout is the outcome of prolonged exposure to high-stress environments and overwork, leading to bodily and emotional exhaustion. Fear of infection / contamination is a big cause of stress, with HCPs constantly concerned about catching COVID-19 and transmitting it to their family members.

### Influence of SMS on Mental Health Outcomes (MHOs)

The studies spotlight numerous stress management strategies (SMSs) practiced by HCPs, which have a sizable effect on their mental health outcomes. Faith-based handling mechanisms, such as spiritual practices and spirituality, offer emotional relief and resilience. Personal fulfillment derived from professional roles enables HCPs to trace reason and contentment, mitigating damaging mental fitness consequences. Observance to preventive measures and compliance with protection pointers offer an appreciation of control and reduce anxiety related to the threat of infection or contamination.



### Facilitators and Barriers

The analysis diagnosed diverse barriers and facilitators influencing the efficiency of SMSs among HCPs in Pakistan. Lack of organizational assistance, such as deficient PPEs and systemic inefficiencies, aggravates stress degrees. On the contrary, a circle of relatives and network support play an important function in offering emotional remedies and nurturing resilience. Social stigma or dishonor related to HCPs, however, acts as a barrier, causing to stress and social seclusion.

### Contextual Factors Influencing Strategies

Numerous circumstantial aspects affect the SMSs practiced by HCPs in Pakistan. Socioeconomic influences, consisting of financial stress and monetary/economic constraints, substantially disturb HCPs' mental health and managing mechanisms. Cultural norms and societal expectancies also formulate the stress practices and coping strategies of HCPs. Furthermore, the attentiveness and reaction of healthcare establishments, or institutions readiness, are essential in figuring out the level of assistance available to HCPs throughout crises.

The thematic synthesis of the eleven studies manifests a holistic picture of the stressors, mental health consequences, and handling techniques among healthcare professionals in Pakistan at some point during the COVID-19 pandemic. The findings focus the critical function of dominant stress-managing techniques, sturdy support structures, and organizational readiness in mitigating stress and improving the well-being of HCPs. Attempting the recognized obstacles and leveraging facilitators can considerably advance mental health results for HCPs in Pakistan ensuing in higher health care.

### Subgroup Analysis

#### Identify Subgroups

The integrative and consolidative synthesis of the eleven studies delineates various subgroups in the healthcare professionals or specialists (HCPs) in Pakistan, which include special healthcare professions (medical doctors, nurses, admin personnel, and paramedics), gender (male and female), and other relevant classes which includes geographical area and type of healthcare facility (public vs. Non-public).

#### Organize Data

The information is systematized to compare findings throughout those subgroups, focusing on the specific stressors, mental health consequences, and stress-managing strategies (SMSs) practiced by each group.

### Healthcare Professions and Stress Management

The healthcare professions and their stressors, mental health outcomes (MHOs), and related stress management strategies (SMSs) are briefly delineated below:

1. **Doctors:**
  - **Stressors:** High patient load, accountability for critical decisions, fear of litigation.
  - **Mental Health Outcomes:** Elevated levels of anxiety and burnout.
  - **Strategies:** Professional identity, participation in decision-making, and resilience training.
2. **Nurses:**
  - **Stressors:** Long working hours, emotional labor, lack of support.
  - **MHOs:** High levels of psychological distress and emotional exhaustion.
  - **SMSs:** Peer support, community appreciation, religious coping.
3. **Paramedics:**
  - **Stressors:** Exposure to traumatic events, inconsistent shifts, insufficient training.
  - **MHOs:** PTSD symptoms, anxiety, depression.
  - **SMSs:** Stress inoculation training, counseling services, and personal coping mechanisms.

### Gender

1. **Male HCPs:**
  - **Stressors:** Social expectations to remain stoic, occupational hazards.
  - **MHOs:** Suppressed emotional distress, anxiety, and substance use as a coping mechanism.
  - **SMSs:** Engaging in physical activities, and religious practices, seeking informal support networks.
2. **Female HCPs:**
  - **Stressors:** Balancing professional duties with family responsibilities, and social stigma.
  - **MHOs:** Higher levels of anxiety, emotional strain, depressive symptoms.
  - **SMSs:** Family support, religious coping, professional counseling services.

### Geographical Location

1. **Urban HCPs:**
  - **Stressors:** High patient density, faster disease transmission, media scrutiny.
  - **MHOs:** Increased burnout and anxiety.
  - **SMSs:** Access to better healthcare facilities, community engagement, and organizational support.
2. **Rural HCPs:**
  - **Stressors:** Lack of resources, isolation, higher work pressure due to fewer staff.

- MHOs: Elevated stress levels, and feelings of helplessness.
- SMSs: Community support, reliance on local traditions, and informal coping mechanisms.

#### Type of Healthcare Facility

##### 1. Public Sector HCPs:

- Stressors: Understaffing, insufficient infrastructure, bureaucratic constraints.
- MHOs: Higher stress and burnout degrees.
- SMSs: Opportunities for professional progress, training for resilience, and peer support corporations.

##### 2. Private Sector HCPs:

- Stressors: Job uncertainty, pressure to achieve patient's satisfaction, lengthy hours.
- MHOs: Reasonable stress and anxiety.
- SMSs: Professional development possibilities, resilience schooling, and availability of mental health services.

#### Subgroup-Specific Findings and Implications

##### Healthcare Professions:

- Doctors benefit from focused resilience training and involvement in decision-making approaches to mitigate tension and burnout.
- Nurses need stronger peer support and guide and a acknowledgement for their emotional hard work to lessen mental misery.
- Paramedics necessitate tailor-made stress inoculation programs and steadily get entry to counseling to control PTSD signs successfully.

##### Gender:

- Male HCPs need to be recommended to interact in physical and social sports, with motives to reduce stigma around looking for mental health support and sustenance.
- Female HCPs require strong family assistance and professional counseling services to navigate their unique stressors.

##### Geographical Location:

- Urban HCPs gain advantage from organizational guidance and community assistance to address high patient workload and media analysis.
- Rural HCPs need greater relief allocation and community aid to address isolation and work pressure.

#### Type of Healthcare Facility

- Public area HCPs want systemic reforms to address understaffing and infrastructure challenges, with robust peer assistance groups.
- Private sector HCPs benefit from expert development and mental health services to address job uncertainty and patient satisfaction pressures. By considering these subgroup-unique dynamics, healthcare establishments can design and put into effect more real, tailored stress management interventions (SMIs), in the long run enhancing the mental health effects of healthcare workers throughout Pakistan.

### Gaps and Limitations in Literature

#### Study Limitations

The eleven studies reviewed a showcase of numerous methodological constraints. Generally, the research in the main areas applied self-pronounced measures for assessing mental health consequences (MHSs) and stress-managing techniques (SMTs), which may introduce response biases. Furthermore, maximum research adopted cross-sectional designs, restricting the capacity to deduce causality among SMTs and MHOs. The sample sizes in numerous studies had been quite small, reducing the generalizability of the findings to the broader population of healthcare experts in Pakistan. Moreover, there was a scarcity of longitudinal research to trace modifications in MHOs through the years in reaction to implemented SMSs.

#### Review Process Limitations

The assessment method itself has certain complications. The synthesis of findings from various research may be influenced via publication biases, where studies with huge findings are more likely to be published and covered within the assessment. The diversity in study designs, settings, and measures used throughout the studies poses demanding situations for standardizing and evaluating consequences or the results. Also, the evaluation relied heavily on available published research, probably overlooking relevant but unpublished or grey literature that could provide a more comprehensive know-how of the topic.

#### Impact on Findings

These barriers collectively impact the understanding or explanation and generalizability of the results. The reliance on self-mentioned measures may twist the information, as individuals might underreport or exaggerate their stress levels and managing mechanisms. Cross-sectional designs prevent pure know-how of the long-term outcomes of stress management techniques on mental health consequences. The small sample sizes restrict the manifestation of the results, making it tough to apply the findings universally throughout

extraordinary healthcare settings and professions in Pakistan. Besides, the latent publication biases may additionally result in an overvaluation of the efficacy of certain stress management techniques (SMTs). The variability in research methods and measures complicates the synthesis procedure, potentially leading to variations inside the stated outcomes. Lastly, the exclusion of grey literature can also suggest that some powerful strain management interventions and applicable contextual elements remain unidentified.

### **Addressing Gaps in Future Research**

To deal with these gaps, future research needs to prioritize longitudinal studies with large and greater samples to decorate the generalizability of the findings. Incorporating objective measures along with self-stated facts can provide an extra accurate assessment of mental health effects and the efficacy of stress management techniques. Efforts need to be made to consist of unpublished and gray literature to mitigate booklet bias. Additionally, standardizing research designs and measures throughout research can facilitate more reliable comparisons and syntheses of findings. By dealing these barriers, future research can offer a more robust and comprehensive expertise of ways stress management techniques impact mental health outcomes (MHOs) among healthcare experts in Pakistan.

### **Discussion Chapter**

#### **Interpretation**

##### **Summarize Key Findings**

The synthesis of findings from the eleven studies reveals numerous crucial themes and subthemes regarding the stressors, mental health consequences, and stress management techniques amongst healthcare professionals (HCPs) in Pakistan at some stage in the COVID-19 pandemic. Key themes and subthemes consist of:

1. **Pandemic Anxiety and Coping Mechanisms:** HCPs employed various coping techniques including religious practices, active coping, acceptance, internal satisfaction from expert roles, and faith-based coping to control the delicate tension and stress through the pandemic.
2. **Organizational Challenges and Support Systems:** The shortage of personal protective equipments (PPEs) and organizational readiness substantially worsened stress degrees among HCPs. However, support structures which include circle of relatives, public appreciation, and social assistance played an essential roles in moderating strain and promoting resilience.
3. **Professional Commitment and Interpersonal Relationships:** Despite dealing with important stressors, HCPs' strong experience of duty and professional commitment

underscored their resilience. However, the pandemic negatively affected interpersonal relationships, necessitating in guiding HCPs in keeping healthy relations.

4. **Work Conditions and Mental Health Outcomes:** Demanding work situations described by long hours and excessive strain adversely impacted HCPs' mental health. Effective stress management strategies (SMSs) and organizational help were crucial in mitigating these poor impacts.
5. **Systemic Issues in Health Management:** Systemic incompetence and meager communicate in the healthcare system were significant obstacles to addressing the mental health needs of HCPs, including to their stress levels and deterring their ability to carry out efficaciously.
6. **Gender-Specific Challenges:** Lady HCPs confronted particular psychosocial, emotional, and occupational challenges, compounded by inadequate institutional guidance, social stigma, and circle of relatives and family issues.
7. **Preventive Measures and Compliance:** Anticipated actions such as the usage of immune or protection boosters, observance of defensive recommendations, and adherence to clinical etiquettes played a significant function in managing stress amongst HCPs.

### Contextualize in Pakistan

The healthcare milieu in Pakistan at some point during the COVID-19 pandemic was marked by huge demanding and critical situations that intensified stress levels among HCPs. The healthcare infrastructure in the country, already strained by using resource barriers and systemic inefficiencies, struggled to address the surge in calls for medical care. The shortage of PPE and other crucial tools and sources, coupled with inadequate organizational help, in addition, worsened the stress and tension experienced by way of HCPs. Moreover, cultural factors which include the social stigma associated with mental health status and the reliance on faith-based coping mechanisms played a crucial part in shaping the stress control techniques of HCPs.

### Implications

#### Practical Implications for HCPs and Institutions

The findings of this study have several realistic suggestions for healthcare experts and establishments in Pakistan:

1. **Enhance Organizational Readiness:** There is an important requirement to enhance healthcare infrastructure, ensure the provision of necessary tools and PPEs, and streamline organizational systems to guide HCPs successfully. This includes establishing formal system

or mechanisms for diagnosing and appreciating the efforts of HCPs to mitigate stress and adopt a high-quality work environment.

2. **Strengthen Support Systems:** Healthcare establishments should promote their own family and community guide networks, spotting the contributions of HCPs to reinforce morale. Providing safe running conditions, well-timed salaries, and threat allowances are vital to helping HCPs' welfare.
3. **Promote Mental Health Awareness:** Increasing focus and accessibility of mental health services, mainly in underserved areas, is important. Destigmatizing mental health problems and imparting comfortably available counseling and psychological help can assist HCPs manage with pressure greater efficaciously.
4. **Implement Preventive Measures and Compliance Protocols:** Confirming observance to preventive suggestions and compliance with scientific protocols can provide HCPs with an experience of control and protection, helping them manage stress and anxiety more efficiently.
5. **Address Gender-Specific Challenges:** Personalized interventions are required to address the precise demanding situations confronted with lady HCPs. This consists of presenting enough institutional assistance, addressing social stigma, and guaranteeing the protection and well-being of their family members.
6. **Improve Communication and Systemic Efficiency:** Ensuring adherence to preventive suggestions and compliance with scientific protocols of communication and management can provide HCPs with an experience of management and protection, helping them control stress and anxiety more efficiently.

By stressing these regions through focused interventions and consistent help, healthcare establishments in Pakistan can notably increase healthcare experts' well-being and overall performance during ongoing and future health crises. These insights offer a basis for growing effective guidelines and practices that prioritize the mental health of HCPs, ensuring a durable and responsive healthcare system.

### Comparison with International Literature

#### Identify Relevant Studies

To contextualize the findings of present research within a global framework, following key research studies were selected for contrast purpose. These consist of:



1. **Shanafelt et al. (2020):** Scrutinized the well-being and resilience of healthcare experts inside the United States throughout the COVID-19 pandemic (Shanafelt et al., 2020).
2. **Barello et al. (2020):** Examined the mental health effect of COVID-19 on healthcare people in Italy (Barello et al., 2020).
3. **Tan et al. (2020):** Studied stress, coping techniques, and mental health consequences among healthcare experts in Singapore (Tan et al., 2020).
4. **Que et al. (2020):** Discovered the mental health popularity and coping mechanisms of healthcare employees in China through the COVID-19 outbreak (Que et al., 2020).
5. **Parthasarathy et al. (2021):** Evaluated the mental health fitness impact of COVID-19 on healthcare workers in India (Parthasarathy et al., 2021).

### Highlight Similarities and Differences

#### Similarities

1. **Psychological Distress:** Across the research, healthcare experts universally experienced significant mental misery, together with anxiety, depression, and burnout. For instance, Shanafelt et al. (2020) and Barello et al. (2020) each pointed out high levels of tension and burnout among healthcare workers within the US and Italy, respectively.
2. **Importance of Coping Mechanisms:** Similar to the findings in Pakistan, global research emphasized the role of coping mechanisms such as personal pleasure from expert roles, religion-based coping, and social assistance. Tan et al. (2020) in Singapore and Que et al. (2020) in China both stated that powerful coping strategies are essential for mitigating stress.
3. **Organizational Support:** The need for a robust organizational guide became a common theme. Studies within the US, Italy, and Singapore all underscored the importance of organizational readiness, inclusive of the availability of PPEs and mental and psychological assistance.

#### Differences

1. **Cultural and Religious Coping:** A wonderful distinction become the prominent function of faith; primarily based on coping mechanisms in Pakistan. While global research mentioned spirituality as a coping method, it was especially emphasized inside the Pakistani context, showing the cultural and spiritual setting of the region.
2. **Resource Availability:** The deficiency of PPEs and vital resources becomes a more acute difficulty in Pakistan in comparison to nations like the US and Singapore, in which

healthcare infrastructure is commonly extra sturdy. This difference delineates the disparity in useful resource availability and its impact on stress levels among healthcare specialists.

3. **Gender-Specific Challenges:** The specific demanding situations confronted by way of lady healthcare professionals have been greatly stated in Pakistan, inclusive of social stigma and family protection issues. While gender-specific demanding situations had been stated in global literature, the socio-cultural context in Pakistan exacerbated these problems, making them more prominent.

#### Explore Reasons

##### Contextual Factors Influencing Differences

1. **Cultural and Religious Context:** The strong emphasis on faith-based coping mechanisms among Pakistani healthcare professionals can be attributed to the cultural and religious fabric of the country, where religion plays a central role in daily life. This cultural aspect provides a distinct form of emotional support and resilience that may not be as prevalent in other contexts.
2. **Healthcare Infrastructure:** The disparity in resource availability, particularly the lack of PPE and other essential supplies, highlights the differences in healthcare infrastructure between Pakistan and more developed countries. This gap is a significant stressor for Pakistani healthcare professionals, exacerbating their psychological distress.
3. **Gender Norms and Social Stigma:** The pronounced gender-specific challenges in Pakistan are influenced by prevailing gender norms and social expectations. The additional burden of social stigma and family safety concerns further compounds the stress experienced by female healthcare professionals, reflecting the need for targeted interventions.
4. **Economic Factors:** The economic strain and systemic inefficiencies within Pakistan's healthcare system contrast sharply with the relatively better-resourced systems in countries like the US and Singapore. These economic factors play a crucial role in the differences observed in stress levels and coping strategies.

#### 5. Explore Reasons

##### Contextual Factors Influencing Differences

1. **Cultural and Religious Context:** The sturdy emphasis on religion-based coping mechanisms amongst Pakistani healthcare experts may be attributed to the cultural and spiritual fabric of the region, wherein faith plays a valuable position in everyday life. This cultural component provides an awesome form of emotional help and resilience that might not be as familiar in other contexts.

2. **Healthcare Infrastructure:** The disparity in resource availability, especially the shortage of PPEs and other essential tools, highlights the variations in healthcare infrastructure between Pakistan and the advanced countries of the world. This discrepancy is a big stressor for Pakistani healthcare professionals, worsening their psychological distress.
3. **Gender Norms and Social Stigma:** The pronounced gender-related challenges in Pakistan are prompted by prevailing gender norms and social expectancies. The supplementary burden of social stigma and family protection concerns further compounds the stress experienced by lady healthcare specialists, reflecting the need for targeted interventions.
4. **Economic Factors:** The economic pressure and systemic inefficiencies within Pakistan's healthcare system contrast sharply with the distinctly better-resourced systems in international locations just like the US and Singapore. These economic or monetary elements play a critical part in the variations discovered in stress levels and coping techniques.

In precis, even as there are usual themes and subject matters in the reports of healthcare experts globally, contextual factors consisting of cultural norms, healthcare infrastructure, gender dynamics, and financial conditions appreciably affect the nature and depth of stressors and coping mechanisms. Understanding these contextual variations is vital for growing custom-made interventions that address the particular desires of healthcare professionals in distinct settings.

## Limitations

### Study Limitations

Several methodological restraints or restrictions had been diagnosed inside the research studies reviewed, which must be stated to provide a well-adjusted interpretation of the findings:

1. **Sample Size and Diversity:** Some research had small sample sizes or lacked variety in their samples, proscribing the potential to generalize findings across various healthcare settings and populations. For example, studies focusing on a single clinic or hospital location may not seize the full spectrum of experiences of healthcare professionals across Pakistan.
2. **Self-Reported Data:** Many research trusted self-mentioned facts, which can introduce bias because of social desirability or recall inaccuracies. Participants would possibly underreport or overreport their stress levels and coping mechanisms primarily based on what they perceive as socially appropriate or suitable.
3. **Cross-Sectional Design:** The majority of the studies employed a cross-sectional layout, taking pictures facts at a single point in time. This design does not allow for the exam of

modifications through the years or the causality among stressors, coping mechanisms, and mental health outcomes.

4. **Qualitative Data Analysis:** While qualitative statistics provides deep insights, it's characteristically subjective and dependent on the interpretation of researchers. Variability in coding, themes and subject development can introduce biases and affect the consistency of findings across research.

#### **Review Process Limitations**

Reflecting on the assessment procedure or review process, numerous barriers and limitations were stated:

1. **Selection Bias:** The research protected on this synthesis have been decided on based on their relevance and availability. This choice technique might introduce bias, as it may exclude relevant studies that had been no longer reachable or omitted all through the quest.
2. **Publication Bias:** There is a potential for publication bias, in which studies with huge findings are much more likely to be published than those with null or poor results. This bias can skew the overall interpretation of the information in the direction of more dramatic or high-quality results.
3. **Variability in Methodology:** The research studies reviewed employed various methodologies, which include exclusive information collection tools, analysis strategies, and definitions of key concepts. This variability could make it difficult to synthesize findings and draw steady conclusions across research.
4. **Language and Contextual Variances:** Some research might have been performed in regional languages or inside precise cultural contexts that were now not completely captured or selected in the synthesis. Language barriers and contextual nuances can affect the translation of findings and their applicability to broader contexts.

#### **Impact on Findings**

The identified boundaries have several implications for the interpretation and generalizability of the findings:

1. **Generalizability:** The boundaries in sample length, variety, and cross-sectional layout limit the generalizability of the findings. The understanding and coping mechanisms of healthcare professionals in a single place or hospital might not constitute the ones in different areas or institutions across Pakistan.
2. **Bias and Accuracy:** Self-pronounced data and qualitative evaluation are prone to biases, which could have an effect on the accuracy and reliability of the findings. These biases

should be taken into consideration while deciphering the mentioned levels of strain and the effectiveness of coping mechanisms.

3. **Longitudinal Insights:** The cross-sectional nature of maximum studies limits the potential to understand the long-term effect of stressors and the evolution of coping techniques over the years. Longitudinal research would be essential to seize these dynamics and provide greater robust insights and understandings.
4. **Holistic Understanding:** Despite the richness of qualitative data, the subjective nature of qualitative analysis and variability in methodologies can hinder holistic and steady know-how of the themes and patterns. Standardized methodologies and triangulation of records sources could enhance the reliability of the findings.

In the end, while the synthesis of the eleven studies affords valuable insights into the stress control techniques and mental health results of healthcare experts in Pakistan, the stated barriers or limitations highlight the need for cautious interpretation. Future research has to deal with these limitations through more rigorous and various methodological procedures, large and more representative samples, and longitudinal designs to offer a greater complete information of the phenomena under study.

### Recommendations

To enhance the mental health outcomes of healthcare professionals (HCPs) in Pakistan, the subsequent actionable pointers are proposed for healthcare establishments and policymakers:

1. **Implement Comprehensive Stress Management Programs:** Develop and put into effect based *stress* control applications that consist of training classes, workshops, and support groups focusing on stress mitigating techniques, including mindfulness, cognitive-behavioral strategies, and physical activities or exercises. Establish peer assist networks and mentorship programs to provide emotional and professional aid to HCPs.
2. **Enhance Organizational Support:** Ensure the provision of private protective equipments (PPEs) and other important assets to reduce place of work stressors and enhance protection. Streamline organizational structures and enhance communication channels to make sure that HCPs receive timely information, statistics and help.
3. **Strengthen Mental Health Services:** Increase the availability and accessibility of mental health services for HCPs, inclusive of counseling and mental support. Destigmatize mental health problems within healthcare establishments by promoting mental health awareness campaigns and integrating mental health offerings into routine occupational health packages.

4. **Recognize and Reward Healthcare Professionals:** Implement formal popularity applications to realize and reward the efforts of HCPs. This ought to consist of economic incentives, public acknowledgments, and profession development opportunities. Foster a tradition of appreciation and respect inside healthcare institutions to enhance morale and job satisfaction.

#### Address Key Areas

##### 1. Stress Management Program Implementation:

- Develop organization-specific stress management programs tailor-made to the precise needs and challenges of various healthcare settings.
- Integrate stress management education into the continuing expert improvement applications for HCPs to make continuous learning and adoption of related coping strategies.

##### 2. Policy Changes:

- Advocate for policy adjustments at the governmental and institutional tiers to prioritize the mental health and well-being of HCPs. This consists of guidelines that mandate ordinary mental health diagnosis, provision of mental health leave, and establishing of mental health units inside healthcare facilities.
- Implement rules that make sure fair workload distribution, reasonable rest intervals, and supportive working environments to mitigate burnout and stress amongst HCPs.

##### 3. Resource Allocation:

- Allocate enough resources to mental health programs, which include funding for mental health services, training, and infrastructure improvements.
- Ensure that rural and underserved regions acquire adequate resources and assist to address the unique stressors confronted with HCPs in those areas.

#### Future Research

To address the identified gaps and construct at the modern-day understanding of stress control amongst healthcare experts in Pakistan, the following areas for future research are recommended:

##### 1. Longitudinal Studies:

- Conduct longitudinal studies to look at the long-time period impact of stress and the effectiveness of various coping strategies over time. This will offer insights into the sustainability of stress control interventions and their long-term advantages.

##### 2. Diverse and Representative Samples:

- Include various demonstrative samples in future research to seize a wide range of understandings and perspectives throughout different healthcare settings and populations. This includes underrepresented groups or samples such as female HCPs, rural healthcare employees, and people in distinctive medical specialties.

### 3. Comparative Studies:

- Conduct comparative research to explore differences in stressors, coping mechanisms, and mental health effects throughout specific areas and healthcare systems. This will assist identify best practices and adaptable techniques for unique contexts.

### 4. Intervention Effectiveness:

- Evaluate the effectiveness of specific stress management interventions (SMIs) through randomized managed trials and different rigorous research designs. This will provide evidence-based recommendations for effective techniques to guide HCPs.

### 5. Impact of Organizational Changes:

- Investigate the impact of organizational adjustments, along with improved verbal exchange, workload control, and recognition applications, on the mental health and well-being of HCPs. Understanding those relationships will help refine regulations and practices to better assist healthcare professionals.

By addressing these recommendations and focusing on future research, healthcare establishments, and policymakers can create a supportive environment that promotes the intellectual fitness and well-being of healthcare professionals in Pakistan, resultantly, leading to progressed healthcare consequences for the broader population.



## Chapter 6: Conclusion

### Summary of Findings

The complete analysis of the eleven studies on stress management strategies (SMSs) among healthcare specialists or professionals (HCPs) in Pakistan has discovered essential insights into the multifaceted nature of stressors and the effectiveness of various coping mechanisms. Key findings suggest that healthcare professionals face critical psychological distress because of factors such as the worry of infection and contamination, insufficient organizational guidance, social isolation, and overburdening workloads. Common stressors recognized consist of a lack of personal shielding device (PPEs), systemic inefficiencies, and socio-monetary impacts of the COVID-19 pandemic.

Despite those challenges, HCPs have practiced various stress management strategies (SMSs), which include faith based coping, personal satisfaction from occupational roles, and observance to preventive measures. Organizational support, family and community recognition, and sturdy mental health services have been highlighted as essentials in mitigating stress and developing resilience amongst HCPs. The findings emphasize the importance of organizational readiness, continuous professional improvement, and mental health awareness in promoting the well-being and performance of healthcare specialists.

### Call to Action

The importance of these findings can't be overstated. There is an urgent need for healthcare establishments and policymakers to put stress management strategies (SMSs) into action to improve mental health consequences among healthcare specialists in Pakistan. The following actions are vital:

- 1. Develop Comprehensive Stress Management Programs:** Tailored to the particular demands of healthcare experts, those programs need to encompass normal training classes, workshops, and guide agencies focused on pressure reduction strategies.
- 2. Enhance Organizational Support and Communication:** Ensure the supply of PPEs and different essential resources, streamline organizational systems, and improve communication channels to offer well-timed statistics and help.
- 3. Strengthen Mental Health Services (MHSs):** Increase the provision and accessibility of mental health offerings, which include counseling and mental guidance, and destigmatize intellectual fitness troubles inside healthcare institutions.

4. **Recognize and Reward Healthcare Professionals:** Implement formal reputation programs to realize and praise the efforts of HCPs, fostering a way of life of recognition and appreciation inside healthcare establishments.
5. **Policy Changes and Resource Allocation:** Advocate for coverage adjustments that prioritize the mental health and well-being of HCPs, ensure fair workload distribution, and allocate enough resources to mental health programs and infrastructure upgrades.
6. **Future Research:** Conduct longitudinal research, encompass various and representative samples, and examine the effectiveness of unique stress management interventions (SMIs) to construct the contemporary understanding of strain management amongst HCPs. By taking these actions, healthcare organizations and policymakers can create supportive work environment that promote the mental health and well-being of healthcare professionals. This, in turn, will cause developed healthcare consequences for the broader population. The time to comply is now, to ensure that healthcare specialists in Pakistan are ready with the necessary support and resources to steer through the current and future challenges correctly.

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Appendices ( tables of included studies, additional details on search strategy)

List of studies included:

1. A case study on the Healthcare Workers in Karachi The Effect of Post-Covid Stress on Anxiety and Coping Mechanisms
2. Biofeedback intervention for Psychophysiological disorders in Healthcare Professional; A Pakistani Perspective
3. COVID-19 stress and wellbeing A phenomenological qualitative study of Pakistani Medical Doctors
4. Exploring stress coping strategies of frontline emergency health workers dealing Covid 19 in Pakistan A qualitative inquiry
5. Impact of COVID 19 on mental health of primary healthcare workers in Pakistan Lessons from a qualitative inquiry
6. Pandemic anxiety and its correlates among young doctors working frontline in Pakistan
7. Psychological Effects of Covid 19 Care; A Qualitative Study of Health Care Workers in Punjab Pakistan
8. Psychosocial, emotional and professional challenges faced by female healthcare professionals during the COVID-19 outbreak in Lahore, Pakistan a qualitative study
9. Qualitative exploration of perspectives of the pharmacists working in public-sector hospitals during COVID-19 pandemic
10. Somatic and Psychological Consequences of Covid-19 on Healthcare Professionals and Its Effects on Healthcare Delivery in a Teaching Hospital in Khyber Pakhtunkhwa, Pa
11. Understanding the mental health impact and needs of public healthcare professionals during COVID 19 in Pakistan a Qualitative study

**Table: Criteria for Evaluating the Quality of a Research Study (JBI Tool)**

LOW Quality (1)	MODERATE Quality (2)	HIGH Quality (3)
1. No clear link between the data and findings 2. No clear basis for drawing wider inferences from the study 3. Lack of alignment between the theory, research question, data collection, analysis and results 4. The sampling strategy, depth and volume of data, and analytical steps taken are not appropriate within the framework 5. The study does not capture and portray the world it is trying to describe 6. The claims made by the research are not backed up	1. Some clear links between the data and findings 2. Some clear bases for drawing wider inferences from the study 3. Some alignment between the theory, research question, data collection, analysis and results 4. The sampling strategy, depth and volume of data, and analytical steps taken are somewhat appropriate within the framework 5. The study somewhat captures and portrays the world it is trying to describe 6. The claims made by the research are somewhat backed up	1. A clear link between the data and findings 2. A clear basis for drawing wider inferences from the study 3. Alignment between the theory, research question, data collection, analysis and results 4. The sampling strategy, depth and volume of data, and analytical steps taken are appropriate within the framework 5. The study captures and portrays the world it is trying to describe 6. The claims made by the research are well-backed up

Here is a comprehensive table that includes all initial codes, codes, sub-themes, and key themes from the synthesis of findings of the 11 studies, ensuring no codes or themes are left out.

Initial Codes	Codes	Sub-Themes	Key Themes
Anxiety, Depression, Burnout	Psychological Distress	Mental Health Outcomes	Post-COVID Stress
Fear of Infection, Fatigue	Physical Symptoms		
Insomnia, Emotional Exhaustion	Psychological and Physical Strain		
Coping Mechanisms, Mindfulness	Individual Strategies	Stress Management Strategies	Stress Management Strategies
Cognitive Behavioral Therapy, Meditation	Cognitive Coping Mechanisms		
Peer Support,	Institutional		

Initial Codes	Codes	Sub-Themes	Key Themes
Supervisor Support	Strategies		
Resilience Training, Biofeedback	Resilience-Building Practices		
Bureaucratic Hurdles, Lack of Resources	Systemic Barriers	Barriers and Facilitators	Barriers to Implementation
Stigma, Workload	Personal Barriers		Facilitators of Implementation
Community Support, Family Support	Social Support		
Continuous Education, Preparedness	Training and Preparedness	Contextual Factors Influencing Strategies	Contextual Factors Influencing Strategies
Cultural Beliefs, Media Influence	Socio-Cultural Factors		
Availability of Mental Health Services	Access to Services		
Limited Access, Long Wait Times	Service Accessibility Issues		
Workload Management, Flexible Scheduling	Organizational Support	Organizational Support	Organizational Readiness
Mental Health Awareness Programs	Awareness and Education		
Financial Incentives, Career Development	Motivational Strategies		
Role Overload, Job Insecurity	Job-Related Stressors	Common Stressors	Common Stressors
Patient Aggression, Poor Work Environment	Workplace Stressors		
Lack of Personal Time, Work-Life Balance	Personal Life Stressors		
Support Groups, Stress Relief Workshops	Support Interventions	Effectiveness of Interventions	Perceived Effectiveness of Interventions
Limited Training, Knowledge Gaps	Barriers to Effective Stress Management		
Encouraging Environment, Strong Leadership	Facilitators to Effective Stress Management		
Flexibility, Personal Resilience	Individual Factors		

Initial Codes	Codes	Sub-Themes	Key Themes
Emotional Intelligence, Self-Efficacy	Psychological Resources		