Literature Review on Correlates of Resilience among Frontline health care professionals exposed to Covid-19

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Certificate of the Supervisor

This is to certify that the work entitled "**Correlates of Resilience among Frontline health care professionals exposed to Covid-19**" is a piece of research work done by **Ms. Mousumi Mayra** under my guidance and supervision, for the partial fulfilment of the Psychology Research Internship. She has showcased great learning capacities, and has displayed deep understanding of the subject. I further certify that to the best of my knowledge and belief this dissertation is an original work done by the candidate herself.

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Abstract

Corona virus outbreak and its adverse effect on people especially on those, who are engaged in front line services are facing major challenges. Facing such a large-scale public health emergency, Health Care Workers are under excessively physical and psychological pressures, prolonged exposure to these stressors may have a long term negatives psychological consequences on health care workers and also in their job performance. Thus their wellbeing is very crucial so that they can continue to serve patients in pandemic situation. According to APA dictionary Resilience is the process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioural flexibility and adjustment to external and internal demands. Considering the present challenges of frontline health workers and the effects on their physical & psychological wellbeing it is important to study the resiliency of them which keeps them going and fight against all the odds and sustain in their jobs. As the pandemic situation is going to continue for a while it is also important to maintain their resiliency further.

Therefore, the objective of this study is to explore the correlates contributing to resilience among frontline health workers and strategies that foster resilience among health professionals during covid-19 through literature survey.

For this purpose research articles are systematically searched in databases like PUBMED, SCIENCE DIRECT, SCOPUS, MENDELEY in English from 2019-2021. Out of 80 research article 42 were selected in this survey.

Results indicate that Antecedents, Moderators and Outcome variables as correlates of resilience of HCWs were identified from literature review. Antecedent of resilience are age, work experience, level of education, presence of children; Likewise moderating variables of resilience are active coping style, mature defense mechanism, positive affect; psycho social factors like social support, organizational support, leadership support; spiritual factors like hope, purpose in life, gratitude, religious values, morality, self-awareness, patience and wisdom, anxiety, depression, burnout, distress, somatisation, emotion-focused coping, immature defence mechanism etc.

The outcome correlate of resilience is maintaining optimal mental health through resilience intervention program among health care workers. Several intervention program including CRM (Community Resiliency Model), computer-assisted training etc. are found to be beneficial for health care workers in enhancing the resilience

Therefore in conclusion it can be said that by gaining in depth knowledge of correlates of resilience of HCWs and understanding the impact of resilience intervention, occupational health psychologists can implement effective & innovative intervention program to HCWs so that they can enhance their resilience & maintain an optimal mental health.

Keywords: Frontline health workers, resilience, correlate.

CONTENTS

Chapter-1

Introduction

A literature review provides an overview of previous research on a topic that critically evaluates, classifies, and compares what has already been published on a particular topic. It allows the author to synthesize and place into context the research and scholarly literature relevant to the topic. It helps map the different approaches to a given question and reveals patterns. It forms the foundation for the author's subsequent research and justifies the significance of the new investigation.

Corona virus outbreak and its adverse effect on people especially on those, who are engaged in front line services are facing major challenges, therefore their wellbeing needs to be taken into consideration, there are huge amount of studies has been conducted to investigate what are the factors that contributing as a protecting factors among health care workers who are exposed to Covid-19 in the midst of adversity.

This particular chapter will focus on what is Covid-19; who is the front line health workers; what is resilience and what is the objective of this study.

1.1 COVID -19

Coronavirus disease 2019 (COVID-19) is defined as illness caused by a novel coronavirus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; formerly called 2019-nCoV), which was first identified amid an outbreak of respiratory illness cases in Wuhan City, Hubei Province, China. It was initially reported to the World Health Organization (WHO) on December 31, 2019. On January 30, 2020, the WHO declared the COVID-19 outbreak a global health emergency. On March 11, 2020, the WHO declared COVID-19 a global pandemic, its first such designation since declaring H1N1 influenza a pandemic in 2009. Illness caused by SARS-CoV-2 was termed COVID-19 by the WHO, the acronym derived from "coronavirus disease 2019". The name was chosen to avoid stigmatizing the virus's origins in terms of populations, geography, or animal associations.

1.2   Frontline Health Workers

Front line workers are employee who provides an essential service or key public service. Frontline health workers are the backbone of effective health systems; they are directly providing services where they are most needed. They are working on the frontlines of the Corona virus outbreak. Facing such a large-scale public health emergency, HCWs are under excessively physical and psychological pressures because of several reasons such as; nurses are putting in risk conditions where they are fighting a lethal virus with inadequate equipment and non-evidence-based treatment (no specific life-saving treatment) and fear of being infected, worrying about infecting their families and contaminating their homes which leads to continued infected vehicle. Moreover, every day there is the significant existential stress associated with witnessing other dying, loss of many patients, colleagues or loved one. Prolonged exposure to these stressors may have a long term negatives psychological consequences on health care workers and also in their job performance.

Therefore their wellbeing is very crucial so that they can continue to serve patients in pandemic situation.

1.3 Resilience

Resilience has been defined in numerous ways, including the following:

"The ability to bounce back from adversity, frustration, and misfortune" (Ledesma, 2014)

"The developable capacity to rebound or bounce back from adversity, conflict, and failure or even positive events, progress, and increased responsibility" (Luthans, 2002).

People face all kinds of adversity in life including personal crisis such as illness, loss of loved one, abuse, bullying, job loss and financial instability.

There is a shared reality of tragic events in the news, such as natural disaster and the course of the global pandemic.

While resilience may include many stable traits and capacities within an individual, most view the expression of resilience as a dynamic process with a trajectory that can change throughout a person's life, thus, resilience is an evolving interaction among our character traits, biological propensities, and the environment that allows us to positively adapt and bounce back from adversity.

Being resilient does not mean that people do not experience stress, but demonstrating resilience includes working through emotional pain and suffering. Resilience is a not a fixed trait, rather it's a biopsychoscial and spiritual phenomenon ,through flexibility, adaptability, and perseverance can help people tab into their resilience by changing certain thought and behavior.

Resilience can also be a mechanism for accelerating recovery from adversity-related mental health problems such as posttraumatic stress disorder. The COVID-19 pandemic has resulted in a significant decline in mental health across the globe and it is clear that this has become a co-occurring public health crisis. The combined impact of COVID-19 on major life domains such as social life, occupational status, and financial security has proven to be a significant source of adversity. While many individuals found these adversities nearly insurmountable, others seemed to find ways to cope effectively in the moment, and still others may have been initially overwhelmed but were able to "bounce back" and extract the positives from an otherwise bleak situation.

This bounce back capacity can act as a buffer against the onset or worsening of psychological distress and mental disorders, these findings exemplify how resilience can sustain psychological health during persistent exposure to stress, and even more importantly, why it is critical to foster resilience over these prolonged periods of adversity

Chapter-2

Objective of the study

The present study entitled "Literature Review on Correlates of Resilience among Frontline health care professionals exposed to Covid-19" has been carried out with the following objectives:

To explore the correlates of resilience among frontline health workers and strategies that foster resilience among health professionals during covid-19 through literature survey.

2.1 Rationale of the present study

Considering the present challenges of frontline health workers and the effects on their physical & psychological wellbeing it is important to study the resiliency of them which keeps them going and fight against all the odds and sustain in their jobs. As the pandemic situation is going to continue for a while it is also important to maintain their resiliency further, therefore several intervention program to tap on stress and training program for improving resilience is also need to be taken into consideration. Various studies have been conducted throughout the world during pandemic phase. These studies are focused on the impact of Covid-19 on mental health of HCW. But there is lack of a systematic review examining the correlates of resilience among frontline health workers exposed to Covid-19, especially in India. Empirical research on resilience of frontline HCW published in the twenty-first century needs to be mapped and its findings synthesized. Therefore, the present study aims to explore the correlates contributing to resilience among frontline health professionals and strategies that foster resilience among health professionals during covid-19 through literature survey. .

Chapter- 3

Methods

Occupational Health Psychology, also known as OHP, is an interdisciplinary study in the field of psychology where the emphasis is mainly placed on the physical and psychological health of workers within organizations. Professionals in the OHP discipline will use methods that are taught in applied psychology coursework to solve some of the practical problems that employees may face in their day-to-day professional life.

Primarily, the OHP discipline is a combination of concepts of organizational psychology as well as health psychology. The main focus of psychologists within this field is to identify occupational factors that can increase the likelihood of injury, distress, or contracting diseases. The effects of any work-related factors that are identified and then addressed can affect an employee's health and their family's health as well.

A goal of occupational health psychology (OHP) researchers is to generate and organize knowledge bearing on the relationship between work-related psychosocial factors and the health of workers. Like researchers in other branches of psychology, OHP researchers elaborate theories, develop hypotheses, and devise ways to test those hypotheses. The testing of hypotheses can give rise to new knowledge. That knowledge can help in the development of interventions to improve occupational health .

There are a variety of research designs. Specific circumstances pertaining to each line of research narrow the choices for OHP investigators. These designs include the experiment, quasi-experiment, cross-sectional study, various longitudinal study designs, and so forth.

In the present study the different literatures were searched, followed by grouping of the articles of interest.

3.1 Literature Search

The search strategy for this literature review was identifying studies that include resilience and its correlates. Publications were includes both national and international databases in English from 2019-2021.

It has been systematically searched in PUBMED, SCIENCE DIRECT, SCOPUS, and MENDELEY. The following keywords were used to select the studies on the relationship between resilience and burnout, depression, stress, anxiety, physical illness and other psychological distress in health care workers of covid-19: (Resiliency or resilience) and (burnout or "occupational burnout" or "Depression" or "Stress" , or "Anxiety") AND (Frontline health care workers of Covid-19).

Relevant papers in key journal was also found like such as "**Indian Journal of Critical Care Medicine**", "**Psychology, Health & Medicine", "Frontiers in Psychiatry", "International Journal of Nursing**".

The search for papers was considered complete when various databases were unable to provide new papers on this particular topic.

In the present study total **121 literatures** was searched for understanding the correlates of resilience of health care professionals exposed to Covid-19.

This study finally obtained **42 research articles**, published mainly in 2019-2021.

3.2 Inclusion Exclusion Criteria

The following inclusion and exclusion criteria were included in this study:

a) These articles had to be published in peer reviewed national & international journals.

b) The articles were written in English.

c) Other studies which focus on stress reduction or other mental health issues alone and not related to resilience were excluded from this study, at the same time studies which focus on the resilience of general population during Covid-19 pandemic were also excluded as this literature review is only focusing on health care professionals those exposed to Covid-19.

The articles were grouped into four categories, where some of the articles represent more than one groups. The groups were: demographic factors, positive correlates of resilience, negative correlates of resilience, impact of resilience training on health care workers.

Chapter-4

Result

A total of 80 articles were screened for this literature survey, 42 studies were selected for this survey according to the inclusion criteria. The studies were conducted from different continents, including Asia (n= 21), Europe (n= 13), USA (n=9), Africa (n=1).

Among Asia most of the studies were from China (n=11), then India (n=4), other than studies were also from Bangladesh (n=1), Iran (n=2), Japan (n=1), Arabia (n=1), Middle East (n=1), Indonesia (n=1).
Among Europe the studies were from Turkey (n=4), Italy (n= 2), Portugal (n=1), Spain (n=1), Netherlands (n=1), Greece (n=2), UK (n=1).
Among USA studies were from New York (n=1),
There was one study from Australia (n=1) as well.
A summary of articles included in a table in this systematic review, where results can be found.
The aim of this present study was to explore different correlates of resilience among health care workers exposed to Covid-19.

4.1 Antecedents of resilience

It is refer to as a variable that comes earlier in an explanation or in a chain of causal links as in path analysis.

Demographic factors are the socioeconomic characteristics of a population expressed statistically; they can be considered as antecedents correlates of resilience.

These typically include such factors as age, gender, level of education, amount of income, marital status, occupation, religion, birth rate, death rate, the average size of a family, the average age at marriage etc.

4.1.1 Resilience and level of education - Few Studies have found that level of education as a demographic factor has a positive correlation with resilience. In a study it has been found that level of education ($r=0.514$, $P=0.044$) had a significant positive correlation with nurses' resilience score during the COVID-19 pandemic (Afshari, D., Nourollahi-darabad, M., & Chinisaz, N.), in a study done by Georgios Manomenidis(2019) on Greek nurses have found that resilient nurses was better educated, that also showed positive relation among level of education and resilience of health care workers, though this study was done before Covid outbreak. Another study conducted by Yiming Liang & Kankan Wu (2020), at China also revealed that higher educational level is positively related to resilience.

Exploratory study on resilience and its influencing factors among hospital nurses in Guangzhou, China conducted by Ren Y.,Zhou Y. ,Zeng Y. (2018) have found that the regression analysis affirmed that the factors which influence the resilience of nurses include self-

efficacy, coping style, job stress, and education level (R^2 = 49.4%, P < 0.001).Therefore enhancing educational training can effectively improve their resilience.

4.1.2 Resilience and work experience – Various studies conducted during the time of Covid-19 outbreak revealed that work experience has a positive correlation with resilience of health care workers exposed to Covid-19, in a article of Cai W. ,Lian B. ,Li H. (2020), results showed that people without public health emergency treatment experience showed worse performance in mental health, resilience and social support, and tended to suffer from psychological abnormality on interpersonal sensitivity and phobic anxiety.

The finding of this study suggested that high levels of training and professional experience, resilience and social support were necessary to health care workers who are first taking part in public health emergence. In another study it has been found that work experience (r=0.572, P=0.030), had a significant positive correlation with nurses' resilience score during the COVID-19 pandemic (Afshari, D., Nourollahi-darabad, M., & Chinisaz, N., 2021). In a study done by Kılınç, T., & Çelik, A. has found that the psychological resilience level of the nurses who had been employed for 16 years or more and was significantly higher. In another study conducted by Arslan H. N. ,Karabekiroglu A. ,Dundar C. (2021) at Turkey has found that psychological resilience scores were significantly higher in those health care workers who had worked for 15 years or more.

4.1.3 Resilience and age – Many studies have also resulted that age is positively correlated with the resilience of HCW exposed to Covid-19. A study conducted by Bozdağ F. , Ergün N. ;Miguel-Puga J. A. ,Cooper-Bribiesca D. ,Jáuregui-Renaud K.(2020) at Turkey found that Psychological resilience significantly and positively correlated with participants' age, here the HCW includes both doctors and nurses and other health care staff. In another study done by Kılınç, T., & Çelik, A has found that age also positively affected nurses' perceived social support and psychological resilience levels; nurses aged 41 years and above showed significantly higher scores for both aspects.

In another study conducted by Awano N ,Oyama N , Akiyama K (2020) at Japan , it has found that there was no significant difference in the total CD-RISC 10 score according to occupation type, age, sex, or working position of HCW.

4.1.4 Resilience and gender- In this present literature survey one article has been considered which was conducted by Sanjida Khan, Shamima Akter, Tarina Khan, Golam Shariar & Mohammad Abdul, Awal Miah (2021) at Bangladesh has found out that female physicians were more fearful, less resilient, and highly distressed compared to males and an intense fear, high perceived stigma, and low resilience were significantly associated with increased psychological distress.

4.1.5 Resilience and presence of children- A study conducted by Arslan H. N. ,Karabekiroglu A. ,Dundar C. (2021) at Turkey has found that psychological resilience scores were significantly higher in those health care workers who had children. In another study of Douillet D.,Caillaud A. ,Hugli O (2021) revealed that parenthood is associated with a higher level of resilience.

4.2 Moderator correlates of resilience

The meaning of correlates is a phenomenon that accompanies another phenomenon, is usually parallel to it, and is related in some way to it, if two things *correlate*, a change in one thing results in a similar or opposite change in the other thing.

Moderator variable is a variable that can strengthen, diminish, negate or otherwise after the association between independent & dependent variable.

While including research articles in this literature survey it has been seen that there are various psychological, psychosocial & spiritual factors that are moderator correlates of resilience of HCW exposed to Covid-19, namely active coping strategy or problem-focused coping strategy, mature defence mechanism, positive emotions, social support, higher purpose in life, acute psychological distress, immature defence mechanism, anxiety, depression &burnout.

4.2.1 Resilience and active coping strategy- Coping strategy is defined as an adaptation to environmental stress that is based on conscious or unconscious choice and that enhances control over behaviour or gives psychological comfort. Active coping strategy is a stress-management strategy in which a person directly works to control a stressor through appropriately targeted behaviour, embracing responsibility for resolving the situation using one's available internal resources (APA Dictionary of Psychology).

In a study conducted by Li W. Q.,Yuan P. ,Li Q. (2021) at China, it has been found that resilience and active coping were positively correlated with the QOL (P<0.001).

A study done by Pietrzak R. H.,Feingold J. H., Ripp J(2020) at NYC have found that non-engagement in substance use coping(9.9 %) were most strongly associated with psychological resilience.

In another study conducted by Lin J. ,Ren Y. H. ,You X. M.(2020) at China also have found that active coping styles (r =.733, P < 0.01), were positively correlated with resilience.

Exploratory study on resilience and its influencing factors among hospital nurses in Guang zhou, China conducted by Ren Y.,Zhou Y. ,Zeng Y. (2018) have found that the regression analysis affirmed that the factors which influence the resilience of nurses include self-efficacy, coping style, job stress, and education level ($R^2 = 49.4\%$, $P < 0.001$).Therefore choosing active coping can effectively improve their resilience.

4.2.2 Resilience and defence mechanism - In psychoanalytic theory, the use of defence mechanisms to protect the ego against anxiety arising from threatening impulses and conflicts as well as external threats (APA Dictionary of Psychology).

In a study done by Di Giuseppe M.,Nepa G. ,Conversano C. (2021) at Italy have revealed that mature defences inversely associated stress and burnout and positively associated with resilience, whereas neurotic and immature defences followed the opposite trend, these defence factors showed positive correlations with stress and burnout and negatively correlated with resilience.

4.2.3 Resilience and social support- Social support is the perception and actuality that one is cared for, has assistance available from other people, and most popularly, that one is part of a supportive social network. These supportive resources can be emotional (e.g., nurturance), informational (e.g., advice), or companionship (e.g., sense of belonging); tangible (e.g., financial assistance) or intangible (e.g., personal advice) (Wikipedia).

The relationship between resilience and social support among HCW has been documented in many studies worldwide, among which few studies have been considered in this literature survey according to the inclusion criteria.

 In a study high resilience was reported by 70% of the samples (387 HCWs) and the importance of this is highlighted where better support was indeed found to be a significant predictor (Pappa S. ,Barnett J. ,Sakkas N. ; 2021), another study have reported emotional support(6.9%), leadership support(6.8%) were most strongly associated with psychological resilience. (Pietrzak R. H.,Feingold J. H.,Ripp J.;2020). A study done by Munn L. T.,Liu T., Gibbs M.(2021) at China have found out in their study that having positive perceptions about the organization's understanding of the emotional support needs of health care workers during the pandemic, having a higher degree of psychological safety, having positive perceptions of leadership support from direct managers were found to be significantly associated with higher levels of resilience. Hou T. Zhang T. , Ni C. (2020) at china have conducted a study have revealed that resilience could partially mediate the effect of social support on mental health among health care workers.

A cross-sectional study on mental health among health care workers during the outbreak of Corona Virus Disease 2019 conducted by Cai W. ,Lian B. ,Li H. (2020) their finding suggested that high levels of training and professional experience, resilience and social support were necessary to health care workers who are first taking part in public health emergence.

In another study conducted by Leodoro J. Labrague at Middle East have also reported that Resilient nurses and those who perceived higher organisational and social support were more likely to report lower anxiety related to COVID-19.

A significant positive correlation between social support and resilience (r=.484, p<.001) have also reported in a study conducted by Choi B. S. (2018) at India.

4.2.4 Resilience and Spirituality – Spirituality is defined as a concern for or sensitivity to things of the spirit or soul, especially as opposed to materialistic concerns (APA Dictionary of Psychology). The relationship between resilience and spirituality among HCW has been documented in various studies. A study done by Pietrzak R. H.,Feingold J. H., Ripp J(2020) at NYC have found that higher purpose in life (7.8%) were most strongly associated with psychological resilience. In another study conducted by Meybodi, A., & Mohammadi, M. at Iran has found that seven components affecting the resilience of nurses in the Corona ward are religious values, morality, self-awareness, patience and hope, wisdom, voluntary activities and the other world belief.

Like for example in a study conducted by Bogaerts S.,van Woerkom M. ,Janković M. (2021) at Netherlands, the results showed that workplace stress and fear associated with the Covid-19 pandemic can be detrimental to workers' psychological well-being, while resilience can serve as a protective factor against being personally attacked or threatened by patients at the workplace.

4.2.5 Resilience and anxiety- Anxiety is defined as an emotion characterized by apprehension and somatic symptoms of tension in which an individual anticipates impending danger, catastrophe, or misfortune (APA dictionary of Psychology).

The relationship between resilience and anxiety among HCW has been documented in many studies worldwide, among which few studies have been considered in this literature survey according to the inclusion criteria.

Setiawati Y. ,Wahyuhadi J. ,Atika A. (2021) in their study at Indonesia have found that a significant correlation between the level of resilience and anxiety experienced by healthcare workers during the COVID-19 pandemic (p <0.05). The lower the resilience, the higher the anxiety experienced.

Depression and anxiety levels were found to be significantly lower in physicians with greater psychological resilience in a study done by Arslan H. N. ,Karabekiroglu A. ,Dundar C. (2021) at Turkey.

A study done by Douillet D.,Caillaud A. ,Hugli O. (2021) also have reported that resilience varied among French physicians, and lower scores on resilience were associated with increased anxiety with potentially harmful behaviours.

In China one study done by Lin J. ,Ren Y. H. ,You X. M. (2020) have found that Resilience correlated negatively with anxiety (r = -.498, P < 0.01).

Miguel-Puga J.A. ,Cooper-Bribiesca D. ,Jáuregui-Renaud K. (2021) in their study have also reported that resilience is negatively related to all the psychological distress i.e. acute stress, anxiety, depression, dissociative symptoms among frontline healthcare workers.

Similarly in another study done by Yıldırım, M., Arslan, G., & Özaslan. at Turkey reported that Corona virus fear and anxiety were negatively correlated with resilience among 204 healthcare professionals.

Mosheva M. ,Hertz-Palmor N. ,Gothelf D.(2020) at Israel conducted on study where they have found an inverse association between resilience and anxiety.

 In another study done by S V., Ruckmani S. (2021) at India have reported that a correlation coefficient of -0.17 indicates that there is no significant relationship between resilience and anxiety.

 Another study conducted prior to Covid-19 outbreak also have reported resilient nurses were better educated, confidence interval had lower anxiety (Georgios Manomenidis, Efharis Panagopoulou, Anthony Montgomery, 2019).

4.2.6 Resilience and depression- Depression is defined as a negative affective state, ranging from unhappiness and discontent to an extreme feeling of sadness, pessimism, and despondency that interferes with daily life. Various physical, cognitive, and social changes also tend to co-occur, including altered eating or sleeping habits, lack of energy or motivation, difficulty concentrating or making decisions, and withdrawal from social activities. It is symptomatic of a number of mental health disorders (APA dictionary of Psychology).

The relationship between resilience and depression among HCW has been documented in few studies worldwide, among which few studies have been considered in this literature survey according to the inclusion criteria.

In China one study done by Lin J. ,Ren Y. H. ,You X. M. (2020) have found that Resilience correlated negatively with depression (r = -.471, P < 0.01).

Miguel-Puga J.A. ,Cooper-Bribiesca D. ,Jáuregui-Renaud K. (2021) in their study have also reported that resilience is negatively related to all the psychological distress i.e. acute stress, anxiety, depression, dissociative symptoms among frontline healthcare workers.

Xiuli Ou, Yantang Chen and their associates conducted one study where they reported that resilience scores of nurses were negatively correlated with depression dimensions (p < 0.05). Thus improving the resilience of nurses can, therefore, reduce psychological symptoms such as anxiety, depression, and interpersonal sensitivity.

Similarly in another study done by Yıldırım, M., Arslan, G., & Özaslan. at Turkey reported that depression, were negatively correlated with resilience among 204 healthcare professionals.

Lourdes Luceño-Moreno ,Beatriz Talavera-Velasco.(2020) at Spain in their study have also reported that depression and resilience were negatively correlated with each other.

4.2.7 Resilience and burnout – Burnout is defined as physical, emotional, or mental exhaustion accompanied by decreased motivation, lowered performance, and negative attitudes toward oneself and others. It results from performing at a high level until stress and tension, especially from extreme and prolonged physical or mental exertion or an overburdening workload; take their toll (APA dictionary of Psychology).

The relationship between resilience and burn out among HCW has been documented in few studies worldwide, among which few studies have been considered in this literature survey according to the inclusion criteria.

Sinu Jose , Manju Dhandapani , Maneesha C Cyria (2020) at India conducted one study have found that The two metrics of burnout viz., emotional exhaustion and personal inefficacy had a significantly negative correlation with resilience among the frontline nurses in the emergency.

Xue Jiang ,Xiaoning Zhang (2021) in their study was interested to examine the association between resilience and burnout of front-line nurses at the peak of the COVID-19 pandemic: Positive and negative affect as mediators in Wuhan, results revealed that positive and negative affect fully mediated the effects of resilience on burnout, emotional exhaustion, depersonalization, and reduced personal accomplishment of front-line nurses.

Several studies have also been included in this literature survey where various other factors are also been associated with resilience and work as a moderator correlates of resilience of HCW exposed to Covid-19.

Bozdağ F. ,Ergün N.(2020) in their study have shown that psychological resilience of HCWs significantly and positively correlated with **life satisfaction, quality of sleep, nutrition, positive affect.**

A study conducted at Latvia, Europe by Bundzena-Ervika A., Mārtinsone K., Rancāns E. (2021) , they were interested in examining the relationship between psychological resilience and self care strategies of health care professionals during Covid-19 pandemic in Lavtia, Results indicates that "Time management" was only predictive for Self-care strategy for psychological resilience in both HCP and POF group.

A study conducted by Souzan Abd Elmenem Abd Elghafar Harfush (2020)at Egypt, the results showed that a statistical significant negative correlation was found between resilience and all psychological problems namely **distress, depression, anxiety, somatisation**.

Similarly in another study done by Yıldırım, M., Arslan, G., & Özaslan. at Turkey reported that **Corona virus fear ,depression, stress ,**and **anxiety** ,were negatively correlated with resilience among 204 healthcare professionals.

Sanjida Khan, Shamima Akter and their associates conducted one study on **"**Psychological distress among Bangladeshi physicians: roles of perceived stigma, fear of infection

and resilience in the context of Covid-19 pandemic" have reported that low resilience was significantly associated with psychological distress.

Lorente, L., Vera, M., & Peiro, T. (Spain) in their study reported that resilience was negatively and significantly correlated to: **insufficient preparation** (0.19***), **fear of infection** (0.12, p = 0.016), **problem focused coping** (0.28***), and **emotion focused coping** (0.43***).

In a study done by Di Giuseppe M.,Nepa G. ,Conversano C. (2021) at Itally have revealed neurotic and immature defence factors showed positive correlations with stress and burnout and negatively correlated with resilience.

4.3 Outcome correlates of Resilience of health care workers

Psychologists define resilience as the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress—such as family and relationship problems, serious health problems, or workplace and financial stressors (APA dictionary of Psychology). Resilience is an evolving interaction among our character traits, biological propensities, and the environment that allows us to positively adapt and bounce back from adversity. Like building a muscle, increasing resilience takes time and intentionality.

Generally resilience intervention refers to takes actions intend to interfere with and stop or modify a process as in treatment or enhancing resilience.

During this literature survey few studies have found out which focuses on the impact of resilience intervention, as strategies that foster resilience among health professionals during covid-19 was one of the objectives of this study.

In a study conducted by Souzan Abd Elmenem Abd Elghafar Harfush (2020) at Egypt were interested to examine the effect of Resilience Intervention on Nurses' resilience and Psychological Problems during The COVID-19 Pandemic, in this study the participants divided into small groups and attended eight sessions of resilience intervention through zoom cloud meetings.

Among 8 sessions the 1st session was mainly introductory session which includes getting familiar with concepts of stress, anxiety and discussed the stressors that faced nurses who caring patients with corona virus.

2nd session was about meaning of resilience, characteristics resilience people, and role of resilience in maintain and promote mental health during adversity.

A-B-C model of resilience in adversity for psychologist Albert Ellis (1913-2007), was explained in the 3rd session.

4th session was about focused in improve nurses' self-confidence especially when facing stressful situations or adversity.

In 5th session, the researcher explored the importance of social support at time of adversity or major life stressor.

6th session explored for the participants that a sense of purpose and meaning of life act as bedrock for coping, healing, and renewal after adversity.

In the 7th session the nurses learnt problems solving skills and appropriate decision making.

Last session centralized on the best stress management techniques that nurses used to relieve pressure or stress, such as "deep breathing exercises, physical meditation, taking care of self are including diet, sleep exercises, self-smoothing activities, and give sense of humour.

There was a statistically significant improvement in nurses' resilience & psychological problems after the intervention, Also, a statistical significant negative correlation was found between resilience and all psychological problems. Resilience intervention is proved to be effective in improving nurses' resilience and psychological health.

In another study, conducted by Grabbe L.,Higgins M. K.(2021)were interested to know the impact of a resiliency training to support the mental well-being of front-line workers. For this purpose, 104 participations enrolled and attended the CRM training.

The Community Resiliency Model (CRM) is a non cognitive variant of mindfulness, emphasizing attunement to interoceptive and exteroceptive signaling cues for regulation of autonomic responses to stress. CRM was derived from somatic psychotherapy and developed by Miller-Karas and colleagues after survivors of natural disasters received brief, somatically based, self-stabilization interventions using their own body sensations to improve mood; lower rates of PTSD occurred subsequently.

The CRM intervention is a manualized set of self-care skills and concepts. Participants received psycho education on the biological responses to stress and trauma (physical signs and symptoms) and gained tools to recognize and diminish these reactions. They learned CRM's concept of the Resilient Zone (RZ), an individual's bandwidth for stress tolerance, where it is possible to think clearly and work effectively. Learners developed an awareness of their autonomic nervous system state to identify and override the unpleasant sensations associated with distress, and, using CRM's 6 techniques, learned to shift into a restorative, parasympathetic state. Through practice, learners may experience greater self and other compassion because of a widened RZ and know how to return to their RZ when distressed.

After a 3-hour CRM training, participants reported improved mental well-being and decreased secondary traumatic stress and somatic symptoms. This simple body awareness intervention may be a good resource during the COVID-19 pandemic.

Maunder, R. G., Lancee, W. & their associates conducted one study which tests the feasibility and effectiveness of a less expensive alternative - an interactive, computer-assisted training course designed to build resilience to the stresses of working during a pandemic. The course was associated with significant improvements in confidence in support and training, pandemic self-efficacy and interpersonal problems. Participants who under-utilized coping via problem-solving or seeking support or over-utilized escape-avoidance experienced improved coping. This study concludes that Computer-assisted resilience training in healthcare workers appears to be of significant benefit.

Other than that there are various studies which have mentioned the importance of intervention program to foster resilience among health care workers exposed to Covid-19, like for example,

In a study done by Awano N ,Oyama N ,Akiyama K at Japan were interested in knowing the degree of anxiety, depression, resilience, and other psychiatric symptoms among healthcare workers in Japan during the COVID-19 pandemic, they have found that During the COVID-19 epidemic, many healthcare workers suffered from psychiatric symptoms. **Psychological support and interventions for protecting the mental health of them are needed.**

In another study done by Sinu Jose , Manju Dhandapani , Maneesha C Cyriac (2021) at India while aims to determine the burnout and resilience and its associated factors among the frontline nurses who provide direct care for the patients in the emergency department of a tertiary care centre in North India, they have also concluded that **effective interventions for improving resilience are needed to relieve nurses' burnout and workplace stressors**.

Finally in another study of China conducted by Li W. Q. ,Yuan P. , Li Q. (2021) were aims to assess the contribution of resilience, coping style, and COVID-19 stress on the quality of life (QOL) in frontline health care workers (HCWs) concluded that **psychological intervention to improve the resilience and coping style, and reduce COVID-19 stress are important in improving the QOL and mental health of HCWs.**

Chapter-5

Discussion

Human life cannot be separated from problems; resilience is seen as the survival ability of individuals to predict and rise from the problems at hand. Individual's resilience is influenced by many factors. Some experts suggest some factors affecting resilience such as Tedeschi and Kilmer 2005; Bonanno et al 2007; Hegney et al 2007; Boardman et al 2008. They reported that resilience is strongly influenced by several things namely; good interpersonal relationships, social relationships and confidence to continue to expand relationships with other individuals, having internal resources such as optimism and positive thinking, and high spirituality includes religiosity ,These factors are further explained by Barbara, Lisa and Karen (2011).

However, considering the present study, resilience of frontline health workers have found to be correlated with various factors, including demographic factors, such as age, gender, work experience and level of educations, psychological factors such as coping style, defence mechanism, positive affect anxiety, depression, burnout, somatisation, distress, fear of infection etc. , psycho social factors such as social support, interpersonal relationships, organizational support, leadership support etc. , spiritual factors like religious faith, hope, gratitude.

The conditions faced by healthcare workers during the current COVID-19 pandemic can be likened to battlefield conditions faced by military personnel.

Heath C.,Sommerfield A. describes a rapidly deployable psychological resilience intervention based on the **Battle Buddy** system of the US army combined with elements of the anticipate-plan-deter model. The intervention had three levels of support: a Battle Buddy system to provide peer support; unit level support through appointing a mental health consultant; and individual support for at-risk individuals. Whereas the latter two elements are more resource-intensive, the Battle Buddy concept is easily implemented and requires few resource commitments.

Literature review conducted by Vinkers C. H. ,van Amelsvoort T. (2020) at Netherlands have noted in their study that the importance of resilience at the individual and societal level, but also the implication for patients with a psychiatric condition and health care workers. They have concluded that it will be important to obtain data on the psychosocial impact in acute and recovered COVID-19 patients and their relatives on how to best mitigate the negative effects. Such studies will allow the identification of **factors associated with resilience, according to living context, coping strategies, personal history and, if possible, biological features such as (epi) genetic background.** This will provide a platform from which to develop community and personalized interventions to improve resilience and reduce the risk of psychopathology in the current and similar crises in the future stress challenges.

For addressing the occupational stress in healthcare workers, a Cognitive Behaviour Therapy (CBT) based intervention is suggested, also supported by a Cochrane review, which can

build/improve/enhance resilience, needed to shield individuals against the development of psychopathology, at the public health level in humanitarian crises. In addition to developing resilience, which will be helpful in combating anxiety, depression, somatisation, and incapacitation (Irfan M. ,Naeem F.,2020).

An integrative review conducted by Baskin R.G. ,Bartlett R. (2021) was interested to examine resilience among healthcare workers during the coronavirus-disease-2019 (COVID-19) pandemic, they have also reported that resilience scores among frontline healthcare workers worldwide during the COVID-19 pandemic in the studies reviewed were overall found to be in the moderate range. Data from the United States showed a decrease in nurse resilience, whereas participants from China had increased resilience compared with pre-pandemic levels. Building resilience in nurses and other healthcare workers can serve as a protective factor against negative outcomes related to the job, including burnout, anxiety and depression, and can improve patient outcomes.

A literature review to explore the concept of personal resilience as a strategy for responding to workplace adversity and to identify strategies to enhance personal resilience in nurses. Their findings suggest that nurses can actively participate in the development and strengthening of their own personal resilience to reduce their vulnerability to workplace adversity and thus improve the overall healthcare setting. They recommend that **resilience-building be incorporated into nursing education and that professional support should be encouraged through mentorship programmes outside nurses' immediate working environments** (Jackson, D., Firtko, A., & Edenborough, M., 2007).

This literature review has systematically analysed correlates of resilience among health care workers exposed to Covid-19, and strategies for fostering resilience among them as the pandemic situation is going to continue for a while it is also important to maintain their resiliency further. This knowledge about correlates of resilience will help us to understand how we can design intervention program to enhance resilience in future.

Chapter -6

Conclusion

Corona virus outbreak and its adverse effect on people especially on those, who are engaged in front line services are facing major challenges. Facing such a large-scale public health emergency, HCWs are under excessively physical and psychological pressures, prolonged exposure to these stressors may have a long term negatives psychological consequences on health care workers and also in their job performance. Thus their wellbeing is very crucial so that they can continue to serve patients in pandemic situation.

The present review identified the correlates of resilience and how those correlates are associated with resilience in frontline health workers. Of the studies reviewed, antecedents, moderators and outcome factors were found to be significantly associated with resilience. Each correlates comprises sub-correlates. Occupational health psychologists need to rely on evidence-based intervention program to enhance resilience of HCWs.

Therefore in conclusion it can be said that by gaining in depth knowledge of correlates of resilience of HCWs and understanding the impact of resilience intervention, occupational health psychologists can implement effective & innovative intervention program to HCWs so that they can enhance their resilience & maintain an optimal mental health.

Limitations The findings of this review should be considered with its limitations. First, it is possible that some studies have missed meeting out criteria for inclusion into the review. Second, potentially relevant studies examining correlates of resilience of HCWs might have missed. Third, due to the variability of the measures used in the included studies; a meta-analysis has not been conducted. Therefore, this review cannot estimate summary effect sizes for any of the relationships described herein.

Future Directions Based on the findings of this review: Future research needs to look at comparison of cultural and contextual factors and how their interaction influence resilience of HCWs, researching resilience of HCWs in an Indian context is also suggested.

References

1. Afshari, D., Nourollahi-darabad, M., & Chinisaz, N. (2021). Demographic predictors of resilience among nurses during the COVID-19 pandemic. *Work*, vol. 68, no. 2, pp. 297-303, 2021. https://doi.org/10.3233/ WOR-203376.

2. Arslan H. N. Karabekiroglu A. [...] Dundar C., The effects of the COVID-19 outbreak on physicians' psychological resilience levels. *Postgraduate Medicine (2021),* https://www.tandfonline.com/loi/ipgm20

3. Awano N ,Oyama N Akiyama K , Anxiety, depression, and resilience of healthcare workers in japan during the coronavirus disease 2019 outbreak. *Internal Medicine (2020)* 59(21) 2693-2699 DOI: 10.2169/internalmedicine.5694-20 .

4. Alex Pollock , Pauline Campbell ¨ Cochrane Database Syst Rev. 2020 Nov 5; 11(11):CD013779. doi: 10.1002/14651858.CD013779.PMID: 33150970.

5. Balay-odao, E., Alquwez, N., Inocian, E., & Alotaibi, R. Hospital Preparedness, Resilience, and Psychological Burden Among Clinical Nurses in Addressing the COVID-19 Crisis in Riyadh, Saudi Arabia., *Frontiers in Public Health*, https://doi.org/10.3389/fpubh.2020.573932

6. Baskin R. G. , Bartlett R. Healthcare worker resilience during the COVID-19 pandemic:

7. An integrative review,*Journal of Nursing Management (2021)* DOI: 10.1111/jonm.13395

8. Bogaerts S. ,van Woerkom M. [...] Janković M.;Associations Between Resilience, Psychological Well-Being, Work-Related Stress and Covid-19 Fear in Forensic Healthcare Workers Using a Network Analysis. , *Frontiers in Psychiatry (2021),* https://doi.org/10.3389/fpsyt.2021.678895.

9. Bozdağ F. ,Ergün N. ; Psychological Resilience of Healthcare Professionals During COVID-19 Pandemic. *Psychological Reports (2020)* DOI: 10.1177/0033294120965477 journals.sagepub.com/home/prx.

10. Bundzena-Ervika A.;Mārtinsone K.; [...],Rancāns E.; RELATIONSHIP BETWEEN PSYCHOLOGICAL RESILIENCE AND SELF-CARE STRATEGIES OF HEALTHCARE PROFESSIONALS DURING COVID-19 PANDEMIC IN LATVIA, *SOCIETY. INTEGRATION. EDUCATION.*

11. Cai W. ,Lian B. ,[...], Li H. A cross-sectional study on mental health among health care workers during the outbreak of Corona Virus Disease 2019. *Asian Journal of Psychiatry (2020)* 10.1016/j.ajp.2020.102111

12. Carolina Lavin Venegas ,Miriam N. Nkangu ,Melissa C. Duffy,Dean A. Fergusson,Edward G. Spilg , Plos One. Interventions to improve resilience in physicians who have completed training: A systematic review. https://doi.org/10.1371/journal.pone.0210512

13. Chang M. C. ,Chen P. F. ,[...],Lung F. W. ,The Effect of Religion on Psychological Resilience in Healthcare Workers During the Coronavirus Disease 2019 Pandemic. *Front. Psychol.* 12:628894. doi: 10.3389/fpsyg.2021.628894.

14. Choi B. S. , Influence of social support and resilience on the nurse job performance. *Indian Journal of Public Health Research and Development (2018).* 10.5958/0976-5506.2018.00385.6

15. Coco M., Guerrera C. S. [...],Ramaci T. Psychosocial Impact and Role of Resilience o f Healthcare Workers during COVID-19 Pandemic ,*Sustainability 2021*, 13, 7096. https:// doi.org/10.3390/su13137096

16. Croghan I. T. ,Chesak S. S. [...],Bhagra A. ,Stress, Resilience, and Coping of Healthcare Workers during the COVID-19 Pandemic. *Journal of Primary Care and Community Health (2021).* 10.1177/21501327211008448

17. Di Giuseppe, M.; Nepa, G.; Prout, T.A.; Albertini, F.; Marcelli, S.; Orrù, G.; Conversano, C. Stress, Burnout, and Resilience among Healthcare Workers during the COVID-19 Emergency: The Role of Defense Mechanisms. Int. J. Environ. Res. Public Health 2021, 18, 5258. https://doi.org/10.3390/ijerph18105258.

18. Douillet, D., Caillaud, A., Riou, J. *et al.* Assessment of physicians' resilience level during the COVID-19 pandemic. *Transl Psychiatry* **11,** 283 (2021). https://doi.org/10.1038/s41398-021-01395-7.

19. Georgios Manomenidis, Efharis Panagopoulou, Anthony Montgomery. Resilience in nursing: The role of internal and external factors,J Nurs Manag Volume27, Issue1 ,January 2019,Pages 172-17, https://doi.org/10.1111/jonm.12662

20. Guo Y. f. Plummer V. [...] Zhang J.
p.The effects of resilience and turnover intention on nurses' burnout: Findings from a c omparative cross-sectional study. *Journal of Clinical Nursing (2019)* Volume28, Issue3-4 February 2019,Pages 499-508

21. Grabbe L. ,Higgins M. K. ,[...], Pfeiffer K. M. , Impact of a Resiliency Training to Support the Mental Well-being of Front-line Workers. *Medical Care (2021),*July 2021 - Volume 59 - Issue 7 - p 616-621 ,doi: 10.1097/MLR.0000000000001535.

22. Heath C. ,Sommerfield A. ,von Ungern-Sternberg B. S. Resilience strategies to manage psychological distress among healthcare workers during the COVID-19 pandemic: a narrative review. *Anaesthesia (2020),*75, 1364–1371 , doi:10.1111/anae.15180

23. Irfan M. ,Naeem F. [...], Javed A. Prevention of occupational stress in health-care workers during COVID-19 pandemic. *Indian Journal of Psychiatry (2020)* ***Volume : 62 Issue : 9 Page : 495-497***

24. Jackson, D., Firtko, A., & Edenborough, M. Personal resilience as a strategy for surviving and thriving in the face of workplace adversity: a literature review. *Journal of Advanced Nursing*, 60(1), 1–9. https://doi.org/10.1111/j.1365-2648.2007.04412.x

25. Hou T, Zhang T, Cai W, Song X, Chen A, Deng G, et al. (2020) Social support and mental health among health care workers during Coronavirus Disease 2019 outbreak: A moderated mediation model. PLoS ONE 15(5): e0233831.

26. Kılınç, T., & Çelik, A, Relationship between the social support and psychological resilience levels perceived by nurses during the COVID-19pandemic: A study from Turkey. *Perspectives in Psychiatric Care* https://doi.org/10.1111/ppc.12648.

27. Lin, J., Ren, YH., Gan, HJ. *et al.* Factors associated with resilience among non-local medical workers sent to Wuhan, China during the COVID-19 outbreak. *BMC Psychiatry* **20,** 417 (2020). https://doi.org/10.1186/s12888-020-02821-8.

28. Wei-Qin Li, Ping Yuan, Jia Sun, Min-Ling Xu, Qin-Xia Wang, Dan-Dan Ge, Ming-Ming Jiang, Li-Qun Xing, Wen-Jun Du & Qiang Li (2021) Resilience, coping style, and COVID-19 stress: effects on the quality of life in frontline health care workers, Psychology, Health & Medicine, DOI: 10.1080/13548506.2021.1905860.

29. Leodoro J. Labrague ; DOI: 10.1111/jonm.13121

30. Lorente, L., Vera, M., & Peiro, T. Nurses´ stressors and psychological distress during the COVID-19 pandemic: The mediating role of coping and resilience. *Journal of Advanced Nursing*, 77, 1335–1344. https://doi.org/10.1111/jan.14695.

31. Lourdes Luceño-Moreno ,Beatriz Talavera-Velasco. Symptoms of Posttraumatic Stress, Anxiety, Depression, Levels of Resilience and Burnout in Spanish Health Personnel during the COVID-19 Pandemic. *Int. J. Environ. Res. Public Health* **2020**, *17*(15), 5514; **https://doi.org/10.3390/ijerph17155514**

32. Maunder, R. G., Lancee, W. J., Mae, R., Vincent, L., Peladeau, N., Beduz, M. A., Hunter, J. J., & Leszcz, M, Computer-assisted resilience training to prepare healthcare workers for pandemic influenza: a randomized trial of the optimal dose of training.*BMC Health Services Research*, 10(1), 72. https://doi.org/10.1186/1472-6963-

33. Meybodi, A., & Mohammadi, Identifying the components of spirituality affecting the resilience of nurses.M. *Journal of Nursing Management* **https://doi.org/10.1111/jonm.13235**

34. Miguel-Puga J. A. ,Cooper-Bribiesca D. ,[...], Jáuregui-Renaud K. , Burnout, depersonalization, and anxiety contribute to post traumatic stress in frontline health workers at COVID-19 patient care, a follow-up study. *Brain and Behaviour (2021)* DOI: 10.1002/brb3.2007

35. Mosheva M. ,Hertz-Palmor N. [...], Gothelf D., Anxiety, pandemic-related stress and resilience among physicians during the COVID-19 pandemic. *Depression and Anxiety (2020),*10.1002/da.23085

36. Pappa, S.; Barnett, J.; Berges, I.; Sakkas, N. Tired, worried and burned out, but still resilient: A cross-sectional study of mental health workers in the UK during the covid-19 pandemic. *Int. J. Environ. Res. Public Health 2021*, 18, 4457. https://doi.org/10.3390/ ijerph18094457

37. Pietrzak R. H., Feingold J. H.[...] Ripp J. Psychological Resilience in Frontline Health Care Workers During the Acute Phase of the COVID-19 Pandemic in New York City. *The Journal of Clinical Psychiatry (2020)*

38. Ren Y. ,Zhou Y. ,[...], ZengY. Exploratory study on resilience and its influencing factors among hospital nurses in Guangzh ou, China.*International Journal of Nursing Sciences (2018),*10.1016/j.ijnss.2017.11.001

39. Sanjida Khan, Shamima Akter, Tarina Khan, Golam Shariar & Mohammad Abdul Awal Miah, Psychological distress among Bangladeshi physicians: roles of perceived stigma, fear of infection and resilience in the context of Covid-19 pandemic *Journal of Social Distress and Homelessnes,s* https://doi.org/10.1080/10530789.2021.1892932

40. Setiawati Y. ,Wahyuhadi J. [...], Atika A., Anxiety and resilience of healthcare workers during COVID-19 pandemic in Indonesia. *Journal of Multidisciplinary Healthcare (2021).* 6 January 2021 Volume 2021:14 Pages 1—8 https://doi.org/10.2147/JMDH.S276655

41. Serrão, C.; Duarte, I.; Castro, L.; Teixeira, A. Burnout and Depression in Portuguese Healthcare Workers during the COVID-19 Pandemic—The Mediating Role of Psychological Resilience. Int. J. Environ. Res. Public Health 2021, 18, 636. https://doi.org/10.3390/ ijerph18020636

42. Sinu Jose , Manju Dhandapani , Maneesha C Cyriac Burnout and Resilience among Frontline Nurses during COVID-19 Pandemic: A Cross-sectional Study in the Emergency Department of a Tertiary Care Center, North India. *Indian Journal of Critical Care Medicine (2020)*: 10.5005/jp-journals-10071-23667; Volume 24 Issue 11.

43. Souzan Abd Elmenem Abd Elghafar Harfush Effect of Resilience Intervention on Nurses' resilience and Psychological Problems during The COVID-19 Pandemic.*Tanta Scientific Nursing Journal*Vol. 19 No. 1 November , 2020, ORCID: 0000-0001-6612-0652

44. S V.Ruckmani S. ANXIETY, RESILIENCE AND COPING STRATEGIES AMONG THE HEALTH CARE WORKERS DURING COVID-19 PANDEMIC.*PARIPEX INDIAN JOURNAL OF RESEARCH (2021) Volume - 10 Issue - 05 May - 2021 PRINT ISSN No. 2250 - 1991 | DOI : 10.36106/parip*

45. Vinkers C. H. ,van Amelsvoort T. [...],der Wee N. J.,Stress resilience during the coronavirus pandemic.van *European Neuropsychopharmacology (2020)* Volume 35, June 2020, Pages 12-16

46. Xiuli Ou, Yantang Chen, Zhonghuan Liang, Shaoxia Wen, Shuzhen Li & Yuzhen Chen , Resilience of nurses in isolation wards during the COVID-19 pandemic: a cross-sectional study.*Psychology, Health & Medicine* Volume 26, 2021 - Issue 1 https://doi.org/10.1080/13548506.2020.1861312

47. Xue Jiang ,Xiaoning Zhang Int J Ment Health Nurs , Association between resilience and burnout of front-line nurses at the peak of the COVID-19 pandemic: Positive and negative affect as mediators in Wuhan. 2021 Aug; 30(4):939-954. doi: 10.1111/inm.12847. Epub 2021 Apr 23.

48. Yıldırım, M., Arslan, G., & Özaslan., Perceived Risk and Mental Health Problems among Healthcare Professionals during COVID-19 Pandemic: Exploring the Mediating Effects of Resilience and Coronavirus Fear. *International Journal of Mental Health and Addiction*. doi.org/10.1007/s11469-020-00424-8

49. Yiming Liang , Kankan Wu , Mental Health in Frontline Medical Workers during the 2019 Novel Coronavirus Disease Epidemic in China: A Comparison with the General Population, *Int. J. Environ. Res. Public Health* **2020**, *17*(18), 6550; **https://doi.org/10.3390/ijerph17186550** .

Annexure: Summary of Reviewed Articles

SL No	Author & Journal Name	Title & Objectives	Sample	Tool Used	Statistics	Result & Conclusion
1	Afshari, D., Nourollahi-darabad, M., & Chinisaz, N. (2021). Work	**Title-** Demographic predictors of resilience among nurses during the COVID-19 pandemic. **Objective-** The present study aims to determine the resilience score and its predictive demographic factors among the nurses working at the hospitals involved with COVID-19 in Ahvaz, Iran.	387 nurses from Ahvaz hospitals participated in this study.	The Connor-Davidson Resilience Scale (CD-RISC). Designed questionnaire for collecting demographic information.	T-test ANOVA Multiple regression analysis.	The results of this study showed that age ($r=0.610$, $P=0.003$), work experience ($r=0.572$, $P=0.030$), and level of education ($r=0.514$, $P=0.044$) had a significant positive correlation with nurses' resilience score during the COVID-19 pandemic. Multiple regression analysis indicated that work experience and level of education were the predictors of nurses' resilience ($R^2=0.15$). The findings can help to better understand effectiveand predictive demographic factors to achieve higher resilience in stressful situations.

2	Arslan H. N. Karabekir oglu A. [...] Dundar C. *Postgraduate Medicine (2021)*	**Title-**The effects of the COVID-19 outbreak on physicians' psychological resilience levels. **Objectives-** The objective of this study is to assess the anxiety, depression levels, and psychological resilience of physicians working during the Covid-19 outbreak and to evaluate the related factors that are associated with their psychological resilience.	Total 668 participants work in various health institutions in Turkey.	Hospital Anxiety Depression Scale (Zigmond and Snaith) Adult Psychological Resilience Scale(Friborg et al.)	Descriptive statistics. The Kolmogorov– Smirnov Test. Mann– Whitney U test Kruskal– Wallis Variance Analysis test. chi-square test. Multiple linear regression models.	Psychological resilience scores were significantly higher in those who had children, who had worked for 15 years or more, and who had received training about COVID-19 (p < 0.05). The physicians with scores below the cut off point on the HAD-D/HADA had significantly higher scores on the Psychological Resilience Scale (p < 0.05). Depression and anxiety levels were found to be significantly lower in physicians with greater psychological resilience.
3	Awano N ,Oyama N Akiyama	**Title-** Anxiety, depression, and resilience of healthcare	848	The 7-item Generalized Anxiety	Chi-squared test was performed on categorical	Older workers and those with higher resilience were less likely to develop depression than others. During the COVID-19 epidemic, many healthcare

	K *Internal Medicine (2020).* Japan	workers in japan during the coronavirus disease 2019 outbreak. **Objectives-** The aim of this study was to assess the degree of anxiety, depression, resilience, and other psychiatric symptoms among healthcare workers in Japan during the COVID-19 pandemic.		Disorder Scale (GAD-7) Center for Epidemiologic Studies Depression Scale (CES-D), 10-item Connor-Davidson Resilience Scale.	variables. The Mann-Whitney U test. Kruskal-Wallis test.	workers suffered from psychiatric symptoms. Psychological support and interventions for protecting the mental health of them are needed.
4.	Balay-odao, E., Alquwez, N., Inocian, E., & Alotaibi, R. Frontiers in Public	**Title-** Hospital Preparedness, Resilience, and Psychological Burden Among Clinical Nurses in Addressing the COVID-19 Crisis in Riyadh, Saudi Arabia. **Objectives-** This study investigates the hospital	281 clinical nurses participated in the survey	Hospital Preparedness Assessment Tool. The Depression, Anxiety, and Stress Scale−21 (DASS-21)	Descriptive statistics. linear multiple regression analysis.	The variables were predicted to be statistically significant ($F_{18,262} = 4.14$, $p = 0.001$) and accounted for 16.8% of the variance in the nurses' perception of hospital preparedness. The regression analysis was statistically significant ($F_{30,250} = 6.71$, $p = 0.001$) and accounted for 38% of the variance in nurses' resilience ($R^2 = 0.446$, Adjusted $R^2 = 0.380$).

	Health, 8. Arbia	preparedness, psychological burden, and resilience of clinical nurses in addressing COVID-19 in Riyadh, Saudi Arabia.		The Resilience Scale for Nurses.		
5.	Bogaerts S. ,van Woerkom M. [...] Janković M. *Frontiers in Psychiatry (2021). Netherlands.*	**Title-** Associations Between Resilience, Psychological Well-Being, Work-Related Stress and Covid-19 Fear in Forensic Healthcare Workers Using a Network Analysis. **Objectives-** In this study, they investigated the interrelations between psychological well-being and resilience on the one hand and work-related stress and Covid-19 fear-related symptoms on the other hand.	318 healthcare workers	The Experience and Evaluation of Work. The Resilience Evaluation Scale. Well-Being Index. The Covid-19 fear scale	Network analysis.	The results showed that workplace stress and fear associated with the Covid-19 pandemic can be detrimental to workers' psychological well-being, while resilience can serve as a protective factor against being personally attacked or threatened by patients at the workplace.

6.	Bozdağ F. ,Ergün N. *Psychological Reports (2020)* (Turkey)	**Title**-Psychological Resilience of Healthcare Professionals During COVID-19 Pandemic. **Objectives**- This study aimed to determine the factors impacting on psychological resilience with the hope of aiding psychological support services to be provided to healthcare workers.	A total of 214 healthcare workers (120 female & 94male) including 66 doctors, 69 nurses and 79 other healthcare staff with an age range of 20–65 .	The brief resilience scale (BRS); Survey of perceived organizational support (SPOS) brief form; Multidimensional scale of perceived social support (MSPSS) Satisfaction with life scale (SWLS) ; Positive and negative affect schedule	Pearson's correlation analysis. Hierarchical linear regression analysis.	Psychological resilience significantly and positively correlated with life satisfaction, positive affect, sub-scales of perceived social support, participants' age, taking personal precautions against coronavirus, nutrition and quality of sleep. Age and occupation (doctor), quality of sleep, positive and negative affect, and life satisfaction significantly predicted the psychological resilience of healthcare professionals.

			(PANAS).		
7.	Bundzena -Ervika A.,Mārtin sone K., [...], Rancāns E. *SOCIETY. INTEGRAT ION. EDUCATIO N. Proceedin gs of the Internatio nal Scientific Conferenc e (2021) (Latvia, Europe)*	**Title-** RELATIONSHIP BETWEEN PSYCHO LOGICAL RESILIEN CE AND SELF-CARE STRATEGIES OF HEALTHCARE P ROFESSIONALS DU RING COVID- 19 PANDEMIC IN LATVIA **Objectives**-The aim of this study was to examine relationship between psychological resilience and self-care strategies in HCP of Latvia, controlling for gender and age during Covid-19 pandemic, and to determine whether the	Total 1723 employees divided in two groups - 77 HCP (18 men, 59 women) and 1646 POF (720 men, 926 women.	Psychologi cal Resilience Scale . Self–care Strategies Questionna ire(consist of 4 scales: "Spiritual resources", "Social support", "Free time activities", "Time manageme nt").		Results indicates that "Time management" was only predictive for Self-care strategy for psychological resilience in both HCP and POF group. Neither age nor gender predicted psychological resilience in HCP group. The results suggest that performing such Self-care activity as time management can help to promote psychological resilience of the employees regardless of profession.

8.	Cai W. ,Lian B. ,[...], Li H. *Asian Journal of Psychiatry (2020)* China	**Title-** A cross-sectional study on mental health among health care workers during the outbreak of Corona Virus Disease 2019. **Objectives-** This study aims to investigate the psychological abnormality in health care workers battling the COVID-19 epidemic and to explore the associations among social support, resilience and mental health.	A total of 1521 health care workers, of whom 147 had public health emergency experience while 1374 showed no experience	Symptom Check-List-90 (SCL-90). Chinese version of Connor-Davidson resilience scale (CD-RISC). Social Support Rating Scale (SSRS)	Chi-square test T-test Multiple regression analysis.	The results showed that people without public health emergency treatment experience showed worse performance in mental health, resilience and social support, and tended to suffer from psychological abnormality on interpersonal sensitivity and phobic anxiety. The finding suggested that high levels of training and professional experience, resilience and social support were necessary to health care workers who are first taking part in public health emergence.

| 9. | Chang M. C. ,Chen P. F. ,[...],Lung F. W. *Frontiers in Psychology (2021)* China | **Title**-The Effect of Religion on Psychological Resilience in Healthcare Workers During the Coronavirus Disease 2019 Pandemic. **Objectives**- This study aimed to investigate the following: (1) whether healthcare workers in general hospitals experience higher mental distress than those in psychiatric hospitals; (2) the role played by religion and alexithymic trait in influencing the mental health condition and perceived level of happiness of healthcare workers amidst the stress of the COVID-19 pandemic; and (3) factors that | 419 health care workers. | Toronto Alexithymia Scale. Five-item Brief-Symptom Rating Scale. The Chinese Oxford Happiness Questionnaire | Descriptive analysis. Structural equation modeling (SEM) | Under the stress of the COVID-19 pandemic, 12.3% of frontline healthcare workers in general hospitals reported having mental distress and perceived lower social adaptation status compared with those working in psychiatric hospitals. Christians/Catholics perceived better psychological well-being, and Buddhists/Taoists were less likely to experience mental distress. Christian/Catholic religion and time had independent positive effects on psychological well-being; however, the interaction of Christian/Catholic religion and time had a negative effect. |

		influence the resilience of healthcare workers at 6 weeks' follow-up.				
10.	Choi B. S. *Indian Journal of Public Health Research and Development (2018)*. India	**Title-** Influence of social support and resilience on the nurse job performance. **Objectives-**This is a descriptive survey research to identify the correlations of nurse job performance with social support and resilience among nurses, and to identify the factors affecting nurse job performance.	183 nurses		Descriptive statistics, Pearson's correlation coefficient Step wise multiple regression analysis.	Nurse job performance had a significant positive correlation with social support (r=.383, p<.001) and resilience (r=.545, p<.001). There was a significant positive correlation between social support and resilience (r=.484, p<.001). It is necessary to change the hospital environment that can enhance the resilience and social support of nurses, that can help improve nurse job performance.
11.	Coco M., Guerrera C. S. [...],Rama ci T.	**Title**-Psychosocial Impact and Role of Resilience o f Healthcare Workers during COVID-19	152 frontline healthcare workers, physicians, and	Resilience Scale for Adults; Big Five Inventory-	ANOVA; Series of independent sample t-tests; Pearson's	The findings gave some suggestions for implementing strategies useful to increase the resilience in healthcare workers and support them to cope with stressful events, typical of the pandemic

	Sustainabi lity (2021) Italy	Pandemic **Objectives-** The aim of this research was to investigate if and how the resilience and personality profile is able to influence the response to stress and anxiety on a sample of Italian healthcare workers, during the COVID-19 outbreak.	paramedical professionals.	10 Item; State Anxiety Inventory; Perceived Stress Scale.	coefficients; Multidimensional scaling using the Guttman method	emergency.
12.	Croghan I. T. , Chesak S. S. [...],Bhagr a A. *Journal of Primary Care and Communit y Health (20*	**Title-** Stress, Resilience, and Copingof Healthcare Workers during the COVID-19 Pandemic. **Objectives-** To estimate the health care workers (HCWs) self-reported stress, resilience, and coping during the COVID-19 pandemic, and to determine inter-professional	A sample of 311 were participated in this study.	Perceived Stress Scale (PSS) Brief Resilience Scale (BRS). Brief Resilience Coping Scale	Multiple linear regression model	These self-reported data indicate that while HCWs reported moderate-high stress scores, and normal levels of resilience and coping, the MD/NP/PA group had the highest resilience, while nurses had the lowest. [MD—medical doctor NP—nurse practitioner

	21)	differences		(BRCS)		PA—physician assistant HCW—healthcare worker]
13.	Di Giuseppe M. Nepa G. [...] Conversano C. *International Journal of Environmental Research and Public Health (2021). Italy*	**Title**-Stress, burnout, and resilience among healthcare workers during the covid-19 emergency: The role of defence mechanisms. **Objectives**- This study aimed to identify protective factors against perceived stress and burnout and factors that may enhance resilience among health workers.	233 healthcare workers (148 female & 85 male) including 80% nurse20% was equally distributed among physicians and healthcare aide workers.	Perceived Stress Scale (PSS) Maslach Burnout Inventory (MBI) 14-item Resilience Scale (RS-14) Defense Mechanisms Rating Scales-Self-	Pearson correlations were used to examine associations between perceived stress, burnout, resilience, and defensive functioning. Independent samples t-tests were used to compare differences in perceived stress, burnout, and resilience between healthcare professionals.	Result reveals that ,mature defences inversely associated stress and burnout and positively associated with resilience and personal accomplishment; whereas neurotic and immature defences followed the opposite trend, these defence factors showed positive correlations with stress and burnout and negatively correlated with resilience and personal accomplishment.

				Report-30 (DMRS-SR-30)	Hierarchical multiple regression	
14.	Douillet D. Caillaud A. [...]Hugli O. *Translational Psychiatry (2021)*	**Title-** Assessment of physicians' resilience level during the COVID-19 pandemic. **Objectives-** This study aim to assess physicians' level of resilience and define factors that improve or decrease the resilience level during the COVID-19 pandemic.	Total 442 participants were mainly emergency physicians, and anaesthesiologists, infectious disease consultants, and intensive care.	Connor-Davidson Resilience Scale (RISC-25).	Multivariable linear regression.	Resilience varied among French physicians, and lower scores were associated with increased anxiety with potentially harmful behaviours. Parenthood is associated with a higher level of resilience.
15	Georgios Manomenidis, Efharis Panagopoulou, Anth	**Title-** Resilience in nursing: The role of internal and external factors **Objectives-** The	1,012 Greek nurses.	"Mental Preparation Strategies Scale". Resilience, anxiety	Multiple regression analysis.	Educational level, anxiety and the overall use of mental preparation strategies were the main predictors of nurse's resilience ([$F = 52.781$, $p = 0.000$, $R^2 = 0.139$, Adjusted $R^2 = 0.137$]).

	ony Montgomery. Nursing Management	objective was to examine and compare the impact of individual characteristics, external factors and coping strategies on nurses' resilience.		and depression, were measured using existing validated self- report instruments.		Resilient nurses were better educated ,confidence interval had lower anxiety and used more often mental preparation strategies before the beginning of their shift.
16	Guo Y. f. Plummer V. [...] Zhang J. p. *Journal of Clinical Nursing (2019)*	**Title-** The effects of resilience and turnover intention on nurses' burnout: Findings from a comparative cross-sectional study. **Objectives-** To investigate burnout among nurses from Australia and China and explore the effects of resilience and turnover intention on nurse burnout between the two countries.	A total of 100 Australian nurses and 197 Chinese nurses participated in the study.			The findings of this study show that there are differences in burnout between Australian and Chinese nurses. The effects of resilience and turnover intention on burnout between the two groups are also identified. Only having turnover intention significantly predicted burnout in Australian participants, while low resilience, having turnover intention and low level of regular exercise strongly predicted burnout in Chinese participants.

| 17 | Grabbe L. Higgins M. K. [...] Pfeiffer K. M.

Medical Care (2021) | **Title-**Impact of a Resiliency Training to Support the Mental Well-being of Front-line Workers.
Objectives- Front-line workers (FLW) are at risk for secondary traumatic stress, burnout, and related psychiatric sequelae: depression, anxiety, suicidality, posttraumatic stress disorder, and sleep and substance use disorders. FLW are in need of self-care programs to support their mental health. | convenience sample of 104 participations who enrolled and attended the CRM training. | World Health Organization-5 Well-being Index; Connor-Davidson Resilience Scale-10; Secondary Traumatic Stress Scale; Somatic Symptom Scale-8. | Descriptive statistics. Internal consistency reliability was assessed for each instrument by computing Cronbach α for item responses at baseline. Multilevel linear models were used to model the changes over time for repeated measures and adjust for missing data due to attrition over time, followed-up by post hoc tests performed using Sidak pairwise error rate adjustment. | After a 3-hour CRM training, participants reported improved mental well-being and decreased secondary traumatic stress and somatic symptoms. This simple body awareness intervention may be a good resource during the COVID-19 pandemic. |

18	Hou T. Zhang T. [...] Ni C. *PLoS ONE (2020)* China	**Title**-Social support and mental health among health care workers during Coronavirus Disease 2019 outbreak: A moderated mediation model. **Objectives-** To examine whether the mediating role of resilience in social support and mental health could be duplicated to the health care workers from a less affected area during the COVID-19 epidemic	1472 health care workers from Jiangsu Province, China during the peak period of COVID-19 outbreak.	Social Support Rating Scale (SSRS), Connor-Davidson Resilience scale (CD-RISC) Symptom Checklist 90 (SCL-90)	Structural equation modeling (SEM) to examine the mediation effect of resilience on the relation between social support and mental health.	The findings showed that resilience could partially mediate the effect of social support on mental health among health care workers.
19	Kılınç, T., & Çelik, A Perspectiv es in	**Title-** Relationship between the social support and psychological resilience levels	370 voluntary nurses were participated in this study.	Multi dimensiona l Scale of Perceived Social	ANOVA T-test The Kruskal–Wallis test. Pearson	A positive directional significant relationship was observed between the social support perceived by the nurses and their level of psychological resilience. The the term of employment and work shift only affected their

| | | | | | Support Scale (MSPSS) Connor–Davidson Resilience Scale | Correlation and linear regression | psychological resilience level.

Both age and the economic condition of the nurses affected their perceived social support and psychological resilience levels. |
|---|---|---|---|---|---|---|---|
| | Psychiatric Care. | perceived by nurses during the COVID-19 pandemic: A study from Turkey. **Objective-**The aim of this study was to determine the relationship between the social support and psychological resilience levels perceived by nurses in Turkey during the coronavirus disease-2019 (COVID-19) pandemic. | | | | | |
| 20 | Lin J. ,Ren Y. H. ,[...], You X. M. *BMC Psychiatry (2020)* | **Title-**Factors associated with resilience among non-local medical workers sent to Wuhan, China during the COVID-19 outbreak. **Objective-** To investigate the resilience of non-local medical workers sent | 114 medical staff among which 79.8%, 61.40% were nurses, 18.4% were doctors, 20.2% were other medical | The Hospital Anxiety and Depression Scale (HADS). Connor Davidson Resilience | Independent-samples *t* test. One-way ANOVA. Pearson correlation. Multiple linear regression | Resilience correlated negatively with anxiety (r = -.498, P < 0.01) and depression (r = -.471, P < 0.01) but positively with active coping styles (r =.733, P < 0.01). Multiple regression analysis showed that active coping (β = 1.314, p < 0.05), depression (β = -.806, p < 0.05), anxiety (β = - 1.091, p < 0.05), and training/support provided by the respondent's permanent hospital (β = 3.510, p < 0.05) were |

		to support local medical workers in treating the outbreak of 2019 novel coronavirus disease (COVID-19).	staff.	Scale (CD-RISC). Simplified Coping Style Questionnaire (SCSQ)		significant associated with resilience. This data showed that active coping, depression, anxiety, and training/support provided by the respondent's permanent hospital are associated with resilience.
21	Li W. Q. Yuan P. [...] Li Q. *Psychology, Health and Medicine (2021).*	**Title-** Resilience, coping style, and COVID-19 stress: effects on the quality of life in frontline health care w orkers. **Objectives -** The aims of the study were to assess the contribution of resilience, coping style, and COVID-19 stress on the quality of life (QOL) in frontline health care workers (HCWs).	309 participants	Generic QOL Inventory-74, Connor-Davidson Resilience Scale, Simplified Coping Style Questionnaire	Hierarchical regression	Resilience and active coping were positively correlated with the QOL (P<0.001).Resilience and the active coping were negatively correlated with COVID-19 stress (P<0.001).Resilience, coping style, and COVID-19 stress accounted for 32%, 13%, and 8% of the variance in predicting the Global QOL, respectively.Psychological intervention to improve the resilience and coping style, and reduce COVID-19 stress are important in improving the QOL and mental health of HCWs.

| 22. | Leodoro J. Labrague | **Title-** COVID-19 anxiety among front-line nurses: Predictive role of organisational support, personal resilience and social support. **Objectives-** This study examines the relative influence of personal resilience, social support and organisational support in reducing COVID-19 anxiety in front-line nurses. | A sample of 325 registered nurses was participated in this study. | The COVID-19 Anxiety Scale. The Brief Resilient Coping Scale (BRCS). The Perceived Social Support Questionnaire (PSSQ) Perceived Organizational Support (POS) questionnaire. | Multiple linear regression analyses, | Resilient nurses and those who perceived higher organisational and social support were more likely to report lower anxiety related to COVID-19.COVID-19 anxiety may be addressed through organisational interventions,including increasing social support, providing resilience-promoting and stress management interventions. |

23	Lorente, L., Vera, M., & Peiro, T. Journal of Advanced Nursing,	**Title-** Nurses´ stressors and psychological distress during the COVID-19 pandemic: The mediating role of coping and resilience. **Objectives-**This study analyses the cross-sectional effect of sources of stress during the peak of COVID-19 pandemic on nurses´ psychological distress, focusing on the mediating role of coping strategies, both problem focused and emotion focused and resilience.	A sample of 421 nurses participated in this study.	Nursing Stress Scale (NSS) by Gray-Toft and Anderson (**1981**) Brief COPE by Carver (**1997**). The resilience scale (Stephens et al. (**2013**) DASS-21 (Antony et al., **1998**)	Structural equation modelling (*SEM*)	Resilience was negatively and significantly correlated to: insufficient preparation (0.19***), fear of infection (0.12, p = 0.016), problem focused coping (0.28***), and emotion focused coping (0.43***).
24	Lourdes Luceño-Moreno	**Title-** Symptoms of Posttraumatic Stress, Anxiety, Depression, Levels of Resilience and Burnout in	1422 lth	The Impact of Event Scale-Revised (IES-R)	Linear regression equations Descriptive	The variables negatively and significantly related to depression would be personal accomplishment, resilience, having a doctor's degree, having a training contract, not having been isolated due to COVID-19 and not having been hospitalized for

	,Beatriz Talavera-Velasco. *Int. J. Environ. Res. Public Health*	Spanish Health Personnel during the COVID-19 Pandemic. **Objectives-** The aim of this study is to analyse posttraumatic stress, anxiety and depression during the COVID-19 pandemic. Associations between burnout, resilience, demographic, work and COVID-19 variables are analysed.		Hospital Anxiety and Depression Scale (HADS) Maslach Burnout Inventory-MBI-HSS Brief Resilience Scale (BRS)	analyses	symptoms compatible with those of coronavirus.
25	Maunder, R. G., Lancee, W. J., Mae, R., Vincent, L., Peladeau, N., Beduz, M. A., Hunter, J. J., &	**Title-** Computer-assisted resilience training to prepare healthcare workers for pandemic influenza: a randomized trial of the optimal dose of training. **Objectives-** This study tests the feasibility and effectiveness of a less expensive alternative -	158 hospital workers were participated in this study.	Pandemic related self-efficacy, Coping style Confidence in support and training. Interpersonal	Intention-to-treat analysis.	The course was associated with significant improvements in confidence in support and training, pandemic self-efficacy and interpersonal problems. Participants who under-utilized coping via problem-solving or seeking support or over-utilized escape-avoidance experienced improved coping. Computer-assisted resilience training in healthcare workers appears to be of significant benefit and merits further study under pandemic conditions

	Leszcz, M BMC Health Services Research, 10(1), 72. https://doi. org/10.11 86/1472-6963-	an interactive, computer-assisted training course designed to build resilience to the stresses of working during a pandemic.		problems		
26	Meybodi, A., & Mohamm adi, M. Journal of Nursing Managem ent	**Title-** Identifying the components of spirituality affecting the resilience of nurses. **Objectives-** To identify the components of spirituality that affect the resilience of nurses in the coronavirus service.	370 voluntary nurses were participated in this study.	Multidime nsional Scale of Perceived Social Support Scale (MSPSS) Connor– Davidson Resilience Scale	ANOVA T-test The Kruskal– Wallis test. Pearson Correlation and linear regression	A positive directional significant relationship was observed between the social support perceived by the nurses and their level of psychological resilience. The term of employment and work shift only affected their psychological resilience level. Both age and the economic condition of the nurses affected their perceived social support and psychological resilience levels.

27	Miguel-Puga J. A. Cooper-Bribiesca D. [...] Jáuregui-Renaud K. *Brain and Behavior (2021)*	**Title-** Burnout, depersonalization, and anxiety contribute to post-traumatic stress in frontline health workers at COVID-19 patient care, a follow-up study **objectives-** To assess the influence of the general characteristics and pre-exsting anxiety/depression / dissociative symptoms resilience on the development of symptoms of post traumatic stress disorder(PTSD)	204 frontline health care worker accepted to participate.	The Hospital Anxiety and Depression Scale (HADS). Dissociative experiences Scale(DES)Resilience Scale (Connor et.al)	Kolmogorov – smirnov test. Pearson Correlation	Results indicates that younger age was related to both pre-existing common psychological symptoms and less resilience. Resilience is negatively related to all the psychological distress i.e. acute stress, anxiety, depression, dissociative symptoms.
27	Mosheva M. Hertz-Palmor N. [...] Gothelf D. *Depressio*	**Title-** Anxiety, pandemic-related stress and resilience among physicians during the COVID-19 pandemic. **Objectives-** They	1106 Israeli physicians (564 males and 542 females)	The Patient-Reported Outcomes Measurement Informatio	Descriptive statistics. Multivariable linear regression.	The factors that were most strongly associated with anxiety in the multivariable linear regression were mental exhaustion, anxiety about being infected, anxiety about infecting family members, and sleep difficulties.The model also showed that resilience

	n and Anxiety (2020)	aimed to investigate the association between pandemic-related stress factors (PRSF) and anxiety and to evaluate the potential effect of resilience on anxiety among physicians.		n System. Connor–Davidson Resilience Scale PRSF inventory		was negatively associated with anxiety.
29	Pappa S. Barnett J. [...] Sakkas N. *International Journal of Environmental Research and Public Health (2021).*	**Title-**Tired, worried and burned out, but still resilient: A cross-sectional study of mental health workers in the UK during the covid-19 pandemic **Objectives-** This study aims at investigating the nature of resilience and stress experience of health care workers during the COVID-19	A total of 387 HCWs from across a large urban mental health service were participated in this study.	Patient Health Questionnaire (PHQ-9). Generalized Anxiety Disorder Scale (GAD-7) Athens Insomnia Scale (AIS).	Multivariable logistic regression analysis	High Resilience was reported by 70% of the samples and the importance of this is highlighted where better support was indeed found to be a significant predictor.

	Citation- Pappa, S.; Barnett, J.; Berges, I.; Sakkas, N. Int. J. Environ. Res. Public Health 2021, 18, 4457. https://doi.org/10.33 90/ ijerph180 94457	pandemic.		Maslach Burnout Inventory (MBI) Resilience Scale-14 (RS-14)		
30	Pietrzak R. H. Feingold J. H.[...] Ripp J.	**Title-** *Psychological Resilien ce in Frontline Health Care Workers During the Acute Phase of*	6026 FHCWs at Mount Sinai Hospital an hospital in NYC.	Personal COVID-19 related stressors(s upplyment ory table 1)	Multiple regression analysis	Results revealed that positive emotions(14.7%), enthusiastic(11.2%), self-efficacy(13.8%), non-engagement in substance use coping(9.9 %), higher purpose in life (7.8%), emotional support(6.9%), leadership support(6.8%) were most strongly

	The Journal of Clinical Psychiatry (2020)	*the COVID-19 Pandemic in New York City*. **Objective-** Characterization of potential resilience promoting factors.		Resilience-promoting factors(Supplymentory table 2).		associated with psychological resilience.
31	Ren Y. Zhou Y. [...] Zeng Y. *International Journal of Nursing*	**Title-** *Exploratory study on resilience and its influencing factors among hospital nurses in Guangzhou, China*. **Objectives-** The present study sought to explore the resilience of Chinese nurses and its influencing factors using a large sample survey.	1356 nurses from 11 general hospitals in Guangzhou, China.	The Conner–Davidson Resilience Scale. The General Self-Efficacy Scale The Simplified Coping Style Questionnaire		The mean total score of nurses' resilience is 59.99 (SD 13.59), which was significantly lower ($P < 0.001$) than that of the general people in China. The regression analysis affirmed that the factors which influence the resilience of nurses include self-efficacy, coping style, job stress, and education level ($R^2 = 49.4\%$, $P < 0.001$). Strengthening self-efficacy, choosing active coping, decreasing job stress, and enhancing educational training can effectively improve their resilience.

| 32 | Sanjida Khan, Shamima Akter, Tarina Khan, Golam Shariar & Mohammad Abdul Awal Miah *Journal of Social Distress and Homelessness* | **Title**-Psychological distress among Bangladeshi physicians: roles of perceived stigma, fear of infection and resilience in the context of Covid-19 pandemic **Objectives**- This study aims to investigate the association among perceived stigma, fear of infection, resilience, and psychological distress among physicians during the Covid-19 pandemic in a developing country, Bangladesh. | A total of 209 physicians voluntarily participated in a web-based cross-sectional survey. | Fear assessment questionnaire Perceived stigma scale Brief resilience scale. Kessler psychological distress scale | | Results showed that female physicians were more fearful, less resilient, and highly distressed compared to males. An intense fear, high perceived stigma, and low resilience were significantly associated with increased psychological distress, while perceived stigma was the most potent factor. |
| 33 | Setiawati Y. Wahyuhadi J. [...] Atika A. | **Title** - Anxiety and resilience of healthcare workers during COVID-19 pandemic in Indonesia. | 227 respondents were healthcare workers at Dr. | State-Trait Anxiety Inventory (STAI) questionnai | The Spearman correlation | A significant correlation was found between the level of resilience and anxiety experienced by healthcare workers during the COVID-19 pandemic (p <0.05). The lower the resilience, the higher the |

	Journal of Multidisciplinary Healthcare (2021).	**Objectives** - This study aims to determine the correlation between resilience and anxiety in healthcare workers during COVID-19 pandemic.	Soetomo Hospital as the COVID-19 referral hospital in Surabaya, East Java, Indonesia.	re. Connor–Davidson Resilience Scale (CR-RISC) questionnaire.		anxiety experienced.
34	Serrão C. Duarte I. [...] Teixeira A. *International Journal of Environmental Research and Public Health (2021).*	**Title -** Burnout and depression in portuguese healthcare workers during the covid-19 pandemic—the mediating role of psychological resilience **Objectives-**. The aim of this study was to explore the mediating role of resilience in the relationship between depression and burnout (personal, work-related, and	2008 subjects completed the survey	Resilience Scale-25 items. Depression Anxiety Stress Scales-21 items. Copenhagen Burnout Inventory Scale19 items	Hierarchical regression model	Psychological resilience played a partial mediating role between depression and all burnout dimensions. This partial mediation suggests that there may be other possible variables (e.g., social connection, self-compassion, gratitude, sense of purpose) that further explain the associations.

		client-related).				
35	Sinu Jose , Manju Dhandapani , Maneesha C Cyriac Indian Journal of Critical Care Medicine (2020)	**Title-** Burnout and Resilience among Frontline Nurses during COVID-19 Pandemic: A Cross-sectional Study in the Emergency Department of a Tertiary Care Center, North India. **Objectives-** This study aims to determine the burnout and resilience and its associated factors among the frontline nurses who provide direct care for the patients in the emergency department of a tertiary care center in North India.	The sample consisted of 120 frontline nurses selected by simple random sampling from various emergency care areas; medicine, surgery, and trauma outpatient departments of a tertiary care center in North India.	Maslach Burnout Inventory. Connor–Davidson Resilience Scale-25 (CD-RISC)	Descriptive Statistics. Pearson correlation	The two metrics of burnout viz., emotional exhaustion and personal inefficacy had a significantly negative correlation with resilience among the frontline nurses in the emergency.Effective interventions for improving resilience are needed to relieve nurses' burnout and workplace stressors.

36	Souzan Abd Elmenem Abd Elghafar Harfush Tanta Scientific Nursing JournalVol. 19 No. 1 November, 2020, ORCID: 0000-0001-6612-0652	**Title-** Effect of Resilience Intervention on Nurses' resilience and Psychological Problems during The COVID-19 Pandemic. **Objectives-** the study aimed to evaluate the effect of resilience intervention on nurses' psychological problems, and their resilience during time of coronavirus pandemic.	70 nurses who are caring for patients with corona virus. The participants divided into small groups and attended eight sessions of resilience intervention through zoom cloud meetings.	Socio-Demographic Questionnaire developed by researchers Four Dimensional System Questionnaire (4DSQ) Connor -Davidson Resilience Scale (CD-RISC)	Student's paired (t) Spearman's rank correlation	There was a statistically significant improvement in nurses' resilience & psychological problems after the intervention, Also, a statistical significant negative correlation was found between resilience and all psychological problems.Resilience intervention is proved to be effective in improving nurses' resilience and psychological health.
37	S V. Ruckmani S. *PARIPEX INDIAN JOURNAL OF RESEARC*	**Title-** ANXIETY, RESILIENCE AND COPING STRATEGIES AMONG THE HEALTH CARE WORKERS DURING COVID-19	Total 66 participants(13 male & 53 female) who are above 18 years were selected from different	Covid-19 anxiety scale (Lee et al.,2020) Brief cope scale(Carver 1997) Brief	Pearson's coefficient of correlation	A correlation coefficient of -0.17 indicates that there is no significant relationship between resilience and anxiety.A coefficient correlation of -0.26 which is significant at 0.05 level, indicates that there is a significant negative relationship between resilience and avoidance coping style.

	H (2021).	PANDEMIC. **Objectives-** The study aims to find the relationship between anxiety, coping style and resilience among health care workers.	hospitals in Tamil nadu	resilience rating scale(Smith et al., 2008).		
38	Xiuli Ou, Yantang Chen, Zhonghuan Liang, Shaoxia Wen, Shuzhen Li & Yuzhen Chen **Psychology, Health & Medicine**	**Title-**Resilience of nurses in isolation wards during the COVID-19 pandemic: a cross-sectional study **Objectives-**The main goal of this study is to investigate the psychological status of nurses in the isolation ward and assess the impact of hospital support interventions on their psychological symptoms.	92 nurses by convenient sampling.	Connor-Davidson Resilience Scale (CD-RISC) Symptom Checklist 90 (SCL-90)	T-tests Chi-squared tests. Person correlation	The resilience scores were negatively correlated with other dimensions (except the somatisation dimension and other items) such as the obsessive-compulsive, interpersonal sensitivity, and depression dimensions ($p < 0.05$) .Thus improving the resilience of nurses can, therefore, reduce psychological symptoms such as anxiety, depression, and interpersonal sensitivity.

| 39 | Xue Jiang Xiaoning Zhang Int J Ment Health Nurs | **Title-**Association between resilience and burnout of front-line nurses at the peak of the COVID-19 pandemic: Positive and negative affect as mediators in Wuhan. **Objectives-** This study briefly examines front-line nurses who experienced burnout, with the main objective of investigating the mediating roles of positive and negative affect in the relationship between resilience and burnout in Wuhan hospitals at the peak of the COVID-19 pandemic. | 180 front-line nurses | Maslach Burnout Inventory-General Survey (MBI-GS). The Positive and Negative Affect Schedule (PANAS). The Connor-Davidson Resilience Scale (CD-RISC) | Structural equation modelling (SEM) analysis | This results revealed that positive and negative affect fully mediated the effects of resilience on burnout, emotional exhaustion, depersonalization, and reduced personal accomplishment of front-line nurses. |
| 40 | Yıldırım, M., Arslan, | **Title-** Perceived Risk and Mental Health Problems among | 204 healthcare | Depression Anxiety Stress | Pearson's correlation | The result showed that Coronavirus fear ,depression, stress ,and anxiety ,were negatively correlated with resilience. Correlations between |

	G., & Özaslan. Internatio nal Journal of Mental Health and Addiction.	Healthcare Professionals during COVID-19 Pandemic: Exploring the Mediating Effects of Resilience and Coronavirus Fear . **Objectives-**This study examined the mediating roles of resilience and coronavirus fear in the relationship between perceived risk and mental health problems among healthcare professionals including doctors and nurses who were actively treating patients confirmed with COVID-19.	professionals	Scales-21 (DASS-21) The Brief Resilience Scale (BRS).	analysis	perceived risk and resilience was r = -0.19.
41	Yiming Liang Kankan Wu *Int. J.*	**Title-** Mental Health in Frontline Medical Workers during the 2019 Novel Coronavirus Disease	899 frontline medical workers and 1104 respondents in	Patient Health Questionna ire (PHQ-9).	Descriptive statistics. Analysis of variance (ANOVA).	The resilience of frontline medical workers in other regions was significantly higher than that of the general population in other regions.Medical staff also have a higher level of education than the general population, and higher educational level is

Environ. Res. Public Health **20 20**, *17*(18) ,	Epidemic in China: A Comparison with the General Population. **Objectives-**The current study aims to evaluate psychological symptoms in frontline medical workers during the COVID-19 epidemic in China and to perform a comparison with the general population	the general population participated.	Generalize d Anxiety Disorder Scale (GAD-7) Insomnia Severity Index (ISI). Abbreviate d Connor– Davidson Resilience Scale (CD-RISC-10),	Bonferroni's post hoc multiple comparison test. Chi-square test	positively related to resilience