Internship Training

At

U4RAD Technologies LPP

"Mental health of Doctors and nurses during COVID-19"

By

Name: Shah Moh Basher

Enroll No: PG/19/018

Under the guidance of

Dr. Nitish Dogra

Post Graduate Diploma in Hospital and Health Management

2019-21

International Institute of Health Management Research

New Delhi

The certificate is awarded to

Shah Moh Basher

In recognition of having successfully completed his/her

Internship in the department of

"Radiology Department"

And has successfully completed his/her project

"Mental health of Doctors and nurses during COVID-19"

19.06.2021

International Institute of Health Management Research, New Delhi

He/ She come across as a committed, sincere & diligent person who

has a strong drive & zeal for learning.

We wish him/her all the best for future endeavors.

Training & Development   **Zonal Head-Human Resources**

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Shah Moh Basher student of PGDM (Hospital & Health Management) from International Institute of Health Management Research; New Delhi has undergone internship training at U4RAD Technologies LPP New Delhi from 1st March to 31st May, 2021

The Candidate has successfully carried out the study designated to him during internship training and his/her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course

requirements.

I wish him all success in all his/her future endeavors.

Ms. Divya Aggarwal   Dr. Nitish Dogra

Associate Dean, Academic and Student Affairs   Associate Professor

IIHMR, New Delhi   IIHMR, New Delhi

The following dissertation titled **"Mental Health of Doctors and Nurses during COVID-19"** at **"U4RAD Technologies LPP"** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Health and Hospital Management** (Hospital & Health Management) for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

Name   Signature

Dr. B.S Singh

(Associate Professor)   _____

Dr. Rupsa Banerjee

(Assistant Professor)   _____

     Ajay Sood

_____   _____

This is to certify that **Shah Moh Basher,** a graduate student of the **PGDM (Hospital & Health Management)** has worked under our guidance and supervision. He/ She is submitting this dissertation titled "**Mental Health of Doctors and Nurses during COVID-19**" at **"U4RAD Technologies LPP"** in partial fulfillment of the requirements for the award of the **PGDM (Hospital & Health Management).**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Dr. Preetha G.S.   Dr. Nitish Dogra

Professor and Dean Research,   Associate Professor

IIHMR- Delhi   IIHMR-Delhi

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH,

NEW DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **Mental Health of Doctors and Nurses during COVID-19** and submitted by Shah Moh Basher Enrollment No.PG/19/018 under the supervision of Dr. Nitish Dogra for award of PGDM (Hospital & Health Management) of the Institute carried out during the period from 1st March to 31st May, 2021 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Signature

FEEDBACK FORM

Name of the Student: **Shah Moh Basher**

Dissertation Organization: **U4RAD Technologies LPP.**

Area of Dissertation: **Research**

Attendance: **Adequate**

Objectives achieved:

Deliverables:

Strengths:

Suggestions for Improvement:

Suggestions for Institute (course curriculum, industry interaction, placement, alumni):

                                            Signature of the Officer-in-Charge/

                                            Organization Mentor (Dissertation)

Date:

Place: Palwal, Haryana

Acknowledgements

As three months of dissertation period come to an end, I would like to thank everyone, without whose contributions, this project would have been impossible to complete, all those who helped me get an enriching experience.

First of all, I also want to thank for letting me part of this enriching journey as a researcher at IIHMR Delhi. Thank you, Sir for your constant support and belief and taking me in this project as my dissertation.

I am very grateful to my mentor Dr. Nitish Dogra IIHMR Delhi for giving me constant support and guidance during my project.

I would also like to thank all my teachers without their support, my experience and my knowledge would have remained incomplete.

The completion of my summer training would not have been possible without tireless contribution and consistence of my friends and family.

Shah Moh Basher

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Abbreviation

SARS	**Severe Acute Respiratory Syndrome**
MERS	**Middle East Respiratory Syndrome**
Covid-19	**Corona Virus Disease 2019**
CDC	**Centre For Disease Control**
CAMH	**Canadian Association of Mental Health**
MHID	**Mental Health in Intellectual Disabilities**
CMHS	**Comprehensive Mental Health Services**
APA	**American Psychiatric Association**
HAMD	**Hamilton Depression Scale**
DASS	**Depression, Anxiety and Stress Scale**
PTSD	**Posttraumatic stress disorder**
AMD	**Age related macular degeneration**
HCWs	**Health care workers**
GAD	**Generalized anxiety disorder scale**
SAS	**Self-rating anxiety scale**
CES-D	**Centre for epidemiologic studies depression scale**

Chapter 1 - Corona Virus

Introduction

1.   Corona virus is the large family of virus which cause various illness in the human and the animal the corona virus which causes the illness like serious like, respiratory illness is common cold and MERS and SARS. recently another corona virus found named as Covid 19. What is exactly COVID-19? It is occurred in Wuhan city in China in the year 2019 in December, it very infectious disease and were unknown before the outbreak and the symptoms are as follows:-

      (a)   Tiredness

      (b)   Dry cough

      (c)   Head ache

      (d)   Nasal congestion

      (e)   Runny nose

      (f)   Sore throat

      (g)   Diarrhea

      (h)   Loss of smell

      (i)   Loss of taste

      (j)   Fever

      (k)   Respiratory congestion

      (l)   Bluish tongue

      (m)   Candidiasis

2.   Spread.   It can be spread through the droplet from nose mouth of the infectious person which can spread the corona virus from one person to another, if the droplet land on any surface and if any one touches the surface with hand and touches his mouth and nose the it will spread very easily.

3.   Spread Through Air.   Some studies have been carried out and suggest that it can spread through air but it is mainly spread through droplets.

4.   Can COVID-19 Spread Through Asymptomatic Patient.   The main reason of spreading COVID-19 is spreading through asymptomatic patient. The person who has no symptoms can easily spread COVID-19 to any person whose immunity is less and cause serious illness to the patient.

5.   Way Of Protection.   The best way to protect from COVID-19 is to wash the hands for 20-30 seconds with soap and use hand sanitizer and also use mask to protect from droplet infection. At times use face shield to prevent the entry of virus through eyes. The physician health care worker also use PPE kit like gowns, face shield, N-95 mask to protect themselves from getting corona virus. Social distancing also plays a vital role to prevent spreading of the virus from one person to another. Avoid touching nose and eyes. If somebody feel unwell, he/she can quarantine himself or isolate so as to prevent spreading to another person. High blood pressure and high blood sugar could be disastrous to anyone who gets infected from corona virus therefore it is essential that blood sugar and BP is regularly monitored. Monitoring the body temp is a must and it should be 37.5C. Follow all the guidelines issued by the government.

6.   Risk of Getting Infected With Co-Morbidities.   Co-morbidities like high BP and high blood sugar can be disastrous for COVID patient. In many COVID patients, it is found that

there is high pulse and heart rate, increased blood pressure. Also, the patient with low immunity or immunosuppressant's may become easy targets to any infected person and show much more symptoms than asymptomatic patient which also may require the life savings procedure to save his/ her life.

7.　　**<u>Worry About Covid</u>**?　　The illness and symptoms are seen in about 20% of the patients, but one in every five may get hospitalized. This is a cause of concern. Antibiotics have a very limited or no effect on the virus.

8.　　<u>Medicine Use in COVID-19</u>.

　　(a)　　Favipiravir

　　(b)　　Injection Remdesivir

　　(c)　　Enoxaparin

　　(d)　　Methyl Prednisolone

　　(e)　　Dexamethasone

　　(f)　　Anti-Pyretic

9.　　**<u>Is COVID-19 Similar to SARS</u>**.　　COVID-19 virus is causes different illness with different symptoms　and the SARS causes respiratory disorder and is caused by SARS virus, there also no outbreak of SARS in the world.

10.　　**<u>Disposal of Masks</u>**.

　　(a)　　Mask should not be touch by hand and wash your hands after disposal.

　　(b)　　Always check for any hole in the mask.

　　(c)　　Always pull the lower side of mask so that it covers the nose properly.

　　(d)　　Discard the mask in closed dust bin.

11. **<u>Incubation Period of COVID-19</u>**.   The incubation period of corona virus s 1-14 days. During this period, individual starts showing symptoms. The survival of the virus on surface is yet to be established. It is still unknown for how long it can sustain itself on the surface, some studies suggest that it can stay for few hours depending upon the conditions like temperature, humidity and environment. It is thus important to clean the surface and disinfect it to kill the virus and protect yourself.

Chapter 2 - Mental Health

1.   It refers to the cognitive behavior basically reflection of reactions of people and their feelings under different scenarios and also during stressful moments. It can affect the daily routine life like relationship. Various components of mental health are as given below:-

   (a)   Physical

   (b)   Intellectual

   (c)   Vocational

   (d)   Social

   (e)   Emotional

   (f)   Spiritual

2.   According to WHO, mental health includes subjective wellbeing, autonomy, Inter-generational dependence and self-actualization. Mental health also includes the ability of the individual to enjoy life and to make balance between the activities and efforts. Depression is characterized by sadness and loss of interest with psychological, behavioral and physical symptoms. Risk factors associated with mental health in Covid.

   a. Over work load

   b.   Fear of getting infection.

   c. Inappropriate working environment.

3.   Warning Signs of Poor Mental Health.

   (a)   Always worrying

   (b)   Unable to concentrate

(c)   Lose temper

(d)   Continuous unhappy

(e)   Insomnia

(f)   Fluctuation in mood

(g)   Dislike

(h)   Upset

(i)   Afraid without real cause

4.   Types Of Mental Illness Classified according to ICDs.

(a)   Organic Disorder

(b)   Behavior Disorder

(c)   Schizophrenia

(d)   Mood Disorder

(e)   Neurotic Disorder

(f)   Behavior Syndrome

(g)   Disorder Of Personality

(h)   Mental Retardation

(i)   Emotional Disorder

5.   Causes Of Mental Disorder.

(a)   Neoplasm

(b)   Metabolic Disorder

(c)   Endocrine Disorder

(d)   Epilepsy

(e)   TB

     (f)   Social Cause

     (g)   Pathological Cause

     (h)   Environmental Factor

     (i)   Toxic Substances

     (j)   Psychotropic Drug

     (k)   Nutrition Factor

     (l)   Nutrition Factor

     (m)   Minerals

     (n)   Infective Agents

     (o)   Traumatic Factor

     (p)   Radiation

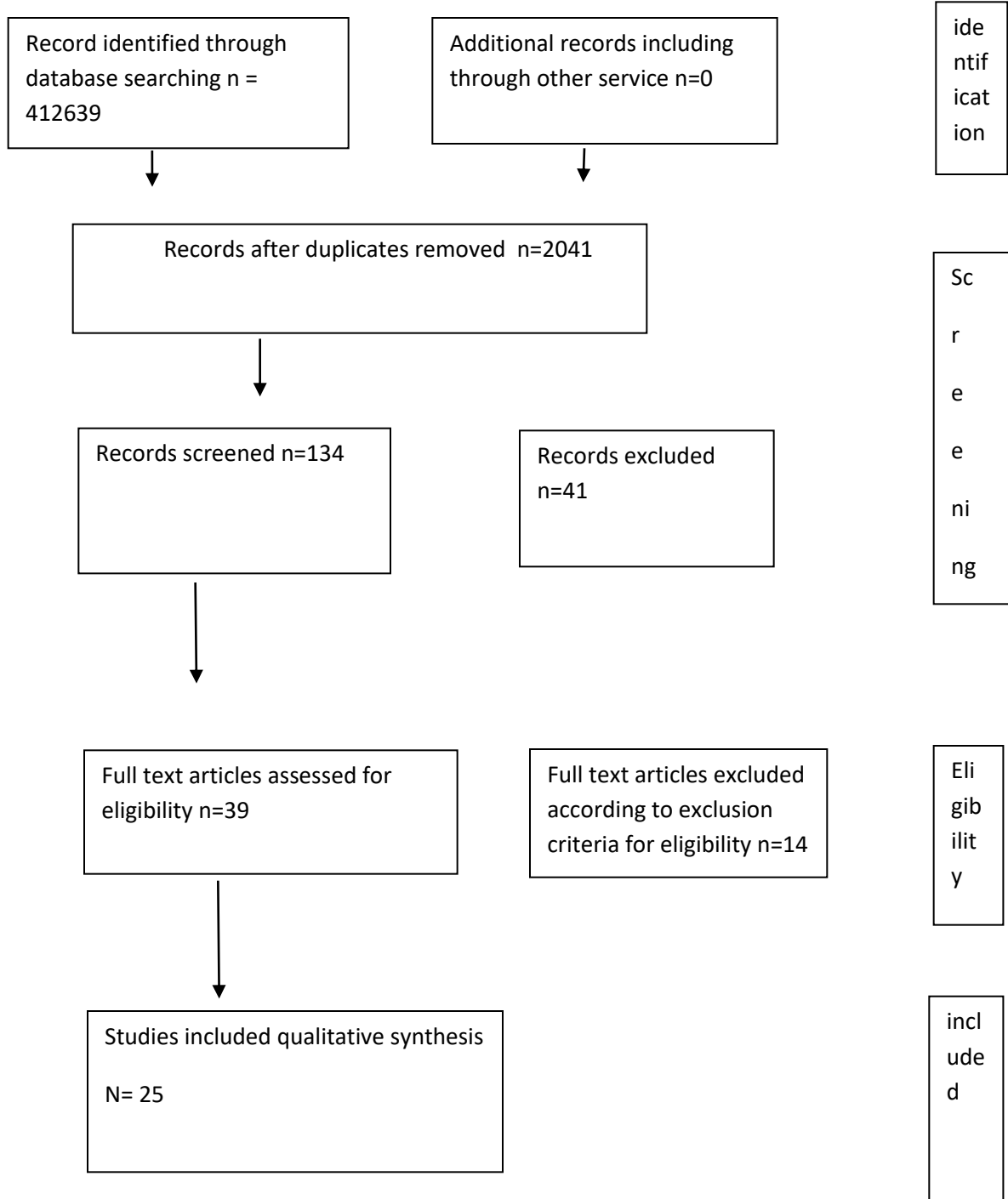## 6.   <u>Mental Health Service</u>.

     (a)   Early Diagnosis

     (b)   Rehabilitation

     (c)   After Care Service

     (d)   Mental Health Education

7.   <u>Community Mental Health Program</u>.

     (a)   IPD Service

     (b)   Emergency Services

     (c)   Diagnostic Service

     (d)   Education Services

     (e)   Training

Prisma Table

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Chapter 3 – Literature review

1.   Pub Med was searched for literature analysis of relevant articles from December 2020-June 2021, search criteria was mental health of doctors during covid pandemic and health impact in covid.

2.   Eligibility Criteria.   Articles included for the study for assessing the impact of covid 19 on the health care workers were published during the period of March 2021 to June 2021. The inclusion were nurses and doctors. Identification and selection of the study independently searched through the literature, the two set of the literature were reviewed, and the duplicated literature were removed. After the selection of the article, the domain in the extraction of the data were date of publication title of the article methodology and the results, study design, key findings. The following domain of the research was followed:-

(a)   Criteria 1 – Mental Health Articles identified were 412639

(b)   Criteria 2 – Mental Health AND doctors and nurses, articles reduced to 2041

(c)   Criteria 3 – Included only pandemic as search, articles reduced 134

(d)   Criteria 4 – Inclusion only Covid as pandemic in the search, articles 131

(e)   Criteria 5 – Exclusion of no other health workers in search, articles reduced to 41

(f)   Criteria 6 – Only free full articles in the search, articles reduced to 39

(g)   These 25 articles are accessible.

Research Domain.   Among the 25-study included in this review,12 were cross sectional,13 were Descriptive. The study population comprises both male and female including doctors and frontline heath care worker during covid, most of the studies are from pub med.

3.   The tool used in these studies included

Good well-being

Probable PTSD

Problem drinking

Moderate depression

Severe depression

Moderate anxiety

Severe anxiety

AMD

Chapter 4

1. **<u>Objective of The Study</u>**.

   To assess the magnitude of mental health outcomes and associated factors among health care workers treating patients exposed to COVID-19

2. **<u>Methodology</u>**.

   (a)   Design of the Study - Descriptive Study

   (b)   Type of Data - Secondary Data

   (c)   Data Collection Method - Articles Review from the PUBMED

   (d)   Language - Articles published in English language only were considered

   Criteria 1 – Mental Health Articles identified were 412639

   Criteria 2 – Mental Health And doctors and nurses, articles reduced to 2041

   Criteria 3 – Included only pandemic as search, articles reduced 134

   Criteria 4 – Inclusion only Covid as pandemic in the search, articles 131

   Criteria 5 – Exclusion of no other health workers in the search, articles reduced to 41

   Criteria 6 – Only free full text articles in the search, articles reduced to 39

   Criteria 7 – These 25 articles are accessible.

Results

S. No	Study	By	Published Date	Methodology	Result
1.	Mental health of staff working in intensive care during Covid-19 - PubMed (nih.gov)	NGreenberg D Weston C Hall T Caulfield Williamson K Fong [6]	April 2021	An anonymized brief web-based survey comprising standardized questionnaires examining depression, anxiety symptoms, symptoms of post-traumatic stress disorder (PTSD), well-being and alcohol use was administered to staff.	Seven hundred and nine participants completed the surveys comprising 291 **(41%) doctors, 344 (49%) nurses and 74 (10%) other healthcare staff. Over half (59%) reported good well-being**; however, **45% met the threshold for probable clinical** significance on at least one of the following measures**: severe depression (6%), PTSD (40%), severe anxiety (11%) or problem drinking (7%).** health than nurses across a range of measures.
2.	Workplace factors associated with mental health of healthcare workers during the COVID-19 pandemic: an international cross-sectional study - PubMed (nih.gov)	Ankur Khajuria , Wojtek Tomaszewski , Zhongchun Liu Jian-Hua Chen , et.al	March 2021	An international, cross-sectional study was conducted in 41 countries. The primary outcome was depressive symptoms, derived from the validated Patient Health Questionnaire-2 (PHQ-2). Multivariable logistic regression identified factors associated with mental health outcomes. Inter-country differences were also evaluated.	A total of 2527 responses were received, from 41 countries**, including China (n = 1213; 48.0%), UK (n = 891; 35.3%), and USA (n = 252; 10.0%). Of all participants, 1343 (57.1%) were aged 26 to 40 years, and 2021 (80.0%) were female; 874 (34.6%) were doctors, and 1367 (54.1%) were nurses.** Factors associated with an increased likelihood of depressive symptoms redeployment with perceived unsatisfactory).

3.	How healthcare workers are coping with mental health challenges during COVID-19 pandemic? - A cross-sectional multi-countries study - PubMed (nih.gov)	Mila Nu Nu Htay , Roy Rillera Marzo , et. al.	May 2021	A cross-sectional study was conducted by using an online, web-based questionnaire, which was distributed to healthcare workers from 32 countries during April and May 2020. The respondents were recruited by the non-random convenience sampling method	A total of 2166 respondents responded to the survey and the majority were working in low- and middle-income countries. Among them, **36% were doctors, 24% were nurses and 40% worked in other healthcare sectors. More than 70% of the respondents answered that "getting family support" and "positive thinking" were coping methods for them during the COVID-19 pandemic. Approximately half of the respondents worshiped according to their belief and **conducted prayers (58.4%) and had adequate sleep and food intake (48.2%).** The significant associations were observed between attitude score towards interprofessional teamwork and gender
4.	Determinants of burnout and other aspects of psychological well-being in healthcare workers during the Covid-19 pandemic: A multinational cross-sectional study - PubMed (nih.gov)	Max Denning , Ee Teng Goh , Benjamin Tan , et al.	April 2021	Countries selected for inclusion represented a range of Covid-19 mortality rates, health system design, economic development, and had regional coordinators that could adapt the questionnaire to the local context and champion distribution This cross-sectional study was conducted between 27th March and 16th June 2020. The questionnaire was administered using Google Forms	A total of 3,537 responses were received (Table 2). Amongst these, 2,**544 (72%) of respondents were female and 923 male (26.1%). 684 (19.3%) responses were from doctors, 1,590 (45%) from nurses, 517 (14.6%) from other clinical staff (including healthcare support workers**, etc), and 746 **(21.1%)** non-clinical staff. 765 responses were from the UK, 232 from Poland, 2,503 from Singapore, and 37 from other countries, which were excluded due to the low response rate for the purpose of analysis to minimise a response bias. During the pandemic, **766 (21.7%) clinical staff were redeployed as part of response measures and 777**

					(22%) respondents had received at least one test for SARS-CoV-2 infection.
5	Evaluation of stress, burnout and hair cortisol levels in health workers at a University Hospital during COVID-19 pandemic - PubMed (nih.gov)	Carolina Ibar [1], Federico Fortuna [2], Diego Gonzalez [3], Juan Jamardo [4], Dario Jacobsen et.al.	April 2021	234 health workers from Hospital de Clínicas "José de San Martín", Buenos Aires University, were included in this study. In this population hair samples were obtained from the posterior vertex as close to the scalp as possible and the individuals completed the following surveys: perceived stress, social support, burnout scale, life event scale, and sociodemographic data. Hair cortisol was measured by an automated chemiluminescent method. The studied population was divided into three groups considering those individuals below the healthy reference sample range (< 40 pg/mg hair), within the healthy	Our results show that 40% of the studied population presented hair cortisol values outside of the healthy reference range. In the whole studied population, a direct correlation was found between hair cortisol concentration and perceived stress as well as between hair cortisol concentration and the emotional exhaustion component of burnout (r = 0.142, p = 0.030; r = 0.143, p = 0.029, respectively). **12% of the studied population showed Burnout (52% doctors and residents, 19% nurses, 19%**

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				reference range (40-128 pg/mg hair) and above the reference range (> 128 pg/mg hair). This study used a transversal and observational design	
6	Psychological Distress, Fear of COVID-19, and Resilient Coping Abilities among Healthcare Workers in a Tertiary First-Line Hospital during the Coronavirus Pandemic - PubMed (nih.gov)	Enrico Collantoni [1], Anna Maria Saieva [2], et.al	April 2021	This study is a cross-sectional, hospital-based online anonymous survey conducted during June 2020 among the HCWs of the University Hospital of Padua. The peak of total confirmed cases in the province of Padova occurred between the end of March and the first weeks of April (250 affected patients admitted in non-ICU and 55 in ICU wards in the Hospital of Padova	Nine hundred and ninety-six HCWs of the Hospital of Padua completed the survey and were included in the study. The main characteristics of the sample are reported in Table 1. **The response rate of physicians was 22% for males and 21% for females. Nurses and other sanitary professionals participated with a response rate of 15% in males and 19% in females**, whereas for **healthcare assistants the response rate was 5% in males and 15% in females**.

| 7 | Depression among physicians and other medical employees involved in the COVID-19 outbreak: A cross-sectional study - PubMed (nih.gov) | Naif Saad ALGhasab [1], Ahmed Hamed ALJadani [1], Sulaman Saud ALMesned [2], Ahmad Salah Hersi [3] | April 2021 | A cross-sectional, hospital-based survey conducted via a region-stratified, 2-stage cluster sampling will be conducted from April 29, 2020, to June 30, 2020. During this period, the total confirmed cases of COVID-19 were around 20,000 plus in Saudi Arabia. To compare the regional differences of depression outcomes among health care workers in Saudi Arabia, samples were stratified by their location | Frontline young healthcare workers especially physician in Saudi Arabia reported a high rate of depression symptoms. Physicians were more prone for significant depression than other medical profession. Countermeasures for health care workers represent a key component for the mental and physical well-being as part of public health measures during this pandemic. Attention to hospital preparedness and adequacy of personal protective equipment contributed to milder depression symptoms. Further studies need to be conducted on crisis management and depression |
| 8 | Facing COVID-19: Psychological Impacts on Hospital Staff in a Tertiary Care Private Hospital in India - PubMed (nih.gov) | N A Uvais [1][2], Mohammed Jezeel Nalakath [3], Kurian Jose [4] | March 2021 | This cross-sectional study was conducted May 5-25, 2020, among 347 hospital staff (nursing and other hospital staff, with the exception of doctors). Depression, anxiety, and insomnia were measured using the 9-item Patient Health Questionnaire, the 7-item Generalized Anxiety Disorder Scale, and the Insomnia Severity Index, respectively. | Of respondents, **16.4% reported clinically significant depression, 13.8% reported clinically significant anxiety, and 13.3% reported insomnia.** Among the nursing staff, 20.9% reported clinically significant depression, 15.9% reported clinically significant anxiety, and 17.0% reported insomnia. There was significantly higher depression |

9	Pandemic fatigue and clinical nurses' mental health, sleep quality and job contentment during the covid-19 pandemic: The mediating role of resilience - PubMed (nih.gov)	Leodoro J Labrague [1]	May 2021	This was a descriptive, cross-sectional study involving 255 frontline clinical nurses in the Philippines. The Pandemic Fatigue Questionnaire, Brief Resilience Scale, Job Contentment Scale and the Sleep Quality Scale were used to collect data through an online survey.	The mean pandemic fatigue score was 3.086 (out of 5). Being vaccinated ($\beta = 0.231$, $p < .001$) and increased staffing levels ($\beta = -0.488$, $p < .01$) were associated with decreased pandemic fatigue in clinical nurses. Resilience partially mediated the relationships between (a) pandemic fatigue and mental health ($\beta = -0.488$, $p < .001$), (b) pandemic fatigue and sleep quality ($\beta = -0.326$, $p < .001$) and (c) pandemic fatigue and job contentment
10	Associations between the working experiences at frontline of COVID-19 pandemic and mental health of Korean public health doctors - PubMed (nih.gov)	Sangyoon Han [# 1], Sejin Choi [# 2 3], Seung Hyun Cho [4], Joonhyuk Lee [5], Je-Yeon Yun [6 7]	June 2021	With first-come and first-served manner, 350 public health doctors with experiences of work at COVID-19 frontline participated online survey on August 2020. Mental health was defined using the total scores of the Patient Health Questionnaire-9, the Generalized Anxiety Disorder-7, the Perceived Stress Scale, and the Stanford Presenteeism Scale-6. Multivariate logistic regression models of mental health with lowest Akaike Information Criterion were determined among all	Perceived distress, lowered self-efficacy at work, anxiety, and depressive mood were reported by 45.7, 34.6, 11.4, and 15.1% of respondents, respectively. Predictors of poor mental health found in the multivariate logistic regression analyses were environmental (insufficient personal protective equipment, workplace of screening center, prolonged workhours) and psychosocial (fear of infection and death, social stigma and rejection) aspects of working experiences at frontline. Satisfaction of monetary compensation and proactive coping (acceptance and willingness to volunteer at frontline) were predictive of better mental health.

				combinations of working environments, perceived threats and satisfaction at frontline, and demographics that were significant (P < 0.05) in the univariate logistic regression.	
11	Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019	Jianbo Lai[1], Simeng Ma[2], Ying Wang[2], et. al.	March 2020	Cross Sectional, Survey Based Region-stratified study collected demographic data and mental health measurements from 1257 health care workers in 34 hospitals from January 29, 2020, to February 3, 2020, in China	A total of 1257 of 1830 contacted individuals completed the survey, with a participation rate of 68.7%. A **total of 813 (64.7%) were aged 26 to 40 years, and 964 (76.7%) were women. Of all participants, 764 (60.8%) were nurses, and 493 (39.2%) were physicians; 760 (60.5%) worked in hospitals in Wuhan, and 522 (41.5%)** were frontline health care workers. A considerable proportion of participants reported symptoms of **depression (634 [50.4%]), anxiety (560[44.6%]), insomnia (427 [34.0%]), and distress (899 [71.5%])**

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12	Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis	Sofia Pappa[1], Vasiliki Ntella[2], et al.[3]	May 2020	A systematic search of literature databases was conducted up to April 17th, 2020. Data pooled using random-effects meta-analyses to estimate the prevalence of specific mental health problems	**Thirteen studies were included in the analysis with a combined total of 33,062 participants. Anxiety was assessed in 12 studies, with a pooled prevalence of 23·2% and depression in 10 studies, with a prevalence rate of 22·8%.** A subgroup analysis revealed gender and occupational differences with female HCPs and nurses exhibiting higher rates of affective symptoms compared to male and medical staff respectively. Finally, insomnia prevalence was estimated at 38·9% across 5 studies.
13	Prevalence of mental health problems during the COVID-19 pandemic: systematic review	Tianchen Wu[1], Xiaoqian Jia[2], Huifeng Shi[1], Jieqiong Niu[1], Xiaohan Yin[1], Jialei Xie[1], Xiaoli Wang[3]	Feb 2020	We searched online biomedical databases (PubMed, Embase, Web of Science, Ovid, CNKI, and Wanfang Data) and preprint databases We searched online biomedical databases (PubMed, Embase, Web of Science, Ovid, CNKI, and Wanfang Data) and preprint databases (SSRN, bioRxiv, and MedRxiv) for observational studies from January 1, 2020 to March 16, 2020 investigating the prevalence of mental health problems during the COVID-19	**We retrieved 821 citations from the biomedical databases and 53 citations** from the preprint databases: 66 studies with 221,970 participants were included in our meta-analysis. **The overall pooled prevalence of depression, anxiety, distress, and insomnia was 31.4%, 31.9%, 41.1% and 37.9%, respectively.** Noninfectious chronic disease patients, quarantined persons, and COVID-19 patients had a higher risk of depression (Q=26.73, p<0.01) and anxiety (Q=21.86, p<0.01) than other populations. The general population and non-medical staff had a lower risk of distress than other populations (Q=461.21, p<0.01). Physicians, nurses, and non-medical staff showed a higher prevalence of insomnia (Q=196.64, p<0.01) than other populations.

					pandemic.
14	The psychologic al impact of COVID-19 and other viral epidemics on frontline healthcare workers and ways to address it: A rapid systematic review	Sonja Cabarkapa [1][2], Sarah E Nadjidai [2][3], Jerome Murgier [4], Chee H Ng [2][3]	Feb 2020	A systematic review using PRISMA methodology was used to investigate the psychological impact on HCWs facing epidemics or pandemics, using three electronic databases (PubMed, MEDLINE and CINAHL), dating back to 2002 until the 21st of August 2020. The search strategy included terms for HCWs (e.g., nurse and doctor), mental health (e.g., wellbeing and psychological), and viral outbreaks (e.g., epidemic and pandemic). Only studies with greater than 100 frontline HCWs (i.e. doctors or	**A total of 55 studies were included, with 53 using quantitative methodology and 2 were qualitative**. 50 of the quantitative studies used validated measurement tools while 5 used novel questionnaires. The studies were conducted across various countries and included people with SARS (13 studies), Ebola (1), MERS (3) and COVID-19 (38). Findings suggest that the psychological implications to HCWs are variable with several studies demonstrating an increased risk of acquiring trauma or stress-related disorders, depression and anxiety. Fear of the unknown or becoming infected were at the forefront of the mental challenges faced. Being a nurse and being female appeared to confer greater risk. The perceived stigma from family members and society heightened negative implications; predominantly stress and isolation. Coping strategies varied amongst the contrasting sociocultural

				nurses in close proximity to infected patients) were included.	settings and appeared to differ amongst doctors, nurses and other HCWs. Implemented changes, and suggestions for prevention in the future consistently highlighted the need for greater psychosocial support and clearer dissemination of disease-related information.
15	Support Groups and Individual Mental Health Care via Video Conferencing for Frontline Clinicians During the Covid-19 pandemic	Ramaswamy Viswanathan [1], Michael F Myers [2], Ayman H Fanous [2]	June 2020	We developed recurring peer support groups via videoconferencing and telephone for physicians, resident physicians, and nursing staff, focusing on issues and emotions related to their frontline clinical work with COVID patients in our medical center which was designated as a COVID-only hospital by the state. These groups are led by attending psychiatrists and psychiatry residents. In addition, we also deployed a system of telehealth individual counseling by attending	Anxiety was high in the beginning of our weekly groups, dealing with fear of contracting COVID or spreading COVID to family members and the stress of social distancing. Later, the focus was also on the impairment of the traditional clinician-patient relationship by the characteristics of this disease and the associated moral challenges and trauma. Clinicians were helped to cope with these issues through group processes such as ventilation of feelings, peer support, consensual validation, peer-learning, and interventions by group facilitators. People with severe anxiety or desiring confidentiality were helped through individual interventions.

| 16 | Infection and mortality of healthcare workers worldwide from COVID-19: a systematic review | Et al. | Dec 2020 | Two parallel searches of academic bibliographic databases and grey literature were undertaken until 8 May 2020. Governments were also contacted for further information where possible. There were no restrictions on language, information sources used, publication status and types of sources of evidence. The AACODS checklist or the National Institutes of Health study quality assessment tools were used to appraise each source of evidence | **A total of 152 888 infections and 1413 deaths were reported. Infections were mainly in women (71.6%, n=14 058) and nurses (38.6%, n=10 706), but deaths were mainly in men (70.8%, n=550) and doctors (51.4%, n=525).** Limited data suggested that general practitioners and mental health nurses were the highest risk specialities for deaths. There were **37.2 deaths reported per 100 infections for HCWs aged over 70 years**. Europe had the highest absolute numbers of reported infections (119 628) and deaths (712), but the Eastern Mediterranean region had the highest number of reported deaths per 100 infections (5.7). |

(continued from previous: ...psychiatrists.)

17	[Mental health problems among health care workers during the COVID-19 pandemic]	Alfonso Urzúa [1], Antonio Samaniego [2], Alejandra Caqueo-Urízar [3], Antonio Zapata Pizarro [4], Matías Irarrázaval Domínguez [5]	Aug 2020	The questionnaires PHQ-9 for depression, GAD-7 for anxiety, ISI-7 for insomnia and IES-R-22 for psychological distress were applied to 125 health care workers aged 18 to 67 years (32 physicians, 22 nurses and 71 of other professions) laboring in hospitals and primary care facilities along Chile.	**Sixty five percent reported depression symptoms, 74% anxiety, 65% insomnia and 57% distress**. Physicians had lower median scores in all scales than nurses and other health professionals. Professionals attending patients with respiratory infections or with COVID-19 had higher median scores in the scales that their counterparts
18	Psychological impact of COVID-19 pandemic on healthcare workers in a highly burdened area of north-east Italy	A Lasalvia [1 2], C Bonetto [2], S Porru [3], A Carta [3], S Tardivo [4], C Bovo [5], M Ruggeri [1 2], F Amaddeo [2 6]	Dec 2020	All healthcare and administrative staff working in the Verona University Hospital (Veneto, Italy) during the COVID-19 pandemic were asked to complete a web-based survey from 21 April to 6 May 2020. Symptoms of post-traumatic distress, anxiety and depression were assessed, respectively, using the Impact of Event Scale (IES-R), the Self-rating Anxiety Scale (SAS) and the Patient Health Questionnaire (PHQ-9). Personal socio-demographic information and job characteristics were also collected, including gender,	**A total of 2195 healthcare workers (36.9% of the overall hospital staff) participated in the study. Of the participants, 35.7% were nurses, 24.3% other healthcare staff, 16.4% residents, 13.9% physicians and 9.7% administrative staff. Nine per cent of healthcare staff worked in ICUs, 8% in sub-intensive COVID-19 units and 7.6% in other front-line services,** while the remaining staff worked in hospital units not directly engaged with COVID-19 patients. Overall, 63.2% of participants reported COVID-related traumatic experiences at work and 53.8% (95% CI 51.0%–56.6%) showed symptoms of post-traumatic distress; moreover, 50.1% (95% CI 47.9%–52.3%) showed symptoms of clinically relevant anxiety and 26.6% (95% CI 24.7%–28.5%) symptoms of at least moderate depression. Multivariable logistic regressions showed that women, nurses, healthcare

				age, living condition, having pre-existing psychological problems, occupation, length of working experience, hospital unit (ICUs and sub-intensive COVID-19 units vs. non-COVID-19 units). A multivariable logistic regression analysis was performed to identify factors associated with each of the three mental health outcomes.	workers directly engaged with COVID-19 patients and those with pre-existing psychological problems were at increased risk of psychopathological consequences of the pandemic.
19	Anxiety, Depression, and Resilience of Healthcare Workers in Japan During the Coronavirus Disease 2019 Outbreak	Nobuyasu Awano,[1] Nene Oyama,[2] Keiko Akiyama,[2] Minoru Inomata,[1] Naoyuki Kuse,[1] et al.	Nov 2020	This survey involved medical healthcare workers at the Japanese Red Cross Medical Center (Tokyo, Japan) between April 22 and May 15, 2020. The degree of symptoms of anxiety, depression, and resilience was assessed using the Japanese versions of the 7-item Generalized Anxiety Disorder Scale (GAD-7), Center for Epidemiologic Studies Depression Scale (CES-D), and 10-item Connor-Davidson Resilience Scale. Furthermore, we added original questionnaires comprising three factors: (i) anxiety and fear of infection and death; (ii) isolation and unreasonable	In total, **848 healthcare workers participated in this survey: 104 doctors, 461 nurses, 184 other co-medical staff, and 99 office workers. Among all participants, 85 (10.0%) developed moderate-to-severe anxiety disorder, and 237 (27.9%) developed depression**. Problems with anxiety and fear of infection and death, isolation and unreasonable treatment, and motivation and escape from work were higher in the depression group than in the non-depression group (total CES-D score ≥ 16 points). Being a nurse and high total GAD-7 scores were risk factors of depression. Older workers and those with higher resilience were less likely to develop depression than others.

				treatment; and (iii) motivation and escape behavior at work.	
20	Mental Health Burden in Different Professions During the Final Stage of the COVID-19 Lockdown in China: Cross-sectional Survey Study	Junfeng Du [# 1 2], Gwendolyn Mayer [# 2], Svenja Hummel [2], Neele Oetjen [2], Nadine Gronewold [2], Ali Zafar [2], Jobst-Hendrik Schultz [2]	Dec 2020	A cross-sectional online survey asked participants about current residence, daily working hours, exposure to COVID-19 at work, and media preferences. We used a shortened version of the Depression, Anxiety and Stress Scale (DASS-21) to assess mental health. Further assessments included perceived stress (Simplified Chinese version of the 14-item Perceived Stress Scale), coping strategies for all participants, and specific stressors for health care workers. We followed the reporting guidelines of the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) statement for observational studies.	**The sample (N=687) consisted of 158 doctors, 221 nurses, 24 other medical staff, 43 students, 60 teachers/government staff, 135 economy staff, 26 workers/farmers, and 20 professions designated under the "other" category. We found increased depression (n=123, 17.9%), anxiety (n=208, 30.3%), and stress (n=94, 13.7%) in our sample**. Professions that were vulnerable to depression were other medical staff and students. Doctors, nurses, and students were vulnerable to anxiety; and other medical staff, students, and economy staff were vulnerable to stress. Coping strategies were reduced to three factors: active, mental, and emotional. Being female and emotional coping were independently associated with depression, anxiety, or stress. Applying active coping strategies showed lower odds for anxiety while mental coping strategies showed lower odds for depression, anxiety, and stress. Age, being inside a lockdown area, exposure to COVID-19 at work, and having a high workload (8-12 hours per day) were not associated with depression, anxiety, or stress. WeChat was the preferred way of staying informed across all groups.
21	Mental Health Among Medical	Svenja Hummel [# 1], Neele Oetjen [# 1], Junfeng	Jan 2020	A cross-sectional online survey was conducted during peak COVID-19 months in 8	**The sample (N=609) consisted of 189 doctors, 165 nurses, and 255 nonmedical professionals**. Participants from France and

	Professionals During the COVID-19 Pandemic in Eight European Countries: Cross-sectional Survey Study	Du [1][2], Elisabetta Posenato [1], et al		European countries. The questionnaire included demographic data and inquired whether the participants were exposed to COVID-19 at work or not. Mental health was assessed via the Depression Anxiety Stress Scales32 (23.53)-21 (DASS-21). A 12-item checklist on preferred coping strategies and another 23-item questionnaire on major stressors were completed by medical professionals.	the United Kingdom reported experiencing severe/extremely severe depression, anxiety, and stress more often compared to those from the other countries. Nonmedical professionals had significantly higher scores for depression and anxiety. **Among medical professionals, no significant link was reported between direct contact with patients with COVID-19 at work and anxiety, depression, or stress. "Uncertainty about when the epidemic will be under control"** caused the most amount of stress for health care professionals while "**taking protective measures**" was the most frequently used coping strategy among all participants.
22	COVID-19 is having a destructive impact on health-care workers' mental well-being	Kris Vanhaecht, Deborah Seys, Luk Bruyneel, Bianca Cox, Gorik Kaesemans, Margot Cloet, Kris Van Den Broeck, Olivia Cools, Andy De Witte, Koen Lowet, Johan Hellings, Johan Bilsen, Gilbert Lemmens, and Stephan Claes	Dec 2020	A cross-sectional survey study, conducted between 2 April and 4 May 2020 (two waves), led to a convenience sample of 4509 health-care workers in Flanders (Belgium), including paramedics (40.6%), nurses (33.4%), doctors (13.4%) and management staff (12.2%). About three in four were employed in	All symptoms were significantly more pronounced during versus before COVID-19. For hypervigilance, there was a 12-fold odds (odds ratio 12.24, 95% confidence interval 11.11-13.49) during versus before COVID-19. Positive professional symptoms such as the feeling that one can make a difference were less frequently experienced**. The association between COVID-19 and mental health was generally strongest for the age group 30-49 years, females, nurses and residential care centers**. Health-care workers

| | | | | | university and acute hospitals (29.6%), primary care practices (25.7%), residential care centers (21.3%) or care sites for disabled and mental health care. In each of the two waves, participants were asked how frequently (on a scale of 0-10) they experienced positive and negative mental health symptoms during normal circumstances and during last week, referred to as before and during COVID-19, respectively. These symptoms were stress, hypervigilance, fatigue, difficulty sleeping, unable to relax, fear, irregular lifestyle, flashback, difficulty concentrating, feeling unhappy and dejected, failing to recognize their own emotional response, doubting knowledge and skills and feeling uncomfortable within the team. Associations between COVID-19 and mental health | reported to rely on support from relatives and peers. A considerable proportion, respectively, **18 and 27%, reported the need for professional guidance from psychologists and more support from their leadership**. |

				symptoms were estimated by cumulative logit models and reported as odds ratios. The needed support was our secondary outcome and was reported as the degree to which health-care workers relied on sources of support and how they experienced them.	
23	Acute stress of the healthcare workforce during the COVID-19 pandemic evolution: a cross-sectional study in Spain	José Joaquín Mira,[X][1,2] Irene Carrillo,[1,3] Mercedes Guilabert,[et al][4]	Nov 2020	A cross-sectional study. Primary care and hospitals in Spain. Participants A non-randomised sample of 685 professionals (physicians, nurses and other health staff). Primary and secondary outcome measures Frequency and intensity of stress responses measured by the Acute Stress of Health Professionals Caring COVID-19 Scale (EASE). Variation of stress responses according to the number of deaths per day per territory and the evolutionary stage of the COVID-19 outbreak measured by the Kruskal-Wallis and the Mann-Whitney U tests.	**The average score on the EASE Scale was 11.1 (SD 6.7) out of 30. Among the participants, 44.2% presented a good emotional adjustment, 27.4% a tolerable level of distress, 23.9% medium**–high emotional load and 4.5% extreme acute stress. The stress responses were more intense in the most affected territories (12.1 vs 9.3, p=0.003) and during the disillusionment phase (12.7 vs 8.5 impact, 10.2 heroic and 9.8 honeymoon, p=0.000).

24	**Anxiety among front-line health-care workers supporting patients with COVID-19: A global survey**	Yasemin Cag,[a,*] Hakan Erdem,[b] Aynur Gormez,[c] Handan Ankarali,[d] Sally Hargreaves,[e] João Ferreira-Coimbra,[f] et al.	Dec 2020	This was an international online survey in which participation was on voluntary basis and data were submitted via Google Drive, across a two-week period starting from March 18, 2020. The Beck Anxiety Inventory was used to quantify the level of anxiety.	**1416 HCWs (70.8% medical doctors, 26.2% nurses) responded to the survey from 75 countries. The distribution of anxiety levels was: normal/minimal (n = 503, 35.5%), low (n = 390, 27.5%); moderate (n = 287, 20.3%), and severe (n = 236, 16.7%).** According to multiple generalized linear model, female gender (p = 0.001), occupation (ie, being a nurse dealing directly with patients with COVID-19 [p = 0.017]), being younger (p = 0.001), reporting inadequate knowledge on COVID-19 (p = 0.005), having insufficient personal protective equipment (p = 0.001) and poor access to hand sanitizers or liquid soaps (p = 0.008), coexisting chronic disorders (p = 0.001) and existing mental health problems (p = 0.001), and higher income of countries where HCWs lived (p = 0.048) were significantly associated with increased anxiety.
25	The Effect of Stress, Anxiety and Burnout Levels of Healthcare Professionals Caring for COVID-19 Patients on Their Quality of Life	Nuriye Çelmeçe [1], Mustafa Menekay [1]	Nov 2020	The sample of the study consisted of a total of 240 healthcare professionals, determined by random sampling method among the healthcare professionals working in pandemic hospitals in Tokat city center, Turkey. Perceived Stress Scale, Spielberger State-Trait Anxiety Inventory, Maslach Burnout Inventory and Quality of Life Scale were used in the study conducted in the relational	While the stress, trait anxiety, and quality of life mean **scores of healthcare professionals who were female, married and had children were higher than the other groups, high, moderate, negative**, and positive correlations were found among all variables.

				screening model.	

Discussion

The Aim of this study to find out the level of the stress, anxiety and the depression among doctor and nurses and to find out the demand of the doctors and nurses and also the experience in association with level of mental health of doctors and nurses. Participants like doctors and nurses were having high acute fatigue compare to chronic level of fatigue. This study helps to find out the highest magnitude of the workload among doctors and nurses, also the emotional demand. The participants experience psychological detachment with work after recovery, this detachment clearly indicate mental health parameter

Findings on prevalence of anxiety, stress and depression among participants was like the population that indicated lockdownmeasure.it may decrease level of serotonin level which results in the depression and the anxiety because of high workload and less of sufficient sunlight

Due to continuous workload in the highly infectious environment the doctors face condition like stress and anxiety and long hours of work with the risk of getting COVID is also affect the mental health of the doctor and nurses

The more demand of the work from health care worker become the high risk of having poor mental health

Recommendations

Based on the question arise above that there are several recommendations for study will conducted in the future

First, recommendation of the studies to examine other possible cofounders, the moderators and mediators related to demand of work during this pandemic period

Second the study should also include the longitudinal design of the study which allow the causal inference which is more important to design intervention by determining the effect and cause

Third, the comparable study should be done with prior to COVID to find the more evidence which relates the mental health of the doctor and nurses during covid and prior to covid

Conclusions

- Doctors were already troubled by mental problems due to work condition like capacity to work full was low, psychological distress, psychiatric morbidity. But after the arrival of the corona pandemic, this burden has increased in the doctor and health care workers like mental health disorders, self-harm, functional impairment of hospital staff So it's clearly indicate that after the arrival of covid 19 the mental health affected more than before

- Doctors and nurses experienced adverse mental health which was experienced by higher level of acute fatigue compared to the chronic

- Due to continuous workload in the highly infectious environment the doctors face condition like stress and anxiety and long hours of work with the risk of getting COVID is also affect the mental health of the doctor and nurses

- The more demand of the work from health care worker become the high risk of having poor mental health

Bibliography

1.   Greenberg N, Weston D, Hall C, Caulfield T, Williamson V, Fong K. Mental health of staff working in intensive care during Covid-19. Occup Med (Lond). 2021;71(2):62–7.

2.   Khajuria A, Tomaszewski W, Liu Z, Chen J-H, Mehdian R, Fleming S, et al. Workplace factors associated with mental health of healthcare workers during the COVID-19 pandemic: an international cross-sectional study. BMC Health Serv Res. 2021;21(1):262.

3.   Htay MNN, Marzo RR, Bahari R, AlRifai A, Kamberi F, El-Abasiri RA, et al. How healthcare workers are coping with mental health challenges during COVID-19 pandemic? - A cross-sectional multi-countries study. Clin Epidemiol Glob Health. 2021;11(100759):100759.

4.   Denning M, Goh ET, Tan B, Kanneganti A, Almonte M, Scott A, et al. Determinants of burnout and other aspects of psychological well-being in healthcare workers during the Covid-19 pandemic: A multinational cross-sectional study. PLoS One. 2021;16(4):e0238666.

5.   Ibar C, Fortuna F, Gonzalez D, Jamardo J, Jacobsen D, Pugliese L, et al. Evaluation of stress, burnout and hair cortisol levels in health workers at a University Hospital during COVID-19 pandemic. Psychoneuroendocrinology. 2021;128(105213):105213.

6.   Collantoni E, Saieva AM, Meregalli V, Girotto C, Carretta G, Boemo DG, et al. Psychological distress, fear of COVID-19, and resilient coping abilities among healthcare workers in a tertiary first-line hospital during the Coronavirus pandemic. J Clin Med. 2021;10(7):1465.

7.   ALGhasab NS, ALJadani AH, ALMesned SS, Hersi AS. Depression among physicians and other medical employees involved in the COVID-19 outbreak: A cross-sectional study: A cross-sectional study. Medicine (Baltimore). 2021;100(15):e25290.

8.   Uvais NA, Nalakath MJ, Jose K. Facing COVID-19: Psychological impacts on hospital staff in a tertiary care private hospital in India. Prim Care Companion CNS Disord [Internet]. 2021;23(2). Available from: http://www.psychiatrist.com/pcc/facing-covid-19-psychological-impacts-hospital-staff-tertiary-care-private-hospital-india

9.   Labrague LJ. Pandemic fatigue and clinical nurses' mental health, sleep quality and job contentment during the covid-19 pandemic: The mediating role of resilience. J Nurs Manag [Internet]. 2021;(jonm.13383). Available from: https://pubmed.ncbi.nlm.nih.gov/34018270/

10.   Han S, Choi S, Cho SH, Lee J, Yun J-Y. Associations between the working experiences at frontline of COVID-19 pandemic and mental health of Korean public health doctors. BMC Psychiatry. 2021;21(1):298.

11.   Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P.

Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-

19 pandemic: A systematic review and meta-analysis. Brain Behav Immun. 2020;88:901–7.

12.   Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health

outcomes among health care workers exposed to Coronavirus disease 2019. JAMA Netw Open.

2020;3(3):e203976.

13.   Nih.gov. [cited 2021 Jun 28]. Available from:

https://pubmed.ncbi.nlm.nih.gov/33310451/

14.   Cabarkapa S, Nadjidai SE, Murgier J, Ng CH. The psychological impact of COVID-19

and other viral epidemics on frontline healthcare workers and ways to address it: A rapid

systematic review. Brain Behav Immun Health. 2020;8(100144):100144.

15.   Viswanathan R, Myers MF, Fanous AH. Support groups and individual mental health

care via video conferencing for frontline clinicians during the COVID-19 pandemic.

Psychosomatics. 2020;61(5):538–43.

16.   Bandyopadhyay S, Baticulon RE, Kadhum M, Alser M, Ojuka DK, Badereddin Y, et al. Infection and mortality of healthcare workers worldwide from COVID-19: a systematic review. BMJ Glob Health. 2020;5(12):e003097.

17.   Urzúa A, Samaniego A, Caqueo-Urízar A, Zapata Pizarro A, Irarrázaval Domínguez M. Salud mental en trabajadores de la salud durante la pandemia por COVID-19 en Chile. Rev Med Chil. 2020;148(8):1121–7.

18.   Lasalvia A, Bonetto C, Porru S, Carta A, Tardivo S, Bovo C, et al. Psychological impact of COVID-19 pandemic on healthcare workers in a highly burdened area of north-east Italy. Epidemiol Psychiatr Sci. 2020;30(e1):e1.

19.   Du J, Mayer G, Hummel S, Oetjen N, Gronewold N, Zafar A, et al. Mental health burden in different professions during the final stage of the COVID-19 lockdown in China: Cross-sectional survey study. J Med Internet Res. 2020;22(12):e24240.

20.   Vanhaecht K, Seys D, Bruyneel L, Cox B, Kaesemans G, Cloet M, et al. COVID-19 is having a destructive impact on health-care workers' mental well-being. Int J Qual Health Care [Internet]. 2021;33(1). Available from: https://academic.oup.com/intqhc/article-lookup/doi/10.1093/intqhc/mzaa158

21.   Cag Y, Erdem H, Gormez A, Ankarali H, Hargreaves S, Ferreira-Coimbra J, et al. Anxiety among front-line health-care workers supporting patients with COVID-19: A global survey. Gen Hosp Psychiatry. 2021;68:90–6.

22.   Çelmeçe N, Menekay M. The effect of stress, anxiety and burnout levels of healthcare professionals caring for COVID-19 patients on their quality of life. Front Psychol. 2020;11:597624.

23.   Mira JJ, Carrillo I, Guilabert M, Mula A, Martin-Delgado J, Pérez-Jover MV, et al. Acute stress of the healthcare workforce during the COVID-19 pandemic evolution: a cross-sectional study in Spain. BMJ Open. 2020;10(11):e042555.

24.   Yasemin Cag,[a,*] Hakan Erdem,[b] Aynur Gormez,[c] Handan Ankarali,[d] Sally Hargreaves,[e] João Ferreira-Coimbra,[f] et al. Anxiety among front-line health-care workers supporting patients with COVID-19: A global survey https://pubmed.ncbi.nlm.nih.gov/33418193/

25.   Nuriye Çelmeçe [1], Mustafa Menekay [1] The Effect of Stress, Anxiety and Burnout Levels of Healthcare Professionals Caring for COVID-19 Patients on Their Quality of Life https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7719786/#idm140712464380016title