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REVIEW ARTICLE

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Emerging Mental Health Conditions in Nursing Professionals during the Global COVID-19 Pandemic- A Narrative Review

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ABSTRACT

Background: Since the start of the Sars-Cov-2 pandemic, which originated in December 2019 in Hubei Province in China, evidence of nursing staff displaying mental health (MH) symptoms and disorders began to rapidly emerge. Research from as early as February 2020 suggests MH conditions such as anxiety, depression and insomnia have been shown to be the most prevalent complaints amongst health professionals. According to the World Health Organisation (WHO) (2020) on the 11th of March 2020 there were 114 countries affected by the virus, with 118,000 cases of the disease worldwide and 4,291 deaths globally.

Aim: This narrative literature review aims to identify which Mental Health Disorders (MHDs) have been found to be most evident in nursing professionals during the COVID-19 pandemic and to establish the extent to which they are prevalent.

Methods: A systematic literature search was conducted from the 1st of January 2020 until the 14th of October 2020 and the data collated from 11 databases (CINAHL, Embase, Medline, PsycInfo, PubMed, PsycArticles, Psychology & Behavioural Science Collection, Cochrane, ProQuest, Scopus and Google Scholar). A Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) flow diagram was employed to depict the flow of information through the different phases of the narrative review, mapping the number of records identified, included and excluded, and the reasons for exclusions to demonstrate the process of establishing the final body of evidence analysed. A total of fifteen studies are included in the final synthesis for this secondary research which comprised studies of varying types and methodologies.

Results: Anxiety dominated the majority of studies and demonstrated the highest percentage of nursing professionals affected by this disorder. Anxiety was found to be between 8.1% to 77.3% prevalent, with between 2.17% and 27.3% of the participants in the included studies deemed to suffer from a severe form of anxiety disorder. Depression was the second most dominant disorder in the participants, ranging from 26%-37.5% and moderate to severe depression was observed in 6.7% and 16.8% overall. A large proportion of studies demonstrated a significant prevalence of insomnia ranging from 28.75%-38.9%. A strong link between all three MHDs showed a similar pattern through all of the included studies in relation to nurse demographics and their working environment.

Conclusion: As the pandemic continues, more research is required to be able to identify other potential MHDs, which may emerge, and to what extent they do so. Furthermore, interventions must be identified and implemented accordingly to reduce the number of nurse professionals dealing with MH issues, which result in longer-term conditions, such as post-traumatic stress disorder (PTSD).

ARTICLE HISTORY

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Background

In the early 1900s, it was not uncommon for an individual perceived to be suffering from a mental illness to be incarcerated in an institution [1,2]. According to Jutras [3], it was not until the late 19th-20th Centuries that contemporary theories of psychopathology began to emerge. Figures such as Sigmund Freud, an Austrian neurologist, and an American psychologist, John B. Watson began their work in trying to understand mental illness, which ultimately led to new theory development and improved understanding [4]. Freud was certain that his psychodynamic theory, sometimes known as psychoanalytic theory, showed early evidence of human basic understanding of consciousness and how MH was interlinked with unresolved and unconscious intentions [4].

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During the 20th Century progress to recognise and acknowledge human MH was still a relatively new concept. The National Mental Health Association (NMHA), now known as Mind, founded in 1946 began training MH Professionals, running, and monitoring MH institutions. The World Health Organization (WHO), established in 1948, had a main purpose to achieve and sustain the highest level of health for all of the world's population [1,5]. WHO defines MH as ascertaining a level of wellbeing whereby the individual is aware of their own capabilities and are able to deal with the stressors of normal everyday life and thus able to positively engage in a productive manner with society [6].

From an international perspective, WHO estimated the number of nurses enduring MH issues in developed countries as being 35-50% suffering from severe MH and identified that 76-85% of these nurses were not receiving any treatment [7]. In the most recent report '*The Mental Health and Wellbeing of Nurses and Midwives in the United Kingdom'* conducted prior to the COVID-19 pandemic recognised a number of key concerns that impact upon individual's MH. The report makes 45 urgent recommendations to highlight and improve some of the issues, which have a detrimental impact upon the wellbeing of nurses, and midwives [8].

The Office for National Statistics (ONS), (2018) reports a survey undertaken in the NHS sector of 127,564 nurses and midwives in England alone, of which 43.5% of workers suffered from work related stress [8]. Evidently the prevalence of cases relating to nurse's MH have been increasing since 2011, as Nadeem's, [9] survey of 2,000 nurses found 50% of their participants being affected by MH issues. In relation to nurse suicide, the Office of National Statistics (ONS) (2017) reports 148 nurses committed suicide between 2011-2015 in England alone [10]. 58.8% nurses and midwives reported feeling pressurised by their managers and colleagues to attend work even when they are sick, as the NHS survey in 2018 revealed [8].

Data from the ONS, (2020) up to the eighth month of 2019 states that NHS nursing staff had almost a million recorded sick days due to MH issues [11]. Additionally, the rate of suicide amongst nurses was 23% above the national average, with female nurses being specifically a higher risk group [12]. It is important to consider that the number of nurses affected by MH issues could be much higher than currently recorded, as a high percentage of professionals such as nurses and midwives who feel under pressure to go to work are not included in the final data collection.

Nationally the numbers of the general public with MH conditions overall continues to rise [13]. By 2014, 19.7% of people age >16 was identified as having a diagnosis of anxiety and depression. According to the Mental Health Foundation 1 in 6 people in the United Kingdom (UK) display anxiety and depression [14].

There was unfortunately a complete lack of nurses' MH documentation contained in local statistics from the Wirral Intelligence Service [15], however, they reported MH prevalence rates in the regional public as being 1.1%, which is above the national average of 1.0%. In addition, diagnosis of depression of local residents age >18 during the year pre pandemic records 6,908 cases, 1.3% higher than the national average [15]. Lifetime depression was evident in 44,503 individuals, 5.8% higher than the national average. Finally, between 2016-18, 83 deaths were recorded due to suicide and unspecified injury according to Wirral Intelligence Service [15]. The local intelligence service is the local government service that collates and analysis data in respect of the current and future health and wellbeing of the Wirral population. It covers a wide range of themes such as health, economy, poverty, inequalities, crime, and community safety.

It would certainly be beneficial to have sector specific data available in relation to statistical analysis from the local Intelligence Service; however, reasons such as finances may constrict such data collection. Identification of those specific employment groups having higher rates of MH and/or suicides would be useful and relevant, as they would provide insight into the specific situation and trends in relation to nursing professionals for example. Particularly, in the light of the current COVID-19 pandemic, the country cannot afford to lose highly qualified nurses and should a sudden surge in nurses' suicide above national average appear it would be extremely important to know why this might be happening and how best to address the relevant issues, as it could affect the health, structure and function of society as a whole.

MH in the workplace as reported by Stevenson and Farmer is a rising issue, urging those solutions need to be found to address this complex issue, which are evident in every community and workplace. They stated that 1 in 4 people report a MH issue and 1 in 6 people report common mental health disorder (CMHD), such as anxiety and depression, ultimately 300,000 people in employment are forced to leave work due to MH complaints [15].

Martin, Ressler, Binder and Nemeroff [16], Pratchett and Yehuda [17] all suggest that the real effects and symptoms of PTSD can be delayed and diagnosed months or years following its onset. Therefore, PTSD may well be evident at a later date during the COVID-19 pandemic, as it is known that anxiety disorders can for example cause a chemical imbalance involving the neurotransmitters serotonin and dopamine which may lead to PTSD. In the light of the fact that there would not have been sufficient time for all the symptoms and particularly the relevant and accurate diagnosis of PTSD would not have been possible, therefore at the time of data collection for this review this issue was considered irrelevant [16,17].

Evidence from the ONS (2020) states that in 2019 (pre-pandemic) MHD led nurses to suicide and was 23% higher when compared to the national average [11]. MHD in nursing health professionals during previous epidemics such as Ebola, Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) epidemics are well documented [18]. Since the start of the Sars-Cov-2 pandemic, which began in December 2019 in Hubei Province China, evidence of nursing staff displaying MH symptoms and disorders began to rapidly emerge across the globe [19,20]. On the 11th of March 2020, WHO declared Sars-Cov-2 a pandemic identifying 114 countries affected by the virus, with 118,000 cases of the disease worldwide and 4,291 deaths globally [21].

This topic is relevant to the author's workplace as the author works on acute COVID-19 positive wards. The author and their colleagues are put at risk by these current issues and therefore

the author believes it is necessary to find out more about the7 specific MHDs identified so far during this pandemic and their extent amongst nursing professionals. The narrative literature review aims to identify which MHDs have been found most prevalent during the COVID-19 pandemic and their extent.

Method

The main objective of this narrative literature review is to critically evaluate a structured investigation of a healthcare topic of MHDs, which are especially relevant to nursing practice today. MH is an important part of any professional's wellbeing and self-control [17]. In order to demonstrate the ability to promote good health to others, nursing professionals should preferably be of good MH themselves. WHO (2018, para.2) states:

'*a state of well-being in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community*'

A narrative literature review is also known as a 'secondary method', which is seen as a comprehensive and objective analysis of currently available evidence. Rigorous methodological guidelines must be set out for writing a narrative review and an appropriate method must be employed. As with any research, secondary exploration of data has its own strengths and weaknesses. Secondary research is greatly appreciated as it helps to explore a chosen research question, in this case emerging MHD in nurse professionals, without the difficult element of hard data collection and on the basis of a relevant body of evidence. According to Bryman [22], a literature review is deemed cost and time-efficient when undertaken with high-quality data, however the author may be lacking familiarity with this primary data and has not been directly involved in its collection and ultimately had no control over its generation, validity and quality, however a critical analysis will be undertaken.

The latest scientific research available will be analysed and critically appraised in depth, using a systematic approach and the Critical Appraisal Skills Programme (CASP) Systematic Review checklist (see appendix IV) [23]. The Rest of the evidence will be analysed using Caldwell, Henshaw and Taylor's [24] framework for critiquing health research as the final pool of evidence consists of different types of studies which are required to be analysed using relevant tools (see appendix II). Also, the PRISMA diagram was used and included to present the reader with a concise flow of the literature search results and a gradual and logical sense of evidence selection [25].

This literature review was conducted in October 2020. The actual search time frame selected was January to October 2020, aiming to include all literature published and available since the start of the COVID-19 pandemic. The correct search strategy of the literature is essential as it shows the systematic approach applied which is required when writing a narrative literature review (see appendix I). The author commenced a literature search through 10 health care databases (see appendix I). The search was supplemented by Google Scholar so that all available and appropriate literature was captured for this literature review.

The databases initially interrogated included: CINAHL, Embase, Medline, PubMed, Cochrane, ProQuest & Scopus. The author expanded the search through an additional three databases which were: PsycInfo, PsycArticles, and Psychology & Behavioural Science Collection due to the MHD topic chosen for this literature review. As these three databases are more likely associated with the chosen topic, therefore, enhancing the search strategy to maximum capacity (Appendix I).

In April 2021, the author completed an additional literature search using all the identified databases (Figure 2 and Appendix I). As the global COVID-19 pandemic continues to be a rapidly developing situation, vast numbers of studies continue to be published, although to aid consistency and due to time constraints the author excluded all potential studies published after October 2020 (Table 1).

As part of a methodical literature review and wide MH theme a PICOT mnemonic was used to describe the four elements of a good clinical question prior to evidence search [26]. PICOT stands for: P-population/patient/problem, I-intervention/indication, C-comparison/control, and T- time (Figure 1).

PICOT process

P	nursing staff
I	narrative review
C	nursing staff's mental health in acute settings
O	which mental health disorders are emerging
T	from Jan 2020- October 2020 (literature search)

Figure 1

The PRISMA diagram was used to clearly identify the selection process employed to achieve the final body of evidence for analysis in the review in a replicable, objective and transparent manner (Figure 2).

Following a PICOT, the search strategy included defined key search terms as follows. Search 1: Psychological OR Mental Health OR Emotional Health OR Mental Phenomena or Stress* or post-traumatic. Search 2: Problem* OR Effect* OR bearing OR Influenc* OR Impact* OR Symptom*. Search 3: Nurse OR Advanced Nurse Practitioner OR Advanced Clinical Practitioner OR Professional. Search 4: COVID-19 OR Sars-CoV-2 OR Pandemic OR Virus. A final search 5 was completed to pool all available data (see appendix I) with a total of b) 3,115 hits during first search in October 2020. The second literature search in April 2021 found 3,532 hits.

Following all b) 3,115 title screening, c) 119 records were identified, from which duplicated texts were removed leaving a total of d) 95 studies for further article dissemination. Subsequently, full abstracts of d) 95 papers were read and assessed for eligibility resulting in e) 49 records matched against the inclusion and exclusion criteria as per table 1.

Inclusion/exclusion table

Table 1

Inclusion Criteria	Exclusion Criteria
Jan 2020- October 2020	Pre COVID-19 pandemic
Full text & Peer reviewed	Non-acute setting
English language	Pre-proofed
Global evidence	Non-English language

Nurses, Advanced Nurse Practitioners, Advanced Clinical Practitioners	Editorials, letters, or individual opinions
Mental health disorders	Interventions and prevention for mental health disorders
Secondary care (acute setting)	Student nurse, nurse in primary setting
	From October 2020 to present day

A precise time frame in this narrative review is important to understand as COVID-19 was first reported in the Hubei Province in China December 2019, therefore, there was no published literature available until early 2020 [27,28].

The main objective concerning time was to capture all available data since the COVID-19 pandemic began. Therefore, all evidence was considered from January 2020 until the author ended their search in the middle of October 2020. According to the author, the first study documenting nursing staff MH findings has been captured in this search [28]. An observational study from China by Li et al., submitted in February 2020, and a cross-sectional study conducted in Portugal, submitted in April 2020 by Sampaio, Sequeira and Teixeira are presented as evidence of the early data collected from the current pandemic [28,29].

Research articles were required to be published in full text and be peer-reviewed, as this is important to note for validity and credibility of published papers. All final texts were in English language only, so that the author could read and analyse literature with no additional difficulties. Due to the nature of this literature review, evidence was searched globally to potentially maximise available literature. The author's objective was to establish whether the findings from studies examined in this narrative review showed similar results across the globe during the COVID-19 pandemic (Table 2).

The primary aim of this narrative literature review was to identify which MHDs had been found most prevalent during the COVID-19 pandemic, therefore literature which suggested interventions or preventions for MH conditions was excluded from this search (Table 1). During a rigorous literature search, nursing professionals from a primary care (such as school nursing) were excluded as the author directed this search to a secondary care setting where frontline staff in acute hospitals with Intensive Care, High Dependency, acute and less acute departments/wards dealt with the COVID-19 pandemic.

As had been previously identified PTSD was deemed inappropriate to include at an early stage of the narrative review due to insufficient time having elapsed to render such information accurate, timely and relevant. It may be that the literature retrieved from the second search in April 2021 would indicate reasonable consideration for including subjects who reporting PTSD symptoms and who may already have symptoms identified and the correct diagnosis as more time had elapsed.

As the SARS-Cov-2 pandemic was declared in March 2020, during the literature search the author has found several pre-proofed pieces of literature in various databases. Potentially, these could be credible pieces of work, however, due to their current publishing status they were omitted from the final pool of data as not yet officially published. A Similar situation was observed during the second search in April 2021, with some studies changing their publication dates from 2020 to 2021, however studies collected until October 2020 were documented as found. Publication dates can change when items go from being published electronic (online) only and then subsequently get formally published in the same journal and have correct page numbers etc.

Some editorials, letters, and individual expert opinions were published, which the author excluded as the aim was to concentrate on reliable, objective evidence available to enhance the credibility of their work. 11 databases were searched to obtain all available data in relation to MHD in nursing professionals since the COVID-19 pandemic began in December 2019 in Wuhan, China. Unexpectedly, a vast amount of data was located around MHD in nursing professionals through all 11 databases using search 1-4 totalling 104,289,191 hits (Figure 2 & Appendix I). As per the PRISMA chart search, 5 resulted in a reduction of the total number of publications to 3,115 (search in October) of which all of titles were screened. At this point, the Cochrane library results diminished to zero.

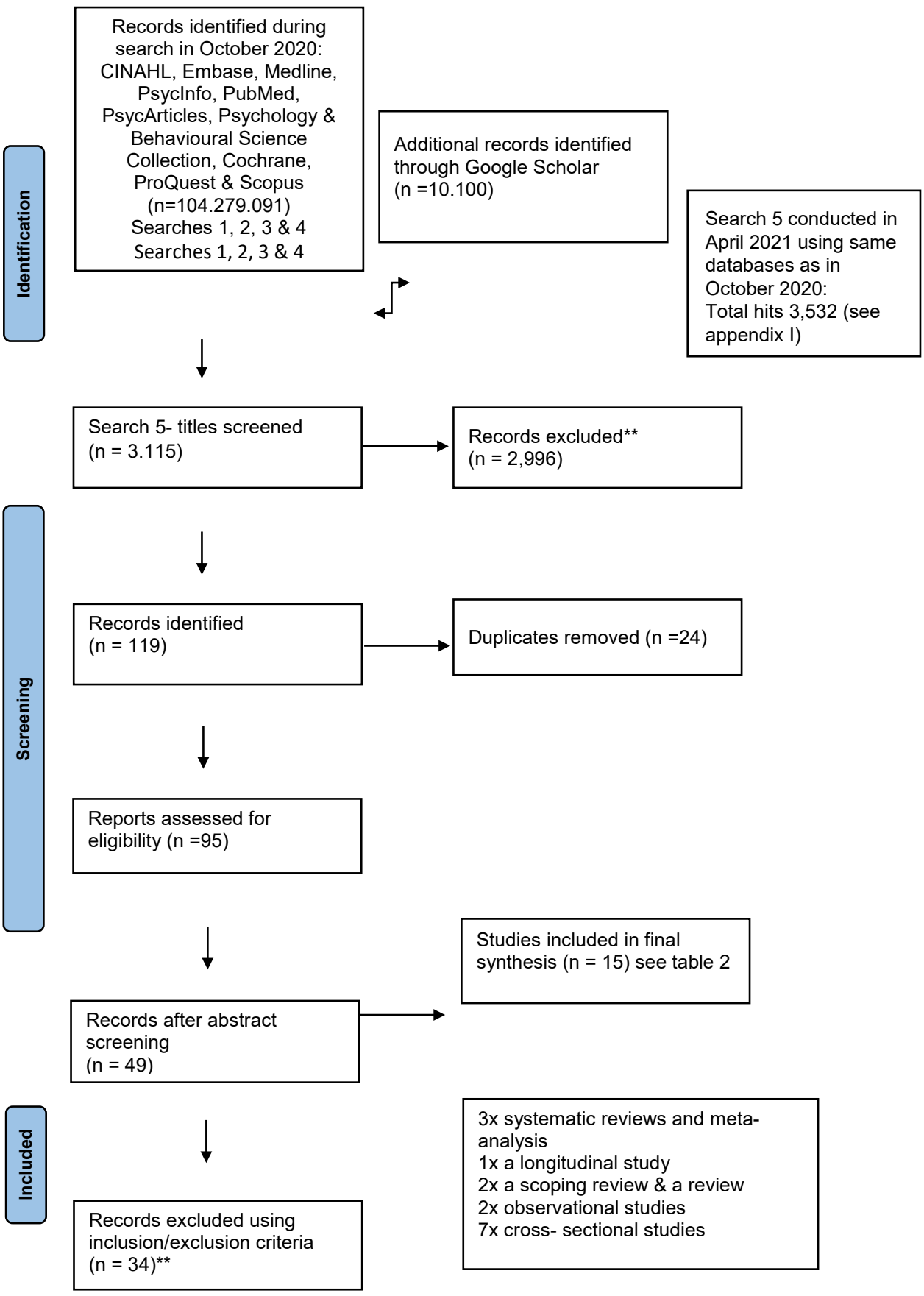
Following a decisive exclusion of the titles, 119 papers were assessed for duplication. The next stage involved an analysis of 95 abstracts, which consequently led to the total number of 49 reduced by 46 abstracts that were deemed unsuitable by the author in relation to her main objectives for this narrative review. Psychology and Behavioural Science Collection database lost all hits during abstract screening. The final stage required the application of inclusion and exclusion criteria to the rest of 49 hits. As per table 1, 34 studies were excluded as they were subject to exclusion criteria, ultimately determining the final body of evidence as 15 studies. At this stage, another two databases: PsycInfo and PsycArticles were excluded from the final pool of evidence due to duplicates, therefore there were results from only seven databases ultimately included in this narrative literature review.

Moher, D., Liberati, A., Tetzlaff, J. and Altman, D., G. (2009) 'Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement', *Public Library of Science Medicine,* 6, pp.e1000097.

Results

A definitive 15 papers were identified using the PRISMA diagram (Table 2) which had a defined link to the research aim and topic. The CASP Systematic Review checklist Brice [23] was used only for systematic reviews and Caldwell, Henshaw and Taylor [24] was applied to analyse and critique each of the other research studies accordingly which assisted the achievement of the ultimate synthesis for this research. The 15 articles varied in study types: two systematic reviews with meta-analyses, a rapid systematic review and meta-analysis, a longitudinal study, a scoping review, a review, two observational studies, five cross-sectional studies, and two cross-sectional surveys. The author aimed to review all studies discussing MHDs in nursing professionals only, however the retrieval also contained information related to other healthcare professionals, such as doctors and other health care workers (HCWs) as well as non-clinical staff where they were studied alongside nursing professionals. This was the case in over 50% of the reviewed publications (Table 2).

PRISMA Flow Diagram



** See inclusion/ exclusion criteria in table 1.

The final body of evidence varied in study location. Study 1 by Pappa et al. [20] looked at the prevalence of MHDs amongst HCWs including physicians, nurses and others, final data collection from this study covered 13 studies selected from China and Singapore with a total participant sample of 33,062.

A scoping review disseminated results of physical and mental impacts to healthcare workers, of which 81.13% were nurses and the rest, 18.9% were physicians also from China and Singapore [30]. Shaukat, Ali, and Razzak filtered the results from 154 studies to the final 10 which met their criteria. They then assessed five studies out of 10 for MH, as the other five measured physical health and therefore were not applicable to this narrative review. Upon robust review, it was evident that only three studies examined healthcare professional's MH, with a total of 1,683 participants. A review on MH problems (study 6) citation consisted of final five cross-sectional studies and one qualitative analysis from China and India, originally reduced from twenty-three lower evidence papers. This review had no definitive number of participants in the sample as its original papers failed to present this statistic.

Study 2 citation was conducted at a later date, which failed to facilitate their aim of the study. Despite using a PRISMA flowchart to describe their search strategy only selected seven studies were included in their final review of Chinese sources with a total of 7,102 healthcare professionals. Studies 4, 7, and 8 citations were also conducted in China, their samples varied from 159 nurses enrolled in study 7 to a total of 1,330 nurses who participated in study 4. Finally, a rapid systematic review and meta-analysis aimed to examine the impact on HCW's MH and selected 117 studies to examine the impact on MH at a global level, but only 52% of the included studies analysed the COVID-19 pandemic. The study sample was not stated in the rapid review and cannot be isolated as the results were pooled together from all types of health emergencies. Overall, most data came from China with the greatest sample size of 33,062 participants from study 1 by Pappa et al., [20].

Interestingly, six cross-sectional studies and one cross-sectional survey demonstrated a wider variety of publication by country origin (Table 2). Studies from China accounted for 57% and the rest of the literature was sourced from Portugal, Italy, and Nepal.

The timing of this narrative review's data collection phase resulted in the majority of the data being collection from one region (China) and therefore, results may have less direct implications to the rest of the world. However, it is important to bear in mind that the pandemic remains ongoing and significant amounts of further research, including in European nations has subsequently become available.

From the final body of evidence, three main themes were derived (Table 2): anxiety, depression and insomnia. These CMHDs can lead to serious medical conditions which are also broad and complex, therefore subthemes such as definition, types of CMHD, psychological and physiological effects, disease correlation to an existing condition will be critically analysed in this narrative review discussion section.

A total of 15 studies have been selected in the final synthesis of this narrative review (Table 2) to explore the latest evidence of emerging MHDs in nursing professionals during the COVID-19 pandemic. Only during the latest stages of study analyses was it noted that the original aim of the sample criteria has changed. Over 50% of research papers from the final fifteen included various HCWs rather than nurses alone (Table 2). It was not possible to identify the correct total numbers of nursing professionals as only some of the studies provided the author with socio-demographic characteristics of their study participants.

Fourteen studies discussed CMHDs apart from study seven by Xie et al., (Table 2) which discussed hyperarousal, which is known as a primary symptom of PTSD. All publications analysing PTSD has been excluded from the final body of evidence as per exclusion criteria (Table 1). This study reporting early evidence during the COVID-19 pandemic in relation to symptoms of hyperarousal, which could suggest a potential future surge of evidence relating to PTSD in nursing professions following long-covid.

During robust analysis and interpretation of the stated results using appropriate critiquing tools of all 15 papers three main CMHDs were identified for further discussion: anxiety, depression, and insomnia. All research papers achieved their clear study design and showed clear hypotheses for their studies. Nonetheless, some of those [31,32] lacked population identifications which consequently resulted in questions being raised in the relation to potential study data implications and data collection issues. However, there are several factors, which can determine whether the outcomes of questionnaires will generate a sufficiently accurate reflection of the purpose of that study. For example, social desirability bias and demand characteristics can be viewed as disadvantage in Tu, He and Zhou research paper. Some of the studies [28,32-35] reported data collection using 'Wechat', the author is unable to fully assess the credibility of this platform of data collection and therefore the results could be subjective. 'WeChat' could be monitored by the local governing body, therefore staff may be more vigilant and careful when reporting their findings due to potential implications from their employer.

As explicit in table 2, a sample is a fundamental part of the research, yet variation in sample numbers where evident in some of the studies discussed (Table 2). For example, a cross sectional study by Tu, He and Zhou [32] demonstrated high prevalence of insomnia, anxiety and depression in 100 frontline nurses working in a Wuhan province field hospital. This could be deemed a relatively small sample in comparison to other studies, however as Bryman [22], suggests, sample of 100 participants is the minimum for obtaining statistically significant results. In this study, the researcher recruited a limited sample, for example, there were no male participants and the data was collected from a single small military base hospital known as 'Houshenshan' in Wuhan.

Sample sizes of studies included in the final body of evidence review vary from 33,062 participants in the first systematic review with meta-analysis cite to only 78 applicants in Spoorthy, Pratapa and Mahant [31], one of the studies for their review. The sample size and collection methods have significant relevance to studies and are indicative of precision. For example, as Bryman [22] states, although a large sample

cannot guarantee studies accuracy, larger samples are shown to increase the expected precision of the sample; therefore, sampling error is reduced as sample size increases. Despite the size of the sample, the method of its collection has significant importance to the overall validity of the study.

There are several sample collection methods available for today's researchers. Some of the final fifteen studies report non-probability sampling, which is an umbrella term for all methods of sampling conducted to principles of probability [22]. Examples include sampling methods such as snowballing and convenience sampling which have their advantages and disadvantages. The main benefits of snowball sampling are that it requires low financial incentives and can be achieved with minimal time and effort, at the same time providing high data accuracy. However, snowball sampling comes with some drawbacks such as lacking sample direction and distribution. Sample bias arises due to there being no attempt made to randomise the sample. It should be noted that professional roles and knowledge differ across participants from the final selection of studies (Table 2).

Discussion

The main objectives of this narrative review are to obtain and understand which MH conditions have been found most evident during this comprehensive analysis of nursing professionals during the COVID-19 pandemic. Additionally, to what extent those MH conditions have emerged and what impact they may have for those individuals diagnosed in their future roles/lives.

Upon vigorous analysis of the final 15 studies, it has been noted that two studies in particular did not; clearly state their research aims (study 2, 13). Clear aims and objectives of the study are essential in research papers as they drive the research process, selection of study type, recruitment approach, data collection and analysis approaches and encourage the researcher to be concise and direct. A clear statement of aims and objectives is a requirement of both critical appraisal tools employed and also provides the reader with early insight into the research when reading an abstract. The aim of the study is usually one of the most essential sentences in the whole research as it summarises all the main components of the study and states what the researcher is aiming to achieve by the end of it.

Choosing the right method for the study is also important as correct methodology used will guide the researcher and the reader through a well sign posted path. In this case, all of the 15 studies have used self-reported questionnaires in this narrative review. There are some advantages when considering those methods of data collection, such as: low financial implications, people can report promptly. Yet, there are some important points to consider relating to the disadvantages of using questionnaires such as validity of the measurement, bias, invalidated self-report and therefore the potential credibility of the study as a whole. It is important to mention, that all of those studies included various scales and measurement tools for accurate calculation and assessment of MHD prevalence (Table 2). Three systematic reviews with meta-analyses used appropriate tools for their research such as PRISMA to describe the filtering, inclusion and exclusion of retrieval, Grading of Recommendations, Assessment, Development and Evaluations) (GRADE) to grade the quality of the research [36], Meta-analyses Of Observational Studies in Epidemiology (MOOSE) checklist [37] for authors, editors, and reviewers of meta-analyses of observational studies to identify and critically appraise all appropriate literature for their systematic reviews as per the Cochrane review framework.

All of the studies selected for this narrative literature review were published in the last 12 months in accordance with the author's initial aim were published via open access. All of the studies have been peer reviewed and the majority have recent and relevant reference lists within the last 5 years. Peer review is important in any research as it provides the study with validity and credibility of its results. Up to date reference lists suggest recent available evidence being used to support the

Funding, ethics and limitations issues

Study	Funding	Ethics	Limitations
1	Funded	Not mentioned	Snowball sampling, generalizability, merits consideration in the inherent heterogeneity across studies
2	Funded	Not mentioned	Risk of bias of data analysis, no full limitations discussed
3	Not funded	Not mentioned	Grey literature not examined, screening undertaken by a single reviewer, small sample of studies examined
4	Funded	Approved	No full limitations discussed
5	Not funded	Not mentioned	No full limitations discussed
6	Not funded	Not mentioned	No full limitations discussed
7	Funded	Approved	No full limitations discussed
8	Not funded	Approved	Limited number of participants
9	Supported by Shanghai municipal health commission	Not mentioned	No full limitations discussed
10	Funded	Not mentioned	Presentation of sample, some findings underpowered, more studies required, participants by profession were limited, self-reported questionnaires
11	Funded	Not mentioned	No full limitations discussed
12	Not stated	Not mentioned	No full limitations discussed
13	Not funded	Approved	Self-report- bias, snowball sample, nurses in quarantine excluded, 3.52% sample margin of error
14	Not funded	Approved	Data availability
15	Not funded	Approved	Study conducted at the early stage of the pandemic, sample selection bias, self-reported

Table 3. Study characteristics

No	Authors	Date	Title	Study Design	Participants	Key findings
1	Pappa, S., Ntella, V., Giannakas, T., Giannakoulis, V., Papoutsi, E. and Katsaounou, P.	2020	Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis.	A systematic review with meta-analysis	33.062	Pooled prevalence of anxiety 23.2% & depression prevalence rate of 22.8%. Insomnia prevalence was estimated at 38.9% Snowball sampling CI. Modified Newcastle-Ottawa scale Subgroup analysis of anxiety and depression prevalence Nurses, physicians and others
2	da Silva Neto, R., Benjamim, C., de Medeiros Carvalho, P. and Neto, M.	2020	Psychological effects caused by the COVID-19 pandemic in health professionals: A systematic review with meta-analysis.	A systematic review with meta-analysis	7102	Significantly higher in health care teams in comparison to other medical and administrative teams. There was no difference severity between teams in depression. Workers with insomnia were more prone for anxiety & depression. Prisma/ PVO strategy Versatile sample: university students, administrative and medical teams, unspecified health professionals and healthcare workers. Also included non- HCW.
3	Serrano-Ripoll, M., Meneses-Echavez, J., Ricci-Cabello, I., Fraile-Navarro, D., Fiol-deRoque, M., Pastor-Moreno, G., Castro, A., Ruiz-Pérez, I., Zamanillo Campos, R. and Gonçalves-Bradley, D.	2020	Impact of Viral Epidemic Outbreaks on Mental Health of Healthcare Workers: A Rapid Systematic Review and Meta-Analysis.	Rapid systematic review and meta-analysis	1,036	Acute stress disorder 40% Anxiety 30% Burnout 28% Depression 24% PTSD 13% 113 (117) studies looked@ impact on mental health. Data pooled using random-effects meta-analyses/ GRADE. 4 studies examined interventions how to reduce impact on MH HCW in general, nurses and doctors.
4	Cai, Z., Cui, Q., Liu, Z., Li, J., Gong, X., Liu, J., Wan, Z., Yuan, X., Li, X., Chen, C. and Wang, G.,	2020	Nurses endured high risks of psychological problems under the epidemic of COVID-19 in a longitudinal study in Wuhan China.	Longitudinal study	1330 709 (53.3%)- from outbreak 621 (46.7%)- from stable period	Nurses during outbreak had significantly higher risk in comparison to those in stable period. Anxiety, Depression, Insomnia- 38.3% (severe) & PTSD. 1/3 nurses had symptomatic disorders of anxiety, depression, and insomnia. Questionnaires: (GAD-7), (PHQ-9), (ISI) & (IES-R). We Chat use to obtain questionnaires DSM-IV CRITERIA & Likert scale Nurses only
5	Shaukat, N., Ali, D. and Razzak, J.	2020	Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review.	A scoping review	4,143 participants in 5 studies	Overall anxiety- 23-44% Depression-50.4% Insomnia- 34.0% Also looked @ physical health impact Female nurses than males or doctors. Severe anxiety in 2.17%. Only 3 studies looked at impact on mental health. Used Prisma/ Arksey O'Malley framework. HCW's consisted of nurses and doctors
6	Spoorthy, M., Pratapa, S. and Mahant, S.	2020	Mental health problems faced by healthcare workers due to the COVID-19 pandemic–A review.	A Review	Sample size varied: 78-1257, three studies had sample <550	Women showed increased anxiety & depression. <30 age had increased depression, but not statistically significant. >50 age feared death. Nurses more than doctors felt anxiety/ depression. Insomnia discussed. No instruments used. Medical and nursing staff, unspecified HCW's and others
7	Xie, H., Cheng, X., Song, X., Wu, W., Chen, J., Xi, Z. and Shou, K.	2020	Investigation of the Psychological disorders in the healthcare nurses during a coronavirus disease 2019 outbreak in China.	Observational study	159	75 nurses from CCU. 84- from other wards. Non-critical ward staff scored significantly higher. Hyper arousal discussed- primary symptom of PTSD. Questionnaire used via mobile app (IES-R)- WeChat SPSS used for all analyses. Nurses only
8	Li, R., Chen, Y., Lv, J., Liu, L., Zong, S., Li, H. and Li, H.,	2020	Anxiety and related factors in frontline clinical nurses fighting COVID-19 in Wuhan.	Observational study	176 Convenience Sampling	Anxiety- 77.3% (136) 27.3%- had severe anxiety. Advice on prevention of MH problems. Hamilton rating scale. Statistical analysis SPSS21. WeChat used- Nurses only
9	Tu, Z., He, J. and Zhou, N.	2020	Sleep quality and mood symptoms in conscripted frontline nurse in Wuhan, China during COVID-19 outbreak.	A cross-sectional study	100	Anxiety 40%. Depression 46%. Reduced sleep. Difficulty in initiating & maintaining sleep. Having nightmares. PSQI, GAD-7, Cronbachs a=0.89, PHQ-9, SPSS version 22.0, multivariate logistic regression analyses used to calculate the crude and adjusted (OR) WeChat used- Nurses only
10	Que, J., Shi, L., Deng, J., Liu, J., Zhang, L., Wu, S., Gong, Y., Huang, W., Yuan, K., Yan, W., Sun, Y., Ran, M., Bao, Y. and Lu, L.,	2020	Psychological impact of the COVID-19 pandemic on healthcare workers: a cross-sectional study in China.	A cross-sectional study	2285	Nurses scored higher than physicians as have a higher workload did. Prevalence of MH in public health professionals & technicians. Anxiety- 46.04%. Depression- 44.37%. Insomnia- 28.75%. 1/3- 1/5 nurses reported symptoms. GAD- 7, PHQ-9, ISI score & Logistic regression analyses were used to explore the factors that were associated with psychological problems**.** WeChat used. Out of 2285- 860 physicians, 913 medical students, 208 nurses, 179 technicians, 125 public health professionals

11	Xiong, H., Yi, S. and Lin, Y.	2020	The Psychological Status and Self-Efficacy of Nurses During COVID-19 Outbreak: A Cross-Sectional Survey.	A cross-sectional survey	223	No difference among demographic variables. Significant difference according to professional titles. Prevalence of anxiety 40.8% respectively. Moderate-severe 12.1%. Prevalence of depression 26.4% respectively. Moderate-severe 6.7% GAD-7, DSM-IV, PHQ-9, the Cronbach's @ of the Chinese version. Nurses only
12	Hong, S., Ai, M., Xu, X., Wang, W., Chen, J., Zhang, Q., Wang, L. and Kuang, L.	2020	Immediate psychological impact on nurses working at 42 government-designated hospitals during COVID-19 outbreak in China: A cross-sectional study.	A multicentre cross- sectional study	4,692	Demographics: younger educated married woman <10 work experience. 6.5% (n-306) had suicidal ideation. 8.1% represented anxiety. 9.4% considered to have symptoms of depression. We Chat, SPSS 26.0 for Mac, t-test & one-way ANOVA. Nurses only
13	Sampaio, F., Sequeira, C. and Teixeira, L.	2020	Nurses' Mental Health During the COVID-19 Outbreak.	A cross-sectional study	767	Not entirely clear on data Anxiety- 4.4 (4.0) Depression- 4.0 (3.8) Stress- 7.3 (4.5). DASS-21, SPSS version 25, t-test & one-way ANOVA were performed. Homogeneous sample/ Non-probabilistic snowball sampling method Nurses only
14	Giusti, E., Pedroli, E., D'Aniello, G., Stramba Badiale, C., Pietrabissa, G., Manna, C., Stramba Badiale, M., Riva, G., Castelnuovo, G. and Molinari, E.	2020	The Psychological Impact of the COVID-19 Outbreak on Health Professionals: A Cross-Sectional Study.	A cross-sectional study	330	Not entirely clear on data Anxiety score of state above the clinical cut off 71.2% staff. 31.3% anxiety. 26.8% had clinical levels of depression. 34.3% stress, 36.7% PTSD, 35.7% burnout, different levels of exhaustion, depersonalisation, Qualtrics software, STAI-S, DASS-21, IES-6, MBI Health professionals: doctors, nurses, nursing assistants, physiotherapists and other (not specified)
15	Khanal, P., Devkota, N., Dahal, M., Paudel, K. and Joshi, D.	2020	Mental health impacts among health workers during COVID-19 in a low resource setting: a cross-sectional survey from Nepal.	A cross-sectional survey	475	During early phase of pandemic. Significant difference in anxiety & depression among profession. Anxiety- 41.9%. >1/3 had symptoms. Depression-37.5%. Insomnia-33.9%. Moderate 5.7% & 1.5% severe clinical insomnia. Profession was statistically insignificant with insomnia. HADS, ISI, AOR, VIF calculated before fitting into the model for each psychometric scale. Nurses, doctors, paramedics, laboratory staff, pharmacist and public health professionals.

initial study and to demonstrate the deeper knowledge base, which supports current research.

The potential research bias can be reduced in some studies as documented in Pappa et al. [22] for example through the use a Modified Newcastle-Ottawa quality assessment tool. da Silva Neto, Benjamim, de Medeiros Carvalho and Neto [38] suggested that they had a potential bias as they used a funnel plot to select their studies. Li et al., [22] used a convenience sample which can be viewed as potential selection bias as some people were chosen to take part and others were not and this selection was not applied against any objective criteria, therefore subjectivity was a possible consequence. The study results could therefore be deemed inapplicable to the rest of the population. Overall, there was no high risk of bias identified in the final body of evidence.

The peer-reviewed evidence suggests that results and statistical calculations are valid. There are evidence of appropriate tools and values used to assess this, for example confidence intervals and p values. Define confidence intervals and p values and what they tell you.

The conclusions of studies analysed do provide with a summary of their findings on CMHD and a reasonable explanation how they came to those results. Some literature which suggests possible interventions and solutions for those affected and urging employers to be aware of more staff suffering with poor MH as the consequence of the current COVID-19 pandemic. Most studies required an approval by their national ethics committee and were successfully endorsed (Table 3). A lot of the research papers discussed their study limitations accordingly in terms of sample selection or term of study (Table 3). Funding was provided for some of the researchers, but overall, the authors declared no potential conflict of interest in respect to research.

It is important to provide the reader with definitions of CMHDs and relevant statistics as part of the foundations of this narrative review in order to enable a better overall understanding of the themes. The author will direct their detailed discussion of the identified themes of anxiety, depression, and insomnia by exploring the evolutionary aspect as a cause of these conditions by briefly discussing the role of the autonomic nervous system (ANS) of the human body [39]. The psychological and physiological effects which were found in current research during the COVID-19 pandemic and to what effect it has been noted as occurring in nursing professionals.

From an evolutionary perspective, the ANS facilitates psychological and physiological response, which has served humans well as they evolved to survive in harsh environments with many challenges and threats to life. Unfortunately, as the human race has developed sophisticated societies to live in the responses that once served well in prolonging survival can now at times prevent individuals from functioning in accordance with the reality of diminished perceived, or real, threats. The driving mechanism behind this is the ANS notably the parasympathetic and sympathetic response commonly termed the fight or flight response [39].

Certain situations for example bereavement, divorce, life-

threatening medical conditions, or the current COVID-19 pandemic can have a seriously detrimental impact upon individuals both physically and psychologically.

Although this narrative literature review is not examining recovery or any interventions for professionals who have been affected by the COVID-19 pandemic, there are various methods available for consideration when promoting and preserving one's wellbeing. According to Denckla et al., [40] resilience is the ability to, mentally or emotionally, be able to cope with a crisis and be able to return to a semblance of normality some point after the event. Denckla et al., [40] state, resilience is still not fully understood, and therefore there is no specific definition of this 'multifaceted phenomenon' [41].

Resilience can be improved by trying to remain calm, positive, maintaining a healthy diet and lifestyle, obtain sufficient sleep and if one can, exercise, obviously, this can be difficult to achieve for some, especially during the pandemic. The research completed by Li, [19] suggests one method of boosting overall wellbeing is through the engagement in the Japanese practice of Shinrin-Yoku, forest bathing, otherwise known as a forest walks for at least thirty minutes a week facilitating exposure to phytoncides, which have been shown to boost the immune system. This could be considered as part of an overall wellbeing intervention for those professionals affected by CMHD during COVID-19 pandemic.

According to Pearce [42] nursing professionals continue to experience anxiety amid the COVID-19's first anniversary. Pearce's survey in November 2020 identified that of 1,650 nurses suggested factors that were contributing to anxiety levels within the work environment included: long working hours, fear of contracting the virus, separation from families, fear of infecting others and potential redeployment [42].

Nurses are continuing to make difficult choices, as the pandemic is ongoing. Twinch [43] highlights nurses' concerns in relation to the level of care they can provide due to this current situation. Some report feeling a lack of compassion, termed compassion fatigue, towards their patients, which can have a detrimental impact upon their own MH and that of their patients [44]. Additional concerns in relation to suicide rates of nursing professionals are raised by Twinch's, [43] research which shows a substantial increase in suicide amongst nurses in the UK over the last decade.

Anxiety

According to Kazdin [45], anxiety can be characterised as an emotional response, which consequently triggers physiological bodily reactions, such as increased heart rate, palpitations and potentially higher blood pressure. Feeling anxious is normal as humans experience anxiety daily, for example, individuals may feel sad during the bereavement of a close relative, individuals may feel nervous in preparation for a job interview, however, and these feeling are often resolved with no further intervention.

Nevertheless, a constant feeling of anxiety and nervousness may lead to more permanent harm to an individual's MH, otherwise known as an anxiety disorder [45]. Prolonged psychological symptoms of anxiety can start to impact on a person's daily activities and ultimately precede physical signs such as agitation, tremors, and restlessness which overall could have detrimental impact upon an individual's social and personal life [46].

There are 4 different types of anxiety that one may encounter: generalised anxiety disorder (GAD), specific phobias, social anxiety, and panic disorder [47]. We often hear about two other conditions, which fundamentally stem from some form of anxiety: obsessive compulsory disorder (OCD) and PTSD. Yet all anxiety disorders are interlinked, and one condition can trigger the other. For example, persistent anxiety becomes more severe and can lead to PTSD whereby the individual can continue to display ongoing severe anxiety over a longer period of time [17].

The human body's reaction to anxiety is still difficult to explain. As Peate [39] states, the ANS is complex, but it is known that SNS takes control of the human body's inner organs without individual conscious awareness or control, with the PNS being responsible for the body's relaxation and re-establishing homeostasis. Study one, by Pappa et al., [37] looked at prevalence rates of anxiety and depression, which was shown to be higher in nurses than doctors. Studies five and six state significantly raised incidence of MHDs in relation to nurse vs doctor [30,31].

Similar results were presented in study three, which included 73% of HCWs in general [48]. Higher rates of MHDs were found amongst healthcare teams in comparison to non-clinical groups in study two [38]. The rest of the studies (10,14 and 15) included a variety of professions from students to technicians although results of MHDs were found to be highest amongst nurses [35,49,50].

Studies two and six were dominated by a higher number of physicians, yet only study two separated results accordingly and confirmed their findings of higher prevalence of psychological problems amongst nurses than doctors [35,50]. Study seven found that nurses had higher probabilities of developing anxiety disorders in comparison to other clinicians [49].

During this literature review, anxiety was found to be prominent in all studies (Table 2). A systematic review and meta-analysis by Pappa et al., [20] synthesised existing evidence on the prevalence of anxiety and concluded pooled incidence of anxiety disorder of 23.2%. Overall, females scored higher in comparison to males at 29.06%-20.92%, and nurses showed greater anxiety levels of 25.8% when compared to doctors at 21.73%. Severe anxiety was evident in 6.88% of healthcare employees. da Silva Neto, Benjamim, de Medeiros Carvalho and Neto's, [38] systematic review with meta-analysis also stated that anxiety disorder were found to be at significantly higher levels in healthcare teams in comparison to other medical or non-clinical employees 13.0 vs 8.5%. However, there was no evidence of recorded noticeable differences in levels of anxiety severity between those teams. Serrano-Ripoll et al., meta-analysis demonstrated acute stress disorder at the highest prevalence of 40% followed by an anxiety disorder at 30% in HCWs in general, nurses and doctors [48].

The authors of a longitudinal study compared data from two periods of the current pandemic: acute to stable [31]. The results gathered using questionnaires stated that one-third of

nurses had symptomatic anxiety disorder and professionals working during the acute phase of the COVID-19 pandemic were found to experience a significantly higher risk of MHDs than those employed during a stable period [31]. Shaukat, Ali and Razzak [30], revealed in their scoping review that the most prevalent MHD in their sample was depression at 50.4%. Similarly, to Pappa et al., [20] meta-analysis, this review demonstrated severe anxiety in 2.17% of the sample population with overall anxiety between 23-44% which came second in line, they also found that female nurse professionals were more at risk of MHDs in comparison to male nurses and doctors [30]. A review by Spoorthy, Pratapa and Mahant [31] also suggests, that predominantly females aged forty or below 44.6% exhibited symptoms of anxiety from self-reported questionnaires.

According to Spoorthy, Pratapa and Mahant more nurses than doctors were affected by increased levels of anxiety [31]. It could be suggested that this repeating information about nurses feeling at greater risk of anxiety than doctors is due to nursing professionals spending more time with patients involving closer caregiving. Li et al., [28] observations study reports from his 176-candidate convenience sample that anxiety was reported as being evident in 77.3% or 136 professionals were affected by this MHD and 27.3% suffered severe anxiety symptoms. Xie et al., [34] discussed hyperarousal symptoms, this is significant and indicative of nurses from non-critical areas experiencing these primary symptoms of PTSD. This information is extremely relevant to note that during the pandemic most non-acute hospital wards were affected by COVID-19 infections and staff were subjected to exceptional burdens in terms of acute patient care, fear, and less experience in comparison to acute settings [34].

On the lower spectrum of the evidence hierarchy, the results on CMHD are relatively similar in terms of numbers. Five cross-sectional studies report anxiety disorder apparent in nursing professionals from 31.3% to 46.04% [31,34,48,49,50]. Que et al. and Khanal et al. conclude that one-third of nurses were experiencing anxiety disorder in their cross-sectional study. According to Que et al., [35], nurses scored higher than physicians due to a higher workload did. The overall prevalence of MH in doctors was at 60.3%, technicians scored 62.02% and public health professionals recorded the highest ratio at 62.4% [35].

Moderate to severe symptoms of anxiety at 12.1% were recorded in Xiong, Yi and Lin [51] publication. Study 11 by Xiong, Yi and Lin showed a significant difference in CMHD according to studies participants, but no difference amongst demographic variables. Out of 4,692 samples, 6.5% or 306 professionals were recorded as having suicidal ideation and 8.1% represented anxiety [52]. The last cross-sectional study presented its results, but the author has found it difficult to interpret the final data set [29]. Sampaio, da Cruz Sequeira and da Costa Teixeira used depression anxiety stress scales (DASS-21) and stated that anxiety was noted at 4.4 (4.0) on the DASS-21 scale using self-reported data. Those results can be viewed as subjective as how can you measure person's impact on MH to others; it is dawn to interpretation of the individual himself in that moment of time.

Depression

According to WHO, [53], depression is one of the main CMHDs in which individuals can exhibit a constant feeling of sadness, reduced awareness and lack motivation to participate in daily activities. As a result of a SNS response, these indicators often lead to more severe symptoms affecting a range of bodily systems such as nervous, circulatory, digestive, reproductive and immune systems [39,53]. Recent statistics suggest that 264 million people worldwide suffer from some form of depression, almost 800,000 people die yearly as a result of suicide which can be the eventual result of severe depression [53]. Jacobson and Newman argue that there is a strong link between anxiety and depression. When psychological and physiological symptoms of anxiety disorder persist, the natural function of the human body is diminished and consequently leads to reduced quality of life and other comorbidities such as depression [54]. Bjelland, Dahl, Haug and Neckelmann [55], Wilson and Hayward [56], Koutsimani, Montgomery and Georganta [57], all confirm a high correlation between anxiety and depressive disorders as well as a number of scales developed to recognise these conditions and differentiate between them. However, the link between these two CMHD are complex and require further clinical research to fully establish its multifaceted relationship and symptomatology [54].

In this narrative literature review, the second highest CMHD was found to be depression. Depression was analysed in 13 studies out of a total of 15 (Table 2 & Appendix III). Nursing professionals displayed a high prevalence of depression from 9.4% from a large cross-sectional study sample of 4,692 participants by Hong et al., [51] to 50.4% as reported by Shaukat, Ali and Razzak [30] in their scoping review. A similar report of participant's demographics in comparison to results for anxiety disorder, nurses and females displayed more significant depression than other professionals or professions [20;30-33,35,38].

Studies by Xiong, Yi and Lin [51] and Khanal et al. [49] state that they identify a significant difference in depression among professions which 26%-37.5%, moderate to severe depression was seen by participants in 6.7% and 16.8% which in a systematic review with a meta-analysis by Pappa et al. [20]. However, it is worth mentioning that there was no difference noted amongst demographic variables [51]. da Silva Neto, Benjamim, de Medeiros Carvalho and Neto [38] report a substantial increase in depressive symptoms in healthcare providers. Their sample was diverse involving university students, administrative and medical teams, unspecified health professionals, nurses, HCWs and non-HCWs.

Hong et al., [52] acknowledge that in their cross-sectional study female nursing professionals up to the age of 30years old and married with less than 10 years of experience in their profession were at the highest risk of suffering from depression. They also stated that 6.5% (n-306) had suicidal ideation. On the contrary, Spoorthy, Pratapa and Mahant [30] argue in their review, which had no definitive sample number, which staff below the age of 30 had increased levels of depression, but their results had no statistical significance.

Lastly, the author found it difficult to analyse and determine a precise numerical indication for the CMHDs in four studies from

the final pool of evidence. An observational study by Xie et al., [34] aimed to ascertain the levels of stress and psychological disorders during the duration of their study; hence, depression as a CMHD was not mentioned in this paper. However, they have managed to obtain evidence on psychological impact in nursing professionals in non-acute settings. Personally, the author understands from their own experience that there is currently not enough research done in non-critical areas to fully examine CMHD and that these areas when explored could potentially identify many significant effects on staff MH and wellbeing. Equally, Li, et al. [28] aimed at examining a specific MHD, anxiety, and therefore provided no data for depression. They also directed their research towards advice and prevention of CMHDs, this of course is an interesting and important aspect when dealing with CMHDs but was explicitly excluded from this study.

Giusti et al., [50] planned to assess the prevalence of burnout in healthcare professionals, although they do state some data on depression as well as other CMHDs. A total of 330 participants (n-88) displayed clinical signs of depression, whereas Sampaio, da Cruz Sequeira and da Costa Teixeira [29] documented their finding in DASS-21 scores. The sample consisted of 767 nurses and the final results of levels of depression were documented as 4.0 (3.8) which the author found difficult and time-consuming to interpret and to compare with other studies from table 2. They also assessed their clinical findings against the local Portuguese population; this can potentially affect the total results of depression as it was measured against a non-clinical participant sample. Also, the general population in numbers was not discussed, this lack of information can theoretically suggest result inaccuracy and potential bias in term of data fabrication or data elimination.

Insomnia

According to Roth [58], insomnia is defined as difficulties in falling asleep and staying asleep. There are three main types of insomnia: acute- often due to a stressor such as a new job, which often resolves within a month when stressors no longer exist [59]. Transient insomnia usually lasts less than a week and is deemed prevalent due to another MH disorder or an environmental change and finally, people who may have underlying risks of insomnia such as acute or transient will develop chronic sleeping problems, which will last more than a month [58]. All the studies that are analysed in the final review showing signs of chronic insomnia as the first symptoms were recorded at the start of the COVID-19 pandemic which is currently ongoing.

Insomnia can also be viewed from an evolutionary perspective as Perogamvros, Castelnovo, Samson and Dang-Vu [60] suggest there is a link between fear which relates to an evolutionary survival mechanism of the human body. For example, nurses who cared for COVID-19 patients displayed fear in study six by Spoorthy, Pratapa and Mahant [30] for multiple reasons which is a normal bodily response to an unknown perceived, or real, threat and is how you would expect the human body to respond [42]. Evidence suggests that there is a strong connection between insomnia and other CMHD such as anxiety and depression [47,61]. Nutt, Wilson and Paterson argue that up to 75% of people experiencing some form of depression also suffer from symptoms of insomnia. Signs of the illness can be significant and, in some individuals, cause considerable distress impacting upon quality of life and potentially resulting in suicide [47,61]. It seems that younger adults in UK population between the ages of 21-30 complain more of sleep problems; however, the evidence suggests that 10% of the older generation in same population also experience these symptoms [61]. Due to a strong correlation between depression and insomnia, when a new diagnosis of depression is made with no corresponding reports of any diagnosis of depression this must be treated with caution [62].

According to Medic, Wille and Hemels [63], interrupted sleep can lead to more serious conditions than not having slept at all. Studies show that interrupted sleep can and does in some people lead to obesity, heart problems, and an impaired immune system leaving the host more vulnerable to a common infection such as flu or SARS-Cov-2 virus [63].

The author has chosen not to review any literature that discusses or analyses intervention and prevention techniques for MHDs. As stated in an inclusion/ exclusion criteria (Table1) research that suggests interventions and prevention for MHD will be excluded for this secondary data analysis. That is not to say that those issues are not important, on the contrary, recommendations for current mediations must be acknowledged and escalated to prevent, treat, and preserve all healthcare professional's MH.

Interestingly, in study three (Table 2) a rapid systematic review and meta-analysis included four studies out of their total 117, which examined interventions to reduce the impact on MH to healthcare professionals. They identified a high prevalence in all CMHD, as well as emerging PTSD at 13% out of a population of 1,036 [48].

Amid the first year of the COVID-19 pandemic, the evidence is still being collated, and more research will be required to establish the true figures of affected health care professionals, especially nurses, in respect to their MH. It is also highly likely, that other conditions such as PTSD will now be emerging, as more data becomes available with regards to the 'long COVID-19 era'.

Conclusion

Recognition of MHDs is a relatively new concept and the initiation of organisations such as WHO and NMHA aim to help the world population to unite and promote human health globally. Current evidence by Stevenson and Farmer [15] strongly suggests that there is a high proportion of nursing professionals suffering from MH issues today; especially in relation to issues in workplace environments and that, occurrences of these are rising, affecting 1 in 4 people.

The Stevenson and Farmer [15] report urged the government to improve the working lives of people with as many as 300,000 losing their jobs because of their MHD problems. Evidence from ONS, (2020) data shows that the number of nurses committing suicide each year as a result of their MH illness is increasing. The decline of MH in nurse professionals has been evident from previous epidemics such as SARS, although new evidence of MH issues has begun to emerge since the start of SARS-Cov-19 pandemic.

This narrative review aimed to identify all MHDs that have been found to be most evident in nursing professionals during the COVID-19 pandemic and to establish the extent of those conditions. Evidence was collated using 11 databases, although finally, results concluded that only data from seven sources have been taken for final review. Final data is analysed from 15 studies, of which 14 examined CMHDs. Three main themes of CMHDs were found: anxiety, depression, and insomnia, which were all prevalent in all studies. The final body of evidence confirms data from many different countries globally, however most publications came from China where the pandemic initially began in December 2019, which may suggest potential data bias and may affect the transferability of these results.

Latest evidence shows a diversity of study methodologies, but they all achieved their clear quantitative research design. Despite differences in participant samples and their method all the studies shared similar results and outcomes. Some more than others concentrated on anxiety or depression, only nine publications analysed effects of insomnia on care professionals. Insomnia was found to be the least dominant MHD, but nonetheless relevant. The studies that did examine insomnia show significant prevalence in the range 2 from 8.75%-38.9%. Anxiety however was deemed the most profound CMHD in all publications. Some of the studies assessed their participants for different levels of anxiety and rated as mild, moderate, and significant.

Depression was identified as the second highly occurring CMHD and identified high numbers of staff displaying symptoms of this condition. Unfortunately, the author was unable to identify a precise number of nurses affected of CMHD as more than 50% of studies had explored nurses' MHD alongside mixed samples of HCWs. A substantial disparity among profession was documented in people suffering depression (26%-37.5%), levels of severe depression were also noted. Despite anxiety and depression being the most prevalent out of three main conditions, this narrative review has found evidence to suggest that insomnia could be the most severe aspect due to lack of sleep having a severe detrimental impact upon overall health and wellbeing. Further research is required to fully explore this area and gain better understanding of this CMHD.

All the studies from the final body of evidence demonstrated that people who were displaying symptoms of insomnia ranged between 28.75%-38.9% and were more likely to develop anxiety and depression. Nutt, Wilson and Paterson [61], Tu, He and Zhou [32] all argue that insomnia can be caused by a number of variables such as chance in temperature or noise and even MHDs such as anxiety and depression.

Conclusions can be drawn on all presented evidence in this narrative literature review on CMHDs that there is a strong link between all MHDs. Anxiety triggers depression and leads to insomnia, and insomnia can escalate from a form of anxiety or depression. This validates that we as human beings are continuing to evolve and adapt, unfortunately, technology and current life in the 21st Century is moving faster than our psychological and physiological response could change. We need to learn to adjust, embrace and increase individual resilience towards these stressors and find alternative solutions to improve when operating in an environment, which at times can appear to be a world full of anxiety and stress. Undoubtedly, more research is required to establish further MHDs that will potentially emerge from this COVID-19 pandemic and to what degree, including those, which have been deliberately excluded from this narrative, review for example PTSD.

This narrative review shows that there is a relatively strong connection between various stressors, which leads large numbers of nurse professionals to develop CMHD. Considering current data that is available, interventions need to be identified and implemented to specifically reduce the number of nurse professionals struggling with the MH issues identified here and in relation to longer-term conditions such as PTSD. It is vital to be able to make evidence-based conclusions on emerging CMHD and its treatment, to produce effective interventions for healthcare and nursing professionals and the rest of the multidisciplinary team.

Ethical consideration

An ethical approval was not required for this narrative literature review, which is known as a comprehensive and objective analysis of the current body of knowledge. This type of research often helps to identify gaps in current field of study, has no direct involvement of participants, and therefore has no risk of direct harm.

This study involved already published and freely available studies. This research received no external funding to influence its undertaking or conclusions this paper does not need National Health Service (NHS) Research Ethics Committee (REC) review for sites in England.

Limitations

The author would like to declare two main limitations. Firstly, during this study only one author was responsible for the literature review, and the application of the inclusion and exclusion criteria and the critical analysis of selected body of evidence. Secondly, although MDT have been an element of an exclusion criterion, some final studies had been found inclusive of doctors and other professions. This evidence was not clear during title and abstract screening therefore was ultimately included and discussed in this narrative review as it was retrieved and indexed in relation to nurses. Not all of the included studies ultimately made it possible to differentiate information solely relating to nurses.

Tools

CASP check list for systematic reviews.

A framework for critiquing health research tool by Caldwell, Henshaw and Taylor [24].

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