

Rapid review of the impact of COVID-19 on mental health

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Executive summary

Background and aim

The coronavirus (COVID-19) pandemic will have various impacts on health, both currently and in the future, although it is not yet clear what the impacts will be. This rapid review aims to summarise current evidence on COVID-19 and its impact on mental health to establish learning for Scotland.

Methods

The COVID-19: living map of the evidence was used as the search strategy for this rapid review as it is robust and already established. This rapid review includes the first 10-week searches from 4 March to 15 May 2020, and considered those studies categorised as having a mental health impact. Titles and abstracts were screened, data were extracted, a critical appraisal of the studies was carried out and the evidence was synthesised.

Findings

Based on current evidence, there are limited longitudinal data to suggest a change in the prevalence of mental health outcomes across all the groups included in this review. However, a small number of studies with comparative pre-COVID-19 data indicate that depression and/or anxiety were elevated during the pandemic; but these were from non-representative Chinese populations. Only one Danish study with methodological limitations suggests that there may be a decrease in psychological wellbeing among general populations in response to a rapid increase in a new infectious disease, but how this changes over time is unclear.

The evidence indicates that a number of key groups are at higher risk of adverse mental health outcomes; these could include frontline staff who are working with COVID-19 patients, women, those with a low educational level and individuals with underlying mental health conditions. However, social and family support, hygiene measures and physical activity appeared to safeguard

mental health. Some of these are consistent with protective factors recommended for good mental health in general.

Limitations

We found various methodological limitations of the evidence and therefore results should be viewed with caution. The main limitations were around unrepresentative sampling, different outcomes measured using different tools, various bias, gaps in the analysis and some studies were poorly described and reported. These limitations made it difficult to draw clear conclusions, generalise to the population and compare studies.

Implications

The limited evidence suggests that it seems likely that there is an increase in poor mental health in Scotland, particularly among those with pre-existing mental illness, healthcare workers, people who have had exposure to COVID-19 and females. Measures to mitigate this potential impact should be considered as a matter of urgency. The current evidence is of poor quality, originating from online surveys which relied on convenience samples, mostly came from China and reports prevalence at a certain point in time. Limited studies looked at health inequalities, for example socioeconomic status, and this highlights work that urgently needs to be undertaken in Scotland, and internationally. To progress our understanding of the impact of COVID-19 on mental health outcomes, we require urgent collection of longitudinal data through Scottish population surveys of representative samples of general population and other likely vulnerable groups (e.g. healthcare and other key workers, those with pre-existing mental health issues, gender), and includes measures comparable with pre-COVID-19 estimates.

Now that the epicentre of the virus has moved, we anticipate that more relevant and comparable data from Europe will become available, which could inform our understanding of the likely impacts on mental health and wellbeing in Scotland.

Introduction

The coronavirus (COVID-19) outbreak began in Wuhan, China, in December 2019. On 11 March 2020, the World Health Organization (WHO) declared COVID-19 a pandemic affecting many countries across the world.¹ The pandemic will have various impacts on health, both currently and in the future, although it is not clear yet what the impacts will be. As well as the people directly affected by the COVID-19 infection, pandemics can also create a degree of fear, worry and concern in the wider population, particularly among vulnerable groups² and frontline healthcare workers treating COVID-19 patients. This rapid review aims to summarise current evidence on COVID-19 and its impact on mental health to establish learning for Scotland.

Research questions

1. What impact is the COVID-19 pandemic having on mental health outcomes (using validated measures) at the population level?
2. What risk and protective factors are associated with mental health outcomes during the COVID-19 pandemic?
3. What are the key learnings and implications for Scotland?

Methodology

The COVID-19: living map of the evidence³ was used as the search strategy for this rapid review as it is robust and already established. The map comprises studies on COVID-19, identified in MEDLINE and Embase, which were published since 2019, and is updated on a weekly basis. This rapid review includes the first 10-week searches from 4 March to 15 May 2020, and considered those studies categorised as having a mental health impact. In addition, PsycInfo as well as pre-publication databases MedRxiv and PsyArXiv were searched using relevant terms to capture papers not included in the COVID-19 map. However, due to the time constraints for this review, these studies were not assessed for inclusion but a summary of relevant results has been provided in **Appendix 1**.

Titles and abstracts were screened, and the following inclusion criteria applied:

- primary studies
- written in English language
- related to COVID-19 and mental health at population level
- mental health and/or mental wellbeing outcomes as measured by validated tools (allowing for some cultural variations)
- included outcomes:
 - prevalence rates (prior to and following pandemic onset)
 - change in prevalence of mental health outcomes over the course of the pandemic
 - point prevalence of mental health outcomes observed during the pandemic.

Overview of findings

The search identified 80 potentially relevant studies affecting mental health. Full-text screening was undertaken and a total of 51 of the studies met the inclusion criteria. Most of these studies (n = 40) were undertaken in China but others were conducted in Vietnam (n = 1), Singapore (n = 1), Singapore/India (n = 1) and Iran (n = 3). Five European studies were identified and were based in Spain (n = 1), Italy (n = 2), Denmark (n = 1) and Turkey (n = 1). Studies that did not meet this criterion were noted and summarised in **Appendix 2**.

The study designs were mainly cross-sectional (n = 48); other study types were longitudinal (n = 1), case control (n = 1) and a mixed method (n = 1). A range of mental health outcomes were assessed, including depression and anxiety, fear, stress, sleep disturbance, post-traumatic stress disorder (PTSD), obsessive–compulsive disorder, somatisation and burnout. Critical appraisal of the studies was carried out using an adapted version of the Critical Appraisals Skills Programme (CASP) cohort tool, Strengthening the Reporting of OBServational studies in Epidemiology (STROBE) checklists or

National Institute of Health cross-sectional checklist. Overall, the quality of the studies was poor to fair, mainly due to poor sampling but further details are noted in the limitations section.

Research question 1: What impact is the COVID-19 pandemic having on mental health outcomes (using validated measures) at the population level?

The heterogeneity in outcomes studied, diversity of location and general poor quality of the studies that we identified make it difficult to draw strong conclusions, and the findings we describe below across different subpopulations should be interpreted with caution.

General population

Evidence from longitudinal studies and comparative data

We found one longitudinal study which looked at the prevalence of mental health outcomes before and during COVID-19.⁴ Three studies^{5,6,7} (two from China and one from Denmark) compared data collected during the pandemic to pre-COVID-19 data which looked at nationwide data from the previous year in China^{5,6} and from 2016 in Denmark.⁷ Two studies^{8,9} focused on children and young people and the impact of the pandemic on depression and anxiety. The rest of the studies all measured point prevalence.

One longitudinal study⁴ looked at stress, anxiety and depression over a period of the pandemic, once during the initial outbreak and then again four weeks later. The sample was not representative of the population and they did not compare results to pre-pandemic measures, therefore we cannot say whether levels of anxiety, depression and stress at the start of outbreak were higher than normal. They found no statistically significant changes in stress, anxiety and depression levels during the initial four weeks of the pandemic.

Three studies looked at prevalence rates, comparing pre-COVID-19 point prevalence rates with point prevalence measured during the pandemic. Only one study⁷ used a representative sample, however, all the confounding variables were not clear, therefore results should be interpreted with caution. Sønderskov⁷ used before and after data using WHO-5 scale and the Danish Mental Health and Wellbeing Survey from 2016. Results showed that psychological wellbeing was affected negatively by the COVID-19 pandemic in the Danish population (25.4% of respondents in the 2020 survey with WHO-5 scores < 50 (the scale ranges from 0–100 and when used for screening for depression a cut off of < 50 is used) was significantly higher than for the 2016 survey 22.5%, $p < 0.001$) and also higher for females than males. In China, Huang and Zhao⁵ compared their findings to another cross-sectional study (the China Mental Health Survey, 2019) which showed anxiety and depression in Chinese adults was higher during the pandemic. The overall point prevalence of anxiety and depressive symptoms was 35.1% and 20.1%, respectively. They referred to another cross-sectional study (the China Mental Health Survey, 2019) which showed in the past 12 months, anxiety was reported as 5.0% and depression 3.6% in Chinese adults. Gao et al.⁶ also reported from a study of 4,827 participants from 31 provinces and autonomous regions in China, point prevalence of depression and anxiety was 48.3% and 22.6%, respectively. They noted that the latest national sample indicated the prevalence of anxiety disorders and depressive disorders was 7.6% and 6.9%, respectively, in China, therefore anxiety and depression seem to have increased during the pandemic.

Among children and young people, two studies compared depression prevalence with pre-COVID-19 levels. Zhou et al.⁹ measured depression and anxiety using the Patient Health Questionnaire (PHQ-9) and the 7-item Generalized Anxiety Disorder Scale (GAD-7) in children and young people aged 12–18 years. The authors reported the incidence of any depressive symptoms at 43.7%, but reports prevalence of depression at above threshold of moderate or above symptom levels at 17.3%. This is comparable to the

meta-analysis used as a comparison which also reports above threshold depression at 15.4%, which, if we assume near normal distribution, is likely not to indicate a significant increase. Another study in China⁸ reported any anxiety and depression symptoms among primary school-aged children using different tools (Screen for Child Anxiety Related Emotional Disorders validated tool and Children's Depression Inventory–Short Form) with prevalence of 18.9% and 22.6%, respectively. The authors reported that the prevalence for depressive symptoms was higher in students in Wuhan who were restricted to home for longer than other investigations in primary schools of China who had lesser restrictions and were further from the epicentre (17.2%).⁸

Point prevalence data

Fourteen studies reported the point prevalence of a range of mental health outcomes using a variety of measures over different time points and some with different populations, making it hard to compare across studies. Four cross-sectional studies measured anxiety and depression using the DASS-21 questionnaire.^{10,11,12,13} Another four studies^{5,6,14,15} measured anxiety and depression using different scales. Four studies^{5,11,16,17} examined the effect of COVID-19 on sleep using two different scales, and two studies^{18,19} looked at a range of other mental health outcomes in population studies including psychological status and crisis.

Two studies looked at distress in populations using a specific measure for COVID-19 designed to capture mental health disorders specific to COVID-19: COVID-19 Peritraumatic Distress Index (CPDI).^{20,21} The scale ranges from 0–100. A score between 28 and 51 indicates mild to moderate distress, and 52 or more indicates severe distress. The Iranian study²⁰ found mean score of CPDI was 34.54 with 14.1% reporting severe distress, higher than the mean CPDI of 23.65 with 5.14% reporting severe distress in China.²¹

Subpopulations

Some studies focused on certain groups (e.g. people who experienced COVID-19, children and young people) to examine what effect the pandemic may have had on their mental health. The location of the studies, the methods by which the study groups were recruited, the heterogeneity of the outcomes which were assessed, the range of ages of participants and the general poor quality of the studies make it difficult to draw strong conclusions from these data.

People who have had COVID-19

Two cross-sectional studies,^{22,23} one in China and one in Vietnam, looked at mental health outcomes on COVID-19 patients discharged from outpatient departments. Both studies found that people with suspected COVID-19 symptoms reported high scores on scales for PTSD, depression and lower health-related quality of life.

Quarantine

Two cross-sectional studies^{24,25} looked at mental health and the effects of quarantine with mixed results. It is hard to compare quarantine studies as this differs by region and timings, depending on the stage of the outbreak. Both focused on outcomes of anxiety and depression using different scales. One study²⁴ with 1,593 respondents aged 18 years and above compared prevalence rates for people affected by quarantine with people unaffected by quarantine (the authors defined affected by quarantine as anyone who had been staying at home and not affected by quarantine as anyone who had permission to work or who was not living in a province with restrictions). They found that prevalence of anxiety and depression in the affected by quarantine group (anxiety 12.9%, depression 22.4%) was significantly higher than that in the not affected by quarantine group (anxiety 6.7%, depression 11.9%). Zhu et al.²⁵ study of 1,443 participants found no significant differences between participants' psychological symptoms, anxiety and depression (15.0%, 22.2%, 22.1% vs 13.4%, 20.8%, 20.8%, respectively) in quarantine (either under

hotel-quarantine health workers or general public at home quarantine) and those not in quarantine (key workers who did not have to stay at home due to work).

People with pre-existing mental health conditions

Two studies^{26,27} examined people with diagnosed mental health conditions and the impact of COVID-19. Hao et al.²⁶ looked to assess and compare the immediate stress and psychological impact experienced by people with and without psychiatric illnesses, and Zhou et al.²⁷ looked at the mental health repercussions of the COVID-19 pandemic in populations attending outpatient departments of psychiatry, neurology and sleep medicine in Chengdu, China. In the Hao et al.²⁶ study, psychiatric patients in Chongqing, China (n = 76) had a higher prevalence of anxiety (6.6 ± 9.0 vs 1.5 ± 2.7 ; $p < 0.001$) and insomnia (10.1 ± 7.16 vs 4.63 ± 4.04 $p < 0.001$) than healthy controls respectively (n = 109). Zhou et al. also found that 20.9% of patients (n = 8140) with pre-existing psychiatric disorders reported a decline in their mental health condition related to the pandemic and that 22% were not able to get routine psychiatric care because of suspended hospital appointments. Owing to this, 18.1% of these patients had self-reduced medication dosages and 17.2% had stopped taking their medication due to difficulties accessing prescriptions.

Children and young people

Four studies^{8,9,28,29} examined the impact of COVID-19 on mental health outcomes in children and young people. The studies included different ages of children and young people and examined different elements of mental health and have no pre-COVID-19 measures.

Two studies measured anxiety among school-aged children (aged 12–18 years) and young people (college students, age not specified) using the GAD-7.^{9,28} The rate of mild anxiety reported for high school students of China⁹ was 27.0%, and that of severe anxiety was 3.0%. The study involving college students²⁸ (n = 7143) reported that 21.3% of participants had self-reported

experiencing mild anxiety and 0.9% of participants experienced severe anxiety. However, it is not clear whether this differs from pre-COVID-19 levels.

One study with an unrepresentative sample assessed the mental health of people aged 14–35 years using the 12-item General Health Questionnaire (GHQ-12). The authors stated that 40.4% of those sampled reported having psychological problems (defined by the authors as scoring higher than 15 points on the 12-item questionnaire).²⁹ However, most of this could be explained by the experience of mild symptoms. Excluding mild symptoms prevalence rates for anxiety and depression are reduced to 5% and 11.2%, respectively.

European studies looking at the general population

Five European cross-sectional studies^{7,30,31,32,33} looked at the effect of the COVID-19 pandemic on levels of anxiety, depression, wellbeing, distress and temperament. Owing to the virus originating in China and then spreading to Europe, these studies take place later than most of the non-European studies, into late March and early April 2020. Only Ozamiz-Etxebarria et al.³⁰ had started their data collection before WHO announced Europe had become the epicentre of the pandemic on the 13 March 2020; all other studies collected their data while Europe was the epicentre. Three studies looked at depression and anxiety during the pandemic, two used the Depression, Anxiety and Stress Scale – 21 Items (DASS-21) measure^{30,31} and one³² used Hospital Anxiety and Depression Scale (HADS) and the Health Anxiety Inventory (HAI). Ozamiz-Etxebarria et al.³⁰ surveyed adults (n = 1,003) using online platforms, social networks and emails in the Basque Community, Spain. Point prevalence was measured for depression in males (n = 184; 8.7% mild, 4.0% moderate, 2.9% severe and 1.7% extremely severe) and was similar to females (n = 551; 8.6% mild, 7.1% moderate, 2.3% severe, 3.0% extremely severe). Anxiety was slightly lower in males (4.0% mild, 5.2% moderate, 1.2% severe, 3.5% extremely severe) and for females (7.0% mild, 12.0% moderate, 2.9% severe, 0.6% extremely severe). Stress in males (9.2% mild, 5.2%

moderate, 2.9% severe, 3.6% extremely severe) was similar for females (8.9% mild, 9.0% moderate, 3.1% severe, 1.2% extremely severe). Mazza et al.³¹ looked at the prevalence of psychiatric symptoms using DASS-21 through an anonymous online questionnaire of adults (n = 2,766) on a survey platform. The authors noted the point prevalence of depression was 67.3% average range (17% high range, 15.4% extremely high range), anxiety was 81.3% average level (7.2% high range, 11.5% extremely high range) and stress was 72.8% average range (14.6% high range, 12.6% extremely high range). Ozamiz-Etxebarria et al.³⁰ also found high depression and anxiety levels (23.6% and 45.1%, respectively) in Turkey during the pandemic. Data were collected through an online questionnaire from 343 individuals aged 18 and above years living in various provinces of Turkey.

One Italian study³³ looked at perceived psychological distress among the Italian general population aged 18–75 years (n = 500); 62% of the individuals reported no likelihood of psychological distress, whereas 19.4% and 18.6% displayed mild and moderate to severe likelihood of psychological distress respectively.

Healthcare workers

Eighteen studies looked at the impact of COVID-19 on mental health outcomes in healthcare workers. The lack of longitudinal studies in this population meant it was not possible to ascertain trends during the course of the pandemic. The majority of studies provided the point prevalence of a range of mental health outcomes, but some compared populations based on their involvement with the care of COVID-19 patients, geographical areas and roles/experience of healthcare workers. Based on these groupings, it was possible to draw some limited observations about which populations may have fared worse in terms of their mental health:

- Three studies^{34,35,36} compared medical healthcare workers with non-medical healthcare workers; in two studies of these studies,^{34,35} of

> 2,000 participants recruited online, there was a higher prevalence of anxiety, fear, depression, insomnia, somatisation and obsessive compulsive symptoms among medical staff (predominantly doctors and nurses) compared with non-medical staff. A smaller study of 470 participants found a higher prevalence of anxiety among medical workers after adjustment for age, sex, ethnicity, marital status, survey completion date and presence of comorbid conditions, but no significant differences in PTSD, stress and depression between groups.³⁶

- A small study³⁷ of 190 participants, comparing the frequency of burnout between redeployed physicians and nurses to frontline COVID-19 wards with those working in their usual wards, showed that burnout prevalence in staff working in their usual ward was three times higher than in COVID-19 ward staff.
- One study of 1,521 participants³⁸ showed that people without experience working in a public health emergency had poorer mental health, resilience and social support compared to those with experience.
- Two studies looked at effect of working in Wuhan, the original epicentre of the pandemic, compared with other Chinese towns/provinces^{39,40} and both suggested that local medical staff had poorer mental health outcomes (insomnia, depressive and anxiety symptoms) compared with people working outside of Wuhan.

The other 11 studies^{41,42,43,44,45,46,47,48,49,50,51} reported the point prevalence of a range of mental health outcomes during the pandemic but these were carried out at different time points. Seven studies were conducted in frontline healthcare staff and three in non-frontline specialist staff (paediatrics, n = 2; multiple sclerosis, n = 1). Two studies were undertaken in certain subpopulations, such as in females⁴³ and across different countries (India and Singapore).⁴⁵ Two studies^{28, 50} featured some psychological support for healthcare staff.

Anxiety and depression prevalence rates ranged from 15.7% to 44.6% and from 10.6% to 50.4% in frontline staff, and 7% to 18.1% and 25% to 29.5% in non-frontline staff, respectively. These should be interpreted with caution due to the variation in the timing of the surveys, non-representative heterogeneous populations and different measurement scales used.

Research question 2: What risk and protective factors are associated with mental health outcomes during the COVID-19 pandemic?

Owing to the poor sampling in the studies, risk and protective factors mentioned should be viewed with extreme care. When we explored the risk and protective factors associated with mental health outcomes during the COVID-19 pandemic, there were some common themes.

Risk factors observed in all study populations were female gender, lower level of education or having an underlying mental health condition. Among healthcare workers, exposure to COVID-19 patients (whether or not in the front line) was a risk factor for increased psychological distress.

Themes for protective factors included family/social support, hygiene measures and physical activity.

Risk and protective factors by population type

General population

Risk factors

- Female gender.
- Frequent exposure to social media.

- Low health literacy.
- Low education.
- Living close to an epicentre of the pandemic.
- Close family or friend contracting COVID-19.
- Migrant worker
- Underlying mental health conditions.

Protective factors

- Increased social and family support.
- Hygienic measures, e.g. handwashing.
- Physical activity.
- Confidence in doctors.
- Satisfaction with health information.

Children and young people

Risk factors

- Female gender.
- Senior high school.
- Living near the epicentre of the outbreak.
- Low education.
- Enterprise employee.
- Negative coping styles.

- Awareness of COVID-19 (knowledge, prevention and control measures).

Protective factors

- Awareness of COVID-19 (knowledge, prevention and control measures).

Healthcare workers

Risk factors

- Female gender.
- Underlying mental health issues.
- Nurses.
- Exposure to COVID-19 patients (frontline and non-frontline staff).
- Organisational factors (e.g. reduced or no provision of personal protective equipment (PPE), perception of control of the pandemic).
- Individual factors (e.g. lack of family support).

Protective factors

- Social support.
- Psychological support.
- Physical activity.
- Working in non-COVID-19 departments.

Research question 3: What are the key learnings and implications for Scotland?

Our review has raised a number of implications for Scotland. First is the urgent need for good-quality, longitudinal research on the impact of COVID-19 and the social distancing measures implemented on the mental health outcomes of people living in Scotland. We also need to identify what the key risk and protective factors are for the population of Scotland, but have some useful pointers on what they could be based on the international literature (e.g. PPE for healthcare staff, social support and physical activity).

Based on the limited evidence available, it seems likely that Scotland will experience an increase in poor mental health (particularly among those who already have pre-existing illness, healthcare workers, people who have had exposure to COVID-19 and females). Ways to mitigate this impact should be considered as a matter of urgency. The mental healthcare system also needs to be prepared and responsive to this.

We strongly recommend that research on mental health is undertaken in such a way as to ensure that the study population is representative of Scotland and that validated measures which have been previously used in population surveys (e.g. the Warwick–Edinburgh Mental Well-being Scale (WEMWBS), the GHQ-12, the Clinical Interview Schedule-Revised (CIS-R) which are all used in the Scottish Health Survey) are used to assess mental health outcomes, so that the results from new research can be put in context of what we already know from the substantial research on this topic that we have undertaken as a country over the decades.

Our review has also identified some gaps in the literature, the largest of these is our understanding of the impact of COVID-19 on the mental health of disadvantaged populations, and children and young people. We feel that the impact of COVID-19 on the mental health of different sociodemographic

groups needs to be prioritised as mental health outcomes are distributed unevenly across the Scottish adult population, with inequalities evident for age, gender, deprivation and socioeconomic status.⁵²

Implications for future research

Our rapid review has several implications for research on the mental health impact of the COVID-19 pandemic.

Need for better-quality research

There is an urgent need for well-designed studies with representative study populations. There is a need for large longitudinal studies that track the mental health of the same individuals over time, for both the whole population and targeted to disadvantaged populations affected by health inequalities. As the reporting of studies was also often poor and details of the ethical approval process for data collection often not provided, researchers should ensure they adhere to the STROBE guidelines.

Triangulation of data and methods

There is a need to triangulate different methods and sources of data collection. The mental health outcomes included in the studies we reviewed all used self-reported data; however, administrative data would strengthen the evidence base. Outcomes to examine could include psychiatric referrals and hospitalisations, suicide mortality, prescriptions for psychotropic drugs, primary care presentations and suitable information recorded through education and social care systems. These will be especially important in measuring the long-term impact of the pandemic and understanding how the pandemic has affected help-seeking for mental health problems. This requires timely access to administrative data in Scotland.

In Scotland, existing linkages between survey data (such as the Scottish Health Survey, which provide in-depth data on potential risk factors) and administrative data could be capitalised on to obtain longitudinal data before and after the pandemic. Researchers should also consider using multiple

sources of data (e.g. different surveys) in their studies to compare their findings between sources. Newly established surveys should ensure their data are made publicly available (e.g. via the UK Data Service). Few qualitative studies in the searches were identified, and this type of research could provide an in-depth understanding of how the pandemic is affecting individuals in Scotland and could help to generate hypotheses for quantitative research.

Most of the data were collected via online surveys, which are safer and more convenient during the current pandemic, but other data collection methods are needed to help reduce the risk of bias, such as via telephone for those who may not have internet access. There is also a need to ensure validated measures of mental health and wellbeing are used in surveys and that they are used in a consistent and standardised way to improve the comparability between studies.

What research is needed?

As we only considered articles published up to 15 May 2020, there will be a need for studies that assess the long-term impact of the pandemic and its social and economic consequences on mental health. Cross-country comparisons would be useful to compare Scotland with other countries that take similar or different approaches to the pandemic response. Few studies provided a comprehensive analysis of potential risk and protective factors for mental health and wellbeing during the pandemic. Robust statistical methods are also needed to help understand whether there is a potential causal effect of the pandemic (e.g. using natural experiment methods such as difference in differences). Studies should also assess overall trends as well as patterns by important subgroups who may be particularly vulnerable, such as children and young people, ethnic minorities, people with long-term illness (particularly mental illness) and disabilities, and disadvantaged socioeconomic groups. A key priority will be the impact among those with pre-existing mental disorders, particularly severe mental illness (e.g. schizophrenia), who may have had

treatment disrupted.⁵³ Taking an intersectional approach by looking at multiple interacting social and economic factors that may increase the risk of poor mental health would also be valuable.

Limitations

Methodological limitations of the evidence

We identified eight overarching limitations which should be considered when interpreting our findings:

- The majority of studies that we reviewed had substantial problems with their sampling design and implementation. Study samples were frequently small, non-random, unrepresentative, self-selecting or opportunistic. Therefore, it was hard to draw precise conclusions, based on the sample about the population as a whole. The majority of the studies were cross-sectional in nature making it impossible to track changes over time within the same individuals.
- Owing to the study design issues described above, the majority of the studies relied on unrepresentative participants. Most studies were conducted via online surveys, and so participants will systematically differ to the general population in a number of ways and therefore cannot be generalised to the population. They will be likely be younger, more educated, more literate and live in more advantaged communities.
- The studies included in this review measured mental health outcomes using a range of different measures to categorise outcomes (e.g. depression, burnout, sleep). This makes the collation of findings from different studies or the comparison of different studies difficult.
- There was a recurring problem with the analysis that had been undertaken in the studies which we identified. There was little consideration of confounding factors. It was also not clear whether some of the studies were adequately powered to carry out the analysis they ultimately undertook. Studies often did not consider methods to

account for the unrepresentative nature of their study population (e.g. via weighting) or report how they dealt with missing data. Few studies considered analysis by important subgroups (e.g. those with pre-existing mental or physical health conditions).

- The studies we identified were prone to two key types of bias, recall bias and selection bias.
- Many of the studies we identified were poorly described and reported. Methods sections were frequently not detailed enough to identify the key steps in the research that had been conducted.
- All studies relied on self-reported data which are prone to a number of well-recognised biases.
- A number of studies were published rapidly (e.g. within days). It is not clear what peer-review processes some of the journals adopted to expedite publication.

Limitations in our own approach

It is important to recognise that our own review has limitations and also that some of the limitations of the studies we identified may result from our own research methods. First, we limited our search to the COVID-19: living map of the evidence for mental health.³ Although we undertook supplementary searches of PsycInfo as well as two pre-publication databases, these searches were limited in nature. Therefore, it is possible that articles have been published which have not been identified in our review. We have also only considered articles published up to 15 May 2020 which will only capture the short-term mental health impact of the pandemic.

Second, we included studies from all countries, with most of those originating from China. Consequently, the findings of some these international studies may not be generalisable to the Scottish context. As Nobles et al.⁵⁴ notes the importance of this when they state, 'The approach and response to quarantine, social distancing and isolation will differ notably between populations'.

Third, we included all mental health outcomes measured using any validated tool. This has meant that it has not been possible to compare some studies which have measured similar aspects of mental health using a different tool. It has also been more challenging to identify key mental health outcomes retrospectively, rather than prospectively. We also only included English-language articles.

Appendix 1: Additional database search results

Additional searches were carried out of the PsycInfo database and the PsyArXiv, MedRXiv pre-print databases. These searches were carried out on 7 May 2020 and used combinations of key words relating to mental health and wellbeing, and to COVID-19 and coronavirus. There were 156 initial results English language from the search. Six of these were duplicates to those already identified through the Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) evidence map.

Owing to the time constraints for this review it was not possible to fully screen these results for inclusion. However, the title and abstracts were screened for original studies relevant to the review questions and these are included here for information. Further screening for validated outcome measures and prevalence would be required for these studies. An initial assessment identified 62 articles that would be suitable for further screening in an updated review.

The majority of initial results comprised expert commentary, editorials, evidence reviews, suggested interventions, guidelines, development of scales and measures, discussion of conceptual frameworks, and modelling and simulations. Not all of the search results were mental health related but were focused on compliance and attitudes.

The results included four rapid evidence reviews or meta analyses on: psychological impacts of quarantine (included in previous searches); impacts on healthcare workers and clinical staff; psychological impacts on pregnant women; and self-guided interventions for anxiety depression and stress.

The majority of potentially relevant studies were from China, with the next largest from Italy and the USA. There were studies using data from: the UK; Spain; Portugal; Jordan; Portugal; India; Japan; Iran; Russian speakers;

Denmark; Brazil; France; Poland; Ireland; New Zealand; Nigeria; Switzerland; and Canada, as well as several multicountry studies.

Results identified for further screening are listed below, categorised by their main population groups (studies that covered more than one population group have been listed by the first referenced in the title):

General population

Hu et al. Countrywide quarantine only mildly increased anxiety level during COVID-19 outbreak in China. medRxiv; 4 April 2020.

Williams et al. Public perceptions and experiences of social distancing and social isolation during the COVID-19 pandemic: A UK-based focus group study. medRxiv; 15 Apr 2020.

Barari et al. Evaluating COVID-19 Public health messaging in Italy: Self-reported compliance and growing mental health concerns. medRxiv; 30 March 2020.

White et al. The impact of the COVID19 pandemic and initial period of lockdown on the mental health and wellbeing of UK adults. medRxiv; 29 April 2020.

Naser et al. Mental health status of the general population, healthcare professionals, and university students during 2019 coronavirus disease outbreak in Jordan: a cross-sectional study. medRxiv; 11 April 2020.

Zhang et al. Health, distress, and life satisfaction of people one-month into COVID-19 outbreak in China. medRxiv; 16 March 2020.

Factors influencing mental health during covid-19 outbreak: an exploratory survey among Indian population. medRxiv; 6 May 2020.

Moreira et al. Protective elements of mental health status during the COVID-19 outbreak in the Portuguese population. medRxiv; 1 May 2020.

Ueda et al. Mental health status of the general population during the COVID-19 pandemic: A cross-sectional national survey in Japan. medRxiv; 3 May 2020.

Sorokin et al. Structure of anxiety associated with the COVID-19 pandemic in the Russian-speaking sample: results from on-line survey. medRxiv; 4 May 2020.

Zhang et al. First study on mental distress in Brazil during the COVID-19 crisis. medRxiv; 23 April 2020.

Rossi et al. COVID-19 pandemic and lockdown measures impact on mental health among the general population in Italy. An N=18147 web-based survey. medRxiv; 14 April 2020.

Wang et al. The psychological distress and coping styles in the early stages of the 2019 coronavirus disease (COVID-19) epidemic in the general mainland Chinese population: a web-based survey. medRxiv; 30 March 2020.

Zhang et al. High risk of infection caused posttraumatic stress symptoms in individuals with poor sleep quality: A study on influence of coronavirus disease (COVID-19) in China. medRxiv; 24 March 2020.

Li et al. Chinese public's knowledge, perceived severity, and perceived controllability of the COVID-19 and their associations with emotional and behavioural reactions, social participation, and precautionary behaviour: A national survey. PsyArXiv; 28 February 2020.

Ammerman et al. Preliminary investigation of the association between COVID-19 and suicidal thoughts and behaviors in the U.S. PsyArXiv; 6 April 2020.

Sweeny et al. Flow in the time of COVID-19: Findings from China. PsyArXiv; 26 March 2020.

Gertens et al. Fear of the coronavirus (COVID-19): Predictors in an online study conducted in March 2020 PsyArXiv; 2 April 2020.

Cerami et al. Covid-19 outbreak in Italy: Are we ready for the psychosocial and economic crisis? Baseline findings from the psycovid study. PsyArXiv; 15 April 2020.

Driot-Volet et al. PONE-D-20-12336. Time and Covid-19 stress in the lockdown situation: Time Free, Dying of Boredom and Sadness. PSyArXiv; 1 May 2020.

Li et al. Self-control moderates the association between perceived severity of the coronavirus disease 2019 (COVID-19) and mental health problems among the Chinese public. PsyArXiv; 11 March 2020.

Odriozola-Gonzalez et al. Psychological symptoms of the outbreak of the COVID-19 crisis and confinement in the population of Spain. PsyArXiv; 15 April 2020.

Rosen et al. Anxiety and distress among the first community quarantined in the U.S due to COVID-19: Psychological implications for the unfolding crisis. PsyArXiv; 14 April 2020.

Vijayaraghavan et al. A descriptive study of Indian general public's psychological responses during COVID-19 pandemic lockdown period in India. PsyArXiv; 13 April 2020.

Okruszek et al. Safe but lonely? Loneliness, mental health symptoms and COVID-19. PsyArXiv; 10 April 2020.

Stadler et al. Individual psychological responses to the SARS-CoV-2 pandemic: Different clusters and their relation to risk-reducing behaviour. PsyArXiv; 31 March 2020.

Lades et al. Daily emotional well-being during the COVID-19 pandemic PsyArXiv; 22 April 2020.

Nelson et al. rapid assessment of psychological and epidemiological correlates of COVID-19 concern, financial strain, and health-related behavior change in a large online sample. PsyArXiv; 13 April 2020.

Orgiles et al. Immediate psychological effects of the COVID-19 quarantine in youth from Italy and Spain. PsyArXiv; 21 April 2020.

Sibley et al. Short-term effects of the COVID-19 pandemic and a nationwide lockdown on institutional trust, attitudes to government, health and wellbeing PsyArXiv. 20 April 2020.

Cantarero et al. Affirming basic psychological needs promotes mental well-being during the COVID-19 outbreak. PsyArXiv; 16 April 2020.

Yildirim et al. Exploring the associations between resilience, dispositional hope, subjective well-being, and psychological health among adults during early stage of COVID-19. PsyArXiv; 28 April 2020.

Romero-Rivas et al. Moral decision-making and mental health during the COVID-19 pandemic. PsyArXiv; 28 April 2020.

Flesia et al. Stable psychological traits predict perceived stress related to the COVID-19 outbreak. PsyArXiv; 24 April 2020.

Agberotimi et al. Interactions between socioeconomic status and mental health outcomes in the nigerian context amid covid-19 pandemic: A comparative study. PsyArXiv; 6 May 2020.

Plomecka et al. Mental Health Impact of COVID-19: A global study of risk and resilience factors. PsYArXiv; 5 May 2020.

Limcaoco et al. Anxiety, worry and perceived stress in the world due to the COVID-19 pandemic, March 2020. Preliminary results. medRxiv; 6 April 2020.

Bailon et al. CoVidAffect: Real-time monitoring of mood variations following the COVID-19 outbreak. PsyArXiv; 29 April 2020.

Health and social care workforce

Kang et al. The mental health of medical workers in Wuhan, China dealing with the 2019 novel coronavirus. *Lancet Psychiatry* 2020;7(3):e14

Huang et al. Emotional responses and coping strategies of nurses and nursing college students during COVID-19 outbreak. *medRxiv*; 8 March 2020.

Qi et al. The evaluation of sleep disturbances for Chinese frontline medical workers under the outbreak of COVID-19. *medRxiv*; 8 March 2020.

Dai et al. Psychological impact of the coronavirus disease 2019 (COVID-19) outbreak on healthcare workers in China. *medRxiv*; 6 March 2020.

Zhang et al. When the storm is the strongest: The health conditions and job satisfaction of Healthcare staff and their associated predictors during the epidemic peak of COVID-19. *medRxiv*; 2 May 2020.

Rossi et al. Mental health outcomes among front and second line health workers associated with the COVID-19 pandemic in Italy. *medRxiv*; 22 April 2020.

Liu et al. The prevalence and influencing factors for anxiety in medical workers fighting COVID-19 in China: A cross-sectional survey. *medRxiv*; 8 March 2020.

Sun et al. Prevalence and risk factors of acute posttraumatic stress symptoms during the COVID-19 outbreak in Wuhan, China. *medRxiv*; 10 March 2020.

Zhu et al. COVID-19 in Wuhan: Immediate psychological impact on 5062 health workers. *medRxiv*; 23 February 2020.

Simione et al. Differences between health workers and general population in risk perception, behaviors, and psychological distress related to COVID-19 spread in Italy. *PsyArXiv*; 3 April 2020.

Bettinsoli et al. Psychological impact and contextual factors associated with physical and mental health conditions of Italian healthcare professionals during the COVID-19 disease outbreak. PsyArXiv; 26 April 2020.

Children and young people

Sallam et al. Conspiracy beliefs are associated with lower knowledge and higher anxiety levels regarding COVID-19 among students at the University of Jordan. medRxiv; 24 April 2020.

Meda et al. COVID-19 and depressive symptoms in students before and during lockdown. medRxiv; 30 April 2020.

Oosterhoff et al. Adolescents' motivations to engage in social distancing during the COVID-19 Pandemic: Associations with mental and social health. PsyArXiv; 6 April 2020.

Asbury et al. How is COVID-19 affecting the mental health of children with special educational needs and disabilities and their families? PsyArXiv; 21 April 2020.

DiGiorgio et al. The interplay between mothers' and children behavioral and psychological factors during COVID-19: An Italian study. PsyArXiv; 30 April 2020.

Elmer et al. Students under lockdown: Assessing change in students' social networks and mental health during the COVID-19 crisis. PsyArXiv; 6 May 2020.

COVID-19 patients

Dong et al. Prevalence and factors associated with depression and anxiety of hospitalized patients with COVID-19. medRxiv; 30 March 2020.

Pre-existing mental health conditions

Rohde et al. Psychiatric symptoms related to the COVID-19 pandemic. medRxiv; 23 April 2020.

Other pre-existing health conditions

Li et al. Comparison of psychological distress and demand induced by COVID-19 during the lockdown period in patients undergoing peritoneal dialysis and hemodialysis: a cross-section study in a tertiary hospital. medRxiv; 17 April 2020.

Castro et al. Impact of COVID-19 on psychiatric assessment in emergency and outpatient settings measured using electronic health records. medRxiv; 1 April 2020.

Appendix 2: Excluded studies (total = 29)

Population studies (total excluded = 17)

Reason for exclusion

Wrong study type

Yuan R et al. Psychological status of parents of hospitalized children during the COVID-19 epidemic in China. *Psychiatry Res* 2020;288:112953.

Russano M et al. Coronavirus disease 2019 or lung cancer: What should we treat? *J Thorac Oncol* 2020 Apr 10;S1556–0864.

Rajkumar RP. COVID-19 and mental health: A review of the existing literature. *Asian J Psychiatr* 2020;52:102066.

Liu S et al. Online mental health services in China during the COVID-19 outbreak. *Lancet Psychiatry* 2020;7(4):e17–8.

Ahorsu DK et al. The fear of COVID-19 scale: Development and initial validation. *Int J Ment Health Addict* 2020;1–9.

Brooks et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 2020;395(10227):912–20.

Wrong outcome

Du L et al. Investigation on demands for antenatal care services among 2 002 pregnant women during the epidemic of COVID-19 in Shanghai. *Chinese Journal of Obstetrics and Gynecology* 2020;55(3):160–5.

Did not record prevalence

Sun N et al. A qualitative study on the psychological experience of caregivers of COVID-19 patients. *Am J Infect Control*. 2020;48(6):592–8.

Lee SA. Coronavirus Anxiety Scale: A brief mental health screener for COVID-19 related anxiety. *Death Stud* 2020;44(7):393–401.

Losada-Baltar A et al. "We're staying at home". Association of self-perceptions of aging, personal and family resources and loneliness with psychological distress during the lock-down period of COVID-19. *J Gerontol B Psychol Sci Soc Sci* 2020.

Zhang J et al. Acute stress, behavioural symptoms and mood states among school-age children with attention-deficit/hyperactive disorder during the COVID-19 outbreak. *Asian J Psychiatr* 2020;51:102077.

Methodology not detailed/fast-tracked publication

Dennis CL, et al. Telephone-based nurse-delivered interpersonal psychotherapy for postpartum depression: nationwide randomised controlled trial. *Br J Psychiatry*. 2020;216(4):189–96.

Did not use a validated measure

Frank A et al. Depression, dependence and prices of the COVID-19-crisis. *Brain Behav Immun* 2020: gbaa048.

Not published in English

Gong M et al. Conducting clinical studies during the epidemics of communicable diseases: perspectives of methodology and health economics. *Journal of Southern Medical University* 2020;40(3):353–7.

Fu X, Li J, Huang Z, Xu Z, Yao W, Cui Y, et al. [Dandelion clock-like sign on CT for diagnose of COVID-19]. *Nan Fang Yi Ke Da Xue Xue Bao*. 2020 Feb 29;40(2):159–63.

Duplicate study

Huang Y, Zhao N. Mental health burden for the public affected by the COVID-19 outbreak in China: Who will be the high-risk group? *Psychol Health Med* 2020;14:1–12.

Huang Y, Zhao N. Chinese mental health burden during the COVID-19 pandemic. *Asian J Psychiatr* 2020;51:102052.

Healthcare workers studies [total excluded = 12]

Reason for exclusion

Wrong study type

Shen X et al. Psychological stress of ICU nurses in the time of COVID-19. *Crit Care* 2020;24(1):200.

Kisely S et al. Occurrence, prevention, and management of the psychological effects of emerging virus outbreaks on healthcare workers: rapid review and meta-analysis. *BMJ* 2020;369:m1642.

Bohlken J et al. COVID-19 Pandemic: Stress Experience of Healthcare Workers - A Short Current Review. *Psychiatr Prax* 2020;47(4):190–7.

Spoorthy MS et al. Mental health problems faced by healthcare workers due to the COVID-19 pandemic-A review. *Asian J Psychiatr* 2020;51:102119.

Did not record prevalence

Yifan T et al. Symptom cluster of ICU nurses treating COVID-19 pneumonia patients in Wuhan, China. *J Pain Symptom Manage* 2020;S0885–3924.

Mo Y et al. Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic. *J Nurs Manag* 2020.

Xiao H et al. The effects of social support on sleep quality of medical staff treating patients with coronavirus disease 2019 (COVID-19) in January and February 2020 in China. *Med Sci Monit* 2020;26:e923549.

Liang Y et al. Screening for Chinese medical staff mental health by SDS and SAS during the outbreak of COVID-19. *J Psychosom Res* 2020;133:110102.

Did not use a validated measure

Ahmed MZ et al. Epidemic of COVID-19 in China and associated psychological problems. *Asian J Psychiatr* 2020;51:102092.

Wu W et al. Psychological stress of medical staffs during outbreak of COVID-19 and adjustment strategy. *J Med Virol* 2020.

Methodology not detailed/fast-tracked publication

Xu J et al. Psychological status of surgical staff during the COVID-19 outbreak. *Psychiatry Res* 2020;288:112955.

Not published in English

Shen X et al. Psychological stress of ICU nurses in the time of COVID-19. *Crit Care* 2020;24(1):200.

Appendix 3: Included studies (total = 51)

Stage of COVID-19 defined by WHO

- 31 December 2019: Pneumonia of unknown cause reported to WHO China Office.
- 13 January 2020: First case of novel coronavirus outside of China confirmed.
- 23 January 2020: Wuhan, China went into lockdown.
- 11 February 2020: Novel coronavirus disease named COVID-19
- 7 March 2020: 100 countries are reporting COVID-19 cases and the world surpasses 100,000 cases.
- 11 March 2020: COVID-19 declared as a pandemic.
- 13 March 2020: Europe becomes epicentre of the pandemic.
- 23 March 2020: UK went into lockdown.

General population

Huang & Zhao, 2020⁵

Title and article type

Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

3–17 February 2020.

Population groups

Healthcare workers and general public.

Methods

Recruited through WeChat public platform and the mainstream media.

7,236 participants; 54.6% females; 31.1% of participants were healthcare workers; mean (standard deviation, SD) age of the participants was 35.3 ± 5.6 years.

Demographic variables, anxiety – GAD-7, depression – CES-D, Sleep – PSQI and knowledge of the COVID-19 outbreak evaluated by answering: times spent thinking about the COVID-19 outbreak and six question about the virus.

Summary of findings

Q1: prevalence: Point prevalence: The overall prevalence of anxiety symptoms, depressive symptoms and poor sleep quality was 35.1%, 20.1%, and 18.2%, respectively.

[In 2019, a cross-sectional epidemiological survey conducted by the China Mental Health Survey (CMHS) showed that 5.0% and 3.6% of Chinese adults have symptoms of anxiety and depressive disorder in the past 12 months, respectively.]

Wang et al. 2020⁴

Title and article type

A longitudinal study on the mental health of general population during the COVID-19 epidemic in China.

Original article.

Study type

Longitudinal survey.

Country and date of study

China.

First survey: 31 January–2 February 2020; second survey: 28 February to 1 March 2020.

Population groups

General population.

Methods

Online survey, recruited via snowball sampling.

1,738 respondents from 190 Chinese cities (1,210 first-survey respondents, 861 second-survey respondents; 333 respondents participated in both). Age range 12–59 years; 67.3% women in first survey and 75% women in second survey.

PTSD symptoms in survivorship after an event measured by IES-R. Mental health status of respondents measured using DASS-21. Mean scores at the two time points reported.

Summary of findings – Q1: Prevalence

Point prevalence: First survey: moderate to severe stress, anxiety and depression was 8.1%, 28.8% and 16.5%, respectively. There were no

significant longitudinal changes in stress, anxiety and depression levels ($p > 0.05$).

Summary of findings – Q2: Risk/protective factors

Protective factors: Included high level of confidence in doctors, perceived survival likelihood and low risk of contracting COVID-19, satisfaction with health information, personal precautionary measures.

Yuan et al. 2020¹⁶

Title and article type

Comparison of the indicators of psychological stress in the population of Hubei Province and non-endemic provinces in China during two weeks during the coronavirus disease 2019 (COVID-19) outbreak in February 2020.

Original article.

Study type

Longitudinal study.

Country and date of study

China.

2 weeks in February 2020, specific dates not specified.

Population groups

General population by occupation.

Methods

Online survey: stratified cluster method was used to randomly select participants.

939 individuals (357 men and 582 women), including 33 from Hubei Province and 906 from non-endemic provinces; 35.89% were aged 18–24 years, 35.57% were aged 25–39 years; 65.92% had undergraduate-level education; 33.23% students; 26.52% medical staff.

Emotional state, somatic responses and behaviour determined by SRQ.

PSQI was used to measure the duration of sleep and sleep quality.

Comparison by occupation.

Summary of findings – Q1: Prevalence

Overall: 622 participants with emotional conditions (66.2%), 497 with somatic responses (52.9%), 527 with reduced sleep quality (56.1%) and 471 with behavioural changes (47.6%).

The emotional state and behaviour of participants in Hubei Province improved, but the quality of sleep did not.

Decrease in sleep quality: 36.43% of study participants reported severely impaired sleep quality, and only 20.3% improved. The same findings occurred with somatic or physical conditions, which became worse in 39.44% and improved in 29.78%. Behaviour worsened in 29.94% and improved in 24.63% during the two-week study period). Emotional state worsened in 37.78% and improved in 39.23%.

Increase among certain occupations: After two weeks, < 24% of medical staff and 19.64% of business managers reported increased anxiety regarding COVID-1; but other professionals became less anxious.

Summary of findings – Q2: Risk/protective factors

Gao et al. 2020⁶

Title and article type

Mental health problems and social media exposure during COVID-19 outbreak.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

31 January–2 February 2020.

Population groups

General public by social media exposure.

Methods

Sample recruited online via Wenjuanxing platform.

4,827 participants from 31 provinces; the mean age of was 32.3 years \pm 10 years (ranged 18–85); 62.2% had achieved a college education; 5.2% were healthcare workers.

Depression: Chinese version of WHO-5 (below 13 indicates depression).

Anxiety: Chinese version of GAD-7 (score of 10 or greater cut point for identifying cases of anxiety).

Summary of findings – Q1: Prevalence

Overall prevalence: The prevalence of depression, anxiety and CDA was 48.3%, 22.6% and 19.4%.

Study increase compared with national prevalence: The latest national sample indicated the prevalence of any disorder (excluding dementia), anxiety disorders and depressive disorders was 16.6% (95% CI 13.0%–20.2%), 7.6% (95% CI 6.3%–8.8%) and 6.9% (95% CI 6.6%–7.2%) in China. The current cross-sectional study found a much higher prevalence of depression, anxiety and CDA.

Summary of findings – Q2: Risk/protective factors

Risk factors: Frequent social media exposure (SME) was positively associated with high odds of anxiety (OR = 1.72, 95% CI 1.31–2.26) and CDA (OR = 1.91, 95% CI 1.52–2.41) compared with less SME.

Wang et al. 2020¹³

Title and article type

Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

31 January–2 February 2020.

Population groups

General population.

Methods

Anonymous online questionnaire, snowball sampling strategy, focused on recruiting the general public living in mainland China, but disseminated to university students who were encouraged to pass it on to others.

1,210 respondents from 194 cities in China.

Sociodemographic data, anxiety and depression measured using IES-R and DASS-21.

Summary of findings – Q1: Prevalence

Point prevalence: 53.8% of respondents rated the psychological impact of outbreak as moderate or severe; 16.5% of respondents reported moderate to severe depressive symptoms; 28.8% of respondents reported moderate to

severe anxiety symptoms; and 8.1% reported moderate to severe stress levels.

Summary of findings – Q2: Risk/protective factors

Protective: Linear regression analysis showed the factors below were significantly associated with lower scores in the IES-R and the DASS stress, anxiety and depression subscales:

- always washing hands after touching contaminated objects
- always wearing a mask regardless of the presence or absence of symptoms
- always covering mouth
- when coughing and sneezing
- always washing hands with soap
- always washing hands immediately after coughing, sneezing or rubbing nose
- always avoiding sharing utensils (e.g., chopsticks) during meals.

Li et al. 2020⁴²

Title and article type

Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

17–21 February 2020.

Population groups

General population and healthcare workers.

Methods

A mobile phone app-based questionnaire was sent to nurses who worked in hospitals and general public (non-medical staff).

A total of 740 individuals took part (214 general public, 234 frontline nurse, and 292 non-frontline nurses), 78.1% female and age in years (median (IQR)), general population 25 (22–38.3), frontline nurse 29.5 (26–34) and 29 (25–34).

Demographic data as well as the Chinese version of the vicarious traumatization questionnaire.

Summary of findings – Q1: Prevalence

General population: Vicarious traumatization scores: 75.5, frontline nurses: 64, non-frontline nurses: 75.5. Median and interquartile range (IQR: 25%–75%)].

Frontline nurses had significantly ($p > 0.001$) lower vicarious traumatization scores than the general public and non-frontline nurses. No significant difference was noted in vicarious traumatization scores between the general public and non-frontline nurses.

Summary of findings – Q2: Risk/protective factors

Protective: Frontline nurses possibly have less vicarious traumatization scores due to protective equipment, training and guidance. Early intervention of vicarious traumatization and psychological stress for the general public and medical staff.

Qiu et al. 2020²¹

Title and article type

A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations.

Editorial.

Study type

Cross-sectional survey.

Country and date of study

China.

31 January–10 February 2020.

Population groups

General population.

Methods

A questionnaire through QR codes online and openly accessible to the general public nationwide.

52,730 valid responses from 36 provinces, autonomous regions and municipalities, as well as from Hong Kong, Macau and Taiwan; 64.7% females.

Demographic data, as well as COVID-19 Peritraumatic Distress Index (CPDI).

Summary of findings – Q1: Prevalence

Overall: The mean (SD) CPDI score of the sample was 23.65 (15.45). Almost 35% of the respondents experienced psychological distress (29.29% of the respondents' scores were between 28 and 51, and 5.14% of the respondents' scores were ≥ 52).

Female respondents showed significantly higher psychological distress than their male counterparts (mean (SD) = 24.87 (15.03) vs 21.41 (15.97), $p < 0.001$). People under 18 years had the lowest CPDI scores (mean (SD) = 14.83 (13.41)). Individuals between 18 and 30 years of age or above 60 presented the highest CPDI scores (mean (SD) = 27.76 (15.69) and 27.49 (24.22), respectively). Migrant workers experienced the highest level of distress (mean (SD) = 31.89 (23.51), $F = 1602.501$, $p < 0.001$). CPDI score of respondents in the middle region of China (including Hubei, the centre of the epidemic) was the highest (mean (SD) 30.94 (19.22), $F = 929.306$, $p < 0.001$).

Summary of findings – Q2: Risk/protective factors

Risk: Gender (female), age (between 18 and 30 years of age or above 60 presented the highest CPDI scores), migrant worker, living close to epicentre of outbreak.

Protective: Time (as time passes, distress levels among the public have been significantly descending).

Bo et al. 2020²²

Title and article type

Posttraumatic stress symptoms and attitude toward crisis mental health services among clinically stable patients with COVID-19 in China.

Correspondence.

Study type

Cross-sectional survey,

Country and date of study

China.

March 2020.

Population groups

Adult patients diagnosed with COVID-19.

Methods

714 patients who had tested positive for COVID-19 completed an online assessment which was incorporated as part of the crisis psychological interventions and were invited to participate in this online assessment prior to their discharge from five quarantine facilities ('Fang Cang' hospitals) in Wuhan.

Mean age of the participants was 50.2 ± 12.9 years; 50.9% females.

The amended self-reported PCL-C was used to assess the severity of the posttraumatic stress symptoms associated with the COVID-19.

Summary of findings – Q1: Prevalence

Point prevalence:

The prevalence of significant posttraumatic stress symptoms associated with the COVID-19 was 96.2% (95% CI 94.8%–97.6%).

Summary of findings – Q2: Risk/protective factors

Risk: COVID-19 patients suffered from significant posttraumatic stress symptoms associated with the COVID-19 prior to discharge.

Zhang et al. 2020¹⁴

Title and article type

Impact of the COVID-19 Pandemic on mental health and quality of life among local residents in Liaoning Province, China: A cross-sectional study.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

November 2019 until December 2019, and from January 2020 until February 2020.

Population groups

General population.

Methods

People were asked to participate via WeChat and phone interviews.

263 participants (aged ≥ 18 years) of Chinese nationality who were able to provide verbal informed consent living in Jinzhou, Liaoning Province, mainland China throughout the pandemic period including pre-COVID-19 and COVID-19 periods completed the survey.

A modified validated Chinese version of a 15-item IES (extent of traumatic stress), modified and validated questions regarding negative mental health impacts, social and family support, mental health-related lifestyle changes using the MHLSS.

Summary of findings – Q1: Prevalence

Overall: The overall mean IES score in participants was 13.6 ± 7.7 , reflecting a mild stressful impact. The overall mean scores for the intrusion and avoidance scales in participants were 12.7 ± 2.6 and 13.4 ± 2.9 , respectively. Only the mean intrusive score in males was significantly higher than that in females (13.0 vs 12.3) ($p = 0.027$). There was no association between the mean intrusive scale score and other demographic factors ($p > 0.05$). There was also no association between the mean avoidance scale score and any demographic factors ($p > 0.05$).

Summary of findings – Q2: Risk/protective factors

Protective: Increased social and family support. Spending more time to rest was also associated with a lower IES score in our participants.

The majority of participants reported that they were paying more attention to their mental health, spending more time relaxing, resting and exercising after the onset of the pandemic.

Nguyen et al. 2020²³

Title and article type

People with suspected COVID-19 symptoms were more likely depressed and had lower health-related quality of life: The potential benefit of health literacy.

Original article.

Study type

Cross-sectional survey.

Country and date of study

Vietnam.

14 February–2 March 2020.

Population groups

People who visited the outpatient departments in hospitals and health centres.

Methods

4,029 participants were interviewed from 10 hospitals across Vietnam.

Body mass index (BMI), International Physical Activity Questionnaire, 12-item short form of the health literacy questionnaire.

Depression was assessed using PHQ-9 and HRQoL.

Summary of findings – Q1: Prevalence

Overall: Out of all participants, 35.1% had presented at the outpatient department with suspected COVID-19 symptoms, 44.3% were men, and 7.4% were depressed. The mean scores of health literacy index and HRQoL were 29.9 ± 7.7 and 69.6 ± 17.5 , respectively. The prevalence of depression was significantly higher in people with suspected COVID-19 symptoms, and varied by different groups of age, education, ability to pay for medication, social

status, comorbidity, eating behaviour, physical activity, and had lower HL score ($p < 0.05$). The HRQoL score was significantly lower in the people with suspected COVID-19 symptoms, and varied by different categories of age, gender, marital status, education, occupation, ability to pay for medication, social status, comorbidity, and physical activity ($p < 0.001$). Additionally, the HRQoL score was significantly lower in the people with depression ($p < 0.001$).

Summary of findings – Q2: Risk/protective factors

Protective: Health literacy for improving depression and HRQoL especially for those who have suspected COVID-19 symptoms.

Liu et al. 2020¹⁷

Title and article type

Prevalence and predictors of PTSS during COVID-19 outbreak in China hardest-hit areas: Gender differences matter.

Original study.

Study type

Cross-sectional survey.

Country and date of study

China.

30 January–8 February 2020.

Population groups

General population.

Methods

Survey was sent to 300 Wuhan and surrounding cities residents who agreed to participate in the study via the internet.

PTSS were assessed by the PCL-5, sleep quality and disturbances were assessed using four items of the PSQI.

Summary of findings – Q1: Prevalence

Overall: 20 of 285 participants (7%) met the criteria of PTSS. Female respondents had statistically significant higher PCL-5 scores than male respondents ($p < 0.01$). Respondents both currently and previously in Wuhan had statistically significant higher PCL-5 scores than respondents outside the area ($p < 0.05$). Populations more susceptible to infection had statistically significant higher PCL-5 scores ($p < 0.01$). Respondents with poorer subjective sleep quality, more frequent failure of sleep initiation, more frequent

early waking during sleep, and less sleep duration had statistically significant higher PCL-5 scores ($p < 0.001$).

Summary of findings – Q2: Risk/protective factors

Risks: The study demonstrated higher symptom prevalence in females. In sub-symptom analysis of PCL-5, women suffer more re-experiencing, negative alterations in cognition or mood and hyperarousal.

Wang et al. 2020¹²

Title and article type

Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

6–9 February 2020.

Population groups

General population.

Methods

600 valid psychological state questionnaires were distributed online to the general population. Inclusion criteria include the following: (1) 18 years old and above and (2) completed questionnaire. Exclusion criteria include the following: (1) 17 years old and below and (2) questionnaire responses are not logical.

SAS and SDS were used to measure anxiety and depression.

Summary of findings – Q1: Prevalence

Prevalence: Non-anxiety and non-depression rates were 93.67% and 82.83%, respectively. There was anxiety in 6.33% and depression in 17.17%. Therefore, female anxiety risk was 3.01 times compared to male (95% CI 1.39–6.52). Compared with people below 40 years old, the anxiety risk of people above 40 years old was 0.40 times more (95% CI 0.16–0.99). SDS

results indicated that the difference between education level and occupation was statistically significant ($p = 0.024, 0.005$). Compared to people with a master's degree or above, those with a bachelor's degree group had a depression risk of 0.39 times more (95% CI 0.17–0.87). Compared with professionals, industrial service workers and other staff had a depression risk of 0.31 times more (95% CI 0.15–0.65) and 0.38 times more (95% CI 0.15–0.93).

Summary of findings – Q2: Risk/protective factors

Risks: Female were more anxious than males.

Lei et al. 2020²⁴

Title and article type

Comparison of prevalence and associated factors of anxiety and depression among people affected by versus people unaffected by quarantine during the COVID-19 epidemic in Southwestern China.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

4–10 February 2020.

Population groups

General population (quarantine vs non-quarantine)

Methods

Convenience sampling to select participants via an online questionnaire.

1,593 respondents aged 18 years and above.

Sociodemographic variables, anxiety using SAS and depression using SDS.

Summary of findings – Q1: Prevalence

Prevalence of anxiety and depression was approximately 8.3% and 14.6%, respectively, and the prevalence in the affected group (12.9%, 22.4%) was significantly higher than that in the unaffected group (6.7%, 11.9%).

Summary of findings – Q2: Risk/protective factors

Protective: Knowledge of COVID-19 and establishment of a psychological assistance system (40.4% of participants in this study had received psychological support or counselling).

Risk: Low average household income.

Hao et al. 2020²⁶

Title and article type

Do psychiatric patients experience more psychiatric symptoms during COVID-19 pandemic and lockdown? A case-control study with service and research implications for immunopsychiatry.

Original article.

Study type

Case-control study.

Country and date of study

China.

Psychiatric patients recruited from 19–21 February 2020, and healthy controls recruited from 21–22 February 2020.

Population groups

General population and people with mental health conditions.

Methods

666 psychiatric patients were approached and 76 completed the survey; 130 healthy controls were approached, 109 completed the survey. The total response rate was 83.8%.

Demographic data; physical symptoms resembling COVID-19 infection and self-rating physical health status in the past 14 days; IES-R, DASS-21, ISI and other psychiatric symptoms.

Summary of findings – Q1: Prevalence

Overall: The mean-IES-R score of psychiatric patients (17.7 ± 14.2) was significantly higher than healthy controls (11.3 ± 10.1) ($p < 0.001$). The mean DASS-21 anxiety score of psychiatric patients (6.6 ± 9.0) was significantly

higher than healthy controls (1.5 ± 2.7) ($p < 0.001$). The mean ISI score of psychiatric patients (10.1 ± 7.16) was significantly higher than healthy controls (4.63 ± 4.04) ($p < 0.001$).

Summary of findings – Q2: Risk/protective factors

Risk: Psychiatric patients were at a higher risk of displaying higher levels of symptoms of PTSD, depression, anxiety, stress and insomnia, worries about physical health, anger and irritability and suicidal ideation as compared to healthy controls.

Tan et al. 2020¹¹

Title and article type

Is returning to work during the COVID-19 pandemic stressful? A study on immediate mental health status and psychoneuroimmunity prevention measures of Chinese workforce.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

24–25 February 2020.

Population groups

General workforce.

Methods

673 valid questionnaires were analysed from a total of 1,323 eligible participants who were members of the workforce were aged 18 years or above and lived in Chongqing. They were full-time employees who received approval from the government to return to work during the peak of the COVID-19 epidemic.

Demographic and occupational data; physical symptoms and self-rating physical health status in the past 14 days, the psychological impact of the COVID-19 epidemic was measured using the IES-R. Mental health status was measured using DASS-21. Sleep quality of respondents was measured using ISI, and other psychiatric symptoms and psychoneuroimmunity preventive measures at personal and organisational levels.

Summary of findings – Q1: Prevalence

The prevalence is about half of the prevalence of PTSD among healthcare workers (approximately 20%) during the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003.

Summary of findings – Q2: Risk/protective factors

Protective: Psychoneuroimmunity prevention measures might play a role in causing a low prevalence of psychiatric symptoms observed in our respondents.

Ozamiz-Etxebarria et al. 2020³⁰

Title and article type

Stress, anxiety, and depression levels in the initial stage of the COVID-19 outbreak in a population sample in the northern Spain.

Original article.

Study type

Cross-sectional survey.

Country and date of study

Spain.

11–15 March 2020.

Population groups

General population.

Methods

A questionnaire was sent using Google Forms to individuals via online platforms, social networks, and emails to different associations.

Questionnaires were sent to a total of approximately 2,400 individuals, of whom 1,003 replied; 81.1% females; 56.5% were 18–25 years, 35.6% were 26–60 years and 8% were aged 61 years or older.

The DASS-21 scale was used and sociodemographic information recorded.

Summary of findings – Q1: Prevalence

Depression scores (% overall population)

Male (n = 184) mild, moderate, severe, extremely severe: 19 (8.7%) 9 (4.0%) 5 (2.9%) 3 (1.7%).

Female (n = 551) mild, moderate, severe, extremely severe: 78 (8.6%) 16 (7.1%) 20 (2.3%) 34 (3.0%).

Anxiety scores (% overall population).

Male (n = 184) mild, moderate, severe, extremely severe 9 (4.0%) 12 (5.2%) 3 (1.2%) 7 (3.5%).

Female (n = 792) mild, moderate, severe, extremely severe 64 (7.0%) 102 (12.0%) 29 (3.3%) 28 (3.6%).

Stress scores (% overall population).

Male (n = 184) mild, moderate, severe, extremely severe 20 (9.2%) 11 (5.2%) 5 (2.9%) 1 (0.6%).

Female (n = 792) mild, moderate, severe, extremely severe 78 (8.9%) 79 (9.0%) 28 (3.1%) 9 (1.2%).

Summary of findings – Q2: Risk/protective factors

Protective: Severe and extremely severe levels of stress, anxiety and depression in the sample in the Basque Autonomous Community in Spain were lower than in the study in China. Knowledge of the pandemic might explain the lower levels of stress, anxiety, and depression.

Jahanshahi et al. 2020²⁰

Title and article type

The distress of Iranian adults during the Covid-19 pandemic - More distressed than the Chinese and with different predictors.

Letter to editor.

Study type

Cross-sectional study.

Country and date of study

Iran.

25–28 March 2020.

Population groups

General population.

Methods

1,058 responses from an online survey across all 31 Iranian provinces.

Covid-19 Peritraumatic Distress Index (CPDI) is an index designed to capture specific phobias and stress disorders specific to COVID-19.

Summary of findings – Q1: Prevalence

Overall: The mean (SD) score of CPDI was 34.54 (14.92), higher than the CPDI of 23.65 (15.45) reported in China from 31 January to 10 February 2020.

Summary of findings – Q2: Risk/protective factors

Protective: People who exercised more and had more children felt less distress.

Moreover, Iranian adults who worked from home, at the office, or had not worked during and before COVID-19 all reported lower distress than those who suspended working.

Moccia et al. 2020³³

Title and article type

Affective temperament, attachment style, and the psychological impact of the COVID-19 outbreak: an early report on the Italian general population.

Original article.

Study type

Cross-sectional survey.

Country and date of study

Italy.

10–13 April 2020.

Population groups

General population.

Methods

Sample of 500. Online survey using a snowball sample for those aged 18–75 who spoke and wrote fluent Italian and had been resident in Italy for at least a month. Excluded those with history of mental health disorders.

Assessed distress assessed through Kessler distress scale, attachment using the ASQ, and temperament.

Summary of findings – Q1: Prevalence

62% of the individuals reported no likelihood of psychological distress, whereas 19.4% and 18.6% displayed mild and moderate to severe likelihood, respectively.

Summary of findings – Q2: Risk/protective factors

Cyclothymic (OR: 1.24; $p < 0.001$), depressive (OR: 1.52; $p < 0.001$) and anxious (OR: 1.58; $p = 0.002$) temperaments, and the ASQ 'need for approval' (OR: 1.08; $p = 0.01$) were risk factors for moderate to severe psychological distress compared to no distress, while the ASQ 'confidence' (OR: 0.89; $p = 0.002$) and 'Discomfort with closeness' were protective (OR: 0.92; $p = 0.001$). Cyclothymic (OR: 1.17; $p = 0.008$) and depressive (OR: 1.32; $p = 0.003$) temperaments resulted as risk factors in subjects with moderate-to-severe psychological distress compared to mild distress, while the ASQ 'Confidence' (OR: 0.92; $p = 0.039$) and "Discomfort with closeness" (OR: 0.94; $p = 0.023$) were protective.

Moghanibashi-Mansourieh et al. 2020¹⁰

Title and article type

Assessing the anxiety level of Iranian general population during COVID-19 outbreak. Original article.

Study type

Cross-sectional survey.

Country and date of study

Iran.

1–9 March 2020.

Population groups

General population.

Methods

10,754 respondents who use social media. Twice as many women as men participated in the study and 65% of respondents were aged between 21 and 40 years.

Assessed anxiety using the DASS-21 questionnaire.

Summary of findings – Q1: Prevalence

The severity of anxiety symptoms in 49.1 % of cases was normal, in 9.3% was severe and in 9.8% was very severe.

Summary of findings – Q2: Risk/protective factors

Risk factors: Having a family member, relative or friend who had contracted COVID-19; women felt more anxiety than men (study has majority female participants), and anxiety links were also associated with the amount of time spent following COVID-19 news.

Zhang et al. 2020¹⁹

Title and article type

The differential psychological distress of populations affected by the COVID-19 pandemic.

Letter.

Study type

Cross-sectional survey.

Country and date of study

China.

15–29 February 2020.

Population groups

General population.

Comparison of 3 groups: those newly recovered from COVID-19, individuals under quarantine and general public.

Methods

App-based survey of population of Zhongshan, one of prefecture-level cities in Guangdong province (n = 205, 56.1% female, 41.9% college educated).

Chinese version of PHQ-9 and GAD-7 scale.

Summary of findings – Q1: Prevalence

Prevalence depression:

- People experiencing COVID-19: 29.2%
- People under quarantine: 9.8%:

- General public: 34.7%
- $p = 0.016$.

Prevalence anxiety:

- People experiencing COVID-19: 20.8%
- People under quarantine: 10.2%
- General public: 19.6%
- $p = 0.154$.

Summary of findings – Q2: Risk/protective factors

Not reported.

Tian et al. 2020¹⁸

Title and article type

Psychological symptoms of ordinary Chinese citizens based on SCL-90 during the level I emergency response to COVID-19.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

31 January–2 February 2020.

Population groups

General population.

Methods

Snowball sample, online survey.

The total sample was 1,060 (93.64% of participants recruited) from all the provinces in China. The sample comprise 549 males and 511 females aged 13 to 76 years (mean (SD) = 35.01 (12.8)).

Outcome: SCL-90 tool; the global severity index (GSI) was considered the overall index of psychological symptoms in this study, which was calculated as the mean of all 90 items in SCL-90. The whole sample was divided into two groups of high risk and low risk by the cut-off point of GSI T-score = 63.

Summary of findings – Q1: Prevalence

Point prevalence:

High-risk group: 12.5%

Low-risk group: 87.5%.

Summary of findings – Q2: Risk/protective factors

Risk factors: Possibly under 18 and over 50; lower education; females and marital status (divorced/widowed).

Mazza et al. 2020³¹

Title and article type

A nationwide survey of psychological distress among Italian people during the COVID-19 pandemic: immediate psychological responses and associated factors.

Original article.

Study type

Cross-sectional study.

Country and date of study

Italy.

18–22 March 2020.

Population groups

General population.

Methods

Anonymous online questionnaire on an online survey platform, which participants accessed via a designated link sent through the main means of communication and social networks to reach a large number of people.

2,766 participants, 71.7% females; mean age of the sample was 32.94 years (13.2; range 18–90 years).

Depression, anxiety and stress measured using DASS-21.

Summary of findings – Q1: Prevalence

Point prevalence: Depression: 67.3% average level, 17% high range, 15.4% extremely.

Anxiety: 81.3% average level, 7.2% high range, 11.5% extremely high range.

Stress: 72.8% average range, 14.6% high range, 12.6% extremely high range.

[Latest data only about 6% of Int. J. Environ. Res. Public Health 2020, 17, 3165 12 of 14 adults aged 18–69 report depressive symptoms.]

Summary of findings – Q2: Risk/protective factors

Risk factors: Female gender, association between a history of stressful situations and was associated with increased anxiety, depression, and stress.

Sønderskov et al. 2020⁷

Title and article type

The depressive state of Denmark during the COVID-19 pandemic.

Original article.

Study type

Cross-sectional survey.

Country and date of study

Denmark.

31 March–6 April 2020.

Population groups

General population.

Methods

Measures wellbeing using the WHO-5 scale.

Compared two properties of the WHO-5 wellbeing scale from this COVID-19 Consequences Denmark Panel Survey (CCDPS) 2020 with those from a previous survey, the Danish Mental Health and Well-Being Survey (DMHWBS) 2016.

Summary of findings – Q1: Prevalence

Before and after prevalence:

The proportion of respondents from the CCDPS 2020 (this survey) with WHO-5 scores < 50 was significantly higher than for the DMHWBS 2016 survey for the total sample (25.4% vs 22.5%, $p < 0.001$) and for females (28.8% vs 24.6%, $p = 0.005$), but not for males (21.8% vs 20.0%, $p = 0.11$).

Summary of findings – Q2: Risk/protective factors

Risks: Female gender.

Zhu et al. 2020²⁵

Title and article type

The immediate mental health impacts of the COVID-19 pandemic among people with or without quarantine managements.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

12 February– 17 March 2020.

Population groups

General population and healthcare workers.

Methods

App-based survey of 1,443 participants under quarantine and 836 participants without quarantine (including non-frontline medical personnel and community support workers).

General psychological symptoms, anxiety and depression measured using SRQ-20, GAD-7 and PHQ-9.

Summary of findings – Q1: Prevalence

Screening positive:

Those in quarantine

SRQ-20: 15%

GAD-7: 22.2%

PHQ-9: 22.1%.

Without quarantine

SRQ-20: 13.4%

GAD-7: 20.8%

PHQ-9: 20.8%.

No significant difference was found for the screening-positive rate of SRQ-20, GAD-7, and PHQ-9 between participants with and without quarantine.

Summary of findings – Q2: Risk/protective factors

Risks: Impacts on daily life.

Özdin et al. 2020³²

Title and article type

Levels and predictors of anxiety, depression and health anxiety during COVID-19 pandemic in Turkish society: The importance of gender.

Original article.

Study type

Cross-sectional survey.

Country and date of study

Turkey.

14–16 April 2020

Population groups

General population.

Methods

Data were collected through an online questionnaire from individuals aged 18 years and above living in various provinces of Turkey.

343 individuals completed the questionnaire. The sample size was calculated based on an expected prevalence of 6.3%¹² Type 1 error of 5% and study power of 95% based on a similar previous study. The calculation showed that at least 159 individuals would need to be enrolled. However, to be able to perform subgroup comparisons within the main study group, we planned to enrol 318 participants.

Sociodemographic data form, anxiety and depression measured using Anxiety and Depression Scale (HADS) and Health Anxiety Inventory (HAI).

Summary of findings – Q1: Prevalence

Point prevalence: In terms of HADS cut-off points, 23.6% (n = 81) of the population scored above the depression cut-off point, and 45.1% (n = 155) scored above the cut-off point for anxiety.

Summary of findings – Q2: Risk/protective factors

Risks: Depression scores were significantly higher among women, individuals living in an urban area, individuals with COVID+ patients among friends or relatives, individuals with current or previous psychiatric illness history and individuals with chronic disease.

Anxiety scores were significantly higher among women, individuals with a COVID+ patient among friends and relatives and individuals with a current psychiatric disease.

Zhou et al. 2020²⁷

Title and article type

Mental health response to the COVID-19 outbreak in China.

Commentary.

Study type

Cross-sectional survey.

Country and date of study

China.

25 February–9 March 2020.

Population groups

Outpatients from psychiatric department.

Methods

2,065 out of 3,441 patients completed an online survey via the WeChat-based survey program Questionnaire Star (589 new patients and 1,476 existing patients).

Anxiety (defined as a total score > 5 on the GAD-7), depression (defined as a total score > 5 on the PHQ-5), and insomnia (defined as a total score ≥ 8 on the ISI).

Summary of findings – Q1: Prevalence

Overall: 24.5% of new patients, including those with anxiety, depression, insomnia, and psychosis could not receive timely diagnoses and treatment. Similarly, 22.0% of existing patients with diagnosed mental disorders, including depression, bipolar disorders and schizophrenia could not receive routine psychiatric care because of suspended hospital visits. Consequently, 18.1% of patients have self-reduced medication dosages, and 17.2% of

patients stopped taking their medication because they could not gain access to prescriptions from physicians during the outbreak.

[As the lifetime prevalence of mental disorders is 16.6% among adults in China.]

Summary of findings – Q2: Risk/protective factors

Risks: Access to medication and healthcare during pandemic.

Ni et al. 2020¹⁵

Title and article type

Mental health, risk factors, and social media use during the COVID-19 epidemic and cordon sanitaire among the community and health professionals in Wuhan, China: Cross-sectional survey.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

18-25 February 2020.

Population groups

General population and healthcare workers.

Methods

Online survey via WeChat (prevalence reaching over 90% in major cities in China); adults aged 18 years or older in Wuhan city during lockdown were recruited for this study.

1,577 community-based adults and 214 health professionals in Wuhan. Participants who were diagnosed with COVID-19 infections were excluded.

Anxiety and depression measured using GAD-2 (cut off ≥ 3) and PHQ-2 (cut off ≥ 3).

Summary of findings – Q1: Prevalence

Prevalence: 1577 community-based adults, around one-fifth of respondents reported probable anxiety (n = 376, 23.84%, 95% CI 21.8–26.0) and probable

depression (n = 303, 19.21%, 95% CI 17.3–21.2). Similarly, of the 214 health professionals, about one fifth of surveyed health professionals reported probable anxiety (n = 47, 22.0%, 95% CI 16.6–28.1) or probable depression (n = 41, 19.2%, 95% CI 14.1–25.1).

Summary of findings – Q2: Risk/protective factors

Protective: Social support was associated with less probable anxiety and depression in both the community and health professionals.

Children and young people

Xie et al. 2020⁸

Title and article type

Mental health status among children in home confinement during the coronavirus disease 2019 outbreak in Hubei Province, China.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

28 February–4 March 2020.

Population groups

Children.

Methods

Online survey of students in grades 2–6 in two primary schools in Hubei.

1,784 responses, 43.3% female.

Questionnaire included optimism about the epidemic, whether they worried about being infected by COVID-19, and depressive and anxiety symptoms measured by the CDI-S and the Screen for Child Anxiety Related Emotional Disorders.

Summary of findings – Q1: Prevalence

Point prevalence: A total of 403 students (22.6%) and 337 students (18.9%) reported depressive and anxiety symptoms, respectively.

These prevalence are higher than those found in other surveys in primary schools in China.

Summary of findings – Q2: Risk/protective factors

Not reported.

Zhou et al. 2020⁹

Title and article type

Prevalence and socio-demographic correlates of psychological health problems in Chinese adolescents during the outbreak of COVID-19.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

8–15 March 2020.

Population groups

Adolescents.

Methods

National web-based survey; non-probability sampling.

8,079 students from junior and senior high school across all 21 Chinese provinces; 12–18 years old (median = 16); 53.5% female; 61.6% living in rural areas.

Anxiety and depression assessed using PHQ-9 and the GAD-7 questionnaire.

Summary of findings – Q1: Prevalence

Point prevalence: The prevalence of depressive symptoms, anxiety symptoms, and a combination of depressive and anxiety symptoms was 43.7%, 37.4% and 31.3%, respectively.

Comparison to national prevalence (depression): Reports of pre-COVID general prevalence of depressive symptoms among Chinese children and adolescents was 15.4%; study prevalence rates notably increased.

Summary of findings – Q2: Risk/protective factors

Risk factors: Female gender, senior high school and living in Hubei Province were risk factors for depressive and anxiety symptoms.

Protective factors: Awareness of COVID-19 (knowledge, prevention and control measures) were protective factors against depressive and anxiety symptoms.

Cao et al. 2020²⁸

Title and article type

The psychological impact of the COVID-19 epidemic on college students in China.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

No dates.

Population groups

Medical students.

Methods

Cluster sampling of undergraduates of Changzhi medical college were asked about their mental health during the COVID-19 outbreak using structured questionnaires.

43 students took part, 69.6% female. Respondents lived in Hubei Province; 43.83% lived in rural areas, 95.4% lived with their parents, and 52.86% of the parents of students did not have a steady income. Most participants (99.45%) had no relatives or acquaintances who were infected with COVID-19.

Demographic information and anxiety measured using GAD-7.

Summary of findings – Q1: Prevalence

Point prevalence: 75.1% had no symptoms of anxiety, students with mild, moderate and severe anxiety were 21.3%, 2.7% and 0.9%, respectively. This

survey indicated that 24.9% of college students were afflicted with experienced anxiety because of the COVID-19 outbreak.

No significant difference in gender or region was indicated.

Summary of findings – Q2: Risk/protective factors

Not reported.

Liang et al. 2020²⁹

Title and article type

The effect of COVID-19 on youth mental health.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

30 January 2020.

Population groups

Young people.

Methods

Online survey with 584 responses mainly from young people aged 14–35; included Knowledge about COVID-19.

Mental health was assessed using GHQ–12, PTSD checklist civilian version and SCSQ (coping styles).

Summary of findings – Q1: Prevalence

Point prevalence: Approximately 40.4% of the participants reported having psychological problems and there were 14.4% of sampled youth with PTSD symptoms.

Summary of findings – Q2: Risk/protective factors

Risk factors: Low education level, enterprise employee, PTSD symptom and negative coping styles.

Healthcare workers

Wu et al. 2020³⁷

Title and article type

A comparison of burnout frequency among oncology physicians and nurses working on the front lines and usual wards during the COVID-19 epidemic in Wuhan, China.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

13–17 March 2020.

Population groups

Deployed frontline workers vs non-frontline workers.

Methods

Convenience sample, participants were redeployed but invited in ratio of 1:1 of frontline: usual wards.

190 participants: 96 frontline participants from department of medical oncology deployed to one designated hospital, and three mobile hospitals, vs 94 colleagues from the same institution who remained in their usual wards; age (median 32, 33 years).

Staff burnout using MBI; Burnout was defined as a high level of emotional exhaustion greater than 27 and/or a high level of depersonalization greater than 10; frequency of participants with a low sense of personal accomplishment less than 31.

Summary of findings – Q1: Prevalence

Point prevalence comparison: Frontline workers had a lower frequency of burnout (13% vs 39%; $p < 0.0001$) and were less worried about being infected compared with the usual ward group.

The frequency of a low level of personal accomplishment is lower in the frontline group than in the usual ward group (39% vs. 61%; $p < 0.002$).

More participants from the front line (76%) strongly disagree or disagree that they felt more burnout now compared with before the COVID-19 crisis.

Summary of findings – Q2: Risk/protective factors

Not reported.

Naser Moghadasi et al. 2020⁴¹

Title and article type

Evaluation of the level of anxiety among Iranian multiple sclerosis fellowships during the outbreak of COVID-19.

Letter to editor.

Study type

Cross-sectional survey.

Country and date of study

Iran.

6 March 2020.

Population groups

Multiple sclerosis specialists.

Methods

All Iranian multiple sclerosis fellowships invited, only 78% responded.

14 multiple sclerosis fellowships; 50% females; mean age 40.58 ± 4.44 years.

Anxiety measured by BAI.

Summary of findings – Q1: Prevalence

Point prevalence: 14.3% had mild anxiety; no differences between sexes.

Summary of findings – Q2: Risk/protective factors

None reported.

Zhang et al. 2020³⁴

Title and article type

Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

19 February–6 March 2020.

Population groups

Medical vs non-medical staff.

Methods

National online survey, used purposive sampling.

2,182 subjects; non-medical health workers (n = 1,255), medical health workers (n = 927; 680 medical doctors and 247 nurse); 64.2 % female.

Insomnia, anxiety, depression, somatization, obsessive-compulsive symptoms and phobic anxiety assessed using ISI, SCL-90-R, and PHQ-4, which included a 2-item anxiety scale and a 2-item depression scale (PHQ-2).

Summary of findings – Q1: Prevalence

Point prevalence comparison: Compared with non-medical health workers, medical health workers showed higher prevalence rates of insomnia (38.4 vs 30.5%, $p < 0.01$), anxiety (13.0 vs 8.5%, $p < 0.01$), depression (12.2 vs 9.5%;

p = 0.04), somatization (1.6 vs. 0.4%; p < 0.01), and obsessive-compulsive symptoms (5.3 vs. 2.2%; p < 0.01).

Summary of findings – Q2: Risk/protective factors

Risk factors: Living in rural areas, being female, and being at risk of contact with COVID-19 patients were the most common risk factors for insomnia, anxiety, obsessive-compulsive symptoms and depression (p < 0.01 or 0.05).

Tan et al. 2020³⁶

Title and article type

Psychological impact of the COVID-19 pandemic on health care workers in Singapore.

Letter to editor.

Study type

Cross-sectional survey.

Country and date of study

Singapore.

19 February–13 March 2020.

Population groups

Medical vs non-medical staff.

Methods

Self-administered survey; invited 500 people from two major tertiary institutions.

470 healthcare workers: medical (physicians, nurses; 296) and nonmedical personnel (allied health professionals, pharmacists, technicians, administrators, clerical staff, and maintenance workers; 174); 68.3% female; 31 years (28–36 years).

Depression, anxiety, and stress measured using DASS-21 and IES-R.

Summary of findings – Q1: Prevalence

Point prevalence comparison: 14.5% screened positive for anxiety, 8.9% for depression, 6.6% for stress and 7.7% for clinical concern of PTSD.

The prevalence of anxiety was higher among non-medical health care workers than medical personnel (20.7% vs 10.8%; adjusted prevalence ratio, 1.85 [95% CI 1.15 to 2.99]; $p = 0.011$), after adjustment.

Summary of findings – Q2: Risk/protective factors

None reported.

Lu et al. 2020³⁵

Title and article type

Psychological status of medical workforce during the COVID-19 pandemic: A cross-sectional study.

Original article.

Study type

Cross-sectional study.

Country and date of study

China.

25–26 February 2020.

Population groups

Medical vs non-medical staff.

Methods

Online survey with participants recruited from a single centre.

2,299 eligible participants enrolled from the single institution, including 2,042 medical staff (doctors, nurses) and 257 administrative staff including logistics; < 30 years and age band 31-40 years (40%).

Summary of findings – Q1: Prevalence

Point prevalence comparison: The proportion of medical staff group on moderate and severe fear was higher than that in the administrative staff group (70.6% vs 58.4%).

22.6% of medical staff showed mild to moderate anxiety and 2.9% were severe; the corresponding proportions of administrative staff were 17.1% and

2.9%. 11.8% of the medical staff presented with mild to moderate depression and 0.3% with severe depression.

Prevalence comparison: The severity of fear, anxiety and depression were significantly different between two groups.

Summary of findings – Q2: Risk/protective factors

Risk factors: Factors contributed to expansion of psychological pressure included working in the isolation ward ($p < 0.001$), worrying about being infected ($p < 0.001$), shortage of the protective equipment ($p < 0.001$), the epidemic would never be controlled ($p = 0.002$), frustrated with unsatisfactory results on work ($p < 0.001$) and feeling lonely with being isolated from loved ones ($p = 0.005$).

Chew et al. 2020⁴⁵

Title and article type

A multinational, multicentre study on the psychological outcomes and associated physical symptoms amongst healthcare workers during COVID-19 outbreak.

Original article.

Study type

Cross-sectional survey.

Country and date of study

Singapore and India.

19 February–17 April 2020.

Population groups

Frontline staff.

Methods

Participants recruited from five major hospitals but sampling not described.

906 healthcare workers (doctors, nurses, allied healthcare workers, technicians, administrators, clerical staff and maintenance workers; 480 from Singapore, 426 from India); 64.3% were female; median age was 29 years (interquartile range: 25–35 years); Indian (55.1%), Chinese (33.7%) and Malay (4.8%) ethnicity; median age (interquartile range) 29 years (25–35 years).

Depression, anxiety, stress and PTSD using DASS-21 and the IES-R instrument.

Summary of findings – Q1: Prevalence

Point prevalence: Anxiety prevalence (15.7%; 8.7% moderate to extremely severe anxiety), depression (10.6%; of which 5.3% was moderate to very severe), stress (5.2%; of which 42.6% were moderate to severe) and PTSD (7.4%, of which 3.8% demonstrated moderate to severe levels).

Country comparison: No difference in psychological outcomes between study participants from the two countries.

Summary of findings – Q2: Risk/protective factors

None reported.

Cai et al. 2020³⁸

Title and article type

A cross-sectional study on mental health among health care workers during the outbreak of Coronavirus disease 2019.

Letter to editor.

Study type

Cross-sectional survey.

Country and date of study

China.

No dates given.

Population groups

Workers with public health experience vs those without public health experience.

Methods

Workers recruited from one province; sampling not described. 1,521 health care workers from Jiangsu Province; 147 with public health emergency experience; 1,374 people had no experience; 75.5% female. 43.5% 18–30 years; 38.3% 31–40 years; 18.1% 41+ years. Symptom intensity assessed by SCL-90, CDRISC and SSRS.

Summary of findings – Q1: Prevalence

Point prevalence: Prevalence of psychological abnormality was 14.1%.

Prevalence comparison: Prevalence among public health experienced workers was significantly decreased compared with those with no experience (14.8% vs 8.2%; $p = 0.029$).

Summary of findings – Q2: Risk/protective factors

Protective factors: Resilience and social support could significantly predict the mental health in healthcare workers without public health experience.

Li et al. 2020⁴⁰

Title and article type

Prevalence, risk factors, and clinical correlates of insomnia in volunteer and at home medical staff during the COVID-19.

Letter to editor.

Study type

Cross-sectional survey.

Country and date of study

China.

15–22 February 2020.

Population groups

Medical workers (Wuhan vs other provinces).

Methods

Online survey, sampling not described. 948 medical staff personnel (219 volunteered to Wuhan, 729 stayed at Ningbo); 78.08% women; 65% nurses. AIS and SRQ-20 were administered to screen the sleep symptoms (i.e. ≥ 6 in AIS) and general psychological symptoms (i.e. ≥ 7 in SRQ-20).

Summary of findings – Q1: Prevalence

Point prevalence comparison: Medical staff in Wuhan had higher insomnia than in Ningbo (58.90 vs 24.97%; $p = 0.001$) and had more general psychological symptoms (13.24 vs 8.64%; $p = 0.044$).

Summary of findings – Q2: Risk/protective factors

Risk factors: Among the medical staff in Wuhan, the symptoms of insomnia were related to gender ($p = 0.042$), education ($p = 0.0076$), and general

psychological symptoms ($p < 0.01$). Among the medical staff in Ningbo, insomnia was not only related to general psychological symptoms ($p < 0.01$) but also related to marital status ($p = 0.046$).

Li et al. 2020⁴³

Title and article type

Psychological impact on women health workers involved in COVID-19 outbreak in Wuhan: a cross-sectional study.

Letter to editor.

Study type

Cross-sectional survey.

Country and date of study

China.

8–15 February 2020.

Population groups

Frontline staff (female).

Methods

Online survey used an online platform and WeChat; participants recruited from single centre. 5,317 women healthcare workers (doctors, nurses and medical technicians) in all clinical departments of Tongji Hospital (Wuhan). Depression and anxiety measured by PHQ-9, GAD-7 Scale and IES-R.

Summary of findings – Q1: Prevalence

Point prevalence: 14.2%, 25.2% and 31.6% had depression, anxiety and acute stress symptoms.

Summary of findings – Q2: Risk/protective factors

Risk factors: Those who have more than 10 years of working, those with chronic non-communicable diseases and mental disorders, and two or more children were risk factors for stress, depression and anxiety. Drinking was a

common risk factor for both depression and anxiety symptom. Protective factor: Exercise habit was a common protective factor of depression, anxiety and acute stress symptoms.

Du et al. 2020³⁹

Title and article type

Psychological symptoms among frontline healthcare workers during COVID-19 outbreak in Wuhan.

Letter to editor.

Study type

Cross-sectional survey

Country and date of study

China.

13–17 February 2020.

Population groups

Frontline staff (Wuhan vs non-Wuhan).

Methods

Smartphone survey; participants recruited/deployed from four tertiary hospitals (30% response rate for Wuhan/local healthcare workers and 67% for nonWuhan/outreach healthcare workers). 134 frontline healthcare workers (60 from two Wuhan-based hospitals and 74 from two nonWuhan hospitals; 47 doctors; 55 nurses; 32 support staff), 60.5% female, aged 36 years (SD 8.05) years.

Perceived stress measured using the PSS, depression measured using the Chinese-version of BDI-II, anxiety measured using the Chinese-version of the BAI.

Summary of findings – Q1: Prevalence

Point prevalence: Prevalence of elevated depressive (BDI-II scores ≥ 14) and anxiety symptoms (BAI scores ≥ 8) was 12.7%; 20.1% had at least mild

depressive and anxiety symptoms; 59% had moderate-to-severe levels of perceived stress. Point prevalence comparison: Locals had greater prevalence of at least mild depression than those deployed to Wuhan (7.27% vs 4.54%, $p < 0.05$).

Summary of findings – Q2: Risk/protective factors

Risk factors: A lack of perceived psychological preparedness, lacking perceived self-efficacy to help the patients; lacking family support; greater perceived stress; or having poor sleep quality were associated with both elevated depressive and anxiety symptoms. Lacking knowledge about COVID-19, higher education attainment, having family or friends infected the virus were also associated with elevated anxiety symptoms.

Huang et al. 2020⁴⁴

Title and article type

Mental health survey of medical staff in a tertiary infectious disease hospital for COVID-19.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

7–14 February 2020.

Population groups

Frontline healthcare staff.

Methods

A cluster sampling method was adopted. 230 clinical frontline medical staff; male 18.7%, female 81.3%; the age is 20–59 (32.6 ± 6.2) years old; 30.4% doctors, 69.6% are nurses. SAS and PTSD-SS were used to investigate the mental health status of medical staff.

Summary of findings – Q1: Prevalence

Point prevalence: Anxiety prevalence rate was 23.04% (severe, moderate, mild: 2.17%, 4.78%, and 16.09%). Stress prevalence rate is 27.39%.

Summary of findings – Q2: Risk/protective factors

Risks: Female and nursing staff anxiety was higher than that of males and doctors ($p < 0.05$).

Lai et al. 2020⁴⁷

Title and article type

Factors associated with mental health outcomes among health care workers exposed to Coronavirus disease 2019.

Original article.

Study type

Cross-sectional study.

Country and date of study

China.

29 January– 3 February 2020.

Population groups

Healthcare workers.

Methods

Across 34 hospitals in China, one clinical department randomly sampled from each selected hospital and all healthcare workers in this department were asked to participate. 1,257 healthcare workers (60.8% nurses and 39.2% physicians); 76.6% female. Most were aged 26–40 years (64.7%). 60.5% worked in Wuhan, 20.8% worked in Hubei province outside Wuhan, and 18.8% worked outside Hubei province. Demographic data recorded and PHQ-9, GAD-7, ISI and IES-R used.

Summary of findings – Q1: Prevalence

Point prevalence: A considerable proportion of participants had symptoms of depression 50.4%, anxiety 44.6% insomnia 34.0%, and distress 71.5%.

Summary of findings – Q2: Risk/protective factors

Risks: Nurses, women, those working in Wuhan and frontline workers reported more severe symptoms on all measurements of depression, anxiety, and distress.

Kang et al. 2020⁵⁰

Title and article type

Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: A cross-sectional study.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

29 January–4 February 2020.

Population groups

Healthcare workers.

Methods

Doctors or nurses working in Wuhan were invited to participate. 994 participants, including 85.5% female, most aged 25–40 years (63.4%); 18.4% doctors and 81.6 nurses completed the survey. PHQ-9, GAD-7, ISI, and IES-R scores were measured.

Summary of findings – Q1: Prevalence

Point prevalence: 36% of the medical staff had subthreshold mental health disturbances, 34.4% had mild disturbances, 22.4% had moderate disturbances, and 6.2% had severe disturbances. 36.3% had received psychological materials, 50.4% had obtained psychological resources available through media, and 17.5% had participated in group psychological counselling.

Summary of findings – Q2: Risk/protective factors

Risk: Exposure of close contacts to COVID-19. **Protective:** Personalised sources of support such as publication-style psychological materials and psychological resources available from media. continuous mental healthcare services are necessary even for subthreshold and mild psychological reactions during this epidemic to attenuate the possibility of escalating complications.

Chung et al. 2020⁵¹

Title and article type

Staff mental health self-assessment during the COVID19 outbreak.

Letter to editor.

Study type

Cross-sectional survey.

Country and date of study

China.

14–25 February 2020.

Population groups

Healthcare workers.

Methods

Self-assessment questionnaire sent via the COVID-19 newsletter (email) and hospital smartphone app, to all hospital staff in the Hong Kong East cluster. A total of 8,418 full-time equivalent staff in six hospitals were invited to complete.

69 staff responded within 10 days of launching the online survey, including nurses (34.8%), clerical and administrative staff (33.3%), healthcare assistants (11.6%), and allied health staff (8.7%), doctors (4.3%), management staff (2.9%), and others (4.3%). PHQ-9 used to measure depression.

Summary of findings – Q1: Prevalence

Point prevalence: The mean PHQ-9 score was 7.6, 34.8% respondents having a score mild depression, 14.5% moderate depression. 2.9% requested support and were reassured after a single phone contact by the psychiatric

nurse. 44.9% respondents provided free text about their concerns, with 45.2% about the sufficiency of personal protective equipment and 19.6% about being infected with COVID-19.

Summary of findings – Q2: Risk/protective factors

None reported.

Wang et al. 2020⁴⁸

Title and article type

Sleep disturbances among medical workers during the outbreak of COVID-2019.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

30 January–7 February 2020.

Population groups

Healthcare workers (paediatrics).

Methods

A self-reported questionnaire survey was conducted at the Children's Healthcare Centre of Renmin Hospital of Wuhan University, Wuhan, China.

A total of 123 healthcare workers completed a self-reported questionnaire survey on their smartphone, 10% male and 90% female healthcare workers, with an average age of 33.75 ± 8.41 years.

Sociodemographic characteristics, COVID-19 epidemic-related factors, PSQI, SAS and SDS.

Summary of findings – Q1: Prevalence

Point prevalence: 38% of paediatric healthcare workers were suffering from sleep disturbance, in addition, 7% and 25% of paediatric healthcare workers had anxiety and depression.

Summary of findings – Q2: Risk/protective factors

Risks: Being an only child, exposure to COVID-19 patients and depression was associated with sleep disturbance.

Chen et al. 2020⁴⁶

Title and article type

Prevalence of self-reported depression and anxiety among pediatric medical staff members during the COVID19 outbreak in Guiyang, China.

Original article.

Study type

Cross-sectional survey.

Country and date of study

China.

Dates not provided.

Population groups

Healthcare workers (paediatrics).

Methods

Self-completion questionnaire for pediatric medical staff in Guiyang, China. Data were collected through an anonymous, self-rated questionnaire.

The questionnaire consisted of three parts: basic demographic data, the SDS and the SAS. Subjects who had worked in high-risk locations, such as COVID-19 wards, fever clinics, infectious diseases departments, emergency rooms, pulmonary medicine departments or X-ray laboratories, were classified as having had high-risk work exposure.

105 response; 90.5% of respondents were female; mean age of 32.6 ± 6.5 years.

Summary of findings – Q1: Prevalence

Point prevalence: Among the 105 respondents the incidences of total, slight, moderate and severe anxiety cases were 18.1%, 10.5%, 5.7%, and 1.9%, respectively. The incidences of total, slight, moderate and severe depression cases were 29.5%, 21.0%, 4.8% and 3.8%. The mean SAS and SDS scores were significantly higher than the norms of SAS in the general Chinese population (40.3 ± 11.5 vs 29.8 ± 10.1 for SAS, 47.1 ± 10.5 vs 41.9 ± 10.6 for SDS, $p < 0.001$).

Summary of findings – Q2: Risk/protective factors

Risks: Workers who had COVID-19 exposure experience were likely to have higher rates of anxiety accompanied by depression than respondents who had no exposure experience.

Abbreviations for validated mental health scales: Insomnia Severity Index (ISI); the Symptom Check List-revised (SCL-90-R); the Patient Health Questionnaire-4 (PHQ-4), which included a 2-item anxiety scale and a 2-item depression scale (PHQ-2); Depression, Anxiety, and Stress Scales (DASS-21); Impact of Events Scale–Revised (IES-R); Maslach Burnout Inventory–Medical Personnel (MBI); Patient Health Questionnaire-9 (PHQ-9); WHO-Five Well-Being Index (WHO-5); Center for Epidemiology Scale for Depression (CES-D); Pittsburgh Sleep Quality Index (PSQI): scale; Generalized Anxiety Disorder-7 (GAD-7); numeric rating scale (NRS) on fear; Hamilton Anxiety Scale (HAMA); Hamilton Depression Scale (HAMD); the General Self-Efficacy Scale (GSES), the Stanford Acute Stress Reaction (SASR) questionnaire; the Social Support Rate Scale (SSRS); Self-Assessment Scale for Posttraumatic Stress Disorder (PTSD-SS); self-rating depression scale (SDS) and self-rating anxiety scale (SAS), the Stress Response Questionnaire (SRQ); health related quality of life (HRQoL); Swanson, Nolan, and Pelham scale (SNAP-IV); The Child Stress Disorders Checklist (CSDC); Beck Anxiety Inventory (BAI); Beck Depression Inventory-II (BDI-II) Perceived 64 Stress Scale (PSS), Connor-Davidson resilience scale (CD-RISC); Athens Insomnia Scale (AIS); Self-Reporting Questionnaire-20 (SRQ-20); Posttraumatic Stress Disorder Checklist (PCL-5); Simplified Coping Style Questionnaire (SCSQ); PTSD Checklist– Civilian Version (PCL-C); Mental Health Lifestyle Scale (MHLSS); PTSD Checklist for DSM-5 (PCL-5); Warwick-Edinburgh Mental Well-being Scale (WEMWBS); ask suicide-screening questions (ASQ); Children’s Depression Inventory–Short Form.

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