

# Mental health research in the Arab region in response to the COVID-19 pandemic: a scoping review

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## ABSTRACT

**Background** The ongoing pandemic has led to a global surge in coronavirus disease 2019 (COVID-19)-related mental health research. However, most related publications come from Western countries or China, and their findings cannot always be extrapolated to Arab countries.

**Aims** This study provides a quantitative and qualitative analysis of mental health research pertaining to Arab countries' response to the COVID-19 pandemic.

**Methods** A scoping review of the World Health Organization (WHO) COVID-19 database for publications on mental health was conducted by authors affiliated with Arab institutions, including articles from inception to 24 October 2020. The included publications were evaluated for their national distribution, international collaboration, publication type, and main research themes. Methodological quality analysis of the included research studies was performed using the original and modified versions of the Newcastle–Ottawa Scale.

**Results** In total, 102 articles were included in this study, averaging 4.6 articles per Arab country. Most of the articles emerged from the Kingdom of Saudi Arabia, Jordan, and Egypt. A majority of publications demonstrated international collaboration. Most of the publications were original research studies and cross-sectional in design. The predominant research theme was examining the pandemic's mental health effects on the general population and healthcare workers. Only 28.0% of the studies were of high methodological quality, whereas 41.5% were moderate and 30.5% were low in quality.

**Conclusions** Mental health research in response to the COVID-19 pandemic in the Arab region has quantitative and qualitative shortfalls. Arab institutions need to respond to the pandemic promptly in order to address the delineated research gap and to generate higher-quality research output.

## INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic is having a profound impact on all aspects of society, including mental well-being. The mental health burden from the ongoing pandemic has been of significant interest to the international scientific community at large and researchers involved in the field of mental

## Key messages

### What is already known on this topic

- Arab countries' mental health research contributions are low despite a high disease burden in the region.
- Evaluation of mental health research in the Arab region concerning the COVID-19 pandemic is promptly needed.

### What this study adds

- The Arab world's mental health research output has multifaceted quantitative and qualitative shortfalls.
- A wide gap exists in the Arab world's COVID-19-related mental health research.

### How this study might affect research, practice or policy

- This study sheds light on areas of urgent mental health research needs in the region, along with other considerations for potential research improvement.

health.<sup>1–3</sup> This has led to a remarkable acceleration of research during the pandemic, with over 43 000 articles published on COVID-19 in the Scopus and PubMed databases as of 26 August 2020. Of these, 3070 pertained to mental health.<sup>2</sup> Western countries, China, and India contributed the most, with 2928 (95%) publications. However, only 13 Arab countries out of 22 (Saudi Arabia, Lebanon, Egypt, Jordan, the United Arab Emirates, Tunisia, Morocco, Oman, Qatar, Bahrain, Libya, Sudan, and Syria) contributed with 94 (3%) publications.<sup>2</sup> This is not surprising, as pre-pandemic research has shown that Arab countries produced only 1% of the global publications in mental health research.<sup>4</sup> Arab countries' contributions to the global research on mental health have been plagued by challenges of stigma, conflict, scarce funding, insufficient training, and a shortage of reliable assessment tools.<sup>5</sup> This clearly indicates that research output in the Arab region does not meet certain standards and is not commensurate with the magnitude of the disease burden in the area, as psychiatric disorders are one of

the leading causes of disability in the region. Calls have been made to close the scientific literature gap between the Arab region and the rest of the world and improve the quality of research.<sup>5</sup> Culturally relevant research is essential as it equips policymakers to make informed health policy decisions. This is significant because research conducted elsewhere may be inapplicable to the Arab context as it may not be generalisable to the Arab population due to differences in genetics, culture, socioeconomic standards, and health-care systems.

The need for research to mitigate mental health consequences was highlighted early in the pandemic by a panel of experts convened by the UK Academy of Medical Sciences.<sup>5</sup> However, concerns have arisen that the rapid production of research to address the impact of mental health issues linked to the COVID-19 pandemic has been carried out at the expense of sacrificing scientific rigour. This panel laid out immediate and long-term priorities for mental health research and recommended obtaining high-quality data on the mental health impact of the COVID-19 pandemic across the whole population and specifically among vulnerable groups.<sup>6</sup> High-quality research is dependent on the collection of high-quality data, integration across disciplines, and international collaboration.<sup>4 5</sup> Rigorous review of research protocols remains the cornerstone of upholding research standards and, thus, safeguarding patients. Lack of adherence to scientific rigour raises concerns about the validity, generalisability, and reproducibility of the research findings. In a recent quality assessment of surveys measuring COVID-19 mental health outcomes in China, only 45% were found to be of high quality.<sup>7</sup> Mental health researchers must employ scientific rigour while exploring the direct and indirect psychological and social impacts of COVID-19.

Maalouf and colleagues<sup>9</sup> recently published a bibliometric analysis highlighting the mental health research response to the COVID-19, Ebola, and H1N1 outbreaks and confirmed that mental health research output is already greater for COVID-19 than all of the other outbreaks combined. Our study builds on their research by focusing specifically on Arab countries and examining the quality of COVID-19 mental health research in the region. By means of a scoping review, our study aims to map and delineate the mental health literature and scholarly productions that emerged in response to the COVID-19 pandemic in the Arab world. We aim to identify the type and themes of research published, scientific gaps, and areas necessitating future research. Additionally, we endeavour to scope the quality of the published research by examining compliance with basic methodological quality criteria.

## METHODS

### Search strategy

This study is reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) reporting guidelines.<sup>8</sup> A priori registered protocol was

not developed. We conducted a systematic literature search of the WHO COVID-19 database from its inception to the date on which the search was conducted (24 October 2020). The WHO COVID-19 database regularly curates COVID-19-specific citations from multiple bibliographical databases including MEDLINE, PsycINFO, Scopus, CINAHL, Embase, Web of Science, in addition to preprint servers, manual searches and experts' referrals.<sup>9 10</sup>

A search query was constructed using mental health-related keywords and the names of the 22 Arab countries: (Egypt\* OR Saudi\* OR KSA OR Leban\* OR Tunis\* OR Emirat\* OR UAE OR Jordan\* OR Qat\* OR Moroc\* OR Iraq\* OR Kuwait\* OR Palestin\* OR Bahrain\* OR Alger\* OR Sudan\* OR Syria\* OR Yemen\* OR Libya\* OR Somalia\* OR Mauritania\* OR Djibouti\* OR Comoros OR Oman\*) AND (Mental\* OR Psych\* OR stress\* OR depress\* OR anx\* OR addict\* OR schizo\* OR mood\*). No COVID-19-related keywords were added to the query due to the high topical specificity of the WHO COVID-19 database.

### Inclusion and exclusion criteria

All articles published by authors affiliated with Arab countries and reporting on the diagnostic, prognostic, or therapeutic aspects of psychiatric disorders or psychological well-being with respect to COVID-19 were included. A coauthoring country was considered as an Arab country if it was one of the 22 member states of the Arab League (ie, Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Kingdom of Saudi Arabia (KSA), Somalia, Sudan, Syria, Tunisia, United Arab Emirates (UAE), and Yemen).<sup>11</sup> Besides including only articles published in English or Arabic with full texts available online, no restrictions were placed on study design, publication type, or publication status. We excluded publications lacking affiliation to Arab countries or unrelated to COVID-19 and mental health research. Similarly, publications in languages other than English or Arabic or with unavailable online full texts were excluded.

### Article screening and data extraction

Three of the authors (IHEA, EA-J, and YZ) independently screened the titles, abstracts, and affiliation details of all retrieved citations against our eligibility criteria for full-text screening.

Articles lacking abstracts and/or affiliation information were automatically included for full-text review. Subsequently, full texts of the articles that passed the preliminary eligibility screening were retrieved and examined for final inclusion or exclusion in the study. Articles lacking full-text availability online were excluded from further data extraction and analysis.

Subsequently, the following parameters from the included articles were abstracted independently by the same three authors, using a standardised and piloted data collection form:

- ▶ Study title
- ▶ Country of author's affiliation (in case of articles whose authors' affiliations include multiple Arab countries, each country was recorded)
- ▶ International collaboration (defined by the presence of at least one author affiliation from a different country)<sup>2,4</sup>
- ▶ Publication type
- ▶ Study design
- ▶ Target population characteristics, including age, population type, and setting.

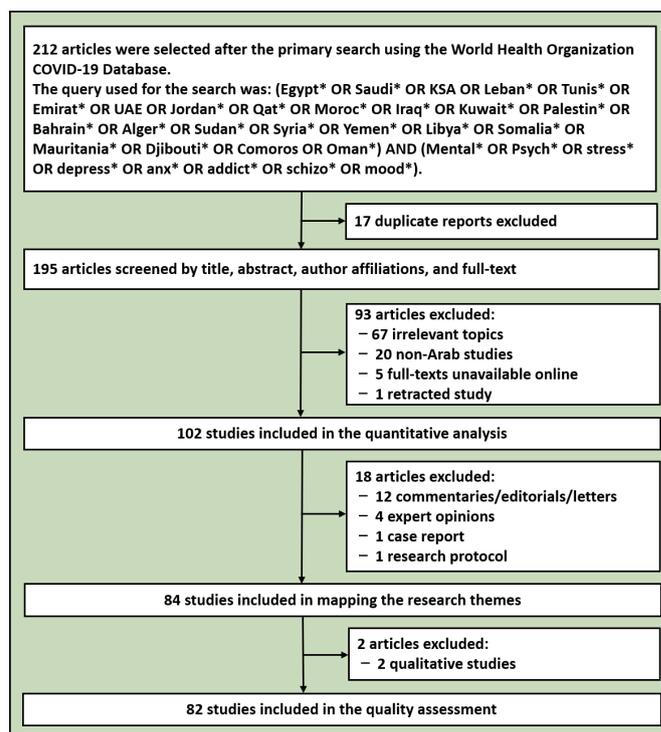
Discrepancies during screening and data extraction were identified and resolved by referring to two other authors (SO and OW).

### Data summary and synthesis

Charted data were synthesised and stored in a tabular format using a Microsoft Excel-based spreadsheet. Then, descriptive content analysis was conducted to identify key research themes emerging from included research articles. Accordingly, two of the authors (MHMOH and IHEA) independently examined the charted data and full texts of included research studies. Editorials, letters, expert opinion reviews, and case reports were excluded from this process as they were not considered as primary research articles. Consequently, broad codes corresponding to key research themes were assigned to each study based on their research questions and target population characteristics; assigning more than one theme per study was allowed. Disagreement in this process was resolved through discussion and consensus between the same two authors. Finally, abstracted parameters were aggregated and displayed in summary graphs (tables and bar charts) and statistics (counts and percentages).

### Quality assessment

Two authors (MHMOH and IHEA) assessed the methodological quality of the included research articles independently and in duplicate. At this point, qualitative research studies were excluded from the assessment as there is no consensus regarding a reliable method for examining the quality of qualitative research in systematic reviews.<sup>12</sup> The quality of included case-control and cohort studies was assessed using the Newcastle–Ottawa Scale (NOS),<sup>13</sup> and cross-sectional studies were evaluated by the modified version of the NOS.<sup>14</sup> Both instruments assess studies based on three broad categories: the selection of the study groups, the comparability of the groups, and the ascertainment of either the exposure or the outcome.<sup>13,14</sup> A visual star-based scoring system was adopted for the studies: seven stars or more were considered to be of high quality, six or five stars were considered to be of moderate quality, and four stars or less were considered as low quality. Disagreements in scoring were resolved by consensus and by consulting a third author (SO).



**Figure 1** Preferred reporting items for systematic reviews and meta-analyses flowchart of the inclusion/exclusion criteria. COVID-19, coronavirus disease 2019; KSA, Kingdom of Saudi Arabia; UAE, United Arab Emirates.

## RESULTS

### Search results

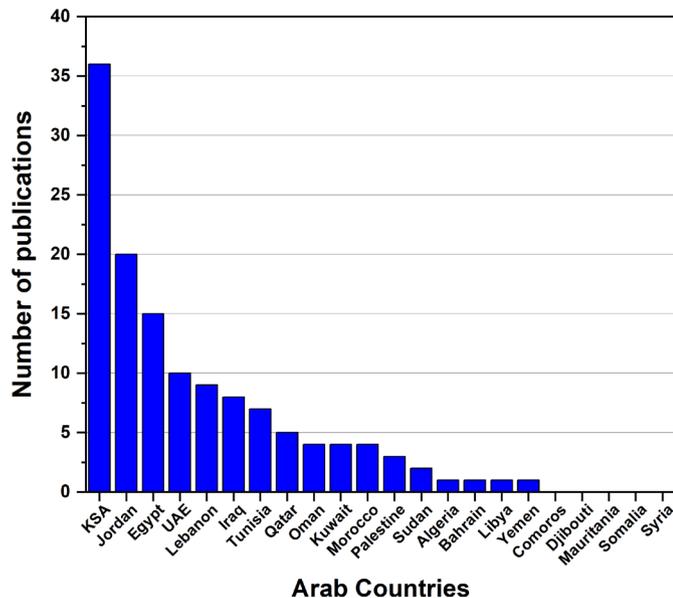
Two-hundred and twelve records were retrieved using the search query. After removing duplicates, 195 records remained. Of these, 93 were excluded: 67 had irrelevant topics (examined areas of the COVID-19 outbreak not included in our inclusion criteria—knowledge and practice of physicians during the pandemic, the impact of the outbreak on patient care and medical education, public misconceptions, region-specific and climate-specific prevalence and incidence, infection rate prediction models, and precautionary measures). Only 102 articles were included for further analysis. Figure 1 illustrates the PRISMA flow chart of the inclusion and exclusion process. Details of the included individual publications are provided in online supplemental table 1.

### Publications by Arab countries

The three most productive countries were KSA (n=36, 35.3%), Jordan (n=20, 19.6%), and Egypt (n=15, 14.7%), respectively. Fourteen other countries contributed the remaining proportion, and five countries had no publications (figure 2).

### Scholarly collaboration

More than half of the publications (n=56, 54.9%) involved international collaboration; nearly two-thirds of these were with institutions from non-Arab countries (n=35). The remainder of the publications (n=46, 45.1%) had



**Figure 2** Number of COVID-19 mental health-related publications by Arab countries from inception to October 2020. Some publications may be affiliated with more than one country, so the sum of articles by country does not equal the sum of all included articles. All publications by country are included, regardless of their types or analysis-wise exclusion. KSA, Kingdom of Saudi Arabia; UAE, United Arab Emirates.

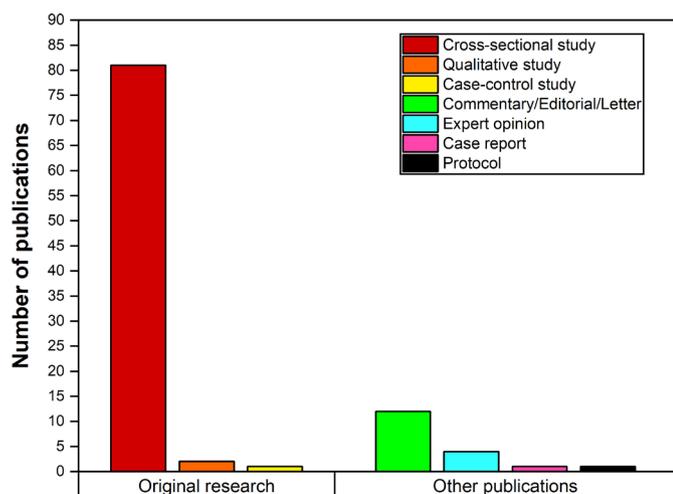
collaboration with domestic institutions within the same country.

**Publication types**

Most publications were original research papers (n=84, 82.4%), the majority of which were cross-sectional studies (n=81, 79.4%). No longitudinal or interventional studies were identified (figure 3).

**Research themes**

Ten main research themes were identified. Thirty-six studies investigated the mental health burden of COVID-19 and lockdown measures on the general public



**Figure 3** Number of Arab region COVID-19 mental health-related publications by type from inception to October 2020.

(42.9% (36/84)), 26 studies focused on frontline health-care providers (31.0% (26/84)), and 22 studies examined general healthcare providers (26.2% (22/84)). These three research themes accounted for 78.6% (66/84) of the included research studies (figure 4).

**Quality assessment**

As detailed in the online supplemental tables 2–5, of the 82 eligible and included research studies, only 23 (28.0% (23/82)) of them were high quality, while 34 (41.5% (34/82)) and 25 (30.5% (25/82)) studies were of moderate and low quality, respectively. The most common methodological shortcomings were poor representativeness of samples, absence of sample size justification, and lack of description of non-respondents.

**DISCUSSION**

In this review, by quantitative and qualitative assessment, we systematically examined COVID-19-related publications pertaining to mental health in Arab countries.

**Main findings and comparison with global literature**

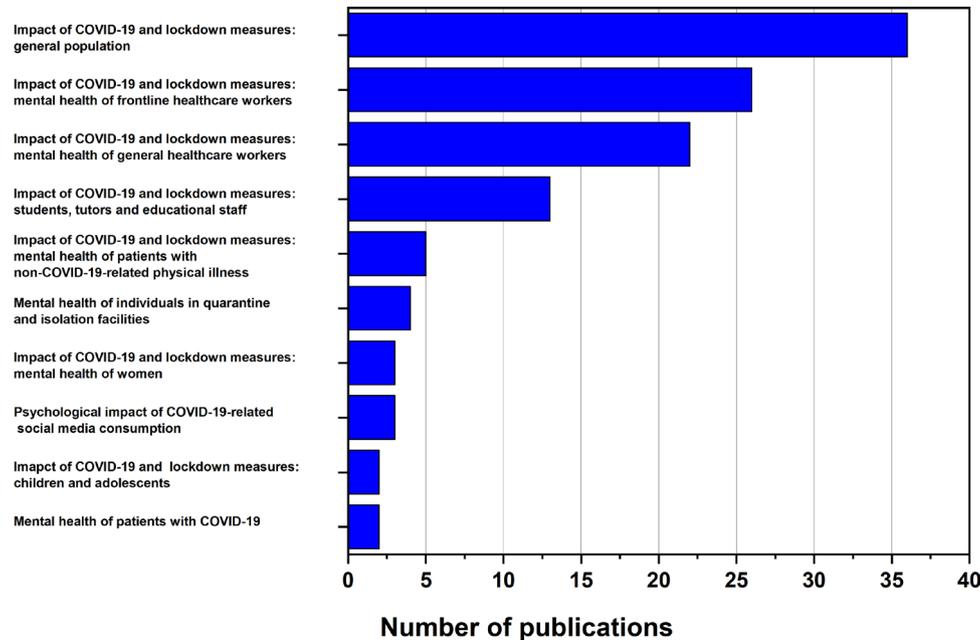
Despite adopting broad selection criteria, only a modest body of evidence was identified, averaging 4.6 publications per Arab country. These figures are in contrast to the global trend showing a massive expansion of medical publications amidst the pandemic.<sup>15</sup> However, this finding is consistent with previous studies reporting low Arab World contribution to global mental health research.<sup>5</sup>

A majority of the included publications from Arab countries demonstrated international collaboration. The proportion of these collaborative efforts outweighed previous reports from the region<sup>4</sup> and the aggregate global figures (22%) for COVID-19-related mental health research.<sup>2</sup>

None of the published studies were interventional, and most of the observational studies were cross-sectional, with no prospective studies identified. This could be because we analysed publications within the first eight months of the pandemic; interventional and prospective studies require a longer period before publication.<sup>16</sup> Another explanation is that authors from Arab countries resort to cross-sectional studies because they are easier to conduct, inexpensive, and require fewer resources.<sup>17</sup>

Our quality assessment indicated that only a minority of studies were of high methodological quality. This aligns with a previous study which showed that Arab countries fell behind other countries in terms of publishing mental health research publications in top-quartile journals.<sup>4</sup>

The predominant focus of the identified studies concerned the impact of COVID-19 and its socio-economic implications on the psychological well-being of the public and other diverse healthcare provider groups. Another area of interest in a notable proportion of the included studies was the impact of the pandemic with the associated closure of educational facilities on the mental health of students and staff. These findings are consistent



**Figure 4** Distribution of COVID-19 mental health-related research themes in Arab region publications from inception to October 2020. Since each study could be assigned to more than one research theme, these figures do not equal the sum of the total number of included studies. COVID-19, coronavirus disease 2019.

with recently published results from other regions<sup>18</sup> that might reflect a global concern towards the rising burden of mental health problems among these population groups.<sup>19–31</sup>

### Strengths and limitations

Our study is the first, to our knowledge, to have examined the scope and quality of COVID-19 mental health research in Arab countries. Our study met all PRISMA-ScR checklist criteria, other than not developing a registered protocol before conducting this study. We used inclusive selection criteria and search query terms with high sensitivity. We also used standardised instruments. In addition, all studies were independently assessed by a group of assessors, and discrepancies were resolved by a separate group. We extended the scoping purpose of the review by mapping the quality and scientific rigour of the included research articles, which might not be achieved through traditional descriptive quantitative and thematic analyses.<sup>32</sup>

This scoping review has a number of limitations. We only searched the WHO COVID-19 database for this review. However, this database gathers scientific publications from the most important databases in the medical field.<sup>9 10</sup>

Moreover, as many of the backbone indexes of the WHO-COVID-19 database have higher coverage of English than non-English publications (eg, PubMed/MEDLINE,<sup>33</sup> Scopus, and Web of Science<sup>34 35</sup>), a proportion of evidence might not be covered in our work.

Despite employing a comprehensive search strategy, there is also a possibility that some relevant topics might have not been fully retrieved by our query, especially if they were introduced as abbreviations (eg, ‘BD’ instead

of ‘bipolar mood disorder’ and ‘PTSD’ instead of ‘post-traumatic stress disorder’). Finally, our results do not represent the complete course of the fast-growing literature of the current pandemic, since the COVID-19 pandemic continues to evolve.

### Implications

This review delineates a wide quantitative and qualitative gap in the Arab world mental health literature that necessitates a timely response from policymakers and researchers.

This work outlines that the amount of research that has come from the Arab world has not been able to meet the population demands produced by the COVID-19 pandemic. Although the number of publications about mental health from Arab countries has been growing at a much faster rate than the rest of the world,<sup>4 36</sup> steps need to be taken to promote both quantity and quality of mental health research in the region. The current pandemic sheds light on the importance of the inter-relationship between physical and mental health.<sup>37</sup> An adequate response to the pandemic must also entail addressing mental health issues.<sup>38</sup> Planning an optimal mental health response plan tailored to the needs of each country or region largely relies on scientific research from that same country or region, since extrapolating data from other countries and regions is not always possible or beneficial.<sup>39</sup>

Our findings emphasise the urgent need for more research that investigates the mental health problems of diverse, vulnerable, and underprivileged social groups. Ideally, these results will stimulate directing investments for future research that will address the gaps we have identified in the literature.

In addition, our scoping review identified high research activity related to the pandemic-induced mental health burden of the general population, healthcare workers, students, and educational staff. This finding indicates that further work is needed to gain deeper insight into these groups' psychological needs and inform tailored interventions to address these needs.

Our findings also demonstrated that the preponderance of COVID-19-related mental health literature emerging from the Arab world was cross-sectional studies, the majority of which were of substandard methodological quality. Cross-sectional studies are useful to examine the prevalence and generate hypotheses. However, they have several limitations, including the inability to investigate the temporal relationships between outcomes and risk factors, and the difficulty to interpret the exact meaning of any statistical associations that might be observed.<sup>17 40</sup> They are also more prone than other types of studies to non-response bias, recall bias, and confounding bias.<sup>17</sup> In the hierarchy of scientific evidence, cross-sectional studies are generally regarded as being among the weakest, superior only to case reports and case series.<sup>41 42</sup> That mental health studies in the Arab world are primarily cross-sectional illustrates that the quality of research still largely lags behind international standards, despite some observed improvement over the last few years.<sup>4 5</sup>

Our review helped identify that most publications produced by Arab countries were not just lower in the evidence hierarchy, but also suffered various methodological shortcomings. These methodological flaws can severely impede the generalisability of any findings and seriously affect the quality of the studies.<sup>43</sup> Since the objective of any research is to extrapolate data beyond the studied sample, these flaws are rendered as severe limitations.<sup>43 44</sup> It is crucial that actions are taken to improve the quality of mental health research in Arab countries. These actions could include greater emphasis on research skills in mental health training programmes and increased incentives for high-quality research in the field.<sup>5</sup> Academic institutions in Arab countries need to prioritise psychiatric research and pool resources, if possible, through mutual collaborations.<sup>5</sup> Such collaborations have previously been associated with higher quality research publications<sup>4 5</sup> and may help promote mental health research in the Arab world. Finally, our analysis has revealed the expansion of international research collaboration between Arab and non-Arab countries, and this finding could further nurture these collaborative efforts.

## CONCLUSION

Because mental health is even more sensitive to cultural and societal differences than physical health, direct extrapolation of relevant Western research findings to non-Western sociocultural contexts is limited in application. However, presently mental health research pertaining to COVID-19 in Arab countries continues to have quantitative and qualitative shortfalls. Collaboration of academic

institutions in Arab countries both regionally and within the international community can promote excellence in mental health research and enhance the overall quality and range of published papers. Higher-quality research, in turn, could translate into evidence-based plans tailored to the specific COVID-19-related mental health needs of Arab countries.

**Contributors** MHMOH, SO and OW designed the study. MHMOH, SO and OW constructed the search and data extraction strategy. IHEA, EA-J and YZ screened the studies and extracted the necessary data. MHMOH and IHEA conducted the quality assessment of the included studies. MHMOH, IHEA, SO and OW drafted the manuscript. MHMOH, SO and OW made critical revisions. All authors read and approved the final version of the manuscript. Both MHMOH and IHEA are joint first authors. MHMOH is responsible for the overall content as guarantor.

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## REFERENCES

- 1 World Health Organization. *Mental health and psychosocial considerations during the COVID-19 outbreak*. World Health Organization, 2020.
- 2 Maalouf FT, Mdawar B, Meho LI, et al. Mental health research in response to the COVID-19, Ebola, and H1N1 outbreaks: a comparative bibliometric analysis. *J Psychiatr Res* 2021;132:198–206.
- 3 Centers for Disease Control and Prevention. Coronavirus disease 2019 (COVID-19) - Stress and coping 2020 [updated July 22, 2021]. Available: <https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/managing-stress-anxiety.html> [Accessed 22 Jan 2022].
- 4 Zeinoun P, Akl EA, Maalouf FT, et al. The Arab region's contribution to global mental health research (2009–2018): a bibliometric analysis. *Front Psychiatry* 2020;11:182.
- 5 Maalouf FT, Alamiri B, Atweh S, et al. Mental health research in the Arab region: challenges and call for action. *Lancet Psychiatry* 2019;6:961–6.
- 6 Holmes EA, O'Connor RC, Perry VH, et al. Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *Lancet Psychiatry* 2020;7:547–60.
- 7 Luo Y, Chua CR, Xiong Z, et al. A systematic review of the impact of viral respiratory epidemics on mental health: an implication

- on the coronavirus disease 2019 pandemic. *Front Psychiatry* 2020;11:565098.
- 8 Tricco AC, Lillie E, Zarin W, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med* 2018;169:467–73.
  - 9 World Health Organization. Global research on coronavirus disease (COVID-19). Available: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov> [Accessed 8 Apr 2021].
  - 10 World Health Organization. WHO COVID-19 database search strategy [updated 5 January 2021]. Available: [https://www.who.int/docs/default-source/coronaviruse/who-covid-19-database/who-covid-19\\_sources\\_searchstrategy\\_20210105.pdf?sfvrsn=480292c0\\_9](https://www.who.int/docs/default-source/coronaviruse/who-covid-19-database/who-covid-19_sources_searchstrategy_20210105.pdf?sfvrsn=480292c0_9) [Accessed 8 Apr 2021].
  - 11 Wikipedia contributors. Arab League: Wikipedia, the free encyclopedia. 2022. Available: [https://en.wikipedia.org/w/index.php?title=Arab\\_League&oldid=1068034583](https://en.wikipedia.org/w/index.php?title=Arab_League&oldid=1068034583) [Accessed 22 February 2022].
  - 12 Mays N, Pope C. Assessing quality in qualitative research. *BMJ* 2000;320:50.
  - 13 Wells GA, Shea B, Da O'Connell, et al. The Newcastle-Ottawa scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses, 2021. Available: [http://www.ohri.ca/Programs/clinical\\_epidemiology/oxford.asp](http://www.ohri.ca/Programs/clinical_epidemiology/oxford.asp) [Accessed 09 Apr 2021].
  - 14 Herzog R, Alvarez-Pasquin MJ, Díaz C, et al. Are healthcare workers' intentions to vaccinate related to their knowledge, beliefs and attitudes? A systematic review. *BMC Public Health* 2013;13:154.
  - 15 Else H. How a torrent of COVID science changed research publishing - in seven charts. *Nature* 2020;588:553.
  - 16 Mann CJ. Observational research methods. research design II: cohort, cross sectional, and case-control studies. *Emerg Med J* 2003;20:54–60.
  - 17 Wang X, Cheng Z. Cross-sectional studies: strengths, weaknesses, and recommendations. *Chest* 2020;158:S65–71.
  - 18 Kar SK, Oyetunji TP, Prakash AJ, et al. Mental health research in the lower-middle-income countries of Africa and Asia during the COVID-19 pandemic: a scoping review. *Neurol Psychiatry Brain Res* 2020;38:54–64.
  - 19 Serafini G, Parmigiani B, Amerio A, et al. The psychological impact of COVID-19 on the mental health in the general population. *QJM: An International Journal of Medicine* 2020;113:531–7.
  - 20 Pierce M, Hope H, Ford T, et al. Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. *Lancet Psychiatry* 2020;7:883–92.
  - 21 Rossi R, Soggi V, Talevi D, et al. COVID-19 pandemic and Lockdown measures impact on mental health among the general population in Italy. *Front Psychiatry* 2020;11:790.
  - 22 Wang C, Pan R, Wan X, et al. A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain Behav Immun* 2020;87:40–8.
  - 23 Campion J, Javed A, Sartorius N, et al. Addressing the public mental health challenge of COVID-19. *Lancet Psychiatry* 2020;7:657–9.
  - 24 Xiong J, Lipsitz O, Nasri F, et al. Impact of COVID-19 pandemic on mental health in the general population: a systematic review. *J Affect Disord* 2020;277:55–64.
  - 25 Carr MJ, Steeg S, Webb RT, et al. Effects of the COVID-19 pandemic on primary care-recorded mental illness and self-harm episodes in the UK: a population-based cohort study. *Lancet Public Health* 2021;6:e124–35.
  - 26 Pappa S, Ntella V, Giannakas T, et al. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. *Brain Behav Immun* 2020;88:901–7.
  - 27 Greenberg N, Docherty M, Gnanapragasam S, et al. Managing mental health challenges faced by healthcare workers during covid-19 pandemic. *BMJ* 2020;368:m1211.
  - 28 Spoorthy MS, Pratapa SK, Mahant S. Mental health problems faced by healthcare workers due to the COVID-19 pandemic-a review. *Asian J Psychiatr* 2020;51:102119.
  - 29 Walton M, Murray E, Christian MD. Mental health care for medical staff and affiliated healthcare workers during the COVID-19 pandemic. *Eur Heart J Acute Cardiovasc Care* 2020;9:241–7.
  - 30 Moitra M, Rahman M, Collins PY, et al. Mental health consequences for healthcare workers during the COVID-19 pandemic: a scoping review to draw lessons for LMICs. *Front Psychiatry* 2021;12:22.
  - 31 Sahu P. Closure of universities due to coronavirus disease 2019 (COVID-19): impact on education and mental health of students and academic staff. *Cureus* 2020;12:e7541–e41.
  - 32 Pham MT, Rajić A, Greig JD, et al. A scoping review of scoping reviews: advancing the approach and enhancing the consistency. *Res Synth Methods* 2014;5:371–85.
  - 33 Loria A, Arroyo P. Language and country preponderance trends in MEDLINE and its causes. *J Med Libr Assoc* 2005;93:381.
  - 34 Non-English language publications in citation indexes—Quantity and quality. 17th International Conference on Scientometrics and Informetrics, ISSI 2019-Proceedings 2019.
  - 35 Pilkington K, Boshnakova A, Clarke M, et al. "No language restrictions" in database searches: what does this really mean? *J Altern Complement Med* 2005;11:205–7.
  - 36 Jaalouk D, Okasha A, Salamoun MM, et al. Mental health research in the Arab world. *Soc Psychiatry Psychiatr Epidemiol* 2012;47:1727–31.
  - 37 Grover S, Dua D, Sahoo S, et al. Why all COVID-19 hospitals should have mental health professionals: the importance of mental health in a worldwide crisis! *Asian J Psychiatr* 2020;51:102147.
  - 38 Adhanom Ghebreyesus T. Addressing mental health needs: an integral part of COVID-19 response. *World Psychiatry* 2020;19:129–30.
  - 39 Ingleby D. How 'evidence-based' is the movement for global mental health? *Disability and the Global South* 2014;1:203–26.
  - 40 Kesmodel US. Cross-sectional studies - what are they good for? *Acta Obstet Gynecol Scand* 2018;97:388–93.
  - 41 Elamin MB, Montori VM. The Hierarchy of evidence: from unsystematic clinical observations to systematic reviews. In: Burneo JG, Demaerschalk BM, Jenkins ME, eds. *Neurology: an evidence-based approach*. New York, NY: Springer New York, 2012: 11–24.
  - 42 Brighton B, Bhandari M, Tornetta P, et al. Hierarchy of evidence: from case reports to randomized controlled trials. *Clin Orthop Relat Res* 2003;413:19–24.
  - 43 Kukull WA, Ganguli M. Generalizability: the trees, the forest, and the low-hanging fruit. *Neurology* 2012;78:1886–91.
  - 44 Polit DF, Beck CT. Generalization in quantitative and qualitative research: myths and strategies. *Int J Nurs Stud* 2010;47:1451–8.



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