INDIAN JOURNAL OF PSYCHOLOGICAL MEDICINE

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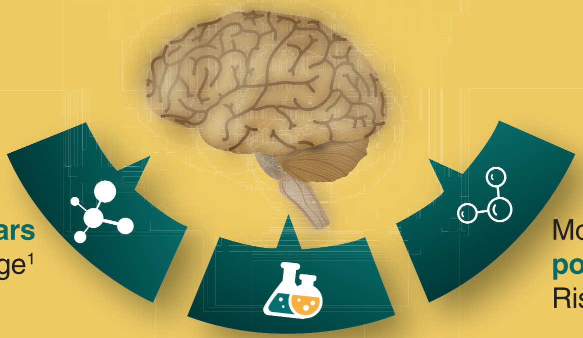

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Additional information available on request

*As on Date, May 2019

References:
1. Karabas I, et al. Analysis and stability of polymorphs in tablets: The case of Risperidone. Talanta. 2007 Feb 28;71(3):1382-86.
2. Data on File

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- PubMed Central (PMC)
- Scopus
- UGC-CARE (GROUP II)
- Indian Science Abstracts

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LEARNING CURVE

A 42-Year-Old New Journal

Shahul Ameen[1], Vikas Menon[2], Samir Kumar Praharaj[3]

As you might have already figured out, this issue of the journal is different—it has a new publisher and a new design. Over the past many months, numerous other, subtler changes too were introduced. A previous editorial had listed the changes we implemented earlier, such as decisions to consider only those research papers that have ethics committee approval and trials that have been registered in a national registry, creation of new posts such as statistical consultant and journal ombudsman, introduction of themed issues, etc.[1] Subsequently too, we have been continuously striving to improve the scientific quality, relevance, and presentation of the journal. Here are the major points pertinent to our authors, peer reviewers, readers, and well-wishers.

Change in Publisher

After the first two years of his 11-year-long tenure as the Hon. Editor, in 2008, Dr MS Reddy took the journal to Medknow. Numerous good things happened to the journal when he was the Editor and Medknow was the publisher—the most important one being that it got included in PubMed Central and, consequently, in PubMed. It got indexed in Scopus too. Besides, much professionalism entered the design and workings of the journal. Even after we took over in 2017, Medknow was very receptive to our suggestions, including the adoption of rotating cover. As the five-year contract with them was about to end in May 2020, the current editor discussed the matter with the parent organization, Indian Psychiatric Society South Zonal Branch (IPS-SZB), and was permitted to contact important publishers and authorized to make a decision. After a detailed review of several proposals and extensive discussions with many companies, the decision was taken to move to SAGE, the primary reason being an anticipated increase in journal visibility.

New Online Addresses

With the publisher, our websites have also changed (**Box 1**). The identifier of the journal, included in URLs, subject lines of emails, etc., has changed from IJPSYM to SZJ (a tongue twister, but it stands for "south zone journal").

BOX 1.

New Websites

- Journal home page: https://journals.sagepub.com/home/szj
- Page at SAGE India: https://in.sagepub.com/en-in/sas/indian-journal-of-psychological-medicine/journal203701
- Manuscript submission site: https://peer-review.sagepub.com/szj

The Editor's email address will continue to be editor@ijpm.info

The journal website will now feature all our past issues, starting with the very first one dated January 1978, with the digital object identifier (DOI) newly added to the pre-2008 articles. Being a part of the SAGE portal, our website will get enhanced visibility and global exposure. The search engine positioning too is expected to improve, resulting in more readers and citations for our articles. Now our article pages feature links to related articles from other SAGE journals. In return, links to our articles will be displayed in the pages of fellow SAGE journals, including *Australian and New Zealand Journal of Psychiatry*, *The Canadian Journal of Psychiatry*, and *International Journal of Social Psychiatry*. SAGE will also provide us a social media manager.

Evolving Article Categories

We have been continually experimenting with the journal's article categories, keeping in mind both the needs of our readers and the efficient utilization of journal space. Here are the modifications introduced and the rationale behind them:

In the November–December 2019 issue, we introduced the Practical Psychotherapy section. It is for papers detailing

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the actual performance of psychotherapy for common and challenging conditions. When a submission to this section is moved to peer review, we remind the reviewers that the focus of this section is not on advancing science but on informing clinicians about the practicalities of "not-so-common-by-our-usual-standards" psychotherapies, the steps involved, the hurdles faced, how they were overcome, etc.

Most case report letters were noticed to contain information irrelevant to those characteristics of the case that are being highlighted in the report. Starting June 2020, the word count of Letters to the Editor has been reduced from 1,000 to 750. We hope that this will motivate the authors to make their write-ups more concise and leave us space for the inclusion of more letters.

We had removed the Case Reports section in March 2018, specifying that case reports will be considered as Letters only. Many authors had subsequently asked how they can publish a case series that would require a higher word count. Also, the new guidelines from the Board of Governors in supersession of the Medical Council of India permit case series as a publication type when considering eligibility for promotion among medical teachers. Hence, in this issue, we are starting a Case Series section with a word limit of 2,000.

Like most journals, we have been publishing the critical responses about our published articles as Letters to the Editor. However, to highlight the importance we accord to post-publication peer review, and as the Letters section is heterogeneous and contains diverse write-ups such as case reports, opinion pieces, and research articles, in the March–April 2019 issue, we introduced a new section, Comments on Published Articles.

In 2018, we had introduced the category of Brief Communications (BC), with a word count limit of 2,000 and, subsequently, for a short period, rechristened it as Brief Research Communications (BRC). These were intended for rapid, preliminary communications of research findings. However, in June 2019, after some deliberations within the editorial team, we discontinued the section. Since then, all research manuscripts that are at least 1,500 words long are being considered as Original Articles (OA) only. The major reasons for the decision were:

- Many authors were submitting manuscripts less than 2,000 words long to the OA section. When they were suggested to change the category to BC/BRC, almost all of them preferred to rather withdraw the manuscript. Also, when the editors or reviewers felt that some of the OA submissions could be trimmed down, the subsequent word count was often below the 2,000-word cutoff, pushing the manuscript to the BC/BRC category. Then too, most authors preferred to withdraw. We lost many otherwise good articles this way. Worse still, some of them might have eventually got published in predatory journals, making their message less accessible to researchers and practitioners.
- Manuscripts with a very clear focus that assess only one or two objectives often end up with a word count of less than 2,000. On the other hand, most OA submissions have assessed lots of variables, done numerous exploratory analyses, and presented all those results and discussed them. In other words, the word count, and the resultant classification to BC/BRC or OA, is mostly not determined by the novelty, importance, or clinical significance of the paper.
- One of the most important papers in medicine, the discovery of the structure of DNA, was published as a Letter.[2] This amply illustrates that it is the content of an article and not its length that matters. (If Watson and Crick published the article now and were working in some Indian medical college, it would not have accorded them any eligibility for promotion!)

When we took charge, there was a category called Book Review. However, submissions to it were rare, numerous reviews on almost all books are available online, and new sections such as Learning Curve and Practical Psychotherapy needed space. Hence, we discontinued the Book Review section. Book or movie reviews can still be submitted as Letters to the Editor.

For the Authors to Note

Apart from the modifications to article categories and word count limits, there are some minor changes too in the submission guidelines (https://journals.sagepub.com/author-instructions/SZJ). Authors of research papers are required to submit, as a supplementary file, the corresponding flow chart from the EQUATOR Network. The referencing system is slightly different now. For example, while "et al." was earlier to be mentioned after the names of six authors, now the number is three. The current referencing system is called SAGE Vancouver. The clause that retrospective registration in a national trial registry is sufficient for trials that started before 2014 has been removed (this means that we are no longer interested in trials that started more than six years ago). The Contribution Details Form has been retired; now you have to instead include an "Author Contribution Section" in the title page.

We will continue to accept manuscripts that have been posted in preprint servers. More specifications regarding this have been added on the journal website.

Studies from other countries are always welcome; however, the topic should be of interest and importance to Indian professionals, for whom the journal is primarily intended. For example, we have desk-rejected manuscripts describing the development of Persian versions of rating scales or neuropsychiatric complications of Lyme's disease.

In the previous website, we had started ahead-of-print publishing in June 2018. Finalized PDFs were being published online in batches, once in 1–2 months. This will be faster now as each article is being published as "Online First" individually as and when the final PDF is ready.

SAGE Track, our current manuscript management portal, has better integration with ORCID iD. Also, after publication, detailed Article Metrics, including the number of Crossref and Web of Science citations and the Altmetric score, are now available on the online article pages.

Being a part of the SAGE group of journals, we will now get a complimentary membership in the Committee on Publication Ethics (COPE). All disputes and issues will now be resolved in accordance with appropriate COPE flowcharts.

Compared to that of most other journals, our peer review process has some additional steps that we introduced in 2018. The details are included online in the submission guidelines.

The first authors of all articles except Letters to Editor and Comments on Published Articles will get a free hard copy of the issue in which the article is published, if the address is in India.

As would be evident in this issue, we are fast-tracking manuscripts on COVID-19.

Raising the Bar

We have been gradually elevating the quality threshold for moving a manuscript to peer review and the eventual acceptance. As described in the previous editorial, simple cross-sectional studies assessing the prevalence and correlates of stress, burden, depression, or quality of life in an "already-studied-a-lot" sample will get desk-rejected. We have now added the following types of studies too to that list:

1. All exploratory, cross-sectional studies that have used multiple scales and do not have a specific objective or compelling hypothesis
2. Surveys looking at the prevalence of anxiety, depression, stress, etc., in whatever population, using one or more screening tools
3. Correlational studies with cross-sectional designs
4. Case-control studies that do not have a strong rationale and have assessed many variables
5. Online or offline surveys of poor methodological quality (surveys on COVID-19 were given a slight exception due to the urgent need for scientific literature on the pandemic).
6. Descriptive studies, unless the variables assessed are novel and important.

Instead, we currently give priority to the following types of submissions:

- Longitudinal studies
- Experimental research
- Studies on biomarkers
- Causation analyses
- Scale translations, validations, development
- Systematic reviews

We expect that majority of the OA or reviews we publish would be the ones meeting these criteria, come 2021.

Welcoming Peer Reviewers

Over the past two years, we have been continuously expanding and refining the reviewer pool. Apart from the usual gains of performing peer reviews, such as the opportunities to be a "gatekeeper" of published research and to improve one's own research skills, we have been providing some specific benefits to our reviewers. These include a mention in the January issue, a year-end digital certificate, membership in an exclusive WhatsApp group where material on research and publishing is routinely shared, and an opportunity to get promoted to the Editorial Board or as a Section Editor. SAGE provides free access to all SAGE journals for 60 days upon the receipt of a completed review and a 25% discount on all SAGE books ordered online. Those who are interested in joining as reviewers are requested to email the editor with their affiliation details, list of important publications, and areas of interest.

"What's the Impact Factor?"

We face this question frequently. IJPM currently does not have an Impact Factor (IF) from Clarivate Analytics. The journal is included in their Emerging Sources Citation Index (ESCI) since April 2018, and the 2019 content has been indexed. The rule is, once an ESCI journal meets their impact criteria, it is moved to the Science Citation Index Expanded (SCIE) and subsequently given an IF. So, an IF is at least a year away for us. (According to the SCImago Journal Rank, our "citations per document" for the past two years, which is equivalent to IF, for 2018, was 0.809; the highest value we ever got there was 0.948, in 2015.[3])

Unlike many other journals, we do not coerce authors to cite our own previous articles. However, though we had presumed that they routinely cite relevant Indian studies, a new paper[4] indicates this does not always happen. We request all Indian mental health researchers to positively ensure that they perform a thorough search of Indian studies on their topic and duly cite the appropriate ones.

Also, SAGE now provides a detailed citation analysis of the published articles, and this might give us some guidance and directions. To be honest, we feel that it is not humanly possible to accurately predict which of the submissions will end up getting lots of citations and which ones will not. For example, one of our recent articles[5] to get the most citations, 14 to be specific, a whopping number by our standards, is one in which major methodological flaws were pointed out in a subsequent Letter to the Editor.[6]

We would also like to clarify that IF is not among our primary goals. Our aim is, rather, to publish articles that advance science sufficiently and are of interest and relevance to practitioners, researchers, or policymakers. If enough citations and an IF naturally follow as a byproduct, that would be great.

This Design

This new design was inspired mainly by the fact that we had some years ago stopped sending free hard copies to the members of IPS-SZB and these days, this journal is mostly read on screens. Hence, we opted for fonts that are more readable on screens and a three-column design. Our aim was to obtain an optimum balance between visual appeal, efficiency of space, and readability. (We also stole certain design elements from some reputed journals. Note that the text citations to tables, figures, etc. are now in bold [e.g., "Box 1" earlier in this editorial]. That is intended to assist those who scan a page; encounter a table, figure, etc., and then want to know where in the text it is described. This idea was copied from the *Archives of General Psychiatry!*).

Thanks to Mr Abhilash Chacko for this design. Thanks to the SAGE team, too, for their inputs and, more importantly, for allowing us an exemption from having to follow their standard design template.

Also, as a part of our decision to make the journal as readable and interesting as possible, starting with the March–April 2019 issue, we have been including illustrations with appropriate articles.

Subscription

The subscription rates have been revised. As should be evident by now, we pay much attention to make the journal scientifically sound, engaging, concise, and readable. We request everyone, especially all the postgraduate psychiatric training centers in India, to subscribe to the journal.

References

1. Ameen S, Praharaj SK, and Menon V. A year on: the changes we introduced and the common mistakes encountered. Indian J Psychol Med 2019; 41: 1–5.
2. Watson JD and Crick F. A structure for deoxyribose nucleic acid. Nature 1953; 171: 737–738.
3. Scimago Journal and Country Rank. Available at https://www.scimagojr.com/journalsearch.php?q=20000195020&tip=sid&clean=0. Accessed 16th June 2020.
4. D'Cruz MM and Andrade C. Barriers to impact factor growth in two major Psychiatry journals from India. Indian J Psychol Med 2020; 42. DOI: 10.1177/0253717620928016
5. Najafi K, Fakour Y, Zarrabi H, et al. Efficacy of transcranial direct current stimulation in the treatment: resistant patients who suffer from severe obsessive-compulsive disorder. Indian J Psychol Med 2017; 39: 573–578.
6. Suhas S, Banwari G, Tharayil HM, et al. Comments on "Efficacy of transcranial direct current stimulation in the treatment: resistant patients who suffer from severe obsessive-compulsive disorder." Indian J Psychol Med 2018; 40: 393–394.

Review Article

Factors Affecting the Psychological Well-being of Health Care Workers During an Epidemic: A Thematic Review

Joel Philip[1], Vinu Cherian[2]

ABSTRACT

Background: Health care workers (HCWs) constitute a vulnerable group in terms of physical, mental, and emotional health setbacks during an epidemic. An in-depth understanding of the effects of epidemics on HCWs is of utmost importance, in order to put in place measures for their well-being. The purpose of the review was to compile, compare, and contrast the available information so as to produce a lucid picture of how HCWs are impacted during an epidemic, and the factors that affect their mental health.

Methods: A literature search of MEDLINE and Google Scholar databases was conducted to uncover research pertaining to four major epidemic outbreaks over the last two decades. The search was carried out at three levels using pertinent key words. The records thus identified were narrowed down at three further levels, that is, by screening of the title, abstract, and full text, to obtain articles most relevant to the subject matter. Data extraction was done using a spreadsheet to compile the relevant data. Data synthesis was done by studying those factors found to affect psychological well-being of HCWs and separating them into suitable subgroups. Recommendations to mitigate the psychological impact were proposed.

Results: Thirteen factors were identified, which were grouped under the broad categories of socio-demographic variables, individual characteristics, social characteristics, and psychological constructs.

Conclusion: Epidemics have a profound impact on psychological well-being of HCWs. There is a pressing need to address the issue of the psychological health of this vulnerable group.

Keywords: Mental health, health care worker, epidemic

Key Messages: The factors affecting the psychological well-being of HCWs during an epidemic outbreak are primarily poor social support, stressful work environments, greater patient contact, inadequate training, quarantine, history of physical or mental health issues, poor coping mechanisms, high perceived risk, stigma, social isolation, and a lack of resilience. Mental health professionals have an important role to play in mitigating the impact of these factors by extending the necessary support and professional expertise to HCW in need.

Epidemics have been a scourge on populations for centuries, with the term acquiring medical significance ever since it was used by Hippocrates in his works over 2,000 years ago. Physicians, nurses, and auxiliary health care personnel have historically been at the forefront of these battles and continue to selflessly do so today. It follows that they may be disproportionately affected more than any other occupational class, in terms of physical, mental, and emotional health. An in-depth understanding of the effects of epidemics on health care workers (HCWs) at the frontlines is of utmost importance, in order to put in place measures for their well-being.[1]

A large study conducted in a tertiary care hospital during the severe acute respiratory syndrome (SARS) epidemic and published in the *British Journal of Psychiatry* estimated that over 75% of HCWs suffered some form of psychiatric morbidity.[2] Studies have also determined that these psychological effects often continue long after the epidemic has been brought under control, persisting for as long as three years after the outbreak.[3] These facts are a reminder of the severity of the issue of the adverse mental health consequences of epidemics on frontline medical professionals.

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The psychological impact on HCWs may comprise anxiety, mood disorders, or symptoms of post-traumatic stress. Similar to the varied effects on mental health, the contributory factors to poor mental health outcomes are also several. A systematic review that studied this during the SARS outbreak delineated some of the factors that affected mental health of HCWs; however, the search was limited to social and occupational variables. The mental health impact was found to be different depending upon the socio-demographic variables, specialty grade, work responsibilities, or even the time during the evolution of the epidemic when the study was undertaken.[4] It is important to identify and address such factors, in order to mitigate the adverse effects on health care personnel.

To this end, several studies have been conducted on related topics over the years. However, these have been carried out in different geographic areas, using varying methodologies, and at times producing differing results. We carried out an in-depth literature search of all published studies over the past two decades concerning the psychological fallout of epidemics on HCWs. Our search covered research pertaining to four major epidemic outbreaks, that is, coronavirus disease 2019 (COVID-19), Ebola, Middle Eastern respiratory syndrome coronavirus (MERS-CoV) and SARS. The objective was to compile, compare, and contrast the available information so as to produce a lucid picture of how HCWs are impacted during an epidemic, and the factors that affect their mental health. This, in turn, lays the groundwork for recommendations to protect the psychological well-being of this vulnerable group.

Materials and Methods

A literature search was done on MEDLINE and Google Scholar to obtain articles fulfilling the following criteria:

1. Published in English journals
2. Published in peer-reviewed journals
3. Dealing with the designated subject matter

Searching and Screening

The search was done at three levels to narrow down the results and obtain the most relevant articles. At the first level, terms related to mental health outcomes were used to carry out the search, such as “anxiety,” “depression,” and “post-traumatic stress.” At the second level, terms related to the prevailing health emergency were utilized, such as “epidemic,” “pandemic,” “SARS,” “MERS,” “Ebola,” “COVID-19,” etc. At the third level, the search was carried out using terms specific to the group of interest, such as “doctor,” “nurse,” “HCW,” “health care professional,” etc. The search was carried out independently by two authors, and the results were combined. The citations thus identified were listed and duplicated articles were sieved out. Articles that were selected for further reading were of several designs, including but not limited to original articles, systematic reviews, narrative reviews, commentaries and letters, as well as qualitative surveys.[5,6]

The titles of the articles were screened to remove those that were irrelevant to the subject matter. The abstracts of the remaining articles were scanned for narrowing the pool further to maintain relevance. Finally, the full texts of the articles that were remaining were screened to ensure adherence to inclusion criteria. The flowchart pertaining to the methodology of screening and selection of articles is elaborated in **Figure 1**.

Data Extraction

A spreadsheet was created to enter the data pertaining to each article in a systematic manner for obtaining a “bird’s eye view” of the literature. The information entered included the disease involved, year and country of study, type of study, nature of study sample, number of participants, factors affecting mental health that were studied, conclusions, and limitations of the study.

Data Synthesis

A separate list was synthesized of all factors that were found to affect mental health of HCWs during an epidemic. These factors were then clubbed into sub-groups based on common themes. If a factor was found to produce differing effects on the study population, the reasons for the same were discussed. Factors that were statistically significant and common to two or more studies, as well as recommendations put forward by authors to mitigate the negative impacts of epidemics were noted.

Results

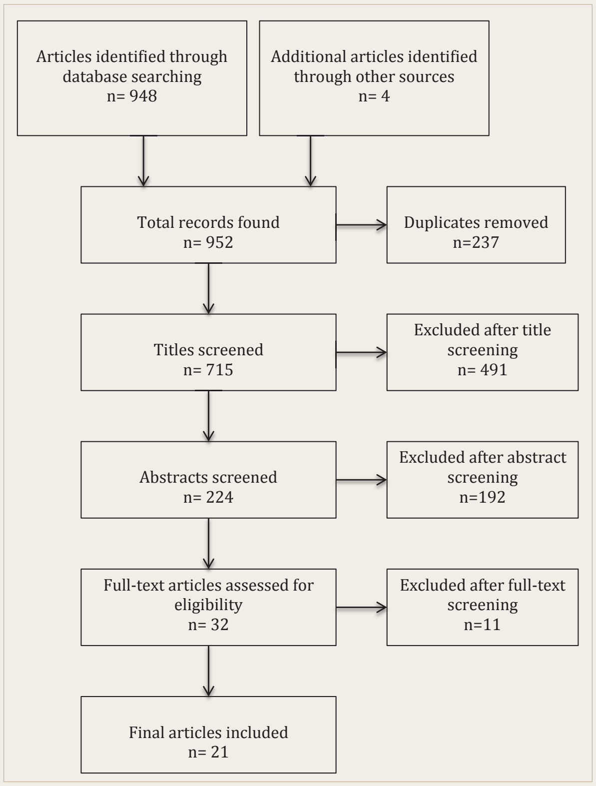
The initial search using the terms elaborated in the methodology, in varying permutations and combinations, yielded over 900 results. These were pared down to exclude studies that did not consider factors responsible for adverse mental health outcomes in health care professionals, the above being the area of interest of our review. Studies that did not meet the inclusion criteria were also removed. Finally, the most relevant articles were selected for the purpose of review. The information extracted from the pertinent original research articles has been laid out in **Table 1**.

Based on a detailed and critical evaluation, we were able to classify the factors affecting the mental health of HCWs during an epidemic into several themes.

1. Age: Two studies found an association between age and psychological distress. One study done in China following the COVID-19 pandemic found that middle-aged staff tended to have a higher risk of mental health problems, owing to greater family burden, while another study conducted after SARS concluded that younger age was associated with greater depressive symptomatology.[7,8] Overall, older HCWs suffered fewer psychological setbacks during an epidemic outbreak.
2. Gender: There is a lack of consensus about the association of psychiatric morbidity with gender, with some studies reporting it to be more common in females and others stating the contrary. Two studies done during the SARS epidemic and two others carried out during the COVID-19 pandemic have shown that psychiatric morbidity is higher among female HCWs.[2,9–11] One study undertaken during the Ebola pandemic suggested higher psychiatric morbidity among men.[12] Additionally, this study noted that male medical staff were prone to encounter greater stigmatization from the community at large.
3. Marital status: Two studies conducted after SARS documented greater levels of anxiety among married hospital staff.[9,13] On the other hand,

FIGURE 1.

Flowchart of Screening and Inclusion/Exclusion of Studies



two other studies determined that persons who were unmarried had a higher risk of depressive symptoms, thereby pointing to the possible role of spouses in guarding against depression, by being a source of social support.[7,8] Hence, it was shown that family ties contributed to anxiety symptoms but protected against depressive symptoms.

4. Educational level: A study conducted during the Ebola crisis concluded that greater educational attainment was associated with a lesser quantum of psychological suffering.[14] Lacunae in knowledge concerning Ebola in medical personnel was found to be associated with lower scores on scales measuring health-related quality of life.[15] Educational level was hence a predictor of how people respond in stressful situations like an epidemic outbreak, with less education contributing to greater psychological effects.
5. Occupational role: Studies have found that workers on the frontlines of an epidemic are more prone to psychological problems.[2,7–9,11,14,16] One study determined that the number of hours spent treating symptomatic patients at close quarters was a predictor of psychological distress in staff.[17] Medical personnel caring for colleagues who were unwell were also concerned and anxious about their level of expertise.[18] Whereas some studies observed that nurses were more prone to post-traumatic stress, others noted that physicians were at higher risk.[3,7,19,20] Depressive symptoms were more common than anxious symptoms among doctors and nurses.[7] Having an intermediate professional designation was associated with greater distress.[11] One study found that the psychological distress experienced by general physicians was significantly higher than that of the Traditional Chinese Medicine practitioners.[21]

   The level of work experience was also significant to mental distress. Newly inducted staff with work experience less than two years had significantly higher scores on mental health questionnaires.[7] Non-essential staff and technicians reported feeling isolated and disconcerted that they were unable to contribute substantially to relief efforts. The term “non-essential” may have added to this sentiment.[7,18] Compared to staff in tertiary hospitals, those in secondary hospitals reported higher scores on scales measuring symptoms of depression, anxiety, and insomnia.[7,11] Samples from general hospitals of western medicine were more likely to report psychological distress and anxious symptoms, while those who worked at infectious disease hospitals reported more depressive symptoms.[7] Hence, health care professionals with less experience, as well as greater and more prolonged patient contact, were at greater risk of psychological distress.
6. Past medical history: A recent survey found that among health personnel, having an underlying medical condition was a risk factor for depression, anxiety, insomnia, somatization, and obsessive-compulsive symptoms.[10] A history of traumatic events was also significantly associated with greater depressive symptomatology.[8] Another study published in Lancet observed that persons with pre-existing mental health issues received less support compared to their counterparts with no such past history.[7] One study on HCWs treating MERS patients pointed out that they were prone to develop symptoms similar to post-traumatic stress disorder (PTSD) even after one month had elapsed.[16] Studies have also established that a neurotic personality often sets the stage for mental health issues following stressors such as an epidemic.[3,16] Hence, a history of past medical or psychiatric disorders was noted to make health workers more vulnerable to psychological disturbances during an epidemic.
7. Affliction of family and friends: The occurrence of the epidemic disease in close family and friends predictably has a negative influence on the psychological status and morale of health care personnel. This was documented in two studies on SARS frontline workers.[8,9] A separate study conducted in emergency department personnel concluded that the overall

TABLE 1.

Studies Included in the Review

Epidemic/ Country	Authors/Design	Participants	Psychological Measures	Results
COVID-19 China (Wuhan)	Kang et al. 2020 Cross-sectional (web-based survey)	183 doctors and 811 nurses	Generalized Anxiety Disorder (GAD-7) Patient Health Questionnaire (PHQ-9) Insomnia Severity Index (ISI-7) Impact of Event Scale-Revised (IES-R)	In total, 36.9% of the sample had sub-threshold mental health disturbances, 34.4% had mild disturbances, 22.4% had moderate disturbances, and 6.2% had severe disturbances. Younger women were affected to a greater extent. In total, 36.3% of participants had accessed printed psychological materials, 50.4% had accessed psychological resources available on media platforms, and 17.5% had participated in psychotherapy.
COVID-19 China (Wuhan, Hubei province)	Lai et al. 2020 Cross-sectional	493 doctors and 764 nurses	Generalized Anxiety Disorder (GAD-7) Patient Health Questionnaire (PHQ-9) Insomnia Severity Index (ISI-7) Impact of Event Scale-Revised (IES-R)	A considerable proportion of participants reported symptoms of depression (50.4%), anxiety (44.6%), insomnia (34.0%), and distress (71.5%). Nurses, women, frontline health care workers, and those working in Wuhan, China, reported more severe degrees of all measurements of mental health symptoms. Frontline health care workers involved in direct diagnosis, treatment, and care of patients with COVID-19 had a higher risk of symptoms of depression, anxiety, insomnia, and distress, and these results were statistically significant.
COVID-19 China (31 provinces)	Liu et al. 2020 Cross-sectional (web-based survey)	1,853 doctors and 2,826 nurses	WHO 20-item Self-Reporting Questionnaire (SRQ-20) Zung Self-rating Anxiety Scale (SAS) Zung Self-rating Depression Scale (SDS)	The prevalence of psychological distress, anxious symptoms, and depressive symptoms were 15.9%, 16.0%, and 34.6%. Those who were middle-aged, divorced or widowed, seldom or not living with family members, nurses, working at high-risk departments, having experiences of treatment for COVID-19 or other infectious diseases, from designated hospitals for COVID-19 treatment and working in higher level hospitals had a higher risk of developing at least one mental health problem. Medical staff with more mental health problems received less psychological help compared with those without any problem.
COVID-19 China	Zhang et al. 2020 Cross-sectional (web-based survey)	680 doctors, 247 nurses, and 1,255 non-medical health workers	Insomnia Severity Index (ISI) Generalized Anxiety Disorder (GAD-2) Patient Health Questionnaire (PHQ-4) Symptom Check List Revised (SCL-90-R)	Compared to non-medical health workers (*n* = 1,255), medical health workers (*n* = 927) had a higher prevalence of insomnia (38.4% vs. 30.5%), anxiety (13.0% vs. 8.5%), depression (12.2% vs. 9.5%), somatization (1.6% vs. 0.4%), and obsessive-compulsive symptoms (5.3% vs. 2.2%). Among medical health workers, having a physical illness was an independent risk factor for insomnia, anxiety, depression, somatization, and obsessive-compulsive symptoms. 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.
COVID-19 Pondicherry, India	Rajkumar 2020 Narrative review	Four articles finally included	A literature search of PubMed database	Symptoms of anxiety and depression (16%–28%) and self-reported stress (8%) are common psychological reactions to the COVID-19 pandemic.
Ebola Sierre Leone	Ji et al. 2016 Cross-sectional	59 Sierra Leone medical staff, 21 logistic staff, 22 medical students, 41 Chinese medical staff, 18 Ebola survivors	Symptom Check List Revised (SCL90-R)	Ebola survivors had extreme somatization, obsession compulsion, depression, anxiety, hostility, phobic anxiety, paranoid ideation, bad sleep, and appetite. Medical staff, who had direct contact with Ebola patients, including nurses, red zone cleaners, and blood team members, had more obvious psychological symptoms. Higher level of education received was associated with fewer psychological symptoms.
Ebola Liberia	Li et al. 2015 Cross-sectional	52 medical staff	Symptom Check List Revised (SCL90-R)	Mental distress among participants was not very serious. Male medical workers and those responsible for cleaning and disinfection showed significant increases in scores for psychological dimensions, such as obsessive-compulsive, anxiety, phobic anxiety, interpersonal sensitivity, paranoid ideation, and positive symptom total.

Ebola Germany	Lehmann et al. 2015 Cross-sectional	42 doctors and nurses from internal medicine, 32 doctors and nurses responsible for Ebola patient treatment, 12 laboratory staff from the research laboratory	Short Form Health Survey (SF-12) Somatic Symptom Scale (SSS-8) Generalized Anxiety Disorder scale (GAD-7) Patient Health Questionnaire (PHQ-9) Functional Assessment of Chronic Illness Therapy (FACIT)	The best predictors of poor physical and mental HrQoL were perceived lack of knowledge about the Ebola virus disease and fatigue.
Ebola Sierre Leone	McMahon et al. 2016 Qualitative	35 health care providers comprising community health officers, nurses, maternal child health aides, community health workers, and laboratory technicians	In-depth interviews and Inductive coding on transcripts	Providers described feeling lonely, ostracized, unloved, afraid, saddened, and no longer respected. They discussed restrictions on behaviors that enhance coping, including attending burials and engaging in physical touch. Providers described infection prevention measures as necessary but divisive because screening booths and protective equipment inhibited bonding or "suffering with" patients.
Ebola Sierra Leone	Raven et al. 2018 Qualitative	25 health workers and 19 key informants	In-depth interviews and inductive coding on transcripts	There were several important coping strategies, including those that drew upon existing mechanisms: being sustained by religion, a sense of serving their country and community, and peer and family support. Externally derived strategies included: training which built health worker confidence in providing care, provision of equipment to do their job safely, a social media platform which helped health workers deal with challenges, workshops that provided ways to deal with the stigma associated with being a health worker, and risk allowance, which motivated staff to work in facilities and provided an additional income source.
MERS-CoV Korea	Lee et al. 2018 Cross-sectional	1,800 hospital practitioners and 73 quarantined patients undergoing hemodialysis	Impact of Events Scale-Revised (IES-R) (administered twice, once during the hospital shutdown and again one month after the shutdown) Mini International Neuropsychiatric Interview (MINI) Hospital Anxiety and Depression Scale (HADS)	During the initial stages of the MERS outbreak, health care workers who performed MERS-related tasks scored significantly higher on the total IES-R and its subscales. In the second assessment of the high-risk group, the sleep and numbness subscale scores from the IES-R differed depending on the implementation of home quarantine, and the intrusion subscale scores differed depending on the performance of MERS-related tasks.
SARS Taiwan (Taipei)	Chen et al. 2007 Prospective	90 task force members (66 nurses, 11 physicians, 7 technicians, 6 respiratory care specialists) and 82 control subjects	Medical Outcome Study Short-Form 36 Survey (MOS SF-36)	Vitality, social functioning, and mental health immediately after care and vitality and mental health after self-quarantine and off-duty shifts were among the worst subscales. The social functioning, role emotional, and role physical subscales significantly improved after self-quarantine and off-duty shifts. The length of contact time with patients with SARS was associated with some subscales (role emotional, role physical, and mental health) to a mild extent. The total number of contact-hours with symptomatic patients with SARS was a borderline predictor of mental health score.
SARS Taiwan	Chong et al. 2004 Cross-sectional	1,257 health workers	Impact of Events Scale (IES) Chinese Health Questionnaire to assess psychiatric morbidity (CHQ)	The estimated prevalence of psychiatric morbidity was 75.3%. In total, 77.4% of respondents reported anxiety, 74.2% depression, poor family relationships, 69.0% somatic symptoms, and 52.3% sleep problems. The average IES score was 34.8 with significantly higher scores in men, in technicians, in those with work experience of less than two years, among those exposed to SARS and in those not living with their family. No significant difference in the IES score was found between marital status and different age groups. Those who were responsible for the care of SARS patients, especially women, manifested higher rates of psychiatric morbidity. No statistically significant difference was found in relation to age, marital status, or living conditions.

SARS China	Liu et al. 2012 Cross-sectional	549 hospital employees	Chinese version of the Center for Epidemiologic Studies Depression Scale (CES-D) Impact of Event Scale-Revised (IES-R)	In total, 77.2% of the sample had CES-D scores lower than 16 and so were considered to have a low level of depressive symptoms, 14.0% had CES-D scores between 16 and 24 and were considered to have moderate levels of depressive symptoms, the remaining 8.8% had CES-D scores of 25 or higher and were considered to have high levels of depressive symptoms. Being single, having been quarantined during the outbreak, having been exposed to other traumatic events before SARS, and perceived SARS-related risk level during the outbreak were found to increase the odds of having a high level of depressive symptoms three years later. Altruistic acceptance of risk during the outbreak was found to decrease the odds of high post-outbreak depressive symptom levels.
SARS Taiwan	Lu et al. 2006 Cross-sectional	127 health workers	Chinese Health Questionnaire Eysenck Personality Questionnaire Parental Bonding Instrument	A total of 22 participants (17.3%) developed significant psychological symptoms, and 105 participants (82.7%) showed no obvious symptoms. Maternal care and neuroticism directly influenced the ability of health care workers to deal with the impact of SARS. Maternal overprotection had an indirect influence on the ability to cope with the impact of SARS.
SARS Taiwan	Lung et al. 2009 Longitudinal	127 health workers	Chinese Health Questionnaire to assess psychiatric morbidity Eysenck Personality Questionnaire to assess personality traits Parental Bonding Instrument to assess care and protection for each parent	Health care workers who had psychological symptoms at follow-up reported these were associated with daily-life stress and not the SARS crisis. Early maternal attachment and neuroticism were found to have a greater effect on life-threatening stress than daily-life stress. Physicians had more somatic symptoms than nurses.
SARS Canada (Toronto)	Maunder et al. 2003 Retrospective iterative study	19 SARS infected patients of which 11 were health workers	Descriptions of the experiences of staff	Patients with SARS reported fear, loneliness, boredom, and anger. They worried about the effects of quarantine and contagion on family members and friends and experienced anxiety about fever and the effects of insomnia. Staff was adversely affected by fear of contagion and of infecting family, friends, and colleagues. Caring for health care workers as patients and colleagues was emotionally difficult. Uncertainty and stigmatization were prominent themes for both staff and patients. The hospital's response included establishing a leadership command team and a SARS isolation unit, implementing mental health support interventions for patients and staff, overcoming problems with logistics and communication, and overcoming resistance to directives.
SARS Singapore	Verma et al. 2004 Cross-sectional	721 general practitioners and 329 traditional Chinese medicine practitioners	Generalized Health Questionnaire (GHQ-28) Impact of Events Revised Scale (IES-R) HIV Stigma Scale	The mean score of the GHQ somatic, anxiety, and social dysfunction subscales were significantly higher in General Practitioners as compared to Traditional Chinese Medicine Practitioners. The GHQ total score, as well as the subscales, was significantly correlated with the IES-R and stigma subscales ($P < 0.05$). General Practitioners who were directly involved in the care of patients with SARS were significantly more likely to be affected as compared to those not involved in the care of patients with SARS.
SARS Hong Kong	Wong et al. 2005 Cross-sectional	123 doctors, 257 nurses, 82 health care assistants	18 item self-designed questionnaire to assess distress Brief COPE (Chinese version)	The mean overall distress level was 6.19 out of a 10-point scale. The mean overall distress levels for doctors, nurses, and health care assistants were 5.91, 6.52, and 5.44, respectively. The overall distress level for nurses was significantly higher than for health care assistants but not doctors. The overall distress level was highly and significantly correlated with six sources of distress: vulnerability/loss of control, health of self, spread of virus, health of family and others, changes in work, and being isolated. In terms of coping strategies, doctors were significantly more likely than nurses and health care assistants to use planning; nurses were significantly more likely than doctors to use behavioral disengagement; whereas health care assistants were significantly more likely to use self-distraction ($P < 0.05$).

SARS China	Wu et al. 2009 Cross-sectional	549 hospital employees	Impact of Events Revised Scale (IES-R)	In total, 10% of respondents experienced high levels of posttraumatic stress (PTS) symptoms since the SARS outbreak. Respondents who had been quarantined, or worked in high-risk locations such as SARS wards, or had friends or close relatives who contracted SARS, were 2 to 3 times more likely to have high PTS symptom levels, than those without these exposures. Respondents' perceptions of SARS-related risks were significantly positively associated with PTS symptom levels and partially mediated the effects of exposure. Altruistic acceptance of work-related risks was negatively related to PTS levels.
SARS London, United Kingdom	Brooks et al. 2017 Systematic review	22 papers finally included	Data extraction from four databases using PRISMA guidelines	The psychological impact of SARS on employees appeared to be associated with occupational role, training/preparedness, high-risk work environments, quarantine, role-related stressors, perceived risk, social support, social rejection/isolation, and impact of SARS on personal or professional life.

COVID-19: coronavirus disease 2019, MERS-CoV: Middle Eastern respiratory syndrome coronavirus, SARS: severe acute respiratory syndrome, WHO: World Health Organization, HrQoL: Health-related quality of life, COPE: Coping Orientation to Problems Experienced, PTS: post-traumatic stress; PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

distress level was highly and significantly correlated with the health of family and significant others.[19] This is, therefore, an important factor that needs to be addressed.

8. Attachment and coping styles: One study conducted during SARS found that a majority of aid workers deployed in the disaster suffered a stress reaction, yet this was guided by both neuroticism and prior levels of maternal attachment. A greater level of maternal over-protection predicted worse mental health following the disaster, and these findings persisted in a three-year follow-up period.[3,20] A separate study concluded that certain coping strategies such as denial and substance use were found to be positively correlated to the level of emotional distress.[19] These findings make clear that faulty attachment and coping styles are related to psychological issues in adult HCWs during stressful situations like an epidemic.
9. Effect of quarantine: Nearly 30% of quarantined individuals in the general population develop psychological symptoms, with longer durations of quarantine associated with greater distress.[22] HCWs have been reported to experience fear, frustration, and stigma both during and after mandated quarantines.[23] They had worries regarding their personal safety, passing on the infection to significant others as well as concerns about being stigmatized in society.[18] One study found that the vitality and psychological well-being of SARS HCWs one month after quarantine remained worse than those in a control group.[17] Studies conducted three years after the SARS outbreak also determined that respondents who had been quarantined were two to three times more likely to have high levels of post-traumatic stress, as well as an increased prevalence of depressive symptoms.[8,9] Similar results were obtained following the MERS epidemic.[16] These findings highlight the fact that persons with mental health setbacks take longer to recuperate and bring to attention the adverse mental health effects of quarantine on HCWs.
10. Perception and altruistic acceptance of risk: A study published in the Canadian Journal of Psychiatry highlighted the important proposition that post-traumatic symptom levels following an epidemic may be related to peoples' perceptions of the stress and the risks involved. In the above study, a positive correlation was established between the two.[9] The authors also noted that the negative mental health effects could be partially offset by an altruistic acceptance of risk; in this case, a negative correlation was established.
11. Stigma: Studies have noted that frontline workers are at an exceptionally high risk of contracting the epidemic disease, as well as being stigmatized, ostracized, and even attacked.[24–29] In one qualitative study, HCWs described feeling stigmatized by those with whom they had earlier shared close relations, and the overall effect on their mental state was described as distressing.[5] Psychosocial support extended to field workers by mental health personnel as part of another study was found to be useful in mitigating the effects of stigma.[6] Therefore, stigma is a significant factor that has been found to affect work morale and productivity in HCWs during epidemics.
12. Social isolation: While the lack of social contact can have a detrimental effect on the mental health of the general population, these are multiplied in HCWs. A study of distancing measures in a tertiary hospital following SARS noted that employees were advised not to interact with colleagues outside of work hours, at a time when people longed for understanding from like-minded individuals. Meals had to be taken alone as eating would necessitate removing one's mask. E-mail was used extensively as a substitute for personal interaction and communication. It was concluded that these measures put into place, while being scientifically sound, led to staff feeling lonely and "cut-off," which in turn affected their psychological health.[17] These findings have also been noted in observations made during subsequent epidemic outbreaks.[11,14,17,30]
13. Resilience: Resilience is broadly understood as the ability to bounce back from setbacks. Only one study included in the review evaluated the

role of resilience as a protective factor in HCWs during an epidemic. In this qualitative study, field workers, during the course of interviews, reported that in spite of a lack of adequate infrastructure, they were able to overcome challenges in order to carry out their professional responsibilities. This was interpreted by the authors as an indicator of considerable reserves of resilience in the study population.[6]

Discussion

The literature search was exhaustive as it spanned four epidemics over 20 years, in addition to being specific to the vulnerable group in question, that is, HCWs. A number of factors were determined to be noteworthy in contributing to mental health effects. The factors that we studied have been divided under the broad categories of socio-demographic variables, individual characteristics, professional characteristics, social characteristics, and psychological constructs.

First, we evaluated socio-demographic variables to characterize their impact on mental health. While these variables obviously cannot be altered, literature does point to certain sub-groups who would benefit from added psychosocial support.[31] An evaluation of the differential psychological effects based on age revealed that middle-aged doctors and health care staff were more likely to suffer psychological consequences during outbreaks. The additional responsibilities associated with this age bracket was deemed responsible for mental health setbacks.[7] With regard to gender, there were varying conclusions reached on variations in mental health outcomes. Whereas some studies found that women were more predisposed owing to their psychological constitution, others reported that men suffered greater owing to the nature of their work, bringing them in closer contact with suspected cases. Marriage and having a supportive partner were found to protect against post-traumatic stress symptoms when working in unfavorable environments during an epidemic.[7,8] Studies have documented that greater social support leads to better psychological outcomes.[32,33] Better organizational support has also been found to allay fears in medical staff.[34] We found that educational attainment and awareness was associated with less psychological distress, possibly due to better coping strategies and better access to social support systems.

With respect to individual characteristics, a past history of mental health problems was found to make HCWs more vulnerable to depression and anxiety following the stress of an epidemic.[10] Such individuals were also found to access psychological services less and hence were less benefitted by such available interventions.[7] Co-existing medical problems added to the probability of a new-onset psychological issue. These findings remind us that future psychological intervention providers should pay more attention to medical staff with mental health problems. Supportive measures could be provided for those staff with such high-risk characteristics on a priority basis. HCWs who had close relations who fell prey to the illness were two to three times more likely to suffer psychological consequences.[9] These findings suggest that persons fitting a certain socio-demographic profile, specifically middle-aged persons with greater family responsibilities, fewer social contacts, less educational attainment, and a past history of medical and psychiatric illness are more prone to psychological distress. Such individuals in a health team need to be promptly identified and provided the necessary support, by way of interventions like delineation of work responsibilities and provision of psychological counseling services.

Next, the significance of professional characteristics and variables were noted. Different studies came to different conclusions as to whether doctors, nurses, or auxiliary staff had greater psychological consequences. However, a systematic review conducted after SARS determined that nurses were more likely to be affected on the occupational spectrum.[4] Doctors and nurses on the frontlines, with closer and more prolonged patient contact, had greater mental health problems. The stress placed on HCWs functioning in these so-called “high-risk” environments have been elucidated in several studies, and there is a need to identify such psychological problems at an early stage.[9,35,36]

A lack of adequate work experience and having to treat colleagues suffering from the illness were found to worsen existing stress, precipitating anxiety and depression. Studies have recorded that a sense of expertise that comes with training facilitates a more robust psychological response to an epidemic. In this way, training is found to be a protective factor in preventing psychological breakdown.[37–39] Workers who had to undergo mandatory quarantines secondary to exposures were found to have worse psychological outcomes, especially with regard to sleep and post-traumatic stress symptoms, when compared to controls. Quarantine periods have been found to amplify post-traumatic stress symptoms of frontline workers in several studies.[9,36,40] Such issues were found to take a long time to recover, sometimes persisting as long as three years after the outbreak. The length of quarantine has also been previously associated with negative outcomes, such as anger and avoidance.[34] Hence, a review of literature surrounding the professional characteristics contributing to psychological distress reveals that nursing staff, those with fewer years of experience, staff working in designated isolation wards, and persons who have had to undergo quarantines are at greater risk. Such personnel need to be provided the requisite training for medical management of afflicted patients. Supply of adequate personal protective equipment, working in shorter shifts, provision of psychological support services, and telephonic check-ins during quarantine can help mitigate psychological setbacks.

On the social front, the stigma faced by HCWs in the community has been adequately described in qualitative studies. The effects of this, in terms of work satisfaction, motivation, and psychosocial setbacks, have also been illustrated in several journal communications. Stigma was found to lead to social isolation and ostracism of health care personnel in their communities. These, in turn, had far-reaching consequences on their mental health.[13,32,41,42] The stigma surrounding HCWs may be alleviated by tackling misinformation regarding disease spread. Public education campaigns to rebuild trust within the community and promoting public acts to show appreciation to health workers can also play a role in reducing stigma.[6]

On evaluating the role of psychological constructs, we noted that a low level of maternal attachment and greater over-protectiveness were associated with increased morbidity.[20] Maternal attachment and personality characteristics of neuroticism were found to have a more profound impact on life-threatening stressful events than daily-life stresses.[3] Certain coping styles like anticipation and planning were found to be more protective than others. Doctors were more likely to use planning as a coping strategy, whereas nurses utilized behavioral disengagement.[19] Modalities of accessing information surrounding the epidemic and the perception of risk to self were also important in predicting psychological problems. The concept of "perceived risk" was studied, wherein we noted that greater perceived risk led to increased levels of post-traumatic stress. This has been noted in other hospital-based studies as well, which has established a similar correlation with PTSD symptoms.[9,13,43] A sense of altruism concerning one's work was protective and helped allay fears of contracting the disease oneself or transmitting it to loved ones.[9] These findings have ramifications, as mature coping mechanisms and a positive perception of one's role in the epidemic response are found to be protective. Conducting workshops on these aspects for health workers can produce positive outcomes in this regard.

Recommendations

Several studies and journal correspondences from frontline workers during epidemic crises have suggested interventions and guidelines to mitigate the psychological aftermath on HCWs. Whereas some suggestions were region-based and limited by available area-specific resources, others were broader and easily generalizable to a larger pool of health care personnel.

We enlist below a list of suggestions to safeguard the mental health of medical personnel during an epidemic, based on the current review of literature:

1. Managers and senior staff must be able to identify personnel at greater risk of developing psychological issues and provide support promptly where necessary. Less critical roles must be identified for those more vulnerable to crises.[37,44]
2. Frontline staff must be identified and suitably upskilled with psychological first aid training and knowledge on coping strategies in order to be able to support co-workers showing early signs of distress.[14,44–46]
3. A forum must be made available for medical personnel to voice their concerns surrounding the challenges of patient care. Peer support programs must be made available and accessible.[7]
4. Guidelines must be put in place to ensure greater physical distancing and better personal hygiene at the workplace. Conducting meetings on online platforms should be encouraged as a step in the right direction.[11]
5. Quarantine must be promoted only when deemed appropriate, that is, when there is significant disease transmission even when the person does not show symptoms, and if this asymptomatic period is neither too long nor too short.[47,48]
6. Whenever planning is underway to execute measures to safeguard the psychological well-being of medical workers and hospital employees, discussions should involve all involved disciplines. There must be adequate representation from the departments of psychology, psychiatry, chaplaincy, social work, nursing and hospital administration. This will ensure that multiple viewpoints are considered to put forward the most effective plans.[46,49]
7. Psychological assistance hotline teams must be set up, comprised of volunteers who have received the relevant psychological training. Team members will be able to provide telephonic guidance to personnel to help effectively tackle mental health problems.[30] For instance, clinical psychologists based at the National Health Service (NHS) Trust at King's College, London have set up a volunteer service that provides assistance for medical personnel through various platforms like e-mail and video conferencing.[14]
8. The National Institute for Health and Care Excellence (NICE) recommends "active monitoring" to make sure that staff who fall sick are identified early and supported with high-quality care.[50]
9. Leaders, both at the grassroots and higher levels of the federal government, must offer clear and authoritative instructions and set out appropriate guidelines regarding protective measures, which in turn can allay excessive fear and apprehension.[14,51]

Role of Mental Health Professionals

Psychiatrists and clinical psychologists need to assume leadership roles in order to safeguard the mental health of treating teams during an epidemic. Their expertise can be invaluable in the early identification and treatment of psychological issues that arise in their clinical colleagues. Medication, as well as psychological interventions like cognitive behavior therapy, can be offered to help those who come forward to seek support. Workshops may be conducted for medical staff to prepare them for the psychological challenges associated with being on the frontlines of the epidemic. Psychiatrists can screen personnel for psychological vulnerabilities before being deployed to especially stressful work environments. They can work with team leaders to allay stigma and encourage help-seeking. Team leaders can be encouraged to foster stronger social bonds between team members and strengthen social support systems at the workplace. Under the guidance of a psychiatrist, clinical supervisors can be supported to engage in "active monitoring" of their colleagues.[50] Mental health professionals can thus play a prominent role in sustaining the psychological well-being of HCWs during an epidemic.[52]

Limitations

Despite the included studies being of several designs, the largest proportion was cross-sectional in nature. Prospective and longitudinal studies, which provide more robust evidence, were fewer in number. Some of the studies were conducted during the peak of the epidemic outbreak when governments had passed advisories on staying indoors. Information was hence collected through web-based surveys. Questionnaires were also mailed to laypersons who acted as a control group in some studies. Without personal interaction with a clinical professional who, under normal circumstances, generally administers such psychological tools, this group may have had unanswered queries about some items on the scale. This may have produced some inconsistency in the test results in a small proportion of subjects. Finally, the response rates were low in a few studies and less than 50% in two of the evaluated works.[19,21]

Conclusion

Our study highlights those factors that play an important role in determining the psychological impact of epidemics on HCWs. A better understanding of the subject can go a long way toward putting in place measures to mitigate this, thereby ensuring a healthy and sustainable medical workforce.

Declaration of Conflicting Interests

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References

1. Sim M. The COVID-19 pandemic: major risks to healthcare and other workers on the front line. Occup Environ Med 2020; 77(5): 281–282.
2. Chong M, Wang W, Hsieh W, et al. Psychological impact of severe acute respiratory syndrome on health workers in a tertiary hospital. Br J Psychiatry 2004; 185(2): 127–133.
3. Lung F, Lu Y, Chang Y, et al. Mental symptoms in different health professionals during the SARS attack: a follow-up study. Psychiatr Q 2009; 80(2): 107–116.
4. Brooks S, Dunn R, Amlôt R, et al. A systematic, thematic review of social and occupational factors associated with psychological outcomes in healthcare employees during an infectious disease outbreak. J Occup Environ Med 2018; 60(3): 248–257.
5. McMahon S, Ho L, Brown H, et al. Healthcare providers on the frontlines: a qualitative investigation of the social and emotional impact of delivering health services during Sierra Leone's Ebola epidemic. Health Policy Plan 2016; 31(9): 1232–1239.
6. Raven J, Wurie H, and Witter S. Health workers' experiences of coping with the Ebola epidemic in Sierra Leone's health system: a qualitative study. BMC Health Serv Res 2018; 18(1): 251.
7. Liu Z, Han B, Jiang R, et al. Mental health status of doctors and nurses during COVID-19 epidemic in China. SSRN Electron J [internet] 2020. http://dx.doi.org/10.2139/ssrn.3551329. Accessed April 19, 2020.
8. Liu X, Kakade M, Fuller C, et al. Depression after exposure to stressful events: lessons learned from the severe acute respiratory syndrome epidemic. Compr Psychiatry 2012; 53(1): 15–23.
9. Wu P, Fang Y, Guan Z, et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. Can J Psychiatry 2009; 54(5): 302–311.
10. Zhang W, Wang K, Yin L, et al. Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China [published online April 9, 2020]. Psychother Psychosom. DOI: 10.1159/000507639.
11. Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Netw Open 2020; 3(3): e203976.
12. Li L, Wan C, Ding R, et al. Mental distress among Liberian medical staff working at the China Ebola Treatment Unit: a cross sectional study. Health Qual Life Outcomes 2015; 13(1): 156.
13. Nickell L, Crighton EJ, Tracy CS, et al. Psychosocial effects of SARS on hospital staff: survey of a large tertiary care institution. Can Med Assoc J 2004; 170(5): 793–798.
14. Ji D, Ji Y, Duan X, et al. Prevalence of psychological symptoms among Ebola survivors and healthcare workers during the 2014–2015 Ebola outbreak in Sierra Leone: a cross-sectional study. Oncotarget 2017; 8(8): 12784–12791.
15. Lehmann M, Bruenahl C, Addo M, et al. Acute Ebola virus disease patient treatment and health-related quality of life in health care professionals: a controlled study. J Psychosom Res 2016; 83: 69–74.
16. Lee S, Kang W, Cho A, et al. Psychological impact of the 2015 MERS outbreak on hospital workers and quarantined hemodialysis patients. Compr Psychiatry 2018; 87: 123–127.
17. Chen N, Wang P, Hsieh M, et al. Impact of severe acute respiratory syndrome care on the general health status of healthcare workers in Taiwan. Infect Control Hosp Epidemiol 2007; 28(1): 75–79.
18. Maunder R, Hunter J, Vincent L, et al. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. CMAJ 2003; 168(10): 1245–1251.
19. Wong T, Yau J, Chan C, et al. The psychological impact of severe acute respiratory syndrome outbreak on healthcare workers in emergency departments and how they cope. Eur J Emerg Med 2005; 12(1): 13–18.
20. Lu Y, Shu B, Chang Y, et al. The mental health of hospital workers dealing with severe acute respiratory syndrome. Psychother Psychosom 2006; 75(6): 370–375.
21. Verma S, Mythili S, Chan YH, et al. Post-SARS psychological morbidity and stigma among general practitioners and traditional Chinese medicine practitioners in Singapore. Ann Acad Med Singapore 2004; 33(6): 743–748.
22. Hawryluck L, Gold W, Robinson S, et al. SARS control and psychological effects of quarantine, Toronto, Canada. Emerg Infect Dis 2004; 10(7): 1206–1212.
23. Robertson E, Hershenfield K, Grace S, et al. The psychosocial effects of being quarantined following exposure to SARS: a qualitative study of Toronto health care workers. Can J Psychiatry 2004; 49(6): 403–407.
24. Koh Y, Hegney DG, and Drury V. Comprehensive systematic review of healthcare workers' perceptions of risk and use of coping strategies towards emerging respiratory infectious diseases. Int J Evid Based Healthc 2011; 9(4): 403–419.
25. Ives J, Greenfield S, Parry JM, et al. Healthcare workers' attitudes to working during pandemic influenza: a qualitative study. BMC Public Health 2009; 9: 56.
26. Maunder RG, Lancee WJ, Mae R, et al. Computer-assisted resilience training to prepare healthcare workers for pandemic influenza : a randomized trial of the optimal dose of training. BMC Health Serv Res 2010; 10: 72.
27. Imai H, Matsuishi K, Ito A, et al. Factors associated with motivation and hesitation to work among health professionals during a public crisis: a cross sectional study of hospital workers in Japan during the pandemic (H1N1) 2009. BMC Public Health 2010; 10(1): 672
28. Hewlett BL and Hewlett BS. Providing care and facing death: nursing during Ebola outbreaks in central Africa. J Transcult Nurs 2005; 16(4): 289–297.
29. Kinsman J. "A time of fear": local, national, and international responses to a large Ebola outbreak in Uganda. Global Health 2012; 8: 15.
30. Kang L, Ma S, Chen M, et al. 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 [published online March 30, 2020]. Brain Behav Immun. DOI:10.1016/j.bbi.2020.03.028.

31. Tsamakis K, Rizos E, Manolis A, et al. COVID-19 pandemic and its impact on mental health of healthcare professionals. Exp Ther Med 2020; 19(6): 3451–3453.
32. Tam C, Pang E, Lam L, et al. Severe acute respiratory syndrome (SARS) in Hong Kong in 2003: stress and psychological impact among frontline healthcare workers. Psychol Med 2004; 34(7): 1197–1204.
33. Chen R, Chou K, Huang Y, et al. Effects of a SARS prevention programme in Taiwan on nursing staff's anxiety, depression and sleep quality: a longitudinal survey. Int J Nurs Stud 2006; 43(2): 215–225.
34. Marjanovic Z, Greenglass E, and Coffey S. The relevance of psychosocial variables and working conditions in predicting nurses' coping strategies during the SARS crisis: an online questionnaire survey. Int J Nurs Stud 2007; 44(6): 991–998.
35. Chen C, Wu H, Yang P, et al. Psychological distress of nurses in Taiwan who worked during the outbreak of SARS. Psychiatr Serv 2005; 56(1): 76–79.
36. Wu P, Liu X, Fang Y, et al. Alcohol abuse/dependence symptoms among hospital employees exposed to a SARS Outbreak. Alcohol Alcohol 2008; 43(6): 706–712.
37. Brooks S, Dunn R, Sage C, et al. Risk and resilience factors affecting the psychological wellbeing of individuals deployed in humanitarian relief roles after a disaster. J Ment Health 2015; 24(6): 385–413.
38. Brooks S, Dunn R, Amlôt R, et al. Social and occupational factors associated with psychological distress and disorder among disaster responders: a systematic review. BMC Psychol 2016; 4(1): 18.
39. Brooks S, Dunn R, Amlôt R, et al. Social and occupational factors associated with psychological wellbeing among occupational groups affected by disaster: a systematic review. J Ment Health 2017; 26(4): 373–384.
40. Bai Y, Lin C, Lin C, et al. Survey of stress reactions among health care workers involved with the SARS outbreak. Psychiatr Serv 2004; 55(9): 1055–1057.
41. Maunder R, Lancee W, Rourke S, et al. Factors associated with the psychological impact of severe acute respiratory syndrome on nurses and other hospital workers in Toronto. Psychosom Med 2004; 66(6): 938–942.
42. Koh D, Lim M, Chia S, et al. Risk perception and impact of severe acute respiratory syndrome (SARS) on work and personal lives of healthcare workers in Singapore. Med Care 2005; 43(7): 676–682.
43. Styra R, Hawryluck L, Robinson S, et al. Impact on health care workers employed in high-risk areas during the Toronto SARS outbreak. J Psychosom Res 2008; 64(2): 177–183.
44. Manderscheid R. Preparing for pandemic avian influenza: ensuring mental health services and mitigating panic. Arch Psychiatr Nurs 2007; 21(1): 64–67.
45. Pekevski, J. First responders and psychological first aid. J Emerg Manag 2017; 11(1): 39.
46. Maunder R, Leszcz M, Savage D, et al. Applying the lessons of SARS to pandemic influenza. Can J Public Health 2008; 99(6): 486–488.
47. Day T, Park A, Madras N, et al. When is quarantine a useful control strategy for emerging infectious diseases? Am J Epidemiol 2006; 163(5): 479–485.
48. Perrin P, McCabe O, Everly G, et al. Preparing for an influenza pandemic: mental health considerations. Prehosp Disaster Med 2009; 24(3): 223–230.
49. Respiratory Therapy Society of Ontario. Pandemic influenza planning guidelines [internet], 2020. https://www.rtso.ca/pandemic-influenza-planning-guidelines/. Accessed April 22, 2020.
50. NICE. Post-traumatic stress disorder [internet], 2018. https://www.nice.org.uk/guidance/ng116. Accessed April 22, 2020.
51. World Health Organization. Health worker Ebola infections in Guinea, Liberia and Sierra Leone [internet], 2020. https://www.who.int/csr/resources/publications/ebola/health-worker-infections/en/. Accessed April 23, 2020.
52. Royal College of Psychiatrists. A statement from the Royal College of Psychiatrists on the roles and work of psychiatrists during the COVID-19 pandemic [internet], 2020. https://www.rcpsych.ac.uk/docs/default-source/about-us/covid-19/the-roles-and-work-of-psychiatrists-during-the-pandemic-statement.pdf?sfvrsn=211f6941_2. Accessed May 8, 2020.
53. Rajkumar R. COVID-19 and mental health: A review of the existing literature. Asian J Psychiatry. 2020; 52: 102066.
54. Ji D, Ji Y, Duan X, et al. Prevalence of psychological symptoms among Ebola survivors and healthcare workers during the 2014-2015 Ebola outbreak in Sierra Leone: A cross-sectional study. Oncotarget 2017; 8(8): 12784–12791.
55. Lehmann M, Bruenahl C, Addo M, et al. Acute Ebola virus disease patient treatment and health-related quality of life in health care professionals: A controlled study. J Psychosom Res 2016; 83: 69–74.

Original Article

A Cross-sectional Study of Psychiatric Comorbidity and Severity of Addiction in Patients with Early- and Late-Onset Alcohol Dependence

Anamika Das[1], Sujita Kumar Kar[1], Pawan Kumar Gupta[1], Pronob Kumar Dalal[1]

ABSTRACT

Background: Alcohol use disorder is a serious health problem with high comorbidities. Early-onset alcohol use has been associated with greater impulsivity, increased severity of dependence, frequent alcohol withdrawal complications, externalizing symptoms, and antisocial behaviors. We aimed to evaluate the psychiatric comorbidities and severity of addiction in early- and late-onset alcohol dependence.

Methods: This was a cross-sectional study. All patients fulfilling the diagnostic criteria of alcohol dependence as per *International Classification of Diseases* (10th edition) were included in it. Semi-Structured Assessment for Genetics of Alcoholism IV was applied to find the age of onset of dependence as per the lifetime frame and also to find comorbidities. Composite International Diagnostic Interview 3.0. was used to find other comorbidities. The severity of addiction was evaluated with Addiction Severity Index, 5th edition. All the sociodemographic and clinical parameters were compared between patients with the early- and late-onset alcohol dependence.

Results: Out of the 112 patients screened, 57 met the selection criteria, 26 were with early-onset and 31 with late-onset alcohol dependence. The patients were all males. The patients with early-onset alcohol dependence had a higher family history ($P = 0.006$) and were nonearning ($P = 0.002$) in comparison to the group with late-onset dependence. The comorbidity among all patients was 59.6% and 84.2% in current and lifetime frames, respectively. It was significantly higher in the early-onset group, both for current ($P = 0.015$) and lifetime ($P = 0.031$) frames. On the domains of Addiction Severity Index 5th edition, the early-onset group had a more severe profile of addiction in all domains except the medical domain.

Conclusion: Comorbidity is high among patients with alcohol dependence and is even higher for the early-onset group. The family history was higher in the early-onset group and they have more severe profile of substance use.

Keywords: Alcohol use disorder, early-onset, late-onset, age of onset, alcohol dependence, psychiatric comorbidities, severity of addiction

Key Messages: Early-onset alcohol dependence is associated with higher family history of alcohol use. Early-onset alcohol dependence has higher psychiatric co-morbidities in comparison to late-onset alcohol dependence. Earlier the onset of alcohol use higher the severity of dependence

Alcohol use disorders (AUDs) is a serious health problem globally. Consumption of alcohol is the world's third-largest risk factor for disease and disability. Alcohol causes 60 types of diseases and injuries and attributes as a component cause in about 200.[1] Thus, AUDs have significant impact, such as medical conditions and psychiatric comorbidities, on the overall well-being of a person. AUDs have been majorly prevalent in developed countries, but there has been a substantial rise in the use of alcohol in developing countries as well. The latest findings from the Global Burden of Diseases report alcohol to be the seventh leading risk factor for mortality and disability-associated life years in the year 2016. Among adults

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aged 15–49 years, alcohol attributes to 3.8% of deaths in females and 12.2% of deaths in males, globally.[2] The hypothesis which was tested in this study was that early-onset (EO) alcohol dependence has higher psychiatric comorbidity and more severe clinical parameters than late-onset (LO) alcohol dependence.

In India, the country of our study, the total (recorded and unrecorded) per capita consumption of alcohol (in liters of pure alcohol) has increased to 4.3 (2008–2010) from 3.6 (2003–2005).[1] The largest epidemiological survey for psychiatric disorders in India had been carried out in the year 2015–2016 and the report of this National Mental Health Survey shows a prevalence of 4.65% of AUDs, which is the third most common mental disorder after tobacco use disorder and depressive disorder.[3]

Higher rates of psychiatric comorbidities associated with AUDs are a matter of serious concern. The major epidemiological studies (Epidemiological Catchment Area Study, National Comorbidity Survey, and National Epidemiologic Survey on Alcohol and Related Conditions) done globally and other prevalence studies of comorbidity of AUDs done in India show a high occurrence of comorbidity.[4] Mood disorders (specifically depression), personality disorders, and anxiety disorders are common psychiatric comorbidities associated with AUDs. While a single disorder can affect the functioning of an individual, comorbidity can have an interactive and overwhelming effect.[5] This has its own diagnostic and therapeutic implications.

A typology of alcohol use is being tried from long back, dating to the 1980s. Various researchers used the "age of onset" as a classification point. Buydens-Branchy et al (1989) used it for the first time for classifying alcoholism.[6] Since then, numerous studies have been carried out for establishing this classification. Results have shown that those with EO alcoholism have more complications, more history of parental alcoholism, and a higher incidence of comorbidities.[7] An Indian study reported that adolescent-onset AUDs are increasingly associated with urban domicile, poor standard of living, and the Christian religion. This study also reported the association of adolescent-onset AUDs with psychological distress, increased vulnerability to alcohol dependence, alcohol-related injuries, and more hazardous patterns of alcohol use during adulthood.[8]

This typology helps in convenient classification of the entity and early intervention. The major disadvantage of this classification lies with the elicitation of the "age of onset," as there has been no standard definition. Various researchers have adopted different definitions of "age of onset," such as the age at which the problem of drinking first started; the age at which alcohol was first taken, not counting sips; the age at which regular drinking started first; the age at which the heaviest drinking started; and the age at which the diagnosis of dependence was first fulfilled.[9–11] It was then revealed that these various ages of onsets represent a trajectory of behaviors and that none holds more importance than the others.[12] Nevertheless, while conducting research, the "age of onset" is mostly taken by researchers as the age of onset of dependence because of its reliability, objectivity, and wide acceptability.[9] The age cut-off has been taken as 20–25 years in various studies.[9–11] The age of 25 years has replicated findings, validating the typology of "age of onset" in studies conducted worldwide[13] and those conducted in India.[9,10] Thus, among the various operational definitions taken, the most clinically relevant is the age at which dependence could be diagnosed for the first time with a demarcating age cut-off of 25 years.

In recent years, it has been observed in India that the age at which alcohol has been first used has declined from the age of 28 years (reported in the 1980s) to 17 years (reported in 2007).[14] In a study conducted in Kerala, the drinking population in the age group of <21 years has risen from 2% to 14% in the last 15 years.[15] If using a simple variable like "age of onset" can help in delineating subgroups that may differ in response to the treatment and long-term outcome, further studies in this field in the Indian scenario would be surely promising, taking into account the drop in the age of first alcohol use in the recent trends.

A comparison of comorbidities between EO and LO alcoholism is not available in Indian studies. The severity of addiction measured through an objective scale like Addiction Severity Index 5th edition (ASI-5), and that too comparing all domains, is also not available in the Indian scenario.

This is a part of a larger unpublished exploratory study that aimed to evaluate the psychiatric comorbidities, the severity of the addiction, externalizing psychopathology, and cognitive performance in patients with EO and LO alcohol dependence attending a tertiary-care teaching hospital of North India. In the current article, we are presenting the data (after doing secondary analysis) that focused on the psychiatric comorbidities and severity of addiction in patients of EO and LO alcohol dependence.

Materials and Methods

Study Design and Setting

This is a cross-sectional study conducted from October 2016 to July 2017 on patients visiting our outpatient de-addiction clinic. The sample consisted of all adult patients fulfilling the diagnostic criteria of alcohol dependence (active dependence) as per the *International Classification of Diseases*, 10th edition and Diagnostic Criteria for Research.[16]

Inclusion and Exclusion Criteria

Patients willing to give written informed consent, and accompanied by relatives who could corroborate the history provided by the patient, were included in the study. Subjects with serious medical comorbidities or too ill to cooperate for the interview were excluded. Other exclusion criteria were age <18 or >60 years and years of formal education <8 years, as another part of the study assessed cognitive performance. Patients in severe intoxication or severe withdrawal were followed-up and made part of the study once the conditions stabilized. Patients abstinent from alcohol for the last one month were also excluded.

Assessment Tools

The patients were assessed with a semi-structured pro forma for sociodemographic and clinical details, details of substance use (onset, course, duration, pattern, and other relevant details), past history, family history, personal history, pre-morbid personality, and mental status examination. *International Classification of Diseases*, 10th edition, and Diagnostic Criteria for Research were used to make the diagnosis, Semi-Structured Assessment for the Genetics of Alcoholism-IV version (SSAGA-IV)[17] was used to find the comorbidity and also the age of onset by its lifetime interview section. Composite International Diagnostic Interview (CIDI) 3.0[18] was used to assess the comorbidities not present in SSAGA-IV, and ASI-5[19] was applied to find the severity of addiction in various domains.

Procedure

Ethical clearance for the study was obtained from the Institutional Ethics Committee. Patients attending the de-addiction clinic and fulfilling the selection criteria were made part of the study. Written informed consents were taken from the patients. After obtaining sociodemographic details in a semi-structured pro forma, SSAGA-IV was applied to get a detailed history of substance abuse, including the age at which the patient first fulfilled the diagnosis of alcohol dependence in the lifetime section of the diagnostic interview. A reliable informant, which included any of the parents or an older sibling, had to be present during the interview with the patient so that the age could be confirmed to avoid any false reporting and to give details of childhood behavior. For the study, "age of onset" was operationally defined as "the age at which the patient first fulfilled the diagnosis of alcohol dependence (as per self-report and cross-checking from the available attendant in the lifetime interview schedule of SSAGA-IV)." SSAGA-IV was used to assess the common comorbid psychiatric disorders associated with it through its diagnostic interview. (It includes the disorders occurring with greater frequency in those with alcoholism.)

CIDI 3.0 screener was applied, and specific modules of CIDI 3.0 were applied to diagnose any other comorbidity not present in SSAGA-IV and which was apparent in the clinical interview. ASI-5 was applied to find out the severity in different domains, both through patient and interviewer severity ratings and also to calculate the composite score.

The patients were divided into two groups as EO alcohol dependence and LO alcohol dependence on the basis of the age of onset of dependence in SSAGA-IV. The age of 25 years was taken as a cut-off to divide the above two groups. The two groups were then compared on sociodemographic profiles, presence of comorbidities, various clinical parameters, and the severity of the addiction. The data were then analyzed using appropriate statistical tests or using Statistical Package for the Social Sciences (SPSS) version 16.[20] For categorical variables such as sociodemographic details, chi-square test or Fischer's test were used. For comparing means, Mann–Whitney U test was applied as the distribution of the data was not normal.

Results

Sociodemographic and Clinical Variables

A total of 112 patients were screened, out of which 21 were excluded. The various reasons for exclusion were age <18 years (*n* = 1), age >60 years (*n* = 2), refusal to give consent (*n* = 1), years of formal education <8 years (*n* = 9), presence of serious comorbid medical illness (*n* = 3), and not being accompanied by a relative who could provide correct history of the patient (*n* = 5). Out of the 91 patients included in the study, 34 did not turn up for the cognitive assessment (which was part of the larger study). So, 57 patients finally formed the study population, out of which 26 belonged to the EO group and 31 to the LO group.

In both the groups, the majority of the patients belonged to the age category of 26–35 years (**Table 1**). Among the nonearning group of population (*n* = 10), most (90%; i.e., 9 out of 10) belonged to the EO AUDs (P = 0.002). Family history was significantly higher in the EO group (P = 0.006). The clinical profile is depicted in **Table 1**.

Comorbidities

The comorbidities of the patient were assessed and diagnosed through SSAGA-IV and CIDI 3.0. SSAGA-IV contains diagnostic frames for both current and lifetime diagnoses. The instrument helps in assessing comorbidities not related to alcohol use. It has been specially designed to look for comorbidities commonly found in alcohol use but not attributable to it. **Figures 1** and **2** show the frequency of comorbidities and compare them between the EO and LO groups for current and lifetime diagnostic frames, respectively. The frequencies of current and lifetime comorbidities were compared between the 2 groups. **Table 2** shows that current (P = 0.015) and lifetime (P = 0.031) comorbidities are significantly higher in the EO group. Attention deficit hyperactivity disorder (ADHD) was not diagnosed in any of the groups, but it was seen that the scores for both inatten-

TABLE 1.

Sociodemographic and Clinical Profile of the Patients

	Demographic Profile No.	Early-Onset Group (*n* = 26)		Late-Onset Group (*n* = 31)		P Value (Fischer Exact Test)
		No.	%	No.	%	
Age (in years)	18–25	7	26.9	0	0	<0.001
	26–35	13	50.0	8	25.8	
	36–45	5	19.2	14	45.2	
	46–60	1	3.8	9	29.0	
Occupation	Nonearning*	9	34.62	1	3.22	0.002
	Earning**	17	65.38	30	96.78	
Duration of illness in years	≤5 years	9	34.6	10	32.3	0.039
	6–10 years	8	30.8	18	58.1	
	>10 years	9	34.6	3	9.7	
Family history	Present	12	46.2	4	12.9	0.006
	Absent	14	53.8	27	87.1	

*Nonearning population: student and unemployed. **Earning population: All unskilled/semiskilled workers, skilled workers, clerk/shop owner/farmer, and professionals/semi-professionals.

tion and hyperactivity symptoms were higher in the EO group.

Severity of Addiction

The severity of addiction was compared on basis of ASI-5 in 7 domains: medical, employment/support, alcohol, drug, legal, family/social, and psychiatric. **Table 3** shows the comparison of the scores of the various domains of the ASI. The EO group had a more severe profile of addiction in all domains except the medical domain.

Discussion

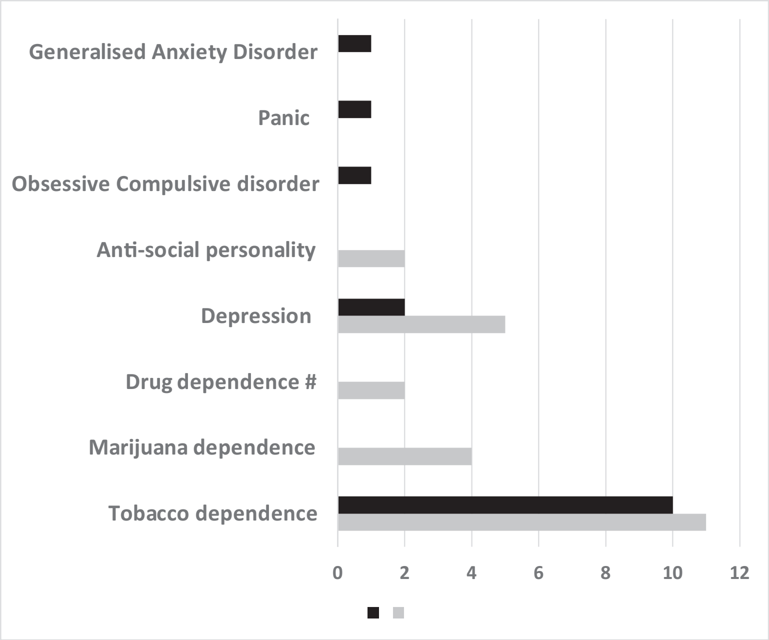
This was a cross-sectional, noninterventional study carried out over a period of approximately one year, in a tertiary care general hospital of North India. SSAGA-IV can be used with reliability and validity to assess the comorbidities commonly associated with alcohol use. Because of its timeline representation of diseases, it is easy to find the age of onset of alcohol dependence, which is the most crucial construct of our study.

The National Mental Health Survey 2015–2016 showed that the prevalence of AUDs is the highest (6.72%) in the age group of 40–49 years.[3] The mean age of our LO group fell in this range, while the EO group had patients with the age of onset of dependence being less than 25 years; the mean age of the EO group was lower. Previous studies also show that the mean age of EO patients was significantly lower (the mean ranging from 35 to 42.43 years) than that of the LO patients (the mean ranging from 40.1 to 47.61 years).[9,13]

The family history of AUDs was significantly higher in the EO group than the LO group. This has been seen in earlier studies too.[9,10] Varma et al, in their study, showed that there is a family loading of alcohol use/dependence in the EO group.[9] This study also showed that it is not the use of all substances but rather only alcohol use which is high in family members of the patients, suggesting a clustering of alcohol use in families.[9] The association between the presence of family history and EO alcohol use seems to be because of having opportunities of earlier initiation of drinking. This difference can have 2 explanations: Firstly, there may be a genetic influence on the dopaminergic and serotonergic pathways, which has given rise to the concept of familial alcoholism. Secondly, it may be environmental influence because of the presence of family members around who are taking alcohol.[21] It has been already found after extensive research that those with familial alco-

FIGURE 1.

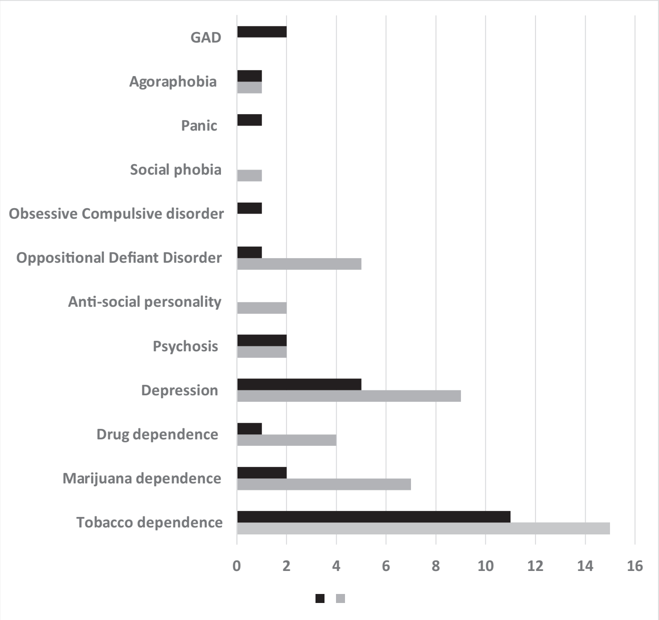
Comparison of Current Comorbidities Between Early- and Late-Onset Alcohol Dependence



Black box refers to late onset alcohol dependence. Gray box depicts early onset alcohol dependence. On X axis, N=number of subjects plotted. #The two cases of drug dependence are of benzodiazepine and opioid dependence. The comorbidities, shown in the figure, are not mutually exclusive.

FIGURE 2.

Comparison of Lifetime Comorbidities Between Early- and Late-Onset Alcohol Dependence



Black box refers to late onset alcohol dependence. Gray box depicts early onset alcohol dependence. On X axis, N=number of subjects plotted. GAD: Generalized anxiety disorder.

TABLE 2.

Comparison of the Presence of Comorbidities

Comorbidity	Current		P Value	Lifetime		P Value
	Early onset (*n* = 26)	Late onset (*n* = 31)		Early onset (*n* = 26)	Late onset (*n* = 31)	
Present	20 (77%)	14 (45.2%)	0.015	25 (96%)	23 (74.2%)	0.031 (Fisher's test)
Absent	6 (23%)	17 (54.8%)		1 (4%)	8 (25.8%)	

holism have an earlier age of onset and show more structural and functional brain abnormalities.[22]

The comorbidity profile of the patients shows that both the current and the lifetime comorbidities are significantly higher in the EO group (**Tables 2** and **3**). Tobacco dependence was the most common comorbidity in both the groups. It is a known fact that tobacco use and alcohol use commonly coexist. They serve as the gateway to the use of more serious drugs. A number of studies indicate that cigarette smoking is a strong predictor of subsequent alcohol use.[23]

After tobacco dependence, the most common comorbidity is depression in both EO and LO groups. Previous Indian studies have also shown depression to be one of the most common comorbidity in AUDs.[24,25] The occurrence of depression is higher in the EO group (19.2% vs. 6.4% for the LO group) for current diagnosis as well as lifetime diagnosis (34.6% vs. 16.1%). Trajectories showing the relation of EO and LO alcohol use with depression show that EO of alcohol consumption is related to higher levels of depressive symptoms.[26] A study has shown that there is a reduction in depression in the >25 years age group, which the authors explained by the hypothesis that the group consisted of more mature individuals who have better coping skills. This possibility was supported in the study by the finding that the people who belonged to >25 years age group also had better social functioning than the EO group.[11] It is also seen that early life depressive symptoms may also give rise to EO alcohol use, thus increasing the lifetime prevalence of depressive disorders in the EO group.[27]

The relationship between AUDs and depression as a comorbidity is well known. The distinction between the cause and the effect between the two entities had always been a point of interest. It has always been problematic to distinguish between the two entities of substance-induced mood disorders and independent mood disorders. Firstly, the years and age are all retrospective reports. Secondly, there are chances of missing independent psychiatric disorders if we only take into account the status of substance use rather than the duration of substance use. Thirdly, the episodes which intermingle with substance use but continue even after cessation can be missed.[5] Because of the above-mentioned possibilities, SSAGA-IV was used, which is a specialized diagnostic tool that specifically takes into account the time periods and, thus, helps delineate the two disorders. The only disadvantage that remains is the retrospective recall of the age, which is inevitable.

The other comorbidity which needs discussion is antisocial/dissocial personality disorder. The prevalence in the EO group was 8%, while the LO group had no such patients. The link of EO alcohol use with antisocial personality disorder (ASPD) is a well-known entity that gets validated more. Various studies have shown the presence of antisocial traits and criminality in the EO group.[11,13] This takes into account that antisocial be-

TABLE 3.

Comparison of Mean Scores, Median, and Interquartile Range (IQR) of ASI Domains—Interviewer Severity Rating and Composite Severity Rating Scores Between the Two Groups

ASI Domains	Interviewer Severity Rating						Mann–Whitney U Test	Composite Severity Rating						Mann–Whitney U Test
	Early onset group (*n* = 26)			Late onset group (*n* = 31)				Early onset group (*n* = 26)			Late onset group (*n* = 31)			
Parameters	Mean	Median	IQR	Mean	Median	IQR	P Value	Mean	Median	IQR	Mean	Median	IQR	P Value
Medical	1.23±0.91	1.0	1.0	1.81±1.14	2.0	1.0	0.059	0.18±0.22	0.122	0.21	0.23±0.20	0.022	0.02	0.331
Employment/suppose	1.81±1.10	2.0	1.0	1.03±0.75	1.0	1.0	0.011	0.39±0.17	0.321	0.25	0.26±0.24	0.50	0.48	0.011
Alcohol	7.85±0.78	8.0	1.25	7.03±0.75	7.0	0.0	<0.001	0.60±0.06	0.612	0.06	0.39±0.17	0.46	0.03	<0.001
Drug	0.46±1.65	0.0	0.0	0.06±0.25	0.0	0.0	0.800	0.024±0.09	0.0	0.0	0.018±0.071	0.0	0.0	0.86
Legal	1.5±2.32	0.0	4.0	0.42±1.46	0.0	0.0	0.012	0.16±0.26	0.0	0.11	0.05±0.12	0.0	0.09	0.13
Family/social	2.96±2.85	2.0	4.25	1.35±2.15	0.0	2.0	0.009	0.28±0.27	0.0	0.26	0.10±0.22	0.158	0.20	0.006
Psychiatric	2.00±2.68	0.0	1.0	0.71±1.79	1.0	1.0	<0.001	0.28±0.27	0.227	0.18	0.16±0.26	0.00	0.23	0.03

ASI: Addiction severity index.

havior is a continuum in externalizing behaviors and is thus more prevalent in the EO group.[11] It has been discussed whether ASPD is primary or secondary to the categorization of EO alcoholism, i.e., whether a group of individuals exists with ASPD, and because of the personality construct, does EO alcoholism develop secondarily. On the other hand, antisocial traits may be a part of a total heritable constellation.[11] A longitudinal study needs to be done in this regard to get the cause–effect model.

Similarly, the lifetime rate of Oppositional Defiant Disorder in our study was 19.2%. Literature review shows a wider prevalence of all externalizing disorders in EO alcohol use. An Indian study evaluated the association of ADHD with the age of onset of AUDs. It revealed that individuals with EO AUDs have significantly higher childhood history of ADHD than those with LO AUD.[28] In our study, the LO group had higher comorbid anxiety disorder than the EO group. Anxiety disorder is more of an internalizing psychopathology. There is a need to see the presence of internalizing psychopathologies like anxiety disorder in a larger sample.

The lifetime comorbidity after combining the EO and LO groups was 84.2%. This is similar to the range of comorbidity rates, i.e., 62% to 92%, found in other Indian studies.[24,25] Community samples had shown a somewhat lower rate of comorbidity.[29] It has been seen that the comorbidity rate in the clinical population is higher than that in the community samples because of Berkson's fallacy, which states that the presence of comorbidity gives an added motivation to patients to seek treatment.[25]

On comparing the severity of addiction or the extent of problematic substance use by using the ASI, it was found that the EO group had a significantly higher score (i.e., more severe problem) in the interviewer severity rating in multiple domains (employment/support status, alcohol, legal, family/social relationships, and psychiatric status). In the medical domain, the LO group had a higher score as there were more patients with medical comorbidity in the LO group (two suffered from diabetes mellitus, three from hypertension, and one from ascites). In the drug domain, two patients of the EO group had drug dependence, but no patient from the LO group did; thus, the score did not show a statistical difference. In the composite score, the EO group had a significantly higher score (i.e., more severe problem) in the domains of employment/support status, alcohol, family/social relationships, and psychiatric status (**Table 3**). The composite score gives a weightage to the patient's need for treatment in that aspect. The explanation for the legal domain not reaching significance can be that the patient did not perceive the problem as severe as deemed by the interviewer. Previous studies have already shown that the severity of alcoholism and the associated psychopathology increase as the age of onset decreases.[11] A study was done where the ASI was applied in the age groups of alcoholism onset <20 years, 20–25 years, and >25 years. It was found out that the lower age group had a higher score in employment, alcohol, legal, family/social status, and psychiatric status, showing more alcohol-related problems in the EO age group. The study also showed that there is a preponderance of legal, social, family, and psychiatric problems in the <20 years onset group. The effects may also be due to the duration of illness. The prolonged illness can affect the employment status, social relationships, family relationships, and even legal status. This implies that the longer a patient has been addicted to alcohol, the more it is likely that he/she would have more psychosocial impairments. So, this observation can be due to the higher duration of illness in the EO group.[11] It has also been seen that the antisocial traits also form an essential element of the EO construct[11] and, thus, may contribute to higher legal problems.

All these findings support the concept of an endophenotype model. We can see that in our study, the EO group had a higher family history of alcohol use, more problematic alcohol use, and higher comorbidities. Ongoing research, including our study, has shown that these constructs are interrelated. Identification of the subjects who are at a higher risk of acquiring the endophenotype can help early intervention and possible approaches to mitigate AUDs as early as possible. So, finding out any of the deficits, such as a family history of alcohol use, any comorbidity (especially ASPD), or higher alcohol-related problems at any point should alert the clinicians. A thorough assessment of all other domains should be done in all such patients.

It has been seen that AUDs contribute to morbidity and disability in a huge proportion, irrespective of the age of onset. Taking alcohol and continuing using it at any level of problematic use is harmful to the individual and society as a whole. If a simple entity like "age of onset" can be applied to the clinical population to stratify risk groups, it can be highly useful. Our study shows valid evidence that the "EO versus LO" concept exists and that the EO group falls in the higher risk strata than the LO group. The comorbidity profile, which has been elaborately studied and compared for the first time in an Indian study, also supports the above assumption. It was also evident through the domain scores of ASI-5, and its use to compare the addiction profile is new in the study. Identification of patients with "EO" in a proximal phase of the trajectory can serve as a helpful measure in the prevention of further problems in the individual. Even from a perspective of public health, a systematic study of the effects of age of first alcohol use are important to be known. Prevention programs such as delaying the first use of alcohol can be an important step. A wholesome management in this viewpoint can help reduce individual suffering by mitigating social, economic, and health-related costs.

The study has limitations. The sample was drawn from individuals attending a De-addiction clinic outpatient department for treatment rather than from alcohol-dependent subjects from the community, limiting its generalizability to the general population. It also resulted in a smaller sample size. The basis for determination of the presence of ADHD/CD/Oppositional Defiant Disorder was essentially and necessarily retrospective in nature. Hence, the influence of factors such as recall bias, selective forgetting, and retrospective falsification cannot be ruled out. To minimize the effect of these factors, information put forth by the individuals was corroborated from the available informants whenever feasible. The investigator was not blind to the outcome. Hence, the possibility of ascertainment bias could not be ruled out. Subjects with serious medical comorbidities were excluded; this could explain why the EO group had a less severe profile of addiction in the medical domain.

Steps were taken to overcome some of these limitations. The onset of alcohol dependence was determined later after interpreting SSAGA-IV, and that was done after the individuals were interviewed on the later sections of SSAGA-IV that included the presence of externalizing disorders. Hence, the interviewer was not aware of the patients' onset of alcohol dependence status during the time of assessment. This must have reduced the interviewer's bias.

Conclusion

The study found that comorbidity is high in patients with alcohol dependence (59.6% and 84.2% in the current and lifetime frames) and is higher in the EO group. The EO group also had a higher family history and a more severe profile of substance use. So, this group forms a more vulnerable population, and special attention needs to be given to them to find out any comorbidity and to manage the severity of their problems.

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Declaration of Conflicting Interests

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References

1. World Health Organization, Unit WHO-MoSA. Global status report on alcohol and health, 2014. Geneva: World Health Organization, 2014.
2. Griswold MG, Fullman N, Hawley C, et al. Alcohol use and burden for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet* 2018; 392(10152): 1015–1035.
3. Gururaj G, Varghese M, Benegal V, et al. National Mental Health Survey of India, 2015-16: summary. Bengaluru: National Institute of Mental Health and Neurosciences, 2016.
4. Singh S and Balhara YPS. A review of Indian research on co-occurring psychiatric disorders and alcohol use disorders. Indian J Psychol Med 2016; 38(1): 10.
5. Grant BF, Stinson FS, Dawson DA, et al. Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders: results from the national epidemiologic survey on alcohol and related conditions. Arch Gen Psychiatry 2004; 61(8): 807–816.
6. Gupta N and Basu D. The ongoing quest for sub-typing substance abuse: current status. Indian J Psychiatry 1999; 41(4): 289.
7. Vohra A, Yadav B, and Khurana H. A study of psychiatric comorbidity in alcohol dependence. Indian J Psychiatry 2003; 45(4): 247.
8. Pillai A, Nayak MB, Greenfield TK, et al. Adolescent drinking onset and its adult consequences among men: a population based study from India. J Epidemiol Community Health 2014; 68(10): 922–927.
9. Varma VK, Basu D, Malhotra A, et al. Correlates of early- and late-onset alcohol dependence. Addict Behav 1994; 19(6): 609–619.
10. Johnson PR, Banu S, and Ashok M. Severity of alcoholism in Indian males: correlation with age of onset and family history of alcoholism. Indian J Psychiatry 2010; 52(3): 243.
11. Johnson BA, Cloninger CR, Roache JD, et al. Age of onset as a discriminator between alcoholic subtypes in a treatment-seeking outpatient population. Am J Addict 2000; 9(1): 17–27.
12. Parrella DP and Filstead WJ. Definition of onset in the development of onset-based alcoholism typologies. J Stud Alcohol 1988; 49(1): 85–92.
13. Lim S-W, Oh K-S, Shin Y-C, et al. Clinical and temperamental differences between early- and late-onset alcoholism in Korean men. Compr Psychiatry 2008; 49(1): 94–97.
14. Lim SS, Vos T, Flaxman AD, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012; 380(9859): 2224–2260.
15. Nair UR, Vidhukumar K, and Prabhakaran A. Age at onset of alcohol use and alcohol use disorder: time-trend study in patients seeking de-addiction services in Kerala. Indian J Psychol Med 2016; 38(4): 315.
16. World Health Organization. The ICD-10 classification of mental and behavioural disorders: diagnostic criteria for research. Geneva: World Health Organization; 1993.
17. Hesselbrock M, Easton C, Bucholz KK, et al. A validity study of the SSAGA: a comparison with the SCAN. Addiction 1999; 94(9): 1361–1370.
18. Haro JM, Arbabzadeh-Bouchez S, Brugha TS, et al. Concordance of the Composite International Diagnostic Interview Version 3.0 (CIDI 3.0) with standardized clinical assessments in the WHO World Mental Health surveys. Int J Method Psychiatr Res 2006; 15(4): 167–180.
19. McLellan AT, Kushner H, Metzger D, et al. The fifth edition of the Addiction Severity Index. J Subst Abuse Treat 1992; 9(3): 199–213.
20. Inc S. SPSS 16.0 for Windows (Version 16.0)[Computer software]. Chicago: Inc S; 2007.
21. Dawson DA. The link between family history and early onset alcoholism: Earlier initiation of drinking or more rapid development of dependence? J Stud Alcohol 2000;61(5):637–646.
22. Goodwin DW. Familial alcoholism: a separate entity? Subst Alcohol Actions Misuse 1983; 4(2–3), 129–136.
23. Grucza RA and Bierut LJ. Cigarette smoking and the risk for alcohol use disorders among adolescent drinkers. Alcohol Clin Exp Res 2006; 30(12): 2046–2054.
24. Singh NH, Sharma S, and Pasweth AM. Psychiatric co-morbidity among alcohol dependents. Indian J Psychiatry 2005; 47(4): 222.
25. Kisore P, Lal N, Trivedi J, et al. A study of comorbidity in psychoactive substance dependence patients. Indian J Psychiatry 1994; 36(3): 133.
26. Skogen JC, Knudsen AK, Hysing M, et al. Trajectories of alcohol use and association with symptoms of depression from early to late adolescence: the Norwegian longitudinal health behaviour study. Drug Alcohol Rev 2016; 35(3): 307–316.
27. Wu P, Bird HR, Liu X, et al. Childhood depressive symptoms and early onset of alcohol use. Pediatrics 2006; 118(5): 1907–1915.
28. Sringeri SKR, Rajkumar RP, Muralidharan K, et al. The association between attention-deficit/hyperactivity disorder and early-onset alcohol dependence: a retrospective study. Indian J Psychiatry 2008; 50(4): 262.
29. Regier DA, Farmer ME, Rae DS, et al. Comorbidity of mental disorders with alcohol and other drug abuse: results from the Epidemiologic Catchment Area (ECA) study. JAMA 1990; 264(19): 2511–2518.

Gender-Specific Correlates of Alcohol Use Among College Students in Kerala, India

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ABSTRACT

Background: Studies of alcohol use among college students in India have reported a male preponderance, but a recent large study suggested that alcohol use is increasing in young females. This increase in use among the young females is of concern as they experience poorer outcomes and a higher risk for addiction. Hence, we aimed to examine the gender-specific correlates of alcohol use among college students in the district of Ernakulum, Kerala.

Methods: From 58 colleges, 5,784 students completed a self-administered questionnaire that assessed use of alcohol, use of tobacco and illicit drugs, psychological distress, suicidality, symptoms of attention deficit hyperactivity disorder, and history of sexual abuse.

Results: Of the questionnaires, 342 had incomplete responses and had to be discarded, and the rest (n = 5,442, 94.1%) were analyzed. lifetime alcohol use was reported by 39% males and 12.6% females. In the multivariable logistic regression analysis using a full model, male students using alcohol compared to male non-users were older, non-Muslim, had poor academic performance, and used other substances. Female users, compared to female non-users, were non-Muslim, had urban residence, used tobacco, and had higher psychological distress, higher suicidal thoughts, and higher lifetime exposure to sexual abuse.

Conclusion: Gender-specific differences extend across sociodemographic and psychological domains. Incorporation of these may improve the effectiveness of public health strategies addressing alcohol use.

Keywords: Alcohol use, female, gender differences, college, Kerala

Key Messages: Study reports on gender differences in alcohol use among college students in India. Male users, compared to male non-users, were older, non-Muslim, had poor academic performance, and used other substance. Female users, compared to females non-users, were non-Muslim and had urban residence, higher level of tobacco use, psychological distress, suicidal thoughts, and history of sexual abuse.

Alcohol use among college students is a public health concern, given the high risk for negative consequences such as academic decline, accidents, psychological distress, suicidality, risky sexual behavior, and increased risk of later addiction.[1] Despite this, the use of alcohol remains exceedingly common, with reports suggesting that in some countries, 90% of college students drink, of whom 25%–50% may be considered "heavy" drinkers.[1,2] Lower rates of alcohol use among college students have been reported previously in India. Earlier studies reported a male preponderance, with 30%–50% reporting alcohol use, whereas alcohol use among females was even lower than 5%.[3,4] However, a recent large study among college students in the state of Kerala in south India suggested that the gap may be narrowing. Though the rates of alcohol use among males matched previous estimations (38.3%), the proportion of female users had more than doubled (12.6%).[5]

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This suggestion of increasing use among young females is of concern, considering that female alcohol users tend to progress much more rapidly from alcohol abuse to dependence as compared to men: a phenomenon known as "telescoping".[6] Though many biological factors such as lower body water and reduced activity of gastric alcohol dehydrogenase enzyme contribute to this susceptibility, many socioeconomic, psychological, and cultural factors that affect women are also reported to play a part.[6] Female users report greater psychological distress, suicidality, and history of sexual abuse compared to male users.[7,8] Attention deficit hyperactivity disorder (ADHD) has been implicated to increase the risk of alcohol use among both males and females.[9]

Existing studies among college students from India have not examined gender differences in the correlates of alcohol use. Examining this may be critical in designing gender-specific public health strategies to tackle alcohol use among young adults. It is in this background that we report the gender differences in the correlates of alcohol use among college students in an Indian district. In addition to sociodemographic factors, other associations examined included the use of other substances (tobacco and illicit drugs), psychological distress, lifetime suicidality and sexual abuse, and features of ADHD.

The findings reported are the secondary analysis of data that further reported alcohol use among college students in the district of Ernakulam, Kerala.[5] The primary objective of the larger study was to examine various psychological issues among college-going students.

Material and Methods

The survey was conducted in 58 colleges in the district of Ernakulam, of Kerala in 2014–2015. The district had 123 colleges offering specialized courses, with approximately 50,000 students enrolled. A master list was initially prepared subcategorizing the colleges into the courses they offer, that is, medical, dental, nursing, engineering, law, arts and sciences, homeopathy, Ayurveda, and fisheries science. The institutions were selected using cluster random sampling. At least 40% of institutions in each subcategory were randomly selected. For courses in which colleges were few in number (medical, dental, law, homeopathy, Ayurveda, and fisheries science), at least 50%, were selected. From each college, the administration allocated students of odd or even years (i.e., the first year and the third year, or the second year and the fourth year). In colleges where there were multiple divisions in a single year, a single division was randomly allocated. All students who were present in the class on the day of the survey were invited to participate.

The questionnaire, initially prepared in English, was translated into Malayalam (the vernacular language) and then back-translated to check for conceptual congruence. Consenting students had the freedom to opt to answer either the Malayalam or English version of the self-administered questionnaire.

The students were invited to participate after explaining the objectives of the survey. They were also informed that the information they provide would remain anonymous and that the answers will not impact their academic grades.

The survey was supervised by the staff from the Dept. of Psychiatry, Government Medical College, Ernakulam (formerly Cochin Medical College).

This study received approval from the Institute Ethics Committee.

Assessment Tools

The sociodemographic profile was assessed using a checklist (age/sex/area of residence/ religion/socioeconomic status/academic performance).

Use of alcohol and other substances was assessed using Alcohol, Smoking and Substance Involvement Screening Test (ASSIST), which is validated for use in developing countries.[10] For the purpose of this paper, only lifetime use of alcohol, tobacco, and illicit drugs (cannabis, solvents, and other substances grouped together) was considered.

In addition, psychological distress was assessed using the Kessler's Psychological Distress Scale (K10)[11]; lifetime sexual abuse was assessed using four questions from Child Abuse Screening Tool Children's Version (ICAST-C), two pertaining to non-contact sexual abuse and two to contact sexual abuse[12]; childhood ADHD symptoms were retrospectively assessed using Barkley Adult ADHD Rating Scale-IV (BAARS-IV)—childhood symptoms self-report,[13] and two questions pertaining to suicidal thoughts and attempts were asked to screen for lifetime suicidality.

Statistical Analysis

Data was analyzed by using SPSS 15.0.[14] Based on the lifetime use of alcohol, both male and female students were grouped into users and non-users. A full model of multivariable binary logistic regression analysis was done to assess the effect of sociodemographic variables, academic performance, other substance use, psychological distress, lifetime suicidality, lifetime sexual abuse, and significant ADHD symptoms across genders, using two sets of analysis (male users vs male non-users, female users vs female non-users). The difference between the odds ratios (ORs) of these factors between males and females was tested based on regression coefficient and standard error. The results are reported in the form of OR and 95% confidence intervals (CI). All tests were two-tailed, and statistical significance was set at $P < 0.05$.

Results

A total of 5,784 students took part in the survey. Of the questionnaires, 342 (5.9%) had to be discarded as they were incomplete, and the rest (n = 5,442, 94.1%) were analyzed. Of them, 3,545 (64.8%) were females, with a mean age of 20.3 years (range 18–25 years). Lifetime use of alcohol was reported by 1,168 (21.4%) students (males—726 [39%]; females—442 [12.6%]).

In the multivariable logistic regression analysis using a full model, male students who reported alcohol use, in comparison to male non-users, had higher odds of being older, being non-Muslim, having poor academic performance, and using tobacco and illicit drugs (**Table 1**).

Female students reporting alcohol use, in comparison to female non-users, had higher odds of being non-Muslim, having an urban residence, using tobacco, and having higher psychological distress scores, suicidal thoughts, and a lifetime exposure to sexual abuse (**Table 1**).

The ORs of male and female students using alcohol were compared. In males,

TABLE 1.

Gender Differences in Academic and Psychosocial Correlates Among Alcohol Users

Variables	Male Non-users N = 1,171 n (%)	Male Users N = 726 n (%)	Female Non-users N = 3,103 n (%)	Female Users N = 442 n (%)	Male Users vs. Non-users Adjusted Odds Ratio[a] (95% CI)	Female Users vs. Nonusers Adjusted Odds Ratio[b] (95% CI)	Odds Ratio (Male Users vs. Female Users) P Value
Age (years) (Mean±SD)	19.32±1.70	19.84±1.75	19.36±1.71	19.36±1.72	1.17 (1.09–1.26)	1.04 (0.97–1.12)	0.03
Family structure							
Living with both parents	993(86.3)	648 (89.4)	2,762(89.7)	389(87.4)	1.00	1.0	–
Single parent family	77(6.7)	45(5.5)	146(4.7)	20(4.5)	1.19 (0.7–1.99)	1.01 (0.57–1.77)	0.66
Living with relatives/others	80(7)	37(5.1)	172(5.6)	36(8.1)	0.64 (0.37–1.11)	1.40 (0.90–2.16)	0.03
Socioeconomic status†							
Above poverty line	952(83.1)	613(84.6)	2,532(82.3)	396(89)	1.00	1.0	–
Below poverty line	196(16.9)	112(15.4)	545(17.7)	49(11)	1.00 (0.72–1.40)	0.65 (0.45–0.91)	0.74
Religion							
Hindu	569(48.8)	411(57)	1,372(44.1)	200(45.2)	1.0	1.0	–
Christian	257(22)	275(38.1)	1,048(33.9)	231(52.3)	1.66 (1.28–2.16)	1.48 (1.17–1.85)	0.49
Muslim	341(29.2)	35(4.9)	670(21.7)	11(2.5)	0.029 (0.02–0.05)	0.09 (0.04–0.18)	0.008
Residence							
Urban	481(44.8)	336(46.6)	1,156(38.0)	255(57.7)	1.0	1.0	
Rural	593(55.2)	385(53.4)	1,183(62.0)	187(42.3)	1.26 (0.99–1.62)	0.52 (0.42–0.66)	<0.001
Part time job	164(14)	132(18.2)	117(3.8)	23(5.2)	1.16 (0.82–1.63)	1.43 (0.85–2.40)	0.505
Academic performance							
Failed in a subject	243(20.8)	210(28.8)	422(13.6)	88(19.8)	1.58 (1.20–2.01)	1.15 (0.85–1.54)	0.125
Substance use							
Tobacco use	79(6.8)	345(47.4)	12(0.4)	45(10.1)	24.42 (15.80–37.73)	23.32 (10.82–50.24)	0.91
Illicit drug use	17(1.5)	83(11.5)	79(2.6)	27(6.1)	4.04 (1.90–8.56)	1.33 (0.76–2.35)	0.02
Psychological distress scores (Mean±SD)	16.18±6.90	17.74±8.25	17.32(±7.61)	21.56±8.55	1.00 (0.98–1.02)	1.03 (1.01–1.05)	0.03
Suicidal thoughts	164(14)	161(22.1)	655(21.1)	193(43.4)	1.14 (0.81–1.61)	1.57 (1.20–2.04)	0.15
Suicide attempts	24(2.1)	24(3.3)	121(10.9)	56(12.6)	0.92 (0.42–2.00)	1.20 (0.75–1.83)	0.57
ADHD scores (Mean±SD)	26.19±10.78	28.47±11.68	25.83±9.52	29.57±10.16	1.01 (0.98–1.014)	1.01 (0.99–1.02)	0.29
Sexual abuse							
Non-contact sexual abuse	205(17.5)	146(20.1)	213(6.9)	100(22.5)	1.07 (0.74–1.54)	1.72 (1.19–2.50)	0.07
Contact sexual abuse	104(8.9)	90(12.4)	254(8.2)	106(23.8)	1.49 (0.95–2.35)	1.65 (1.16–2.34)	0.72

[a]Reference category—male non-users. [b]Reference category—female non-users. CI: confidence interval. †Socioeconomic indicators of the Government of India.

the risk of alcohol use was higher with older age and illicit drug use. In females, not living with parents, having an urban residence, and higher psychological distress indicated a higher risk (**Table 1**).

Discussion

In this paper, we report the gender-specific differences in correlates of alcohol use among college students from the state of Kerala, India. The higher proportion of females in our sample is reflective of the pattern of enrollment in higher educational institutions in Kerala.[15] The state of Kerala has the highest per capita consumption of alcohol (8.3 liters) in India, with approximately 10% of the population drinking problematically.[16] In our study, increasing age was a risk factor for alcohol use only among males. Most studies show consumption to increase with age,[1,2] but there are inconsistencies, with some researchers reporting a decrease or no change.[17] The lack of consistency has been explained by the variation in age range and academic year (consequently, workload) of students across studies.[16]

Among our students, both males and females who were Muslims were less likely to drink, reflecting the strict moral proscriptions of Islam having a significant influence in reducing use among the Muslim students.[18]

Female students, in our study, from an urban background had a higher risk of alcohol use, but the place of residence did not influence male drinking. This is in variance to most previous studies from other countries that have reported a higher risk among students from both genders who were from a rural background.[1,2] Two factors in Kerala may contribute to this difference. First, urban centers have witnessed significant economic and social transformation, with consequent liberalization of social norms, which appear to foster female drinking. Second, the proportion of licensed outlets is higher in the urban centers, possibly providing increased access to alcohol.

While the socioeconomic status did not have any association with alcohol use among our students, most previous studies have suggested that students of higher socioeconomic status who have access to disposable income have increased risk of substance use.[1] In India, most college students, irrespective of their economic background, are financially supported by their families, and parents often restrict access to disposable money.

In our study, female students living with relatives were at higher risk of using alcohol. Living in less controlled situations or non-traditional family structures has been reported to increase the risk of alcohol use.[17]

Though it has been consistently reported that alcohol use impairs academic performance irrespective of gender,[1,2] in our sample, only the male students using alcohol had impaired academic performance. A significantly higher proportion of males in our study, as reported in the prior paper, reported hazardous use (males—27.8%; females—5.4%),[5] suggesting that only hazardous use may correlate with academic decline.

In our sample, both males and females using alcohol had higher rates of tobacco use. In addition, male alcohol use was associated with the use of illicit drugs. This finding of the use of one drug significantly increasing the risk for another has been reported in multiple studies.[1,6,17]

Female users in our sample had higher psychological distress. The relationship between alcohol use, gender, and psychological distress is complex, and the findings have been inconsistent. It has been previously reported that rates of psychological distress are higher among women users,[6,19] but there are also studies among males, reporting increased depressive symptoms leading to heavier alcohol use.[8,20] Female alcohol users (but not males) in our sample also had more suicidal thoughts, suggesting that the higher psychological distress in alcohol-using females in our study, compared to males, may have conferred an increased risk of suicidality. Previous studies have implicated psychological distress and alcohol use to increase suicidality, with subjects having both reporting the highest risk.[19]

A higher proportion of female students using alcohol in our study reported a past history of sexual abuse. Multiple studies have consistently reported this association, with prospective studies suggesting that alcohol use increases the risk of initial and subsequent sexual assault, with females more likely to experience harm.[7,8,21]

There was no correlation of alcohol use with ADHD among subjects of either gender in our sample. This is contrary to robust findings linking ADHD with alcohol and other substance use disorders in late adolescence and early adulthood.[9] Our findings however, may have been prone to recall bias, as subjects were asked to retrospectively recollect childhood symptoms, limiting its validity.

The present study has several limitations. Suicidality and sexual abuse were assessed using limited questions. The cross-sectional nature of the study limits any conclusion with regards to the causality. Many factors that mediate the relationship between gender and alcohol use, like peer influences and family history, were not examined. Since the questionnaire was anonymous, it was not possible to offer interventions for students who reported psychological issues. Considering this, mental health professionals from the Dept. of Psychiatry, Government Medical College, Ernakulam, who supervised the survey, provided students with telephone numbers for contact to seek help if they perceived a need. Recognizing the need for interventions, a summary of the study findings and suggested intervention strategies were submitted to the Department of Collegiate Education, Government of Kerala. This report has since been accepted, and currently, all government arts and science colleges in the state have trained counselors who provide mental health interventions to the students in need.

The strengths include using mostly structured instruments in a large sample, with the response rate being comparable to previous large anonymized surveys on substance use among college students in India.[22] Hence, the findings are generalizable within the state.

To conclude, this study suggests that differences exist in the sociodemographic and psychological domains between male and female alcohol users and between users and non-users of the same gender.

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Data Sharing Statement

Deidentified individual participant data (including data dictionaries) will be made available, upon publication, to researchers who provide a methodologically sound proposal for use in achieving the goals of the approved proposal. Proposals should be submitted to tsjaisoorya@gmail.com.

Declaration of Conflicting Interests

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References

1. Johnston LD, O'Malley PM, Bachman JG, et al. *Monitoring the future national survey results on drug use, 1975–2011: volume II, college students and adults ages 19–50.* Ann Arbor, MI: Institute for Social Research, The University of Michigan, 2011.
2. Karam E, Kypri K, and Salamoun M. Alcohol use among college students: an international perspective. Curr Opin Psychiatry 2007; 20(3): 213–221.
3. Benegal V, Nayak M, Murthy P, et al. Women and alcohol use in India. In: Obot IS & Room R, eds. *Alcohol, gender and drinking problems: perspectives from low and middle income countries*. Geneva: World Health Organization, 2005.
4. Khosla V, Thankappan KR, Mini GK, et al. Prevalence & predictors of alcohol use among college students in Ludhiana, Punjab, India. Indian J Med Res 2008; 128(1): 79–81.
5. Jaisoorya TS, Gowda GS, Nair BS, et al. Correlates of high-risk and low-risk alcohol use among college students in Kerala, India. J Psychoactive Drugs 2018; 50(1): 54–61.
6. Greenfield SF, Back SE, Lawson K, et al. Substance abuse in women. Psychiatr Clin North Am 2010; 33(2): 339–355.
7. Parks KA, Romosz AM, Bradizza CM, et al. A dangerous transition: women's drinking and related victimization from high school to the first year at college. J Stud Alcohol Drugs 2008; 69(1): 65–74.
8. Pedrelli P, Collado A, Shapero BG, et al. Different pathways explain alcohol-related problems in female and male college students. J Am Coll Health 2016; 64(7), 535–544.
9. Lee SS, Humphreys KL, Flory K, et al. Prospective association of childhood attention-deficit/hyperactivity disorder (ADHD) and substance use and abuse/dependence: a meta-analytic review. Clin Psychol Rev 2011; 31(3): 328–341.
10. WHO ASSIST Working Group. The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST): development, reliability and feasibility. Addiction 2002; 97(9): 1183–1194.
11. Andrews G and Slade T. Interpreting scores on the Kessler psychological distress scale (K10). Aust N Z J Public Health 2001; 25(6): 494–497.
12. Zolotor AJ, Runyan DK, Dunne MP, et al. ISPCAN Child Abuse Screening Tool Children's version (ICAST-C): instrument development and multi-national pilot testing. Child Abuse Negl 2009; 33(11): 833–841.
13. Barkley, RA. *Barkley Adult ADHD Rating Scale-IV (BAARS-IV)*. New York: Guilford Press, 2011.
14. SPSS Inc. *SPSS for windows*, version 15.0. Chicago: SPSS Inc., 2006.
15. Rashtriya Ucchatar Shiksha Abhiyan (RUSA) New Delhi. Ministry of Human Resource Development/University Grants Commission. Government of India, 2013. http://mhrd.gov.in/sites/upload_files/mhrd/files/RUSA_final090913.pdf. Accessed December 29, 2019.
16. Prasad R. Alcohol use on the rise in India. Lancet 2009; 373(9657): 17–18.
17. 17. Wicki M, Kuntsche E, and Gmel G. Drinking at European universities? A review of students' alcohol use. Addict Behav 2010; 35(11), 913–924.
18. Mohammadpoorasl A, Ghahramanloo AA, Allahverdipour H, et al. Substance abuse in relation to religiosity and familial support in Iranian college students. Asian J Psychiatr 2014; 9: 41–44.
19. Galaif ER, Sussman S, Newcomb MD, et al. Suicidality, depression, and alcohol use among adolescents: a review of empirical findings. Int J Adolesc Med Health 2007; 19(1): 27–36.
20. Pedrelli P, Shapero B, Archibald A, et al. Alcohol use and depression during adolescence and young adulthood: a summary and interpretation of mixed findings. Curr Addict Rep 2016; 3(1), 91–97.
21. Abbey A. Alcohol-related sexual assault: a common problem among college students. J Stud Alcohol Suppl 2002; (14): 118–128.
22. Surani NS, Pednekar MS, Sinha DN, et al. Tobacco use and cessation counseling in India-data from the Global health professions students survey, 2005–09. Indian J Cancer 2012; 49: 425–430.

Can Cancer Diagnosis Help in Quitting Tobacco? Barriers and Enablers to Tobacco Cessation Among Head and Neck Cancer Patients from a Tertiary Cancer Center in South India

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ABSTRACT

Background: Tobacco use contributes to almost 40% of the cancers in India. Considering the potential threat, many preventive measures have been instigated in the country. However, tobacco cessation for hospitalized cancer patients is an unexplored territory in India. This study aims to understand the quit status and to explore the reasons to quit or continue the use of tobacco after the diagnosis of head and neck cancer (HNC).

Methods: HNC patients admitted between February and April 2016 were assessed for their tobacco use status. A DT was used to assess the psychological distress. Users were assessed for their readiness to quit and dependence on tobacco. An in-depth interview was conducted among 25 patients (seven current users and 18 recent quitters), and themes that emerged were discussed.

Results: Of the 119 HNC patients, 71 were tobacco users and 48 had quit tobacco after the diagnosis. The reasons to quit were the perceived benefits of quitting, advice from the physicians, and awareness about cancer and its association with tobacco. In contrast, the reasons to continue the use of tobacco were attributed to coping mechanisms, nihilistic perception about the outcome of the cancer, and a lack of understanding about cancer and its association with tobacco.

Conclusion: The recent quitters comprehended the benefits of quitting and were able to prioritize their needs after the diagnosis. However, one-third of the HNC patients continued to use tobacco even after the diagnosis of cancer. Hence, tobacco cessation services need to be integrated into oncology services for achieving better treatment outcomes.

Keywords: Smoking cessation, tobacco, cancer diagnosis, head and neck cancers, quit status

Key Message: A better understanding of the current users' and recent quitters' attitudes, behavior, and perception about tobacco and its association with cancer would help in designing effective tobacco cessation interventions for hospitalized cancer patients.

"Cancer cures smoking" is a statement often said. Many studies suggest that the readiness and motivation to quit tobacco usage increase once a patient is diagnosed with cancer.[1] However, research also says that one-third to one-half of the users continue to use tobacco even after the commencement of treatment.[2] Among patients with head and neck cancer (HNC), the incidence of tobacco use is as high as 75% in the first year after cancer diagnosis.[3] This reluctance to quit smoking is attributed to more severe nicotine dependence, severe psychological distress, low social support, lack of motivation and withdrawal symptoms.[4–7] Research also emphasizes the role of ignorance

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about the benefits of tobacco cessation and its association with cancer.[8]

Continued use of tobacco after cancer diagnosis reduces the overall treatment efficacy, quality of life, and survival period. It also increases the risk of surgical complications, weight loss, and aggravation of chemo-induced side effects, including skin and oral mucosites.[9–11] Cancer patients who continue to use tobacco also experience depression, severe fatigue, and decreased pulmonary and immune functions.[12,13] Hence, assisting tobacco users to quit after a cancer diagnosis is of paramount importance in enhancing the quality of their lives.

The need for tobacco cessation in the primary prevention of cancer is well established. However, there is a dearth of research in the area of the tobacco users' perception, knowledge, behavior, and attitude about the association of tobacco and cancer in the Indian context.[14] This mixed-method sequential explanatory study assessed the quit rate of tobacco users and explored the reasons for quitting and continuing tobacco usage among HNC patients after the diagnosis. Exploring the reasons for quitting or continuing the use of tobacco would help in designing tailor-made tobacco cessation interventions among cancer patients in India.

Materials and Methods

Participants' Recruitment

The study included HNC inpatients who had a history of tobacco usage and were admitted in a tertiary cancer center in South India for treatment with curative intent, between February 2016 and April 2016. Patients who were above 25 years of age and could converse in Tamil or English were included, irrespective of their education, gender, socioeconomic status, and occupation. Purposive sampling was used, and participant recruitment for the qualitative study was not based on data saturation. This study was approved by the ethics committee of the center. Prior written informed consent was obtained from all participants.

A list of patients with history of tobacco use was prepared based on the hospital records. The patients were then approached and asked about their current tobacco use. For patients who confirmed having quit tobacco, the quit status was confirmed from caregivers and hospital staff. The patients were then categorized as current users (who continued tobacco use after diagnosis and during treatment) and recent quitters (who quit tobacco use immediately after the cancer diagnosis and continued the quit status until the time of the interview).

Tools Used

All patients were initially screened to measure their psychological distress using a Distress Thermometer (DT) developed by the National Comprehensive Cancer Network (NCCN).[15] The DT is a self-report tool where cancer patients are asked to rate their overall distress on a scale of zero (no distress) to 10 (extreme distress). Additionally, the current tobacco users were assessed using the Fagerstrom Test for nicotine dependence[16] (smoking and smokeless), which is a questionnaire used to assess the level of nicotine dependence, and Readiness to Quit Scale,[17] which is a questionnaire to measure the "stages of change" in a tobacco user.

To explore the reasons to quit or continue tobacco use, a semi-structured interview was conducted by the principal investigator who is an MPhil scholar with a master's degree in psychology and is trained in qualitative research methods. For semi-structured interviews, participants were enrolled based on in-person interactions. The researcher did not have a prior relationship with the study participants, and no one besides the researcher and the participant was present during data collection. The questions to guide the semi-structured interview were generated based on informal discussions with tobacco-related cancer patients admitted to the ward by the first author before the study. The questions were identified and pretested for their relevance, appropriateness of wording, and clarity. The questions were translated into the regional language (Tamil). The following lead questions were asked, and further probing was done based on the responses, to have an in-depth understanding about the reasons.

- What are the reasons to continue or quit tobacco use after the cancer diagnosis?
- Can you briefly tell me about your understanding of tobacco and its association with cancer?

Data Analysis

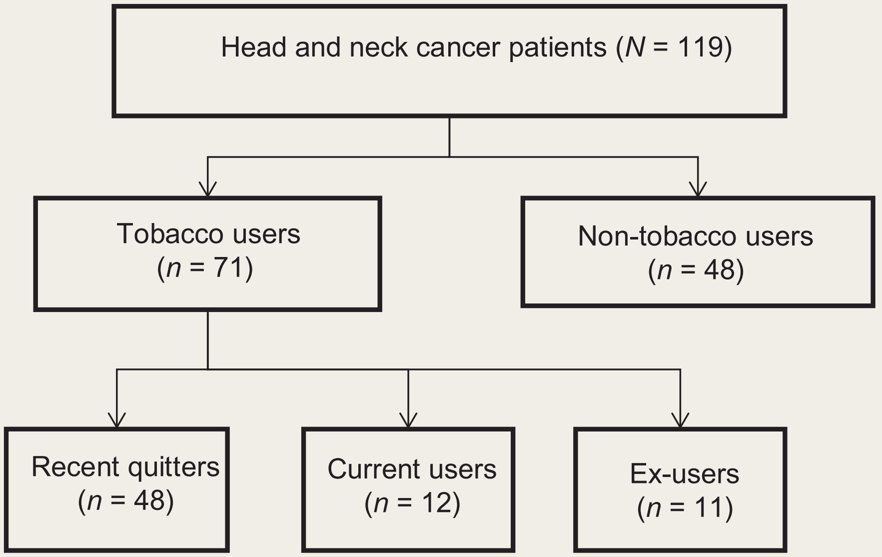
The quantitative data for the Fagerstrom Test for nicotine dependence (smoking and smokeless), the Readiness to Quit Scale, and the NCCN DT were summarized using descriptive statistics. Field notes were made after the semi-structured interviews were conducted by the researcher. Each interview lasted 15–20 min. The audios recorded in the semi-structured interviews were transcribed in Tamil and then translated to English by experts. Themes were identified based on thematic analysis developed by Braun and Clarke.[18] To gain systematic and meaningful data, two experts were asked to code the raw data independently. After the coding process, differences in interpretations were resolved through discussions with two other experts, who then sorted the code into potential themes. All the themes were made up of different subcodes, of which some initial codes were generated to form the main themes, and others were generated to form the subcategories. Codes with similar meanings were grouped together. The researchers and qualitative experts refined the themes that emerged for coherency and examined the relationship between them. A psychologist and a psycho-oncologist with prior experience in qualitative research and no other involvement in the study performed an independent review of the analysis, critically read the transcripts, explored the themes, and analyzed subsets of the raw data for further validation of the findings. The study findings are reported based on the recommendation of the 32-item checklist of the consolidated criteria for reporting qualitative research (COREQ)[19] for conducting interviews.

Results

A total of 119 HNC patients registered during the study period, out of which 71 were tobacco users as found in the medical records (**Figure 1**). Out of the 71 patients, 48 (68%) were recent quitters (quit immediately after diagnosis), 12 were

FIGURE 1.

Head and Neck Cancer Patients Registered at a Regional Cancer Center Between February 2016 and April 2016 and Their Tobacco Use Status After Diagnosis



current users, and 11 reported that they had quit tobacco prior to the diagnosis of cancer.

Among the 48 recent quitters, 28 could not be included in the study due to the following reasons: difficulty in speaking (n = 5), palliative treatment (n = 6), language barriers (n = 7), Ryle's tube insertion and longer stabilization time (n = 2), unwillingness to participate (n = 2), and administrative reasons (n = 6). Eventually, 20 recent quitters (age range, 29–65 years) consented to give an in-depth interview. As two of the audio recordings of patient interviews lacked audio clarity, only 18 interview transcriptions were included for analysis.

Among the 12 current users, only seven consented to participate in the study, whereas the other five refused to participate due to lack of motivation and fear of exposing their continued tobacco use to the family members.

The mean age of the participants recruited for interview (n = 25) was 48.6 years (standard deviation 10.75). All of them were aware of the diagnosis, and 68% (n = 17) were diagnosed with oral cavity cancers. Moreover, 48% (n = 12) of them were using a smokeless form of tobacco, 36% (n = 9) were using a smoking form, and 16% (n = 4) were using both the forms. The demographic and clinical characteristics of the patients are presented in **Table 1**.

TABLE 1.

Demographic, Clinical Characteristics, and Distress Level of Head and Neck Cancer Patients Using Tobacco

Variable	Categories	Recent Quitters (n = 18)		Current Users (n = 7)	
		n	(%)	n	(%)
Gender	Male	14	(77.8)	7	(100)
	Female	4	(22.2)	–	(–)
Age (in years)	<48[a]	9	(50)	2	(28.6)
	>48	9	(50)	5	(71.4)
Education	No formal education	6	(33.3)	–	(–)
	Primary	12	(66.6)	5	(71.4)
	Secondary	–	(–)	2	(28.6)
Occupation	Daily wager	10	(55.6)	3	(42.9)
	Self-employed	8	(44.4)	3	(57.1)
Area of residence	Urban	6	(33.3)	3	(42.9)
	Rural	12	(66.6)	4	(57.1)
Type of tobacco used	Smoking tobacco	5	(27.8)	4	(57.1)
	Smokeless tobacco	12	(66.6)	–	(–)
	Both	1	(5.6)	3	(42.9)[b]
Cancer site	Unknown primary	1	(5.6)	1	(14.2)
	Oral cavity	14	(77.8)	3	(42.9)
	Pharynx	3	(16.6)	2	(28.6)
	Larynx	–	(–)	1	(14.2)
Distress	Mild distress	2	(11.1)	1	(14.2)
	Moderate distress	9	(50.0)	1	(14.2)
	Severe distress	7	(38.9)	5	(71.4)

[a]Mean age of all participants was 48. [b]Continued smoking but quit the smokeless form of tobacco after diagnosis.

With Fagerstrom Test for nicotine dependence, the severity of the nicotine dependence was found to be very low in five of the current users, while the remaining two had medium severity. All the seven of them were in the precontemplation stage (readiness to quit). Five of the current users were severely distressed (NCCN DT), whereas the 16 (89%) of the recent quitters were moderately or severely distressed.

Themes That Emerged Among Current Users

The themes that emerged among current users (**Table 2**) were using tobacco as a coping mechanism to relieve the psychological distress associated with cancer and treatment, hopelessness about the outcome of cancer and its treatment, and a lack of understanding about cancer and its association with tobacco.

TABLE 2.

Major and Subthemes Emerged as Reasons and Its Description for Continuing and Quitting Tobacco Use Among Newly Diagnosed Head and Neck Cancer Patients

Major Themes	Subthemes	Descriptions
Current Users		
Psychosocial factors	Coping mechanism	Tobacco is used as a general coping strategy to relieve distress. To cope up with the distress associated with the diagnosis of cancer and treatment.
	Nihilistic perception about cancer outcome	Skeptical about the outcome of quitting/fear of failure. Hopeless about the outcome of cancer treatment (Cancer is associated with death, quitting tobacco is not going to make a difference).
	Understanding about cancer and its association with tobacco	Tobacco use does not have any association with cancer. Using tobacco occasionally or in small quantity does not cause cancer or any harm.
Recent Quitters		
Psychosocial factors	Perceived benefits of quitting tobacco	Improves health status Improves psychological well-being Financial benefits Improves treatment outcome Prevents recurrence and secondary malignancies Prevents other health risks Reduces the burden on family members Improves interpersonal relationships
	Doctor's advice to quit tobacco	Strong advice from oncologists and other treating team members
	Understanding about cancer and its association with tobacco	Knowledge about the role of tobacco in cancer Feeling guilty about using tobacco Awareness that tobacco use is the cause of their current illness (cancer)

1. **Coping mechanism**

   Current users reported that they use tobacco as a coping strategy in general to relieve stress and that they continue to use tobacco to cope with the current distress associated with cancer diagnosis and treatment.

"It's all because of stress…for getting relief from stress and to feel good…. Yes, I do have difficulties and family problems, and to get rid of those thoughts, I smoke…."

(Current User Participant No: 01).

2. **Nihilistic perception about cancer outcome**

   Some patients did not perceive any added benefit in quitting at this stage, as they thought that the damage was already done. Despite the assurance of the treating oncologists about a possibility of cure, they were skeptical about the outcome of cancer and its treatment. They strongly believed that quitting tobacco at this stage cannot improve one's health and that death is inevitable after being diagnosed with cancer. This sense of hopelessness was a major deterrent in the case of current users' decision to continue with tobacco use.

"What I think is that I have got cancer, and nothing can be done at this stage. I am in this condition. So I do not know what to do…. I am continuing because everything is over anyway…."

(Current User Participant No: 04)

3. **Understanding about cancer and its association with tobacco**

   Current users disputed the fact that "tobacco causes cancer." They brought up real-life examples of those people who had cancer despite having clean habits and those who never had cancer despite heavy and prolonged tobacco usage. Current users raised these real-life examples in their defense to continue with the use of tobacco even after cancer diagnosis. They believed that the current illness was not associated with tobacco and, therefore, continued to use it.

"There are so many people who smoke, and they don't get any disease. I smoke only occasionally, but I got cancer. I don't know which one is to blame: the cigarettes or the disease…."

(Current User Participant No: 02).

Current users believed that smoking one or two cigarettes a day might not be harmful.

"When I started, I was thinking what big deal is going to happen…. Now it has become a habit, and smoking one or two cigarettes in a day is not a big deal…."

(Current User Participant No: 05)

Themes that Emerged Among Recent Quitters

The themes that emerged among recent quitters (**Table 2**) were perceived benefits of quitting tobacco, doctor's advice to quit tobacco, and understanding about cancer and its association with tobacco.

1. **Perceived benefits of quitting tobacco use after diagnosis**

Recent quitters believed that quitting tobacco might improve their health status. Tobacco use further caused pain and irritability in the affected site and prevented them from using tobacco.

"I have quit only after experiencing pain. I have pain in my tongue. Whenever I eat spicy food or I put pan, I experience a burning sensation and due to that, I have quit…."

(Recent Quitter Participant No: 06)

The recent quitters felt an improvement in their psychological well-being after quitting.

"Now I am healthy. Feeling good and strong…. Initially, it was difficult even to walk…. Now I can walk better…."

(Recent Quitter Participant No: 03)

Recent quitters believed that the price of tobacco products was too high and that they should rather save money for their treatment instead of spending it on tobacco.

"First, to begin with money, 2000 rupees per month can be saved…. I can use it for my treatment…."

(Recent Quitter Participant No: 03)

Recent quitters were concerned about the outcome of the cancer treatment and recurrence, and they associated the current illness with tobacco. They believed that continuing tobacco use might lead to poor prognosis and recurrence.

"I have to stop…. After being diagnosed with cancer, I should stop…. If I continue to use, I think my disease will come back…. I don't want to suffer any more…. By merely thinking about the disease, I'm scared…. When I came to know about the diagnosis itself, I was shocked…. If I don't quit, the disease might spread further and endanger my life…."

(Recent Quitter Participant No: 08)

Recent quitters associated tobacco not only with cancer but also with other noncommunicable diseases, and the knowledge was attributed to media campaigns.

"Didn't see any risk, might get cancer, might get some problem in the lungs or heart because of tobacco…. The juice from tobacco gets deposited in the lungs. They show on TV also…. They trap it in bottles and show…. There is a fear that something like that might come…."

(Recent Quitter Participant No: 01)

Commitment to the family too was a motivating factor to quit.

"If I were alone, then fine. But I must take care of five people. I know that I have got the disease. I have got two kids, my wife, and my parents. Hereafter (pause), if I continue again, it's over…."

(Recent Quitter Participant No: 10)

"My wife suffers a lot. She doesn't tell me. But I feel guilty. I am not even able to face her. Why have I got cancer? It is because of this."

(Recent Quitter Participant No: 05)

Recent quitters believed that quitting tobacco would bring in happiness among their family members.

"My relatives had always asked me to stop this habit, but I never listened to them. Whenever they say anything related to smoking, I tried to avoid them. This had created a lot of indifference amongst us. Now they are happy because I have stopped this habit…."

(Recent Quitter Participant No: 17)

2. Doctor's advice to quit tobacco

Some of the recent quitters had quit because of repeated and consistent advice received during their hospitalization from oncologists and other health care professionals.

"Yes…Doctors have advised me…. They said that only after quitting this habit will they be able to cure the disease or else it will be growing and lead to bigger issues…. That's why I decided to stop the habit…."

(Recent Quitter Participant No: 13)

Half of the HCN patients who quit after cancer diagnosis experienced withdrawal symptoms in the first week following cessation. The common withdrawal symptoms were craving, irritability, anger, and headache. But these patients adopted several coping strategies that they had learned from the doctors to abstain from the habit.

"I used clove whenever I had craving…. But gradually, I have reduced, and I quit the habit…. Now I feel relieved…."

(Recent Quitter Participant No: 03)

"Whenever I have such thoughts, I use cinnamon or dry grapes…. Then such thoughts won't recur immediately…. Even sweets are effective."

(Recent Quitter Participant No: 02)

"That's what, it would be slightly difficult. It is irritating, I have felt like I have lost something. Still, when we think about our family, we get the confidence…. When I have such thoughts, I would drink water, iced water, or juice. In the evenings, I would take tea or milk with some biscuits."

(Recent Quitter Participant No:10)

3. Understanding about cancer and its association with tobacco

Prior to the cancer diagnosis, the recent quitters were well aware about the strong association of cancer with tobacco usage. The diagnosis further strengthened their credence and made them feel guilty of their behavior, leading to quitting the use of tobacco.

"I quit the habit only after the cancer was diagnosed on my tongue…not before that…."

(Recent Quitter Participant No: 07)

"Our sins will not leave us alone. What we sow, so shall we reap. I have got cancer. I got it because of the mistake I made. I have reformed. But, I do have to pay for the sins I have already committed. So, God has given me cancer. That is how I feel. It was difficult, but I was not angry. I generally don't feel much anger…."

(Recent Quitter Participant No: 05)

"Whatever is bad for health, I have used it all my life and it has been the cause of my cancer…. So, I feel very angry looking at my own self…. I have spoilt my own health…."

(Recent Quitter Participant No: 13)

No patient in the study group received any special intervention from professionals to quit tobacco, apart from simple advice from oncologists and nurses.

Discussion

This study added new knowledge in understanding the tobacco cessation status among newly diagnosed HNC patients and the reasons associated with it. The quit rate was observed to be 67.6%. The self-reported quit rates among cancer patients were reported as 83%[20] and 65%[21] in earlier literature, in line with the current study. Previous studies[22–24] have reported that demographic variables such as gender (male), socioeconomic status (low), and education (low) play a vital role in continuing tobacco usage after a cancer diagnosis. Because of the small sample size, we were unable to perform further analysis to see if our sample had findings similar to those of the previous literature.

All smokeless tobacco (SLT) users in our sample had quit their habit. This could be due to the treatment-related side effects and the inability to use SLT. While undergoing radiation therapy, patients often experience symptoms such as mucositis and pain. Patients who quit because of side effects might resume tobacco usage once the symptoms disappear.[21] However, in a previous study, the quit rate was found to be low among SLT users due to the high level of nicotine dependency.[25] During in-depth interviews, our patients reported having a burning sensation at the cancer site. This had also prevented them from taking their regular diet during such times. Further exploring this might give a better understanding of whether their quitting is temporary due to the side effects or is it because of the correct understanding of the ill effects of tobacco usage.

In this study, 71.4% of the current users experienced severe psychological distress after cancer diagnosis, as compared to 38% of the recent quitters. Although the current users experienced severe distress, none of them were clinically depressed in this study. It has been established that cancer patients experience severe psychological distress from the time of diagnosis to the completion of treatment.[26–28] As supported by the qualitative findings of this study, distress could be the reason for not being able to quit this habit. A majority of our patients reported a lower level of nicotine dependence and still found it difficult to quit. A systematic review had concluded that stress is one of the factors that lead to continued tobacco use.[14]

All current users were in the precontemplation stage and, hence, they had low awareness, whereas the recent quitters were well-aware of its association with cancer. A low quit rate among tobacco users who were in the precontemplation stage has also been found in other studies.[29]

Reasons to Quit or Continue to Use Tobacco

Users who continued to use tobacco after cancer diagnosis did so because of higher psychological distress and this outweighed the benefits of quitting. The current users were unconvinced that even moderate smoking posed health risks. There are similar studies attributing low awareness on the health risks associated with tobacco use as the reason for cancer patients' lower motivation to quit the habit.[30–34] Although advancement in treatment resulted in improved quality of life, the current users perceived that cancer has no cure and that death is inevitable even though they were under treatment with curative intent.

Furthermore, many current users believed that tobacco consumption did not cause cancer. In order to support their claims, they cited examples of people around them who smoked tobacco for their entire lifetime and were still cancer-free. On the other side, they also cited examples of many nontobacco users who were diagnosed with cancer. In fact, some current tobacco users were of the opinion that continuing tobacco use would improve their overall physical condition and that quitting would damage their psychological well-being. Consistent with previous studies,[35] heightened psychological distress and constant worry about the future of their families detracted the patients from their frail aim to stop tobacco use. Hence, many of the current users continued to use tobacco after the diagnosis as a coping strategy.

The recent quitters experienced feelings of guilt and censure, which led to tobacco cessation. This finding is consistent with other studies where recent quitters claimed that their cancer was a result of God's anger and punishment for their bad habit of using tobacco. Family support had also played a strong predictor of tobacco cessation.[36–38]

A majority (n = 13) of the quitters perceived that continued use of tobacco would aggravate the pain at the cancer site and increase the chances of secondary cancers. They also feared the stigma of death by cancer and were willing to take any measures to avoid it. The recent quitters were convinced that the benefits of quitting outweighed the potential threat of tobacco use at this stage. They perceived that quitting would improve the treatment outcome and cancer prognosis, and enhance their psychological well-being.

No patients received specialized tobacco cessation intervention to quit tobacco, although some recent quitters reported that their physician's advice was a motivating factor. Advice and tips provided by doctors and other health care professionals on managing withdrawal symptoms have been found to be effective in helping patients to quit tobacco usage.[39] Hence, it is essential to offer cessation support to all tobacco users who are diagnosed with cancer, as it is difficult for them to quit on their own.[40]

Strengths and Limitations

This study was conducted in a single tertiary cancer center, because of which its findings cannot be generalized. The small sample size limited the ability to perform inferential statistics to determine the association of tobacco quitting with the stage of change, level of nicotine dependence, stress, and demographic characteristics. While the recent quitters had reached data saturation, the current user group was not able to meet the same, which is another limitation of this study. Further studies can be conducted to explore these aspects. The quit rate was based on the self-report. Although the author took efforts to confirm the quit rate through surrogate measures, there are chances that the patients might have used tobacco without the knowledge of caregivers and hospital staffs. The quit status was not confirmed using any biomedical assessments such as urine cotinine. Moreover, all study participants were admitted to the hospital and were under treatment. The hospital has a tobacco-free policy, and patients and visitors were not able to use tobacco within the campus. Also, the patients might have had side effects associated with treatment. This would have restricted them from using tobacco apart from the reasons reported by them. These aspects were not explored in the study.

The strengths of the study are as follows: firstly, it is a mixed-method sequential explanatory study, and, secondly, it adds new knowledge to the field of oncology in the Indian context as no study has been conducted in this area so far and to best of our knowledge.

Conclusions

"Cancer cures smoking," the often-said statement, was disproved in this study, as a substantial proportion of patients continued tobacco use after the cancer diagnosis, indicating the need for tobacco cessation services at oncology settings.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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References

1. Alton D, Eng L, Lu L, et al. Perceptions of continued smoking and smoking cessation among patients with cancer. J Oncol Pract 2018; 14(5): e269-e279.
2. Florou AN, Gkiozos IC, Tsagouli SK, et al. Clinical significance of smoking cessation in subjects with cancer: a 30-year review. Respir Care 2014; 59: 1924–1936.
3. Cooley ME, Lundin R, and Murray L. Smoking cessation interventions in cancer care: opportunities for oncology nurses and nurse scientists. Annu Rev Nurs Res 2009; 27: 243–272.
4. Schnoll RA, Malstrom M, James C, et al. Correlates of tobacco use among smokers and recent quitters diagnosed with cancer. Patient Educ Couns 2002; 46: 137–145.
5. Cox LS, Africano NL, Tercyak KP, et al. Nicotine dependence treatment for patients with cancer. Cancer 2003; 98: 632–644.
6. Cooley ME, Sarna L, Kotlerman J, et al. Smoking cessation is challenging even for patients recovering from lung cancer surgery with curative intent. Lung Cancer 2009; 66: 218–225.
7. Benowitz NL. Nicotine addiction. N Engl J M 2010; 362: 2295–2303.
8. Grills NJ, Singh R, Singh R, et al. Tobacco usage in Uttarakhand: A dangerous combination of high prevalence, widespread

ignorance, and resistance to quitting. Biomed Res Int 2015; 2015: 132120.

9. Yang H-K, Shin D-W, Park J-H, et al. The association between perceived social support and continued smoking in cancer survivors. Jpn J Clin Oncol 2012; 43: 45–54.
10. Jassem J. Tobacco smoking after diagnosis of cancer: Clinical aspects. Transl Lung Cancer Res 2019; 8(S1): S50-S58.
11. Zhang J, Kamdar O, Le W, et al. Nicotine induces resistance to chemotherapy by modulating mitochondrial signaling in lung cancer. Am J Respir Cell Mol Biol 2009; 40: 135–146.
12. Tsao AS, Liu D, Lee JJ, et al. Smoking affects treatment outcome in patients with advanced nonsmall cell lung cancer. Cancer 2006; 106: 2428–2436.
13. Cataldo JK, Dubey S, and Prochaska JJ. Smoking cessation: An integral part of lung cancer treatment. Oncology 2010; 78(5–6): 289–301.
14. Gritz ER, Fingeret MC, Vidrine DJ, et al. Successes and failures of the teachable moment. Cancer 2006; 106: 17–27.
15. Holland JC and Bultz BD. The NCCN guideline for distress management: A case for making distress the sixth vital sign. J Natl Compr Canc Netw 2007; 5: 3–7.
16. Heatherton TF, Kozlowski LT, Frecker RC, et al. The Fagerstrom Test for nicotine dependence: A revision of the Fagerstrom Tolerance Questionnaire. Addiction 1991; 86: 1119–1127.
17. Lakshmanam K and Vidhubala E. Readiness to quit scale (unpublished observation), 2002.
18. Braun V and Clarke V. Using thematic analysis in psychology. Qual Res Psychol 2006; 32: 77–101.
19. Tong A, Sainsbury P, and Craig J. Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. Int J Qual Health Care 2007; 19: 349–357.
20. Gritz ER. Smoking and smoking cessation in cancer patients. Addiction 1991; 86: 549–554.
21. Ostroff JS, Jacobsen PB, Moadel AB, et al. Prevalence and predictors of continued tobacco use after treatment of patients with head and neck cancer. Cancer 1995; 75: 569–576.
22. Schnoll RA, Engstrom PF, Subramanian S, et al. Prevalence and correlates of tobacco use among Russian cancer patients: Implications for the development of smoking cessation interventions at a cancer center in Russia. Int J Behav Med 2006; 13: 16–25.
23. Emmons KM, Puleo E, Park E, et al. Peer-delivered smoking counseling for childhood cancer survivors increases rate of cessation: The partnership for health study. J Clin Oncol 2005; 23: 6516–6523.
24. Reid JL, Hammond D, Boudreau C, et al. Socioeconomic disparities in quit intentions, quit attempts, and smoking abstinence among smokers in four western countries: Findings from the International Tobacco Control Four Country Survey. Nicotine Tob Res 2010; 12(Suppl 1): S20–S33.
25. Handa S, Kour H, and Khurana C. Insight into nicotine addiction. CHRISMED J Health Res 2017; 4: 69.
26. Mcbride CM. Understanding the potential of teachable moments: The case of smoking cessation. Health Educ Res 2003; 18: 156–170.
27. O'Hea EL, Monahan BR, Cutillo A, et al. Predictors of psychological distress and interest in mental health services in individuals with cancer. J Health Psychol 2014; 21: 1145–1156.
28. Updates to the National Cancer Institute's PDQ information from recently Published Oncology Research. J Natl Cancer Inst 2017; 109(11).
29. Riemsma RP. Systematic review of the effectiveness of stage based interventions to promote smoking cessation. BMJ 2003; 32: 1175–1177.
30. Schnoll RA, Rothman RL, Newman H, et al. Characteristics of cancer patients entering a smoking cessation program and correlates of quit motivation: Implications for the development of tobacco control programs for cancer patients. Psychooncology 2004; 13: 346–358.
31. Ostroff JS, Copeland A, Borderud SP, et al. Readiness of lung cancer screening sites to deliver smoking cessation treatment: Current practices, organizational priority, and perceived barriers. Nicotine Tob Res 2015; 18: 1067–1075.
32. Cox LS, Patten CA, Ebbert JO, et al. Tobacco use outcomes among patients with lung cancer treated for nicotine dependence. J Clin Oncol 2002; 20: 3461–3469.
33. Alton D, Eng L, Lu L, et al. Perceptions of continued smoking and smoking cessation among patients with cancer. J Oncol Pract 2018; 14: e269–e279.
34. Bassett JC, Gore JL, Kwan L, et al. Knowledge of the harms of tobacco use among patients with bladder cancer. Cancer 2014; 120: 3914–3922.
35. Li WHC, Chan SSC, and Lam TH. Helping cancer patients to quit smoking by understanding their risk perception, behavior, and attitudes related to smoking. Psychooncology 2014; 23: 870–877.
36. Sun H-Q, Guo S, Chen D-F, et al. Family support and employment as predictors of smoking cessation success: A randomized, double-blind, placebo-controlled trial of nicotine sublingual tablets in Chinese smokers. Am J Drug Alcohol Abuse 2009; 35: 183–188.
37. Park EW, Tudiver FG, and Campbell T. Enhancing partner support to improve smoking cessation. Cochrane Database Syst Rev 2012; 11: CD002928.
38. Graham S and Gibson RW. Cessation of patterned behavior: Withdrawal from smoking. Soc Sci Med 1971; 5: 319–337.
39. Rigotti NA, Clair C, Munafò MR, et al. Interventions for smoking cessation in hospitalised patients. Cochrane Database Syst Rev 2012; 16: CD001837.
40. Komiyama M, Takahashi Y, Tateno H, et al. Support for patients who have difficulty quitting smoking: A review. Intern Med 2019; 58: 317–320.

Original Article

Prevalence and Predictors of Stress, Anxiety, and Depression Among Healthcare Workers Managing COVID-19 Pandemic in India: A Nationwide Observational Study

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ABSTRACT

Background: The coronavirus disease 2019 (COVID-19) pandemic has caused great financial and psychological havoc. Healthcare professionals (HCPs) are among the many groups of people who are in the frontline and facing a risk of direct exposure to the virus. This study aimed to assess the prevalence and predictors of stress, depressive, and anxiety symptoms among HCPs of India.

Methods: It was a cross-sectional, online survey conducted in April 2020 among HCPs who are directly involved in the triage, screening, diagnosing, and treatment of COVID-19 patients and suspects. Stress was estimated using Cohen's perceived stress scale. Depression and anxiety were assessed using the tools Public Health Questionnaire—9 and Generalized Anxiety Disorder—7. Predictors were analyzed using univariate and multivariate binary logistic regression.

Results: A total of 433 online responses were obtained, and N = 350 were finally included. The prevalence (95% CI) of HCPs with high-level stress was 3.7% (2.2, 6.2), while the prevalence rates of HCPs with depressive symptoms requiring treatment and anxiety symptoms requiring further evaluation were 11.4% (8.3, 15.2) and 17.7% (13.9, 22.1), respectively. Women had approximately two times the increased odds of developing moderate- or high-level stress, depressive symptoms requiring treatment, and anxiety symptoms requiring further evaluation. Similarly, women staying in a hostel/temporary accommodation had two times the increased odds of developing depression or anxiety symptoms.

Conclusion: The prevalence of stress, depressive, and anxiety symptoms among HCPs in India during the pandemic is comparable with other countries.

Keywords: Pandemic, COVID-19, stress, anxiety, depression, prevalence, risk factors

Key Messages: COVID-19 pandemic puts frontline HCPs at great risk of psychological stress. The prevalence values of high-level stress, depressive symptoms requiring treatment, and anxiety symptoms requiring further evaluation were 3.7%, 11.4%, and 17.7%, respectively; these values are comparable to other countries and not high, given the comparatively poor health infrastructure in our country compared to other nations. This could be attributed to the early phase of the pandemic and the resilience of Indian HCPs.

The emergence of the novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS CoV-2), causing the coronavirus disease 2019 (COVID-19) over the turn of the year 2020 has wreaked havoc in the medical systems across the world. Over 28 lakh cases have been reported throughout the

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world, with numbers increasing by the day.[1] This has put healthcare professionals (HCP) under tremendous pressures as they deal with many variables some of which are longer working hours, lack of personal protective equipment, lack of specific drugs and protocols, and being away from family. According to previous studies, during the outbreaks of severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS), frontline medical staff had reported high levels of stress that resulted in posttraumatic stress disorder (PTSD).[2,3] It was also found that HCPs considered resignation, faced stigmatization,[4] and feared contagion and spread to family and friends, resulting in high levels of stress, depression, and anxiety symptoms.[5] There have been plenty of reports from China detailing the number of HCPs getting infected and even succumbing to the illness.[6] Concerns of the psychological impact of the pandemic like before are arising. This resulted in interventions such as setting up psychological assistance services over the telephone, internet, and application-based sessions.

As on April 11, 2020, India faces the most critical phase of the pandemic, with community transmission not yet in full flow.[7] HCPs across the country are facing a fight like never before. Vulnerable to psychological impact, we aim to evaluate the magnitude of stress, anxiety, and depression and to assess possible associated risk factors at this early stage of the pandemic. This would help us plan appropriate interventions at the early stage to prevent a detrimental outcome for the brave HCPs out there.

Materials and Methods

Ethics

The study was approved by the institutional ethics committee. An online written informed consent was obtained from all potential participants.

Study Design and Eligibility Criteria

This was an online-questionnaire-based cross-sectional study conducted in India during the month of April 2020.The online questionnaire was designed on Google Forms and circulated in multiple WhatsApp groups, targeting doctors and nurses involved in triage, screening, diagnosing, and treatment of COVID-19 patients and suspects. Those who were currently doing their internship were excluded.

Study Procedures

The link to the online questionnaire was circulated on April 10, 2020, and the target sample size was achieved on April 25, 2020. A maximum of three reminders were sent in all WhatsApp groups. To limit the number of HCPs who inadvertently answer the questionnaire without being involved in COVID-19 work, a specific yes/no question confirming their work in COVID-19 was asked. Those who marked the answer as “Yes” were allowed to continue answering the questionnaire. The questionnaire had five sections, namely, baseline sociodemographic characteristics, Generalized Anxiety Disorder 7-item (GAD-7), Patient Health Questionnaire-9 (PHQ-9), Perceived Stress Scale-10 (PSS-10), and miscellaneous psychosocial questions. Data were collected anonymously, with only one response was permitted per person.

PHQ-9 is a 9-item self-report questionnaire used in clinical practice for screening, diagnosing, monitoring, and measuring the severity of depression. PHQ scores ≥10 have a sensitivity of 88% and a specificity of 88% for major depression and require treatment.[8] PSS-10 is an instrument designed to measure the degree to which situations in one’s life are appraised as stressful. PSS items have been found to have good correlations with other stress measures, self-reported health and health service measures, health behavior measures, smoking status, and help-seeking behavior.[9] GAD-7 is a 7-item self-report questionnaire used in clinical practice for screening and assessing severity of generalized anxiety disorder. Cut-off points of 5, 10, and 15 may be interpreted as representing mild, moderate, and severe levels of anxiety on the GAD-7. A score of >10 would require further evaluation.[10]

Sample Size Estimation

Considering an estimated prevalence of depression (p) among HCPs to be 13.5% based on the study by Zhu et al.,[11] the sample size estimated using the formula $(Z\alpha)^2pq/d^2$ using an alpha error of 5% and an absolute precision (d) of 5% was 179. If estimated considering the prevalence of stress (p = 29.8%), although a different tool being used, and anxiety (p = 24.1%), the sample size, with the other assumptions remaining constant, would be 322 and 281, respectively. Considering the largest value among the three and assuming an approximate 10% of questionnaires to have incomplete responses, we decided to increase the sample size to 350.

Data Management

Data were exported from the Google Forms to Microsoft Excel (Microsoft Corporation, Redmond, Washington, USA, 2016) spreadsheet and coded. Statistical analyses were performed using Statistical Package for Social Sciences (SPSS) Statistics for Windows, Version 20.0 (IBM Corp., USA, 2011).

Statistical Analysis Plan

Demographic characteristics were summarized using descriptive statistics such as frequency and percentages in case of discrete data, or mean and standard deviation (SD) in the case of continuous data. Prevalence rates of high-level stress, anxiety symptoms requiring further evaluation, and depressive symptoms requiring treatment were expressed as proportions with 95% confidence intervals (CI). The hypothesized factors/predictors to each of these conditions, namely stress, anxiety, and depression, such as age, gender, being a doctor, years of experience, hostel/ temporary accommodation, history of mental illness, presence of comorbidities, perceived inability to distress, and employment in the government sector, were subjected to univariate binary logistic regression. Those with a significance of $P < 0.2$ in the univariate analysis were included in the multivariate binary logistic regression model.

Results

A total of 433 responses were received. Of these, 83 respondents were not involved in any of the COVID-19 related activities and hence were excluded. The remaining 350 from across ten states and one union territory were included in the analysis. A total of 344 participants had disclosed their institutions of affiliation, and the number of participating institutions totaled to 98. Of the 350 participants, 84.3% (*n* = 295/350) were doctors and the remaining 15.7% (*n* = 55/350) were nurses. The mean (SD) age of the participants was 30.21 (5.22) years. The demographic characteristics are summarized in **Table 1**.

The details regarding the occupation of participants are given in **Table 2**. Junior residents formed the major proportion (*n* = 168/350; 48.0%). The mean (SD) years of experience of the participants were 5.52 (4.79).

The prevalence (95% CI) of HCPs with high-level stress was 3.7% (2.2, 6.2). The prevalence rates (95% CI) of HCPs with depressive symptoms requiring treatment and anxiety symptoms requiring further evaluation were 11.4% (8.3, 15.2) and 17.7% (13.9, 22.1), respectively. The details of various categories of stress, depressive symptoms, and anxiety symptoms, and the details of leisure activities are depicted in **Table 3**. A large majority (*n* = 273/350; 78.0% had serious concerns about the spread of infection from them to their friends or family members. Also, most participants (*n* = 151/350; 43.2% and *n* = 175/350; 50.0%, respectively) were not satisfied with the administrative support from the institution and the availability of personal protective equipment.

An analysis to identify the predictors of moderate- and high-level stress revealed that female gender (odds ratio [OR] = 2.008, 95% CI = 1.122, 3.594, and P value = 0.019) was the only significant predictor among all the hypothesized factors, thereby negating the need for multivariate analysis. With regards to depressive symptoms requiring treatment, the significant predictors (adjusted OR; 95% CI; P value) were female gender (2.023; 1.021, 4.010; 0.044) and hostel/temporary accommodation (2.355; 1.180, 4.702; 0.015). Similarly, the significant predictors (adjusted OR; 95% CI; P value) of anxiety symptoms requiring further evaluation were female gender (2.180; 1.230, 3.862; 0.008) and hostel/temporary accommodation (1.926; 1.046, 3.548; 0.035). The details of the univariate analysis and multivariate analysis to identify the predictors of stress, depression, and anxiety are summarized in **Table 4**.

TABLE 1.

Demographic Characteristics

Characteristic		Frequency (*N* = 350)	Percentage (%)
Age (years)	18–29	178	50.9
	30–44	163	46.6
	45–60	9	2.6
Gender	Male	187	53.4
	Female	163	46.6
Geographical distribution of participants within India[a]	North and Central	42	12.0
	South	219	62.6
	East and North East	20	5.7
	West	69	19.7
Accommodation	Home	189	54.0
	Hostel	133	38.0
	Temporary arrangement	28	8.0
History of mental disorders	Yes	15	4.3
	No	331	94.6
	Did not disclose	4	1.1
Comorbidities	Asthma/COPD	15	4.3
	Hypertension	9	2.6
	Diabetes mellitus	8	2.3
	Hypothyroidism	4	1.1
	Miscellaneous[b]	6	1.7

[a] As per the six administrative zones of India recognized under Part III of the States Reorganisation Act, 1956.
[b] Polycystic ovarian disease and allergic rhinitis: two participants each; seronegative arthritis and migraine: One participant each. COPD: chronic obstructive pulmonary disease.

Discussion

The prevalence of high-level stress was low (3.7%) and the rates for depressive symptoms requiring treatment and anxiety symptoms requiring further evaluation (11.4% and 17.7%, respectively) were comparatively more. The prevalence rates of depressive and anxiety symptoms are in line with the findings from similar studies assessing psychological impact during the COVID-19 pandemic in China but the prevalence of high-level stress in our study is comparatively low. However, a huge majority of our participants still have moderately-high stress (78.9%), which is clinically relevant. Zhu et al. from Wuhan, China, the epicenter of the virus outbreak, have reported that among 5,062 HCPs, the prevalence rates of stress, depression, and anxiety were 29.8%, 13.5%, and 24.1%, respectively.[11] Another study from China, conducted among 1,257 HCPs, reported that the prevalence rates of severe distress, depressive symptoms requiring treatment, and anxiety symptoms requiring further evaluation were 10.5% (*n* = 132/1257), 14.8% (*n* = 186/1257), and 13.3% (*n* = 154/1257), respectively.[12] To the best of the authors' knowledge, as on April 20, 2020, study results from India or other countries on the psychological impact of COVID-19 among HCPs are yet to be published.

A closer look into the baseline prevalence of stress, depression, and anxiety among medical staff revealed similar prevalence rates even without the pandemic. A study by Grover et al. among doctors from Chandigarh, conducted in the pre-pandemic period, has reported the prevalence of moderate or severe depression to be 13.2% (*n* = 59/445) and moderate- or high-level stress to be 80.2% (*n* = 357/445), using the same tools used by us.[13] Swapnil et al. have reported that the prevalence rates of anxiety

TABLE 2.

Occupational History

Variable	Category	Frequency (*N* = 350)	Percentage (%)
Employment sector	Government	165	47.1
	Private	185	52.9
Occupation	Doctor	295	84.3
	Nurses	55	15.7
Designation	Junior resident	168	48.0
	Senior resident/assistant professor	95	27.1
	Associate professor/professor	35	10.0
	Staff nurse	52	14.9
Department	Emergency medicine	166	47.3
	General medicine	68	19.4
	Critical care	27	7.7
	Paediatrics	16	4.6
	Otorhinolaryngology	8	2.3
	Infectious diseases	6	1.7
	Pulmonology	6	1.7
	Other medical specialties	33	9.4
	Other surgical specialties	20	5.7
Years of experience	Ten years and below	310	88.6
	Greater than ten years	40	11.4

and depression were 64.60% and 14.18% as assessed using the 28-item general health questionnaire.[14] This suggests that the pandemic has not overtly affected the psychological well-being of the HCPs in India. One possible reason could be that the community transmission is in check due to the ongoing nationwide lockdown, thereby reducing the patient load.[15] Another factor could be resilience that Indian doctors might have developed during the course of their professional life.[16] Medical post-graduate training in India is very competitive,[17] usually very vigorous, and with long working hours,[18] associated burnout, and routine exposure to a variety of infectious diseases.[19] Furthermore, even without a pandemic, the public sector hospitals in India always see a huge number of cases, with very limited staff and infrastructure.[20] Exposed to such stressors, the attitude of HCPs to the current crisis could be paradoxically less panic-stricken. Although we discuss that the psychological issues are not much different now when compared to the non-pandemic days, the concern of spreading the infection to family and friends and the concern about lack of administrative support and adequate personal protective equipment is very high as noted in HCPs across the world.[21]

An analysis of the risk factors for stress, depression, and anxiety symptoms revealed that female gender was a significant predictor. Women were at approximately two times higher odds to develop these conditions. This finding is in line with the findings reported by Lai et al., where women are at increased odds of developing distress (OR: 1.45; P = 0.01), depression (OR: 1.94; P = 0.003), and anxiety (OR: 1.69; P = 0.001).[12] Staying at a hostel or other temporary makeshift accommodations was yet another significant predictor, with participants at two-times the increased odds of developing depression or anxiety symptoms. Those living away from home are most likely feeling lonely, which itself is an important risk factor for psychiatric symptoms.[22] Female gender is yet another risk factor for the development of psychiatric symptoms during loneliness.[22] Although

TABLE 3.

Psychological Characteristics

Variable	Category	Frequency (*N* = 350)	Percentage (%)
Perceived stress	Low	61	17.4
	Moderate	276	78.9
	High	13	3.7
Depressive symptoms	None–Minimal	177	50.6
	Mild	133	38.0
	Moderate	30	8.6
	Moderately severe	7	2.0
	Severe	3	0.8
Anxiety symptoms	None–Minimal	118	33.7
	Mild	170	48.6
	Moderate	48	13.7
	Severe	14	4.0
Leisure activities	Online entertainment	260	74.3
	Talking with friends	214	61.1
	Physical fitness	118	33.7
	Smoking	28	8.0
	Alcohol	15	4.3
	Unable to do any	25	7.1
Concern about the spread of infection to family	High	273	78.0
	Moderate	44	12.6
	Low	33	9.4

(Table 3 Continued)

(Table 3 Continued)

Variable	Category	Frequency ($N = 350$)	Percentage (%)
Satisfied with the institutional support	High	96	27.4
	Moderate	103	29.4
	Low	151	43.2
Satisfied with the availability of personal protective equipment	High	84	24.0
	Moderate	91	26.0
	Low	175	50.0

TABLE 4.

Univariate Analysis for Predictors of Stress, Depression, and Anxiety

Predictors	Moderate or High-Level Stress		Depression Requiring Treatment		Anxiety Requiring Further Evaluation	
	Odds Ratio	P Value	Odds Ratio	P Value	Odds Ratio	P Value
Younger age[a]	1.01	0.85	1.02	0.57	1.03	0.39
Female gender	2.01	0.02	2.08	0.04[b]	2.24	<0.01[c]
Being a doctor	1.23	0.58	0.72	0.43	0.73	0.39
Less years of experience[a]	1.01	0.79	1.03	0.52	1.06	0.11[c]
Hostel/temporary accommodation	1.18	0.56	2.41	0.01	2.21	0.01[c]
History of mental illness	1.39	0.67	1.21	0.81	1.17	0.81
Presence of comorbidities	0.72	0.42	1.39	0.49	0.95	0.91
Perceived inability to distress	1.12	0.85	0.66	0.58	0.88	0.82
Employed in government sector	0.77	0.36	1.27	0.47	1.24	0.44

[a]Considered as continuous variables with the hypothesis that lower the value, greater the risk.; [b]Results of multivariate analysis for predictors of depressive symptoms requiring further treatment (adjusted odds ratio; 95% confidence intervals; P value): female gender (2.023; 1.021, 4.010; 0.044) and hostel/temporary accommodation (2.355; 1.180, 4.702; 0.015).; c Results of multivariate analysis for predictors of anxiety symptoms requiring further evaluation (adjusted odds ratio; 95% confidence intervals; P value): female gender (2.180; 1.230, 3.862; 0.008), less years of experience (1.023; 0.953, 1.099; 0.526) and hostel/temporary accommodation (1.926; 1.046, 3.548; 0.035).

studies from other countries have identified many other predictors of psychological symptoms,[12,21] we believe that the resilience developed during the early days of the professional career, as discussed, have helped Indian HCPs to tide over the psychological crisis the pandemic otherwise would have created.

Our study has a few limitations. By virtue of its design that it is an online questionnaire without face-to-face interviews, it is difficult to pin a clinical diagnosis on participants who exhibited symptoms. The actual prevalence rates of clinically diagnosed psychological issues studied may vary, although validated screening tools have been used in this study. Also, self-selection bias is a possibility. Further, not all cadres of HCPs other than nurses and doctors have participated in the study. Yet another limitation is that India being a large country in area, the burden of patients diagnosed with COVID-19 is varied, with metros facing the brunt of the pandemic rather than the interiors. Thus, the findings may not be truly reflective of the entire nation during the time of this study. Having said that, the main strength of this study is that the psychological impact has been assessed while the trigger event is actually still ongoing and the threat is still looming.

Conclusion

The prevalence rates of high-level stress, depressive symptoms requiring treatment, and anxiety symptoms requiring further evaluation were 3.7%, 11.4%, and 17.7%, respectively. These were comparable to the reports from other countries. Female gender and staying away from family were significant predictors. The government of India has already been taking a lot of initiatives to cater to the psychological needs of the general population and its HCPs, and we recommend that these measures continue to be in place at least till the pandemic completely phases out itself.

Declaration of Conflicting Interests

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References

1. Coronavirus update (live). https://www.worldometers.info/coronavirus. Accessed April 25, 2020.
2. Tam CWC, Pang EPF, Lam LCW, et al. Severe acute respiratory syndrome (SARS) in Hong Kong in, 2003: stress and psychological impact among frontline healthcare workers. Psychol Med 2004; 34(7): 1197–1204.
3. Lee SM, Kang WS, Cho A, et al. Psychological impact of the, 2015 MERS outbreak on hospital workers and quarantined hemodialysis patients. Compr Psychiatry 2018; 87: 123–127.
4. Maunder R, Hunter J, Vincent L, et al. The immediate psychological and occupational impact of the 2003 SARS outbreak in

a teaching hospital. CMAJ 2003; 168(10): 1245–1251.

5. Lee AM, Wong JG, McAlonan GM, et al. Stress and psychological distress among SARS survivors 1 year after the outbreak. Can J Psychiatry 2007; 52(4): 233–240.
6. Wu P, Fang Y, Guan Z, et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. Can J Psychiatry 2009; 54(5): 302–311.
7. Hindustan Times. "No community transmission of Covid-19 in India," WHO rectifies error in report, 2020. https://www.hindustantimes.com/india-news/no-community-transmission-of-covid-19-in-india-who-rectifies-error-in-report/story-akxjThGS55OF2u32BYaHYJ.html. Accessed April 27, 2020.
8. Kroenke K, Spitzer RL, and Williams JB. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med 2001; 16: 606–613.
9. Cohen S, Kamarck T, and Mermelstein R. A global measure of perceived stress. J Health Soc Behav 1983; 24: 385–396.
10. Spitzer RL, Kroenke K, Williams JB, et al. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med 2006 May 22; 166(10): 1092–1097.
11. Zhu Z, Xu S, Wang H, et al. COVID-19 in Wuhan: immediate psychological impact on 5062 health workers. medRxiv, 2020 Jan 1.
12. Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Netw Open 2020 Mar 2; 3(3): e203976.
13. Grover S, Sahoo S, Bhalla A, et al. Psychological problems and burnout among medical professionals of a tertiary care hospital of North India: a cross-sectional study. Indian J Psychiatry 2018; 60: 175–188.
14. Swapnil B, Harshali R, and Snehal C. Prevalence of low mental health among nurses in medical intensive care units. Int J Contemp Med Res 2016; 3(8): 2444–2447.
15. News18 India. India has delayed community transmission, lockdown will help us if rules are followed: ICMR scientist. https://www.news18.com/news/india/india-has-delayed-community-transmission-lockdown-will-help-us-if-rules-are-followed-icmr-scientist-2554139.html. Accessed April 25, 2020.
16. Zwack J and Schweitzer J. If every fifth physician is affected by burnout, what about the other four? Resilience strategies of experienced physicians. Acad Med 2013 Mar 1; 88(3): 382–389.
17. Diwan V, Minj C, Chhari N, et al. Indian medical students in public and private sector medical schools: are motivations and career aspirations different? Studies from Madhya Pradesh, India. BMC Med Educ 2013 Sep 15; 13: 127.
18. Kaur S, Sharma R, Talwar R, et al. A study of job satisfaction and work environment perception among doctors in a tertiary hospital in Delhi. Indian J Med Sci 2009 Apr; 63(4): 139–144.
19. Wilson W, Raj JP, Narayan G, et al. Quantifying burnout among emergency medicine professionals. J Emerg Trauma Shock 2017; 10(4): 199–204.
20. Bajpai V. The challenges confronting public hospitals in India, their origins, and possible solutions. Adv Public Health 2014; 2014: 898502.
21. Cai H, Tu B, Ma J, et al. Psychological impact and coping strategies of frontline medical staff in Hunan between January and March 2020 during the outbreak of coronavirus disease 2019 (COVID-19) in Hubei, China. Med Sci Monit 2020 Apr 15; 26: e924171.
22. Mushtaq R, Shoib S, Shah T, et al. Relationship between loneliness, psychiatric disorders and physical health? A review on the psychological aspects of loneliness. J Clin Diagn Res 2014; 8(9): WE01–WE4.

Original Article

Healthcare Providers on the Frontline: A Quantitative Investigation of the Stress and Recent Onset Psychological Impact of Delivering Health Care Services During COVID-19 in Kashmir

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ABSTRACT

Background: Frontline healthcare workers (FHCWs) are at an increased risk of contracting COVID-19. We aimed to assess the stress and psychological impact of the COVID-19 pandemic among FHCWs.

Methods: This was an exploratory hospital-based study. A semistructured e-questionnaire was developed and shared through emails, WhatsApp groups, Facebook, and Twitter. The study instruments used were stress questionnaire and the impact of event scale—revised.

Results: We received 133 valid responses. A total of 81 (61.4%) of the respondents were single, 74 (55.6) were male, 70 (52.6%) were between 20 and 29 years of age, and 91 (68.4%) were from urban background. A total of 83 (62.4%) of respondents were doctors and 28 (21.1%) were registered nurses. A total of 36 (27.1%) were posted in emergency and 34 (25.6%) were in the in-patient department. Feeling sad and pessimistic, feeling of being avoided by others, the burden of change in the quality of work, and worrying whether the family will be cared for in their absence were significantly more in nurses as compared to the doctors. Stress due to burden in an increase in the quantity of work was seen more in FHCWs working in the swab collection center as compared to those working in the in-patient department, emergency, or theaters. Severe psychological impact was seen in 81 (60.9%) of FHCWs. The psychological impact was significantly more in males and in those who were married. It was also significantly related to the place of posting.

Conclusion: More than half of the FHCWs had a severe psychological impact owing to COVID-19. The psychological impact was more in males and those who were married, and it was related to the place of posting of the FHCWs. Nurses had significantly higher stress as compared to doctors.

Keywords: COVID-19 pandemic, front line health care worker, stress, psychological impact

Key Messages: Compared to prior pandemics, our results reveal a higher degree of psychological impact and stress in FHCWs in the backdrop of COVID-19. Compared to doctors, stress was more in nurses. Severe psychological impact was more in married males working in COVID clinic and swab collection center.

On December 31, 2019, China announced a group of cases of atypical community-acquired pneumonia of unknown etiology in vendors and dealers linked with seafood in the wholesale market of Wuhan, Hubei Province.[1] On January 7, 2020, health authorities of China declared that this

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group of patients was associated with a 2019 novel coronavirus (2019-nCoV).[2] Within three months, the virus had affected more than 118,000 people, caused 4,291 deaths, and spread to 114 countries. On January 30, 2020, the World Health Organization (WHO) declared COVID-19 outbreak a global pandemic and public health emergency of international concern.[3]

This virus is known to be transmitted through droplet infection by mildly ill or presymptomatic infected persons, which poses the greatest challenge to control, as compared to the Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS) pandemics.[4] The WHO reported the mortality rate in COVID-19 to be 3%–4%; however, it appeared that the mortality statistics were underreported.[5,6] Since the advent of its first case in Kashmir,[7] every passing day, the government authorities and media kept on reporting an escalation in cases, as a result of which public anxieties were on the rise.[8] This pandemic not only has a high case fatality rate but has also led to psychological unrest, chaos, and disturbances around the globe.[9] With the advent of the COVID-19 outbreak, a worldwide shortage of personal protection equipment (PPE) was reported, which endangered the life of frontline healthcare workers (FHCWs). In a Third World country like India, it further added to the concern.[10] This pandemic, with its highly contagious nature, diverse clinical presentation, unrecognized asymptomatic and presymptomatic carriers, rapid spread, nonavailability of specific antiviral treatment, and high mortality rate, has caused considerable panic around the globe.[11]

The FHCWs who are exposed and indirect contacts with the confirmed and suspected COVID-19 cases are vulnerable to both high risks of infection and mental health problems. The most common psychiatric issues experienced by FHCWs include anxiety, post-traumatic stress symptoms, stigma, depressive symptoms, sleep disturbances, and concern regarding contagion exposure to their friends and family.[12]

Therefore, it is essential to understand how FHCWs think and react when they appraise a pandemic of such magnitude. Hence, this study was undertaken to assess stress and recent-onset psychological impact in FHCWs in a government-designated COVID-19 hospital.

Materials and Methods

This was an exploratory hospital-based study conducted among the FHCWs of Kashmir's lone government-designated COVID-19 hospital. Snowball sampling technique was used. An e-questionnaire was developed using Google Docs, to prevent transmission of infection via fomites. The e-questionnaire was shared through emails, WhatsApp groups, Facebook, and Twitter to the participants. The participants were requested to forward the survey to as many FHCWs as possible. Thus, the link was rolled out to people apart from the first point of contact and so on. On receiving and clicking on the link, the participants would get autodirected to the survey. The first page of the survey consisted of an information page about the purpose of the study and how the data would be used. Participation in the study was voluntary. Participants were asked to give consent and confirm. After they agreed to take the survey, they filled up the demographic details. Then a set of several questions appeared sequentially, which the participants were to answer.

Participants with age more than 18, able to understand the English language, and with access to the internet took part in the study. The data collection was done from April 8, 2020, to April 15, 2020, and it began three weeks after the detection and confirmation of the index case of COVID-19 in Kashmir. The sociodemographic variables, specialization, and place of posting were recorded. The online self-reported stress questionnaire and the impact of event scale—revised (IES-R) were used.

The stress questionnaire comprises 23 items contained in 4 sections: anxiety about infection, exhaustion, workload, and feeling of being protected during the pandemic of the 2019-nCoV. Each item was rated on a 5-point Likert scale (1: not at all, 2: slightly, 3: definitely, 4: markedly, 5: very severely) to describe how often the FHCWs experienced the 23 items during the pandemic. Nineteen items used in our study were based on the stress-related questionnaire used in a study on influenza pandemic (2009).[13] However, four new questions were added to the questionnaire (questions 20–23]. The questionnaire was validated in the Kashmiri population, and the Cronbach's α was found to be 0.79, meaning an acceptable consistency.

The IES-R is a 22-item Likert rating scale, with a total score ranging from 0 to 88. This self-reporting measure assesses the subjective distress in the form of post-trauma symptoms (PTS) experienced by the subjects at any time during the last month of the pandemic.[14] A score of 0-23 is interpreted as normal, 24-32 as mild, 33-36 as moderate, and > 37 as severe psychological impact.[15] The survey was approved by the Institutional Ethics Committee and Board of Research Studies.

Statistical Analysis

Each item of the stress questionnaire was summarized as mean and standard deviation. IES-R score was treated as a categorical variable and summarized as frequency and percentage. Independent samples Kruskal–Wallis test was used to compare stress questionnaire item scores across

TABLE 1.

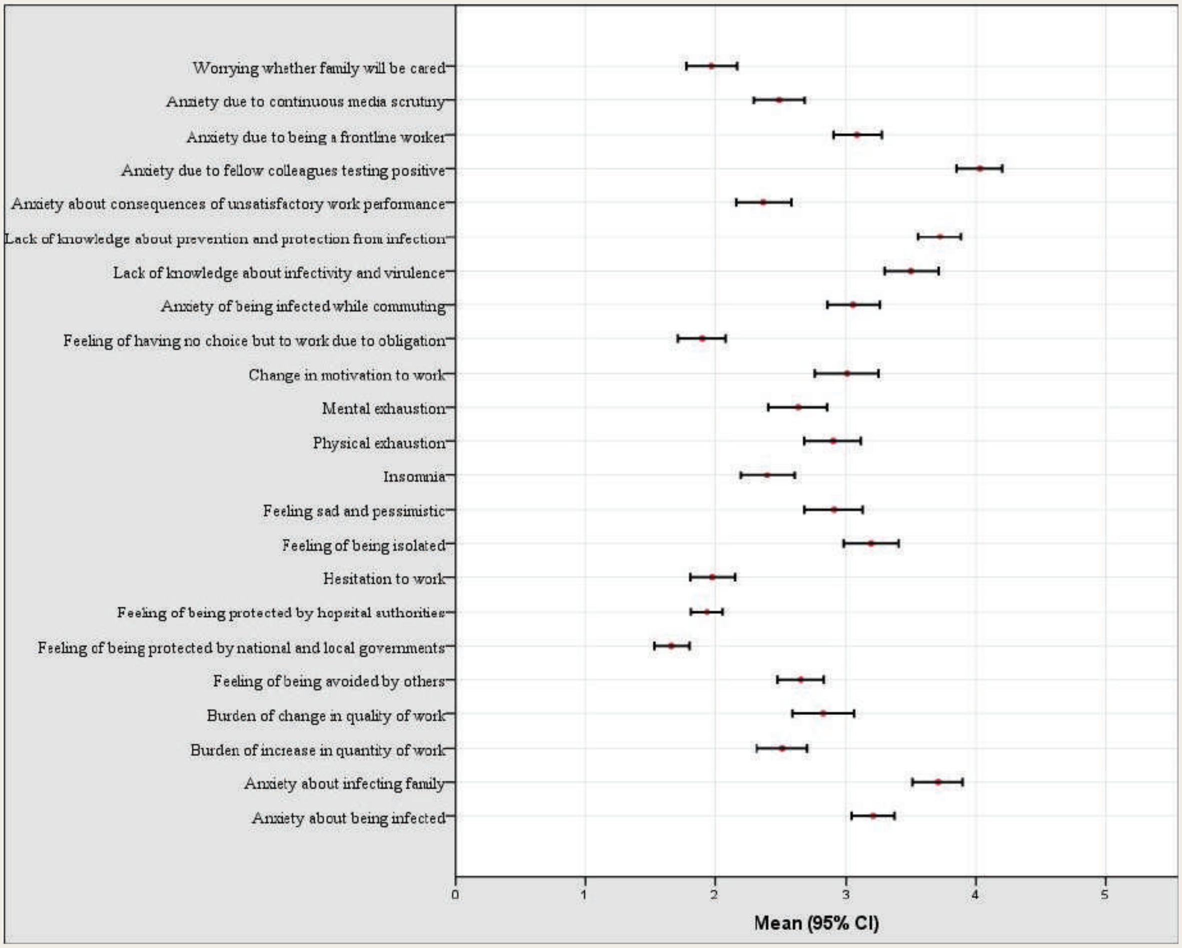
Characteristics of Study Participants

Participant Characteristics		Frequency (%)
Age (years)	20–29	70 (52.6)
	30–39	43 (32.3)
	40 & above	20(15)
Gender	Male	74 (55.6)
	Female	59 (44.4)
Residence	Urban	91 (68.4)
	Rural	42 (31.6)
Marital status	Single	81 (61.4)
	Married	51 (38.6)
Designation	Doctor	83 (62.4)
	Nurse	28 (21.1)
	Technician	12 (9)
	Others	10 (7.5)
Place of posting	Emergency	36 (27.1)
	IPD	34 (25.6)
	Theatre	23 (17.3)
	OPD	20 (15)
	COVID clinic	13 (9.8)
	Swab collection center	7 (5.3)

IPD: in-patient department, COVID: coronavirus disease, OPD: out-patient department.

FIGURE 1.

Mean and 95% Confidence Interval of Various Items in the Stress Questionnaire



categories of other categorical variables. In cases where Kruskal–Wallis P value was <0.05, as multiple comparisons were made, the P values were adjusted using Bonferroni correction. The association between participant characteristics and psychological impact (IES-R) was tested using Fisher's exact test, and a two-sided exact P value was reported. All tests were two-tailed, with $P < 0.05$ considered statistically significant. Statistical analysis was performed using SPSS version 21.0 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, version 21.0. Armonk, NY: IBM Corp.).

Results

A total of 142 responses were received. Out of this, 3 were incomplete. Six respondents had a history of psychiatric illness and were therefore excluded as a result of which 133 respondents were taken. A total of 81 (61.4%) of the respondents were single, 74 (55.6%) were male, 70 (52.6%) were between 20 and 29 years of age, and 91 (68.4%) were from an urban background. 83 (62.4%) of respondents were doctors, and 28 (21.1%) were registered nurses. A total of 36 (27.1%) were posted in emergency, and 34 (25.6%) were in the in-patient department (**Table 1**). The mean±SD score of the stress questionnaire was 14.99±3.65. The highest stress score was seen in items like "anxiety due to colleagues testing positive" and "anxiety about infecting family." The least stress scores were seen in items like "feeling of being protected by national and local government" and "feeling of having no choice but to work due to obligation" (**Figure 1**).

Feeling sad and pessimistic ($P < 0.001$), feeling of being avoided by others ($P = 0.003$), the burden of change in the quality of work ($P = 0.005$), worrying whether the family will be cared for in their absence ($P < 0.001$), and distress due to colleagues testing positive ($P = 0.009$) were significantly more in nurses as compared to doctors (**Table 2**). Stress due to the burden in an increase in the quantity of work ($P = 0.014$) was seen more in FHCWs working in the swab collection center as compared to those working in the in-patient department ($P = 0.024$), emergency ($P = 0.012$), or theatre ($P = 0.025$) (**Table 3**). Though not statistically significant, anxiety about being infected ($P = 0.72$), getting the family infected ($P = 0.43$), physical exhaustion ($P = 0.31$), and a decrease in motivation to work ($P = 0.14$) were more in FHCWs aged > 40.

The mean total IES-R score was 45.07±25.53. Severe psychological impact was seen in 81 (60.9%) of the respondents (**Table 4**). The psychological impact was significantly more in males ($P = 0.03$) and in those who were married ($P = 0.001$). The psychological impact was also significantly related to the designation ($P = 0.037$) and the place of posting ($P = 0.002$) (**Table 5**).

Discussion

Healthcare professionals are always at the forefront of any pandemic and risk their lives in the line of their duty.[16] Since the outbreak of COVID-19 in Wuhan, many cases occurred among FHCWs who contracted the infection within the health care facilities. Many doctors and paramedics died from this infection around the world, especially in China and Italy.[17,18]

During the outbreak of any pandemic, FHCWs are at risk of getting the infection, though not equally. Staff working in emergency and critical care are at a higher risk.[16] For this reason, FHCWs from high-risk areas were chosen in this study. We included nurses, respiratory therapists, ancillary staff, and doctors directly in contact with COVID-19 patients. Most of the FHCWs were young (age group of 20–29 years), unmarried, males, and medical doctors posted in emergencies or in-patient department.

Stress and Profession

In comparison to doctors, the nurses experienced more stress in terms of feeling sad and pessimistic, feeling of being avoided by others, the burden of change in the quality of work, stress due to colleagues testing positive, and worrying whether the family will be cared for in case anything untoward happens to them. This could be explained by their direct and intensive involvement in patient care, close contact and proximity with the patients, insufficient and inadequate protective equipment, and lesser compensation than doctors. Further, majority of the nurses were newly recruited and had fewer years of experience.

Our results are in concordance with authors from China and Taiwan.[19,20] The reasons reported by others, in unison with our results, include anxiety about infecting family,[21] inadequate staff,[22] the infectivity of the disease, inadequate protective equipment,[23] nosocomial spread,[24] and risk to life.[25]

Our results also match with those of Mitchell et al. who found that[26] the nursing staff experienced severe stress during the outbreak of vancomycin-resistant enterococci (VRE). Therefore, such a psychological reaction to extreme stress

TABLE 2.

Responses to Stress Questionnaire by the Designation of the Study Participants

Variables	Doctor (*n* = 83)	Nurse (*n* = 28)	Technician (*n* = 12)	Others (*n* = 10)	*P* Value[*]
Anxiety about being infected	3.3 (0.9)	3.0 (0.8)	3.3 (1.2)	3.2 (1.0)	0.72
Anxiety about infecting family	3.8 (1.0)	3.4 (1.3)	3.6 (1.4)	3.8 (1.1)	0.43
Burden of increase in quantity of work	2.5 (1.1)	2.6 (1.4)	2.7 (1.2)	2.3 (0.8)	0.90
Burden of change in quality of work	2.5 (1.4)	3.6 (1.3)	2.8 (1.1)	3.1 (1.7)	0.005[†]
Feeling of being avoided by others	2.4 (1.0)	3.1 (1.1)	3.0 (0.4)	2.9 (0.7)	0.003[‡]
Feeling of being protected by national and local governments	1.6 (0.7)	2.0 (1.0)	1.8 (0.8)	1.6 (0.8)	0.20
Feeling of being protected by hospital authorities	1.9 (0.6)	2.3 (1.0)	1.8 (0.8)	1.8 (0.8)	0.19
Hesitation to work	1.9 (1.0)	1.9 (1.0)	2.3 (1.1)	2.2 (0.9)	0.35
Feeling of being isolated	3.1 (1.3)	3.6 (1.2)	3.2 (1.5)	2.9 (0.9)	0.27
Feeling sad and pessimistic	2.5 (1.2)	3.7 (1.2)	3.6 (1.2)	3.1 (1.1)	<0.001[§]
Insomnia	2.2 (1.2)	2.9 (1.3)	2.7 (1.1)	2.2 (0.9)	0.07
Physical exhaustion	2.7 (1.2)	3.1 (1.5)	3.4 (1.3)	2.9 (1.0)	0.31
Mental exhaustion	2.4 (1.3)	2.7 (1.4)	3.4 (1.2)	3.0 (0.8)	0.048[¶]
Change in motivation to work	2.8 (1.4)	3.3 (1.5)	3.6 (1.3)	3.4 (1.4)	0.14
Feeling of having no choice but to work due to obligation	1.8 (1.0)	1.9 (1.2)	2.2 (1.5)	2.1 (0.9)	0.66
Anxiety of being infected while commuting	2.9 (1.1)	3.4 (1.3)	3.0 (1.4)	3.4 (1.5)	0.26
Lack of knowledge about infectivity and virulence	3.3 (1.2)	3.9 (1.1)	3.5 (1.4)	3.8 (1.0)	0.15
Lack of knowledge about prevention and protection from infection	3.6 (0.9)	3.9 (1.1)	4.3 (0.8)	3.8 (0.9)	0.09

Variables	Doctor (*n* = 83)	Nurse (*n* = 28)	Technician (*n* = 12)	Others (*n* = 10)	*P* Value[*]
Anxiety about consequences of unsatisfactory work performance	2.3 (1.2)	2.7 (1.3)	2.6 (1.2)	2.0 (0.8)	0.30
Anxiety due to fellow colleagues testing positive	4.0 (1.0)	4.6 (0.7)	3.8 (1.4)	3.5 (1.4)	0.009[#]
Anxiety due to being a frontline worker	3.1 (1.1)	3.1 (1.2)	3.3 (1.2)	3.1 (0.9)	0.94
Anxiety due to continuous media scrutiny	2.5 (1.2)	2.3 (1.2)	2.6 (1.2)	2.6 (1.0)	0.71
Worrying whether family will be cared	1.7 (0.9)	2.8 (1.4)	1.8 (0.9)	2.7 (1.2)	<0.001[**]

Figures indicate mean (standard deviation). *Independent samples Kruskal–Wallis test, followed by adjustment for multiple comparisons when P value for the Kruskal–Wallis test was < 0.05. † *P* value for nurses versus doctors = 0.003. ‡ P value for nurses versus doctors = 0.011. § P value for nurses versus doctors < 0.001. ¶ P value for technicians versus doctors = 0.079 (adjusted P value for multiple comparisons was not significant). # P value for nurses versus doctors = 0.016. ** P value for nurses versus doctors = 0.001, others versus doctors = 0.019.

may be common among nurses during a highly infectious pandemic.[27]

A study done in nurses in the emergency department during the SARS pandemic had also revealed that nurses are more prone to develop psychological distress and behavioral disengagement than doctors, matching our results.[28] Many studies done in different parts of the world have also shown that nurses working on the frontline during the SARS outbreak were affected both mentally and physically.[20,29–31]

In contradiction to our results, an article from Singapore has shown that physicians and those who were single were at increased risk of developing mental health issues.[32] In concordance with our results, Grace et al. have shown that FHCWs directly treating SARS-CoV positive patients experienced a high level of discrimination and mental health issues than those who were not dealing with such patients.[33]

The latest literature on the mental health of 1,563 health care workers concluded that over half (50.7%) of the respondents experienced depressive symptoms, approximately half of them experienced anxiety, and one-third had problems in sleep.[34]

The ever-increasing number of confirmed and suspected cases, overwhelming workload, stretched working hours, shortage of specialist staff, inadequate PPE, lack of FDA-approved prophylactic drugs or specific vaccine, feelings of being inadequately supported, and continuous media scrutiny and radar may all contribute to the stress in FHCWs.

Among the various stressors associated with the COVID-19 outbreak, safety was the major concern for the FHCWs. It was extremely stressful for them to see their colleagues displaying COVID-19-like symptoms, testing positive or getting intubated; patients dying in front of them from COVID-19, as well as the fear that they could transmit the disease to their families or friends. Similar concerns were also reported during the MERS-CoV outbreak.[27]

Other significant stressors experienced by the FHCWs, particularly nurses, were whether their family would be looked after in their absence and whether compensation will be provided to them if

TABLE 3.

Responses to Stress Questionnaire by Place of Posting of the Study Participants

Variables	OPD (*n* = 20)	IPD (*n* = 34)	Emergency (*n* = 36)	COVID clinic (*n* = 13)	Theatre (*n* = 23)	Swab Collection Center (*n* = 7)	*P* Value[*]
Anxiety about being infected	3.3 (1.0)	3.2 (1.1)	3.2 (0.8)	3.0 (1.0)	3.2 (0.6)	3.7 (1.1)	0.74
Anxiety about infecting family	3.8 (1.1)	3.5 (1.2)	3.9 (1.1)	3.7 (1.3)	3.6 (1.1)	3.7 (1.1)	0.78
Burden of increase in quantity of work	2.7 (1.1)	2.4 (1.3)	2.3 (1.1)	2.9 (1.1)	2.3 (0.9)	3.9 (0.7)	0.014[†]
Burden of change in quality of work	2.8 (1.3)	2.9 (1.4)	2.6 (1.4)	2.5 (1.4)	3.0 (1.5)	4.1 (1.1)	0.12
Feeling of being avoided by others	2.7 (1.0)	2.7 (1.0)	2.5 (1.2)	2.8 (1.0)	2.4 (0.8)	3.6 (0.5)	0.11
Feeling of being protected by national and local governments	1.7 (0.7)	1.7 (0.8)	1.7 (0.9)	1.6 (0.7)	1.6 (0.9)	1.1 (0.4)	0.40
Feeling of being protected by hospital authorities	2.0 (1.0)	2.1 (0.8)	1.8 (0.6)	1.8 (0.7)	1.9 (0.6)	2.3 (0.8)	0.33
Hesitation to work	1.9 (1.0)	2.2 (1.2)	2.0 (0.9)	1.5 (0.7)	1.9 (0.8)	2.6 (1.4)	0.25
Feeling of being isolated	3.1 (1.1)	3.3 (1.3)	3.3 (1.3)	3.0 (1.4)	3.1 (1.2)	3.7 (1.4)	0.85

Variables	OPD (*n* = 20)	IPD (*n* = 34)	Emergency (*n* = 36)	COVID clinic (*n* = 13)	Theatre (*n* = 23)	Swab Collection Center (*n* = 7)	*P* Value*
Feeling sad and pessimistic	2.9 (1.4)	3.0 (1.4)	2.8 (1.2)	2.5 (1.0)	3.0 (1.3)	3.3 (1.6)	0.86
Insomnia	2.6 (1.2)	2.4 (1.5)	2.4 (1.0)	2.4 (1.3)	2.1 (0.7)	3.3 (1.6)	0.55
Physical exhaustion	3.0 (1.2)	2.7 (1.4)	2.8 (1.23)	3.2 (1.2)	3.0 (1.2)	3.6 (1.3)	0.53
Mental exhaustion	2.7 (1.3)	2.5 (1.3)	2.6 (1.3)	2.5 (1.3)	2.7 (1.4)	3.3 (1.3)	0.74
Change in motivation to work	2.6 (1.3)	2.9 (1.5)	2.9 (1.5)	3.5 (1.4)	3.4 (1.3)	3.0 (1.7)	0.30
Feeling of having no choice but to work due to obligation	2.1 (1.1)	1.9 (1.2)	1.7 (0.8)	1.8 (0.7)	1.9 (1.2)	2.4 (1.5)	0.76
Anxiety of being infected while commuting	3.3 (1.0)	3.1 (1.4)	3.0 (1.1)	2.6 (1.1)	3.2 (1.2)	3.1 (1.2)	0.53
Lack of knowledge about infectivity and virulence	3.0 (1.3)	3.3 (1.3)	3.8 (1.1)	3.7 (0.9)	3.7 (0.9)	3.4 (1.7)	0.20
Lack of knowledge about prevention and protection from infection	3.8 (1.1)	3.8 (1.0)	3.4 (1.1)	3.8 (0.6)	3.8 (0.8)	4.3 (0.8)	0.33
Anxiety about consequences of unsatisfactory work performance	2.5 (1.6)	2.3 (1.3)	2.3 (1.1)	2.7 (1.4)	2.3 (1.0)	2.4 (1.3)	0.97
Anxiety due to fellow colleagues testing positive	4.3 (1.0)	4.0 (1.0)	4.1 (1.1)	4.3 (0.9)	3.7 (1.1)	3.9 (0.7)	0.38
Anxiety due to being a front-line worker	3.1 (1.1)	3.1 (1.2)	3.0 (1.2)	2.9 (1.0)	3.2 (1.0)	3.3 (0.8)	0.95
Anxiety due to continuous media scrutiny	2.2 (1.0)	2.5 (1.1)	2.5 (1.1)	3.2 (1.4)	2.2 (1.2)	2.9 (1.45)	0.29
Worrying whether family will be cared	2.1 (1.4)	2.2 (1.1)	2.0 (1.2)	1.7 (1.0)	1.9 (1.2)	1.3 (0.5)	0.30

Figures indicate mean (standard deviation).* Independent samples Kruskal–Wallis test, followed by adjustment for multiple comparisons when P value for Kruskal–Wallis test was <0.05.† P value for swab collection versus IPD = 0.024, swab collection versus emergency = 0.012, swab collection versus theatre = 0.025. IPD: in-patient department, COVID: coronavirus disease, OPD: out-patient department.

TABLE 4.

Psychological Impact of the Pandemic Among Study Participants

IES-R	Frequency (%)
Normal (0–23)	41 (30.8)
Mild psychological impact (24–32)	11 (8.3)
Moderate psychological impact (33–36)	0
Severe psychological impact (≥37)	81 (60.9)

IES-R: impact of event scale revised.

they died of COVID-19 infection. Our results are in unison to a MERS-CoV study wherein the expectation of extra financial compensation and recognition by the hospital helped them to reduce stress.[35]

Stress and Place of Posting

Stress due to the burden of an increase in the quantity of work was more in FHCWs working in swab collection center. This can be explained by a sudden and dramatic increase in the workload of microbiologists and laboratory technicians working there. To identify the asymptomatic cases and to save the region from catastrophe, they were pushed for aggressive testing. What further aggravated the stress was the continuous media scrutiny and radar, which pressurized them for a rapid increase in the testing rate,[36] which was followed by a seven-fold increase in the testing rate in just two weeks.[37]

Stress and Age

In our study, the stress was not significantly affected by age; however, it was slightly high in the age group of 40-49 years. Anxiety about being infected and thereby infecting the family was more in the age the group of 40-49 years, which is in concordance with studies done on the influenza pandemic in the USA[38] and SARS pandemic in Singapore.[39] The possible reasons are that majority of the people are married and have children by this age. Thus, there is always stress about bringing the virus home and passing it on to loved ones and family members. The presence of medical comorbidities too contributes to the increased stress in this age group. However, even young people with no comorbidities can contract the disease and become critically ill or even die[40]; age is no bar for the virus.[41] Hence, contrary to what was expected, stress was not significantly associated with age. In our study, exhaustion was also more common in the elderly people, which could further be explained by the decline in body strength with age and the comorbid medical conditions.

Psychological Impact

The psychological impact, as depicted by the IES-R score, was significantly more

TABLE 5.

Psychological Impact of the Pandemic by Participant Characteristics

Parameters Frequency (%)		Normal (0–23)	Mild Psychological Impact (24–32)	Moderate Psychological Impact (33–36)	Severe Psychological Impact (≥ 37)		
		Frequency (%)	Frequency (%)	Frequency (%)	Total	P Value*	
Age (years)	20–29	24 (34.3)	8 (11.4)	0 (0.0)	38 (54.3)	70	0.11
	30–39	15 (34.9)	2 (4.7)	0 (0.0)	26 (60.5)	43	
	≥40	2 (10.0)	1 (5.0)	0 (0.0)	17 (85.0)	20	
Gender	Male	16 (21.6)	8 (10.8)	0 (0.0)	50 (67.6)	74	0.030
	Female	25 (42.4)	3 (5.1)	0 (0.0)	31 (52.5)	59	
Residence	Urban	25 (27.5)	8 (8.8)	0 (0.0)	58 (63.7)	91	0.46
	Rural	16 (38.1)	3 (7.1)	0 (0.0)	23 (54.8)	42	
Marital status	Single	32 (39.5)	10 (12.3)	0 (0.0)	39 (48.1)	81	0.001
	Married	9 (17.6)	1 (2.0)	0 (0.0)	41 (80.4)	51	
designation	Doctor	30 (36.1)	5 (6.0)	0 (0.0)	48 (57.8)	83	0.037
	Nurse	10 (10)	4 (14.3)	0 (0.0)	14 (50.0)	28	
	Technician	0 (0.0)	1 (8.3)	0 (0.0)	11 (91.7)	12	
	Others	1 (10.0)	1 (10.0)	0 (0.0)	8 (80.0)	10	
Place of posting	OPD	11 (55.0)	2 (10.0)	0 (0.0)	7 (35.0)	20	0.002
	IPD	9 (26.5)	7 (20.6)	0 (0.0)	18 (52.9)	34	
	Emergency	13 (36.1)	1 (2.8)	0 (0.0)	22 (61.1)	36	
	COVID clinic	0 (0.0)	0 (0.0)	0 (0.0)	13 (100.0)	13	
	Theatre	8 (34.8)	1 (4.3)	0 (0.0)	14 (60.9)	23	
	Swab collection center	0 (0.0)	0 (0.0)	0 (0.0)	7 (100.0)	7	

IPD: in-patient department, COVID: coronavirus disease, OPD: out-patient department. *Fisher's exact test, two-sided.

in males and in those who were married. The psychological impact was also significantly related to the place of posting. Severe psychological impact was reported by those working in COVID clinics or the swab collection center. The reason for the highest psychological impact in these areas seems to be a high-risk work environment experienced by the FHCWs. The most common risk was the generation of aerosols and droplets and the subsequent very high chance of illness transmission. FHCWs working in COVID clinics and swab collection center also complained of the provision of inadequate PPE such as N95 masks or face shields, splash shields, centrifuge safety cups, and sealed centrifuge rotors. The rapid escalation in cases, staggering death figures exceeding those of previous pandemics, and unprecedented nature of the COVID-19 pandemic in terms of the worldwide death toll in doctors and paramedics might have caused the heightened response in the FHCWs here in Kashmir. Unpreparedness to deal with the pandemic and lack of knowledge about the disease can be the other contributing factors.

Published data has shown that perceived risk levels related to an event are affected by unfamiliarity and perceived uncontrollability of the hazards involved and that these perceptions, in turn, affect a person's likelihood of developing post-traumatic stress disorder.[42,43]

In our study, about two-thirds of the respondents were having symptoms of PTS (mild and severe). A recent study from China has shown that 53.8% of participants rated the psychological impact of the COVID-19 outbreak as either moderate or severe during the initial phases of the outbreak; thus, these results almost match our results.[44] Our results are also consistent with studies on the SARS outbreak, with psychological distress experienced at the beginning, during, and end of pandemic by 18 to 57% of FHCWs.[45]

Published literature about the 2003 SARS outbreak has shown severe psychological reactions among medical professionals.[46–49] The commonest reasons shared by the studies include anxiety about getting the infection and carrying the contagion to their families and friends,[50] uncertainty and stigmatization,[50,47] and reluctance to work. The published data has shown that FHCWs working in high-risk departments such as critical care units and isolation wards are at increased risk of developing adverse psychological reactions than those working in low-risk units.[51]

First medical responders including paramedics and ambulance drivers have also been found to display heightened stress, become emotionally effected and traumatized, and have higher levels of depression and anxiety.[52] Review of published data on adverse effects of the disaster on the psychological health of FHCWs revealed the common risk factors for developing mental health issues, which include inadequate social support and communication, maladaptive coping, lack of knowledge, and training.[51] A study in Singapore reported that more than 27% of FHCWs had a General Health Questionnaire-28 score of more than 5, and around 20% of the physicians and nurses experienced PTSD.[32]

Similarly, a hospital in Toronto reported about 29% of participants scoring above the normal threshold in emotional distress on GHQ-12,[53] while a survey of stress reactions among FHCWs in SARS reported that 5% of participants had acute stress disorder.[47]

Limitations

First, convenient sampling and lack of knowledge about the nonresponders may bias the results.[54] Second, a single-center study performed early in the outbreak may limit the generalizability of the findings.

Conclusion

More than half of the FHCWs had a severe psychological impact from COVID-19. The psychological impact was more in males and those who were married, and it was related to the place of posting. Nurses had significantly higher stress as compared to doctors. Early psychological interventions targeting this vulnerable group may be of help. Frequent provision of information about the pandemic and liaison psychiatric services may help to reduce the stress of on FHCWs and the psychological impact on them.

Declaration of Conflicting Interests

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References

1. World Health Organization. Pneumonia of unknown cause—China. 2020. https://www.who.int/csr/don/05-january-2020-pneumonia-of-unkown-cause-china/en/.
2. World Health Organization. Novel coronavirus—China. 2020. https://www.who.int/csr/don/12-january-2020-novel-coronavirus-china/en/.
3. Mahase E. China coronavirus: WHO declares international emergency as death toll exceeds 200. BMJ Clin Res Ed 2020; 368: m408.
4. Gates B. Responding to covid-19: a once-in-a-century pandemic? N Engl J Med 2020; 382(18): 1677–1679.
5. WHO. Coronavirus disease 2019 (COVID-19) situation report 46. 2020. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200306-sitrep-46-covid-19.pdf?sfvrsn=96b04adf_2.
6. Baud D, Qi X, Nielsen-Saines K, et al. Real estimates of mortality following COVID-19 infection. Lancet Infect Dis 2020 March.
7. First corona virus case in Kashmir as Khanyar resident tests Positive: Govt/ greater kasmir. https://www.greaterkashmir-com.cdn.ampproject.org/v/s/www.graeterkashmir.com/news/Kashmir/first-coronavirus-case-in-kashmir-as-Khanyar-resident-tests-positive-govt (accessed April 3, 2020).
8. Tang B, Wang X, Li Q, et al. Estimation of the transmission risk of the 2019-nCoV and its implication for public health interventions. J Clin Med 2020; 9(2): 462.
9. 9. Xiao C. A novel approach of consultation on 2019 novel coronavirus (COVID-19)-related psychological and mental problems: Structured letter therapy. Psychiatr Invest 2020; 17(2): 175–176.
10. WHO. Rolling updates on coronavirus disease (COVID-19). 2020. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-theyhappen (accessed April 4, 2020).
11. Lu H. Drug treatment options for the 2019-new coronavirus (2019-nCoV). BioSci Trends 2020;14(1): 69–71.
12. Zheng W. Mental health and a novel coronavirus (2019-nCoV) in China. J Affect Disord 2020. Published online March 21, 2020.
13. Matsuishi K, Kawazoe A, Imai H, et al. Psychological impact of the pandemic (H1N1) 2009 on general hospital workers in Kobe. Psychiatry Clin Neurosci 2012; 66(4): 353–360.
14. Weiss D and Marmar CR. The impact of the Event Scale—Revised. In: Wilson J and Keane TM (eds) *Assessing psychological trauma and PTSD: A practitioner's handbook*. New York, NY: Guilford Press, 1997: 399–411.
15. Creamer M, Bell R and Failla S. Psychometric properties of the impact of event scale—revised. Behav Res Ther 2003 Dec 1; 41(12): 1489–1496.
16. Simonds AK and Sokol DK. Lives on the line? Ethics and practicalities of duty of care in pandemics and disasters. Eur Respir J 2009; 34: 303–309.
17. https://www.thehindubusinessline.com/news/world/covid-19-over-100-italian-doctors-have-died-of-treating-virus-patients/article31305687.ece (accessed April 20, 2020).
18. https://www.thehindubusinessline.com/news/world/covid-19-over-100-italian-doctors-have-died-of-treating-virus-patients/article31305687.ece (accessed April 20, 2020).
19. Li L, Cheng S, and Gu J. SARS infection among health care workers in Beijing, China. JAMA 2003; 290(20): 2662–2663.
20. Shih FJ, Gau ML, Kao CC, et al. Dying and caring on the edge: Taiwan's surviving nurses' reflections on taking care of patients with severe acute respiratory syndrome. Appl Nurs Res 2007; 20(4): 171–180.
21. Sibbald B. Right to refuse work becomes another SARS issue. CMAJ 2003; 169: 141.
22. Taylor S, White B, and Muncer S. Nurses' cognitive structural models of work-based stress. J Adv Nurs 1999; 29: 974–983.
23. Farquharson C and Baguley K. Responding to the severe acute respiratory syndrome (SARS) outbreak: lessons learned in a Toronto emergency department. J Emerg Nurs 2003; 29: 222–228.
24. Schabas R. SARS: prudence, not panic. CMAJ 2003; 168: 1432–1434.
25. Drazen JM. SARS: looking back over the first 100 days. N Engl J Med 2003; 349: 319–320.
26. Mitchell A, Cummins T, Spearing N, et al. Nurses' experience with vancomycin-resistant enterococci (VRE). J Clin Nurs 2002; 11: 126–133.
27. Lee S-H, Juang Y-Y, Su YJ, et al. Facing SARS: Psychological impacts on SARS team nurses and psychiatric services in a Taiwan general hospital. Gen Hosp Psychiatry 2005; 27(5): 352–358.
28. Wong TW, Yau JK, Chan CL, et al. The psychological impact of severe acute respiratory syndrome outbreak on healthcare workers in emergency departments and how they cope. Eur J Emerg Med 2005; 12(1): 13–18.
29. Chan S. Nurses fighting against severe acute respiratory syndrome (SARS) in Hong Kong. J Nurs Scholarsh 2003; 35(3): 209.
30. Tzeng HM. Fighting the SARS epidemic in Taiwan: a nursing perspective. J Nurs Adm 2003; 33(11): 565–567.
31. Mok E, Chung BP, Chung JW, et al. An exploratory study of nurses suffering from severe acute respiratory syndrome (SARS). Int J Nurs Pract 2005; 11(4): 150–160.
32. Chan AOM and Huak CY. Psychological impact of the 2003 severe acute respiratory syndrome outbreak on health care workers in a medium size regional general hospital in Singapore. Occup Med Oxf Engl 2004; 54: 190–196.

33. Grace SL, Hershenfield K, Robertson E, e al. The occupational and psychosocial impact of SARS on academic physicians in three affected hospitals. Psychosomatics 2005;46(5):385–391.
34. Liu S, Yang LL, Zhang CX, et al. 2019 novel coronavirus: online mental health services. Lancet Psychiatry. 2020: In press.
35. Khalid I, Khalid TJ, Qabajah MR, Barnard AG, Qushmaq IA. Healthcare workers emotions, perceived stressors and coping strategies during a MERS-CoV outbreak. Clin Med Res 2016 ;14(1): 7–14
36. Sidiq N. COVID-19 in Kashmir: "Infection seeping in community." 2020. https://www.aa.com.tr/en/asia-pacific/covid-19-in-kashmir-infection-seeping-in-community-/1799641 (accessed May 4, 2020).
37. https://www.deccanherald.com/national/j-k-s-coronavirus-testing-capacity-has-increased-to-over-350-samples-per-day-jitendra-singh-825453.html (accessed on April 20, 2020).
38. Balicer RD, Omer SB, Barnett DJ, et al. Local public workers' perceptions toward responding to an influenza pandemic. BMC Public Health 2006; 6: 99.
39. Al-Hameed F, Wahla AS, Siddiqui S, et al. Characteristics and outcomes of Middle East respiratory syndrome coronavirus patients admitted to an intensive care unit in Jeddah, Saudi Arabia. J Intensive Care Med 2016 Apr 9; 31(5): 344–348.
40. *The New Indian Express*. 26-year-old becomes first Pakistani doctor to die from coronavirus. 2020. https://www.newindianexpress.com/world/2020/mar/23/26-year-old-becomes-first-pakistani-doctor-to-die-from-coronavirus-2120485.html (accessed April 11, 20).
41. Koh D, Lim MK, Chia SE, et al. Risk perception and impact of severe acute respiratory syndrome (SARS) on work and personal lives of healthcare workers in Singapore: What can we learn? Med Care 2005; 43: 676–682.
42. Marshall RD, Bryant R, Amsel L, et al. The psychology of ongoing threat: Relative risk appraisal, September 11, attacks and terrorism-related fears. Am Psychol 2007; 62(4): 304–316.
43. Marshall RD, Galea S and Kilpatrick D. Psychological reactions to terrorist attacks. Findings from the National Study of Americans' reactions to September 11: Comment. JAMA 2002; 288(21): 2683–2684.
44. Wang C, Pan R, Wan X, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. Int J Environ Res Public Health 2020; 17: 1729.
45. Phua DH, Tang HK, and Tham KY: Coping responses of emergency physicians and nurses to the2003 severe acute respiratory syndrome outbreak. Acad Emerg Med 2005, 12: 322–328.
46. Maunder R, Hunter J, Vincent L, et al. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. CMAJ 2003; 168(10): 1245–1251.
47. Bai Y, Lin CC, Lin CY, et al. Survey of stress reactions among health care workers involved with the SARS outbreak. Psychiatr Serv 2004; 55(9): 1055–1057.
48. Lee AM, Wong JG, McAlonan GM, et al. Stress and psychological distress among SARS survivors 1 year after the outbreak. Can J Psychiatry 2007; 52(4): 233–240.
49. Chua SE, Cheung V, Cheung C, et al. Psychological effects of the SARS outbreak in Hong Kong on high-risk health care workers. Can J Psychiatry 2004; 49(6): 391–393.
50. Maunder R, Hunter J, Vincent L, et al. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. CMAJ 2003; 168(10): 1245–1251.
51. Naushad VA, Bierens JJ, Nishan KP, et al. A systematic review of the impact of disaster on the mental health of medical responders. Prehospital Disaster Med 2019; 34: 632–643.
52. McAlonan GM, Lee AM, Cheung V, et al. Immediate and sustained psychological impact of an emerging infectious disease outbreak on health care workers. Can J Psychiatry Rev Can Psychiatr 2007; 52: 241–247.
53. Martinese F, Keijzers G, Grant S, et al. How would Australian hospital staff react to an avian influenza admission, or an influenza pandemic? Emerg Med Australas 2009; 21(1): 12–24.
54. Ameen S and Praharaj SK. Problems in using WhatsApp groups for survey research. Indian J Psychiatry 2020; 62: 327–328.

Original Article

Statewide Survey of Psychological Distress Among People of Tamil Nadu in the COVID-19 Pandemic

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ABSTRACT

Background: COVID-19-driven pandemic has caused panic, fear, and stress among all strata of society. The study aimed to assess stress and the factors that influence it in a representative population in the state of Tamil Nadu (TN)—a state in the southern India where the levels of stress have not been measured yet.

Methods: From April 13 to April 25, 2020, we conducted an online survey among the TN population using the snowball sampling technique, collecting basic demographic data. COVID-19-perceived stress was collected through COVID-19 Peritraumatic Distress Index (CPDI). Binomial regression analysis was used to identify the extent of the relationship between CPDI and sociodemographic factors by estimating the odds of having significant stress. $P \leq 0.05$ was considered significant.

Results: A total of 2,317 valid responses were received. Of the respondents, 830 (35.82%) were males, 1,084 (46.79%) were below 25 years of age, and 2,297 (99.14%) were native residents of TN. The mean(±SD) CPDI was 20.66±12.03. While 1,830 (77.2%) respondents had low or no stress, 478 (20.2%) had mild to moderate stress, and 63 (2.7%) had severe stress. The bivariate model included marital status, age, nativity, and income. The odds of having significant stress (mild–moderate or severe) for a 25–34 year age group as compared to >55 years group was 2.38 ($P < 0.001$). As compared to widowed, the married had higher odds ratio (3.41, $P = 0.05$). Compared to those with >10 lakh annual income, those with 2.5–5 lakhs annual income had odds ratio of 1.65 (95% CI = 1.01 to 2.7, $P = 0.05$).

Conclusions: During the lockdown due to COVID-19, every 1 in 5 TN population had some form of stress, as measured by CPDI. Our model identified certain factors driving the stress, which would help policy framers to initiate an appropriate response.

Keywords: COVID-19, stress, Tamil Nadu, mental health, pandemic

Key Message: Every 1 in 5 Tamil Nadu respondents had some form of COVID-19 related stress, and 2.7% had severe stress. For the 25–34 years age group, those with an annual income of 2.5–5 lakh, and married, were more prone to stress. A total of 6% were irritable and entered into conflict with family members more than usual; 2.4% of respondents could not sleep well and had bad dreams related to COVID-19.

The Public Health Emergency was posed by a unique RNA coronaviral outbreak in Hubei Province, China in early 2020. The causative organism was named SARS-CoV-2, and the illness is commonly referred to as the novel coronavirus disease (COVID-19). The medium of spread in humans is interpersonal contact via respiratory droplets/aerosols.[1] In late January 2020, India reported its first COVID-19 case.[2] As a part of the containment initiative, India was placed on a total lockdown from March 25, 2020.[3] As on June 23, 2020, India had 440214 COVID-19 cases, of which 248189 were cured and 14011 succumbed.[4]

Widespread infection, social-media-fueled panic, and disruption creates stress, and thus, has a psychological impact. Meta-analyses revealed that anxiety and

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depression (16–28%) and self-reported stress (8%) are the common psychological reactions to this pandemic.[5,6] Social isolation, interpersonal distancing, heightened need for infection-control procedures, fear of infection, public perception of COVID-19 stigma, concerns about self/family well-being, the potential of facing emotionally charged clinical environments, issues of financial insecurity, and potential loss of income could precipitate stress.[6–8]

In the present COVID-19 crisis, a third of the Chinese public (n=52730) manifested psychological stress, with 5% experiencing severe stress.[9] Similarly, 14.1% of the Iranian public (n=1058) suffered severe stress and 47%, moderate stress.[10] Among Indians, a small unstructured general public survey (*n* = 662) reported that the respondents were preoccupied with the thoughts of COVID-19 (80%) and had sleep difficulties (12.5%), paranoia about acquiring COVID-19 (37.8%), and stress (36.4%). Four of five Indians perceived mental healthcare needs.[11]

TN has an effective healthcare delivery system.[12] It also has an established, strong mental health surveillance and treatment program.[13,14] To date, the psychological (dis)stress perception due to COVID-19 has not been assessed among Indian citizens in TN. This study intends to address this lacuna and evaluated the patterns of perceived psychological stress as well as explored the factors associated with it.

Materials and Methods

An online survey for assessing psychological stress among people of TN was conceived in early April 2020 after reports of COVID-19-related suicide and self-harm behavior in India.[15,16] The survey was conducted from April 13 till April 25, both days inclusive. This coincided with the phase 2 of the lockdown. A waiver was obtained for this survey from the first author's institutional review committee, as this was completely an anonymous survey with no personal identification collected, invasive procedure carried on, or disease exposure details collected. Also, the survey was carried out during a humanitarian emergency and disaster, as per the Indian Council of Medical Research guidelines.[17]

The survey was done exclusively using a self-administered bilingual form in English and the local language, Tamil (with back translation verified). The instrument was designed using simple Google Forms and the link was shared among various social media and public platforms, using the snowball sampling technique. Anonymity was ensured and no personal identification, such as IP address, email IDs, or details of COVID-19 exposures, was collected. Participation was on a purely voluntary basis. The demographics of gender, the age group in years (<25, 25–34, 35–44, 45–54 and ≥55), nationality (Indian/other than Indian), state of origin (TN/other Indian states), the state presently living in (TN/other Indian states), marital status (married/unmarried/separated/widowed), nature of employment (student/unemployed/self/government/private), and annual income (in Indian rupees) as per government income tax categorization (below 2.5/2.5–5/5–10/above 10 lakhs) were collected. The state of origin and residence were combined to form people of TN, including TN residents, emigrants (person of TN origin who had left the state), and immigrant population (non-native of TN but settled in there).

The survey also used the previously validated questionnaire, COVID-19 Peritraumatic Stress Index (CPDI).[9] This self-reported questionnaire captures the details concerning anxiety, depression, phobias, cognitive change, avoidance and compulsive behavior, physical symptoms, and loss of social functioning in the past week and collectively quantifies the stress on a scale of 0–100. A CPDI score of ≤27 indicates low or no stress, 28–51 indicates mild to moderate stress, and ≥52 indicates severe stress.[9]

The data were analyzed using Statistical Package for the Social Sciences (IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp). Descriptive statistics, mean ± standard deviation (SD) or median for continuous variables, as well as proportions for categorical variables was calculated. Association of demographic variables with stress levels obtained by CPDI was assessed by the Pearson χ^2 test. For assessing the odds ratio, the stress was classified as no or low stress and as significant stress (mild to moderate and severe together). The magnitude of association of demographic variables with levels of stress was analyzed using binomial logistic regression and presented as odds ratios with 95% confidence interval (CI). Hosmer–Lemeshow goodness-of-fit test was used to assess the model fit. $P \leq 0.05$ was considered statistically significant.

Results

We received a total of 2,317 valid, completed responses. Of them, 830 (35.82%) were males, 1,084 (46.79%) were below 25 years of age, 1,179 (50.89%) were unmarried, 1,016 (43.85%) were students, and a vast majority of them were earning less than INR 2.5 lakhs per annum (1,637, 70.65%). Of all respondents, 2,297 (99.14%) were both natives of TN and residing in TN, while the rest were either immigrants or emigrants.

More than half of the respondents (*n* = 1,250, 52.72%) had felt extremely sympathetic and had a sorrowful feeling towards the COVID-19 patients and their families. One in five respondents had an urge to collect COVID-19 information all day though they did not need it. 391 (16.49%) of the respondents felt insecure and bought a lot of goods such as medications, sanitizers, gloves, masks, and/or other home supplies. One in ten respondents constantly believed all information regarding COVID-19 without any verification or evaluation, while 344 (14.51 %) often felt helpless and had brewing anger against people in responsibility. A total of 190 (8.01%) often avoided watching COVID-19 news as they were too scared. Similarly, 164 (6.91%) of respondents often felt empty and helpless, while 142 (5.99%) were often irritable and engaged in conflicts with family members than in normal times. 56 (2.36%) of respondents often could not sleep well and had negative dreams about COVID-19, while 81(3.42%) had issues with loss of appetite due to preoccupation with COVID-19 (**Table 1**).

The Cronbach's α score was 0.88 for the 24 questions in the CPDI, with an intra-class correlation of 0.24 ($P \leq 0.001$)

TABLE 1.

Response of the Study Population to the COVID-19 Peri-Stress Index Questionnaire

The Frequency of the Below Activities in the Past Week	Never	Occasionally	Sometimes	Often	Most of the Time
	N (%)	N (%)	N (%)	N (%)	N (%)
Compared to usual, I feel more nervous and anxious.	1,182 (49)	568 (23.5)	571 (23.7)	69 (2.9)	22 (0.9)
I feel insecure and bought a lot of goods such as medications, sanitizers, gloves, masks, and/or other home supplies.	917 (38)	535 (22.2)	569 (23.6)	281 (11.7)	110 (4.6)
I can't stop myself from imagining myself or my family being infected and feel terrified and anxious about it.	1,279 (53)	581 (24.1)	410 (17)	78 (3.2)	64 (2.7)
I feel empty and helpless, no matter what I do.	1,534 (63.6)	428 (17.7)	286 (11.9)	105 (4.4)	59 (2.4)
I feel sympathetic to COVID-19 patients and their families. I feel sad about them.	173 (7.2)	293 (12.1)	696 (28.9)	621 (25.7)	629 (26.1)
I feel helpless and angry about people around me, such as the governors and media.	1,052 (43.6)	479 (19.9)	537 (22.3)	185 (7.7)	159 (6.6)
I am losing faith in the people around me.	1,527 (63.3)	399 (16.5)	315 (13.1)	95 (3.9)	76 (3.2)
I collect information about COVID-19 all day. Even if it's not necessary, I can't stop myself.	911 (37.8)	502 (20.8)	528 (21.9)	314 (13)	157 (6.5)
I will believe the COVID-19 information from all sources without any evaluation.	1,330 (55.1)	434 (18)	412 (17.1)	158 (6.6)	78 (3.2)
I would rather believe in negative news about COVID-19 and be skeptical about the good news.	1,756 (72.8)	306 (12.7)	236 (9.8)	82 (3.4)	32 (1.3)
I am constantly sharing news about COVID-19 (mostly negative news).	1,795 (74.4)	310 (12.9)	203 (8.4)	64 (2.7)	40 (1.7)
I avoid watching COVID-19 news since I am too scared to do so.	1,544 (64)	340 (14.1)	338 (14)	128 (5.3)	62 (2.6)
I am more irritable and have frequent conflicts with my family.	1,481 (61.4)	485 (20.1)	304 (12.6)	84 (3.5)	58 (2.4)
I feel tired and sometimes even exhausted.	1,391 (57.7)	523 (21.7)	334 (13.8)	117 (4.9)	47 (1.9)
Due to feelings of anxiety, my reactions are becoming sluggish.	1,804 (74.8)	322 (13.3)	206 (8.5)	49 (2)	31 (1.3)
I find it hard to concentrate.	1,538 (63.8)	421 (17.5)	299 (12.4)	97 (4)	57 (2.4)
I find it hard to make any decisions.	1,522 (63.1)	450 (18.7)	278 (11.5)	97 (4)	65 (2.7)
During this COVID-19 outbreak, I often feel dizzy, have back pain or chest discomfort.	2,079 (86.2)	176 (7.3)	106 (4.4)	30 (1.2)	21 (0.9)
During this COVID-19 outbreak, I often feel stomach pain, bloating, or other stomach discomforts.	2,129 (88.3)	174 (7.2)	75 (3.1)	19 (0.8)	15 (0.6)
I feel uncomfortable when communicating with others.	1,950 (80.8)	224 (9.3)	155 (6.4)	47 (1.9)	36 (1.5)
Recently, I rarely talk to my family.	1,971 (81.7)	161 (6.7)	129 (5.3)	84 (3.5)	67 (2.8)
I cannot sleep well. I always dream about myself for my family being infected by coronavirus.	1,969 (81.6)	238 (9.9)	149 (6.2)	31 (1.3)	25 (1)
I lost my appetite.	1,869 (77.5)	267 (11.1)	195 (8.1)	51 (2.1)	30 (1.2)
I have constipation or frequent urination.	2,030 (84.2)	208 (8.6)	113 (4.7)	43 (1.8)	18 (0.7)

for single measures and 0.88 ($P \leq 0.001$) for average measures. The mean ± SD of CPDI was 20.66±12.03, with 95% CI as 20.18–21.15, with a median of 18 and a range of 4–98. The interquartile range was 14 (12–26). There were 1,830 (77.2%) respondents with low or no stress, and the rest 541 (22.8%) had significant stress. Of this, 478 (20.2%) had mild to moderate stress, while 63 (2.7%) had severe stress. The distribution of the mean (SD) and median CPDI scores for demographic variables is provided in **Table 2**.

An initial analysis using contingency test based on the Pearson χ^2 test was conducted to identify the association of stress levels with demographic factors such as gender, age group, income, marital and employment statuses, and nativity. The age group and marital status were the only statistically significant demographic parameters with $P < 0.05$. As the other parameters were skewed and not significantly associated, they were not considered for further analysis (**Table 3**). For ease of convenience, nativity was classified as native and non-native TN (by combining immigrants and emigrants).

For assessing the risk, the mild to moderate and severe stress groups were combined to form a group called the significant stress group. The resultant model showed a good fit with Hosmer and Lemeshow test ($\chi2 = 1.73$, $P = 0.94$). The Nagelkerke (pseudo) R^2 was 0.02. It was observed that, as compared to no or low stress, the odds of having significant stress increased for younger age group. This was pronounced in the 25–34 years group (OR = 2.38, $P < 0.001$) and 35–44 years group (OR = 2.36, $P < 0.001$). As compared to widowed, the separated had higher OR (8.29, $P = 0.05$). As compared to those who are earning above ten lakhs, the lesser income group had significant stress, with the 2.5–5 lakh group having an OR of 1.65 (95% CI = 1.01–2.7, $P = 0.05$) (**Table 4**).

Discussion

Besides physical health, mental health also takes a strong hit during a pandemic. Past pandemics have underlined the need for an efficient mental health screening program and integration into the pandemic response. The stress, fear, and

TABLE 2.

Demographics of Study Population (*n* = 2,371)

Characteristics	Subgroups	Count	Mean±SD of CPDI	Median of CPDI
Sex	Male	830	20.88±11.66	19
	Female	1541	20.55±12.23	18
Age group in years	Below 25	1084	20.46±12.02	18
	25–34	465	21.04±12.44	18
	35–44	424	21.66±12.6	19
	45–54	258	20.29±11.14	19
	55 and above	140	18.66±10.3	16
Marital status	Unmarried	1179	20.26±11.92	18
	Married	1133	20.95±12.08	18
	Separated	43	26.07±13.61	23
	Widowed	16	15.56±7.15	15
Employment	Student	1016	20.29±11.91	18
	Unemployed	220	21.92±12.63	19
	Self-employed	253	20.61±11.04	19
	Private employment	653	20.62±12.57	17
	Government employment	229	21.28±11.46	19
Annual income in lakh Indian rupees	0–2.5	1637	20.44±12.04	18
	2.5–5	318	21.88±12.48	19
	5–10	261	21.43±11.52	19
	Above 10	155	19.21±11.71	17
Nativity	Native resident	2297	20.65±12.05	18
	Immigrant	25	22.44±10.89	19
	Emigrant	49	20.43±11.95	20

SD: standard deviation, CPDI: COVID-19 Peritraumatic Distress Index.

panic could fuel emotional and behavioral turmoil, precipitating mental health burden during or after the pandemic. Psychological factors play a vital role in determining the behavior of the public and their contribution to lockdown and isolation.[18] As there was a paucity of data on the stress reaction to the developing COVID-19 situation in TN, this study was designed to capture the stress among the general public using a non-contact, anonymous, brief, indirect, self-reporting, and self-volunteering format.

Unlike the Chinese CPDI score of 23.65±15.45 and Iranian score of 34.54±14.92, TN had 20.66±12.03.[9,10] About 61% of Iranian and 35% of the Chinese public had relatively higher stress, as compared to 23% in the TN sample.[9,10] This difference could emanate from the fact that both the countries had heightened spread and were epicenters of the outbreak during the data collection, as well as the fact that TN (and India) were never hot spots by the time of the collection and writing of this data. The present data collection was done after the lockdown extension.

This study, to the best of our knowledge, for the first time, has provided robust measures of psychological stress profile of the general public in TN in COVID-19 situation. The sociodemographic factors that precipitated psychological stress differed widely between Chinese and Iranian studies.[9,10] This study also identifies association of different factors. In the present study, young adults were predisposed to stress as compared to no or low stress, with an OR < 2 with high statistical significance. This could be due to several reasons: Young TN public is much exposed to smartphones, news, and social media. Rapid increase of COVID-19 virus and social media-fueled COVID-19-related voluminous information, including unverified claims, may precipitate stress and other psychological reaction.[19–21] In this regard, this study resonates with Chinese studies.[8,22] Those with an average annual income of INR 2.5 to 5 lakhs had a significant odds ratio (OR=1.65, P = 0.05) as compared to those earning above ten lakhs per year. Age is a major contributor for stress with odds ratio ranging from 1.8 to 2.38 in different

TABLE 3.

Demographic Parameter Association with Levels of Stress

		Low or No Stress *N* (%)	Mild to Moderate Stress *N* (%)	Severe Stress *N* (%)	P Value
Sex	Male	643 (35.1)	172 (36)	15 (23.8)	0.16
	Female	1187 (64.9)	306 (64)	48 (76.2)	
Age group by years	Below 25	851 (46.5)	205 (42.9)	28 (44.4)	0.03
	25–34	345 (18.9)	105 (22)	15 (23.8)	
	35–44	309 (16.9)	102 (21.3)	13 (20.6)	
	45–54	203 (11.1)	49 (10.3)	6 (9.5)	
	Above 55	122 (6.7)	17 (3.6)	1 (1.6)	
Marital Status	Unmarried	930 (50.8)	219 (45.8)	30 (47.6)	0.01
	Married	861 (47)	241 (50.4)	31 (49.2)	
	Separated	24 (1.3)	17 (3.6)	2 (3.2)	
	Widowed	15 (0.8)	1 (0.2)	0	
Employment status	Student	801 (43.8)	189 (39.5)	26 (41.3)	0.57
	Unemployed	160 (8.7)	51 (10.7)	9 (14.3)	
	Self-employed	193 (10.5)	56 (11.7)	4 (6.3)	

		Low or No Stress N (%)	Mild to Moderate Stress N (%)	Severe Stress N (%)	P Value
	Private	501 (27.4)	134 (28)	18 (28.6)	
	Government	175 (9.6)	48 (10)	6 (9.5)	
Annual income in lakhs	0–2.5	1270 (69.4)	323 (67.6)	44 (69.8)	0.40
	2.5–5	232 (12.7)	77 (16.1)	9 (14.3)	
	5–10	200 (10.9)	54 (11.3)	7 (11.1)	
	Above 10	128 (7)	24 (5)	3 (4.8)	
Nativity	Native	1773 (96.9)	462 (96.7)	62 (98.4)	0.92
	Immigrant	19 (1)	6 (1.3)	0	
	Emigrant	38 (2.1)	10 (2.1)	1 (1.6)	

TABLE 4.

Binomial Logistic Regression Analysis to Assess the Stressor with No or Less Stress as a Comparison Group to Those with Significant Stress (Mild to Moderate and Severe)

Socioeconomic Factor	Subgroup	Odds Ratio	95% CI for Odds		P Value
			Lower	Upper	
Age group in years	Below 25	2.259	1.215	4.199	0.01
	25–34	2.379	1.367	4.141	0.00
	35–44	2.362	1.370	4.073	0.00
	45–54	1.817	1.016	3.249	0.04
	above 55				
Marital status	Unmarried	2.669	0.335	21.251	0.35
	Married	3.407	0.440	26.407	0.24
	Separated	8.292	0.979	70.251	0.05
	Widowed				
Annual income in lakh Indian rupees	0–2.5	1.312	0.835	2.061	0.24
	2.5–5	1.652	1.009	2.704	0.05
	5–10	1.378	0.826	2.298	0.22
	Above 10				
Nativity	Native	0.942	0.538	1.651	0.84
	Non-TN				

CI: confidence interval, TN: Tamil Nadu.

age groups as compared to those above 55 years. Younger people are at more risk to stress as compared to those above 55 years. Marital status plays a very significant influence on stress. This aspect has not been described in earlier studies. As there is no precedence, the findings could not be compared with existing literature. As there was only a small number of immigrants and emigrants, the influence of this factor could not be compared, though narrative reviews are available.[23] Also, our results broadly resonate with those of a recent index survey from West Bengal, India.[24]

Present findings provide robust insights into the features of psychological stress in the TN public. The pre-COVID-19 prevalence of various psychological disorders were estimated: mood disorders at 4.62%, depressive disorders was 3.61%, anxiety related disorders 3.5%, and neurotic/stress related disorder 1.9%.[25–27] In this study, 22.8% had significant stress, with 2.7% of respondents having severe stress. This underlines the need for providing mental health assistance to vulnerable groups such as young people, those with lower income levels, and those lacking a support system. The system also needs to dynamically provide access to mental health support systems. There is a need for strategic planning and development of COVID-19-related psychological first aid team that should indulge in non-contact monitoring, screening, referral, and targeted intervention procedures. As one in five of the population could suffer from stress, the focus should be on preventing stress among those with mild-to-moderate stress while providing mental health care for those with severe stress. This is a mass, self-administered tool. Only initial screening is feasible and this tool can identify those with significant stress. Further clinical interview and psychological aid have to follow.

The results of this study should be interpreted with caution as this is an observational cross-sectional survey, and done in a relatively small, smartphone-handling sample. This sample could not be representative of the entirety of TN. Also, there are limitations in online surveys, particularly those in which the response rate is not known.[28,29] Also, the low (pseudo) R^2 but statistical significance indicate that there could be outliers and other confounding factors. This underlines the need for further studies with larger sample size and accounting more sociodemographic factors. Future studies have to take these limitations into account.

Conclusion

COVID-19 pandemic has created stress across all spheres of human life. The stress among the TN population has been captured in the initial phases of the pandemic containment effort. This would help the mental health professionals and the policymakers to institute appropriate mental health efforts and solutions during the lockdown as well as when the normalcy is restored.

Declaration of Conflicting Interests

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References

1. Rodriguez-Morales AJ, Cardona-Ospina JA, Gutiérrez-Ocampo E, et al. Clinical, laboratory and imaging features of COVID-19: A systematic review and meta-analysis. Travel Med Infect Dis 2020 Mar 13: 101623. DOI: 10.1016/j.tmaid.2020.101623.
2. Gupta N, Praharaj I, Bhatnagar T, et al. Severe acute respiratory illness surveillance for coronavirus disease 2019, India, 2020. Indian J Med Res [Epub ahead of print] 2020; 151. DOI: 10.4103/ijmr.IJMR_1035_20
3. Pulla P. Covid-19: India imposes lockdown for 21 days and cases rise. BMJ 2020; 368. DOI: 10.1136/bmj.m1251.
4. GOI. www.mofhw.gov.in updated June 23, 2020, by 9:30 am, last accessed on June 23, 2020.
5. Rajkumar RP. COVID-19 and mental health: A review of the existing literature. Asian J Psychiatr 2020 Apr 10; 52: 102066. DOI: 10.1016/j.ajp.2020.102066.
6. Usher K, Bhullar N, and Jackson D. Life in the pandemic: Social isolation and mental health. J Clin Nurs 2020 Apr 6. DOI: 10.1111/jocn.15290
7. Gavin B, Hayden J, Adamis D, et al. Caring for the psychological well-being of healthcare professionals in the Covid-19 pandemic crisis. Ir Med J 2020 Apr 3; 113(4): 51.
8. McKee M and Stuckler D. If the world fails to protect the economy, COVID-19 will damage health not just now but also in the future. Nat Med 2020 Apr 9. DOI:10.1038/s41591-020-0863-y.
9. Qiu J, Shen B, Zhao M, et al. A nationwide survey of psychological stress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. Gen Psychiatr 2020 Mar 6; 33(2): e100213.
10. Jahanshahi AA, Dinani MM, Madavani AN, et al. The distress of Iranian adults during the Covid-19 pandemic: More stressed than the Chinese and with different predictors. medRxiv 2020.04.03.20052571; DOI: https://doi.org/10.1101/2020.04.03.20052571
11. Roy D, Tripathy S, Kar SK, et al., Study of knowledge, attitude, anxiety and perceived mental healthcare need in Indian population during COVID-19 pandemic. Asian J Psychiatr 2020 Apr 8; 51: 102083.
12. Parthasarathi R and Sinha SP. Towards a Better Health Care Delivery System: The Tamil Nadu model. Indian J Community Med 2016; 41(4): 302–304.
13. Ng C, Chauhan AP, Chavan BS, et al. Integrating mental health into public health: The community mental health development project in India. Indian J Psychiatry 2014; 56(3): 215–220.
14. Gautham MS, Gururaj G, Varghese M, et al., The National Mental Health Survey of India (2016): Prevalence, socio-demographic correlates and treatment gap of mental morbidity [published online ahead of print, 2020 Mar 4]. Int J Soc Psychiatry 2020; 20764020907941. DOI:10.1177/0020764020907941.
15. Goyal K, Chauhan P, Chhikara K, et al. Fear of COVID 2019: First suicidal case in India. Asian J Psychiatry 2020; 49. DOI: 10.1016/j.ajp.2020.101989.
16. Sahoo S, Rani S, Parveen S, et al. Self-harm and COVID-19 pandemic: An emerging concern—a report of 2 cases from India. Asian J Psychiatr 2020 Apr 16; 51: 102104. DOI:10.1016/j.ajp.2020.102104.
17. ICMR. *Research during humanitarian emergencies and disasters. In National Ethical Guidelines for Biomedical and health research involving human participants*. 1st ed. Mathur R (Ed). New Delhi: ICMR, 2017: 137–140.
18. Pfefferbaum B, Schonfeld D, Flynn BW, et al. The H1N1 crisis: A case study of the integration of mental and behavioral health in public health crises. Disaster Med Public Health Prep 2012 Mar; 6(1): 67–71.
19. Chen E, Lerman K, and Ferrara E. Tracking social media discourse about the COVID-19 pandemic: Development of a public coronavirus Twitter data set. JMIR Public Health Surveill 2020; 6(2): e19273. Published May 29, 2020. DOI:10.2196/19273.
20. Kadam AB and Atre SR. Negative impact of social media panic during the COVID-19 outbreak in India. J Travel Med 2020; 27(3): taaa057. DOI:10.1093/jtm/taaa057.
21. Bhat M, Qadri M, Beg NU, et al. Sentiment analysis of social media response on the Covid19 outbreak [published online ahead of print, May 8, 2020]. Brain Behav Immun 2020; S0889-1591(20)30709-1. DOI:10.1016/j.bbi.2020.05.006
22. Cheng C, Jun H, and Liang B. Psychological health diathesis assessment system: A nationwide survey of resilient trait scale for Chinese adults. Stud Psychol Behav 2014; 12: 735–742.
23. Singh OP. Mental health of migrant laborers in COVID-19 pandemic and lockdown: Challenges ahead. Indian J Psychiatry 2020; 62: 233–234.
24. Chakraborty K and Chatterjee M. Psychological impact of COVID-19 pandemic on general population in West Bengal: A cross-sectional study. Indian J Psychiatry 2020; 62: 266–272.
25. Arvind BA, Gururaj G, Loganathan S, et al. Prevalence and socioeconomic impact of depressive disorders in India: Multisite population-based cross-sectional study. BMJ Open 2019; 9(6): e027250. Published Jue 27, 2019. DOI: 10.1136/bmjopen-2018-027250.
26. Gururaj G, Varghese M, Benegal V, et al. *National Mental Health Survey of India, 2015–2016, prevalence, patterns and outcomes*. Bangalore: National institute of Mental Health and Neurosciences (NIMHANS), 2016. http://indianmhs.nimhans.ac.in/Docs/Report2.pdf (accessed May 25, 2020).
27. India State-Level Disease Burden Initiative Mental Disorders Collaborators. The burden of mental disorders across the states of India: the Global Burden of Disease Study 1990–2017. Lancet Psychiatry 2020; 7(2): 148–161.
28. Burke M and Hodgins M. Is “Dear colleague” enough? Improving response rates in surveys of healthcare professionals. Nurse Res 2015; 23(1): 8–15.
29. Fincham JE. Response rates and responsiveness for surveys, standards, and the Journal. Am J Pharm Educ 2008; 72(2): 43. DOI: 10.5688/aj720243.

Psychological Health Among Armed Forces Doctors During COVID-19 Pandemic in India

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ABSTRACT

Background: A pandemic poses a significant challenge to the healthcare staff and infrastructure. We studied the prevalence of anxiety and depressive symptoms among armed forces doctors in India during the COVID-19 pandemic and the factors that contribute to these symptoms.

Methods: The study was conducted from March 30, 2020, to April 2, 2020, using a self-administered questionnaire questionnaire using the hospital anxiety and depression scale (HADS), which was sent through Google Forms. Responses were received from 769 respondents. Data were analyzed for demographic details and HADS scores using the chi-square test and backward logistic regression.

Results: Anxiety and depressive symptoms were seen in 35.2% and 28.2% of the doctors, respectively. In doctors with anxiety symptoms, significant associations were observed with age (20–35 years, 39.4%, $P = 0.01$), gender (females, 44.6%, $P < 0.001$), duration of service (0–10 years, 38%, $P = 0.03$), and clinical versus non-clinical specialties (non-clinical, 41.3%, $P < 0.001$) as opposed to marital status, education level, and current department of work.

In doctors with depressive symptoms, significant associations were observed with age ($P = 0.04$), clinical versus non-clinical specialties ($P < 0.001$), duration of service (0–10 years, 30.1%, $P = 0.03$), and doctoral degree ($P = 0.04$) as opposed to gender, marital status, education level, and current working department.

Conclusion: The study revealed a high prevalence of anxiety and depressive symptoms among armed forces doctors. The main contributing factors are female gender, young age group, non-clinical specialties, and having a doctoral degree.

Keywords: Doctors, COVID-19, anxiety, depression, HADS

Key Messages: A high prevalence of anxiety and depressive symptoms were found among armed forces doctors in India during the initial months of COVID-19 pandemic. We recommend training of non-clinical, young, and frontline doctors with adequate medical facilities. The support system for families of doctors should be enhanced.

In December 2019, China observed various cases of pneumonia of unknown origin. These cases were clustered in Wuhan city of Hubei province.[1] The disease rapidly spread to European and American countries. The etiologic agent responsible for the outbreak of coronavirus disease (COVID-19) is a novel coronavirus closely related to the severe acute respiratory syndrome (SARS) virus and has been named as SARS-CoV-2.[2] India also started reporting cases of COVID-19 from various states. As of April 18, 2020, the World Health Organization (WHO) reported worldwide 2,164,111 confirmed cases, with 146,198 deaths, and India reported 14,378 total cases, with 480 deaths (https://covid19.who.int/).

The COVID-19 outbreak has created significant fear, distress, anxiety, and depression amongst the doctors as well as the general public. Doctors are particularly prone to develop various mental health disorders as compared to the general population.[3–5] A study from

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Hong Kong brought out the stress levels among healthcare workers during the SARS outbreak in 2003. A higher level of anxiety symptoms (36.7%: moderate–severe, 14.4%: extreme–severe), and depressive symptoms (36.3%: moderate–severe, 4.4%: extreme–severe) were reported.[6]

Recently, a study from China during COVID-19 pandemic on insomnia and related factors revealed the prevalence of symptoms of stress, anxiety, and depression amongst healthcare workers to be 73.4%, 44.7%, and 50.7%, respectively.[7] A study from China estimated that the prevalence of symptoms of anxiety, depression, and both among doctors were 25.67%, 28.13%, and 19.01%, respectively, during non-COVID days in 2014.[5] Various factors associated with psychological distress during a pandemic among doctors are uncertainty about disease course, high mortality, inadequate infrastructure, lack of adequate protective equipment, no proven definitive drug treatment or prophylaxis, apprehension of transmitting the disease to family members, no vaccine, and high incidence among frontline healthcare workers.[8,9]

Although various surveys on the mental health of doctors are available across the world, no such specific survey has been conducted in India among armed forces doctors during the present COVID-19 pandemic. The present survey aims to evaluate the prevalence of anxiety and depressive symptoms among the armed forces doctors and the associated factors during the COVID-19 pandemic.

Methods

Study Design

The present study employs a quantitative approach. A cross sectional survey is used to access the prevalence of anxiety and depressive symptoms among doctors during the COVID 19 pandemic.

Sample Size Estimation

The sample size was determined by using the formula $N = Z_\alpha^2 P(1-P)/d^2$. In this, α was 0.05, Z_α was 1.96 (at 95% confidence level), and the estimated acceptable margin of error for proportion, d, was 0.05. Based upon a previous study on psychological health in doctors in China during SARS outbreak in 2003 and a COVID-19 study from China, the prevalence of psychological comorbidities was estimated to be around 37%.[6,7] Based on the above formula, the sample size was estimated to be a minimum of 358.

Data Collection

The sample for the survey consisted of doctors in the armed forces across India. The survey was carried out during the second phase of COVID-19 from March 30, 2020, to April 2, 2020. A self-administered questionnaire was sent through Google Forms to all respondents. The Google Form asked for demographic details like gender, age, marital status, education level, duration of service, clinical versus non-clinical specialty, and current working department, and a validated tool to assess the psychological health of doctors. We received a total of 769 responses from doctors. Out of these, 20 were removed during the cleaning of data, and 749 were analyzed.

Measures

A self-administered scale was used to assess anxiety and depressive symptoms. Hospital anxiety and depression scale (HADS)[10] has 14 items (7 each for depression and anxiety), with a score ranging from 0 to 21. The score of 0–7 is taken as normal, and 8–21 is taken as abnormal for both symptoms. The HADS was initially designed for use in hospital practice. However, its use with the general population is well validated. The Cronbach Alpha for anxiety and depression subscales is 0.83 and 0.82, respectively, with a mean correlation of 0.561. The HADS was not used for the diagnosis of anxiety and depression; it was only used as a screening tool for anxiety and depressive symptoms.

Statistical Analysis

The data was analyzed using the IBM SPSS Statistics 23 for windows (Version 23.0., IBM Corp., NY, USA). χ^2 analysis was used to analyze the descriptive statistics and their association with anxiety and depressive symptoms. Backward logistic regression analysis was used for variables with either bivariate comparison or subject of interest to the author. The results are reported as βs (coefficients of regression) and standard error (SE). A P value of less than 0.05 was considered to be statistically significant.

Ethical Considerations

Ethical clearance was obtained from the Institutional Ethics Committee. Written Informed consent was taken from all the respondents before filling out the questionnaire.

Results

Sociodemographic Characteristics

We sent forms to 897 doctors, out of which 769 responded, making a response rate of 85.7%. Out of the 769 responses, 20 were removed during the cleaning of data, and 749 were analyzed. The demographic characteristics are given in **Table 1.** Out of all participants, 556 were male (74.2%). The maximum participants were in the 20–35 years age group (47.4%), married (73.5%), with less than ten years of service (48.9%), in clinical specialties (59.9%), and working in outpatient departments (OPDs) (42.3%).

All the participants were divided into two groups based on the HADS score. The participants with a score of ≤7 were assigned to the non-anxiety/non-depressive group, and those with score > 7 were assigned to the anxiety group or the depressive group. The mean (SD) anxiety score and the prevalence of anxiety symptoms were 6.37 (4.01) and 35.2%, respectively. The mean depression score and the prevalence of depressive symptoms were 4.90 (4.03) and 28.2%, respectively. In the anxiety group, significant associations were observed with age ($P = 0.01$), gender ($P < 0.001$), duration of service ($P = 0.03$), and clinical vs non-clinical specialty ($P < 0.001$). No association was found with education level ($P = 0.14$), marital status ($P = 0.15$), or current working department ($P = 0.83$).

In the depression group, significant associations were observed with age ($P = 0.04$), clinical vs non-clinical specialty ($P < 0.001$), and duration of service ($P = 0.03$). No association was found with gender ($P = 0.50$), education level ($P = 0.07$), marital status ($P = 0.18$), or current working department ($P = 0.96$).

Table 2 shows the multivariate analysis of the factors associated with anxiety

TABLE 1.

Descriptive Statistics for the Characteristics and Their Associations with Anxiety and Depressive Symptoms Using the Chi Square Tests

			Anxiety Symptoms			Depressive Symptoms		
Variables		Doctors n (%)	Anxiety Score Mean (SD)	n (%)	P	Depression Score Mean (SD)	n (%)	P
Total		749(100)	6.37(4.01)	264(35.2)		4.90(4.03)	28.2	
Gender	Male	556(74.2)	6.08(4.01)	178(32.0)	<0.001	4.72(4.02)	153(27.5)	0.50
	Female	193(25.8)	7.22(4.32)	86(44.6)		5.40(4.04)	58(30.1)	
Age group (years)	20–35	355(47.4)	6.89(4.03)	140(39.4)	0.01	5.33(4.21)	114(32.1)	0.04
	36–50	245(32.7)	6.31(3.91)	86(35.1)		4.72(3.75)	65(26.5)	
	51–65	129(17.2)	5.52(3.95)	36(27.9)		4.13(3.92)	25(19.4)	
	>65	20(2.7)	3.50(3.08)	2(10.0)		4.25(3.87)	7(35.0)	
Marital status	Unmarried	173(23.1)	6.78(4.16)	71(41.0)	0.16	5.33(4.22)	58(33.5)	0.18
	Married	564(73.5)	6.26(3.97)	190(33.7)		4.76(3.97)	149(26.4)	
	Separated	12(1.6)	5.75(3.41)	3(25.0)		5.25(3.36)	4(33.3)	
Education level	Bachelor degree	184(24.6)	6.37(3.93)	62(33.7)	0.14	4.82(4.07)	48(26.1)	0.07
	Master degree	307(41.0)	6.10(3.86)	99(32.2)		4.69(3.95)	77(25.1)	
	Doctoral degree	258(34.4)	6.70(4.22)	103(39.9)		5.20(4.08)	86(33.3)	
Duration of service (years)	0–10	366(48.9)	6.78(3.98)	139(38.0)	0.03	5.26(4.13)	110(30.1)	0.03
	11–20	231(30.8)	6.45(3.90)	85(36.8)		5.03(3.94)	71(30.7)	
	>21	152(20.3)	5.26(4.04)	40(26.3)		3.82(3.73)	30(19.7)	
Clinical specialty	Yes	449(59.9)	5.98(3.81)	140(31.2)	<0.001	4.55(3.89)	109(24.3)	<0.001
	No	300(40.1)	6.96(4.22)	124(41.3)		4.9(4.02)	102(34.0)	
Current working department	OPD	317(42.3)	6.42(4.12)	108(34.1)	0.83	5.06(4.13)	91(28.7)	0.96
	Flu clinic	54(7.2)	6.19(4.06)	16(29.6)		4.50(4.17)	3(24.1)	
	Isolation ward	34(4.5)	6.62(3.464)	14(41.2)		4,32(3.43)	8(23.5)	
	ICU	83(11.1)	6.83(4.07)	32(38.6)		5.06(4.38)	25(30.1)	
	Work from home	52(6.9)	6.15(4.16)	20(38.5)		4.79(3.69)	15(28.8)	
	Others	209(27.9)	6.18(3.86)	74(35.4)		4.81(3.88)	59(28.2)	
Anxiety symptoms	No	485(64.8)	3.98(2.20)	0(0)	-	3.03(2.90)	51(10.5)	<0.001
	Yes	264(35.2)	10.78(2.60	100(100)		8.33(3.52)	160(60.6)	
Depressive Symptoms	No	538(71.8)	4.87(3.05)	104(19.3)	<0.001	2.84(2.29)	0(0)	
	Yes	211(28.2)	10.21(3.57)	160(75.8)		10.13(2.48)	100(100)	

SD: standard deviation, OPD: outpatient department, ICU: intensive care unit.

and depression. Factors associated with anxiety symptoms were female gender, age less than 65 years, and having depressive symptoms. Similarly, factors associated with depressive symptoms were age more than 65 years, duration of service between 11 and 20 years, belonging to non-clinical specialties, with a doctorate, and having anxiety symptoms.

Discussion

We carried out this study using self-administered questionnaires on doctors working in various armed forces hospitals. Our study showed the prevalence of anxiety and depressive symptoms as 35.2% and 28.2%, respectively, with 160 (21.4%) participants having both symptoms. Our study showed a lower prevalence of anxiety and depression as compared to a Chinese study on COVID-19, which revealed the prevalence of anxiety and depression as 44.6% and 50.4%, respectively.[6] This could be because of the social and cultural differences in the population, different scales used for diagnosis, and the fact that our study was conducted during stage 2 of the pandemic as compared to the Chinese study conducted during the peak of the outbreak. Indian data on the prevalence of mental disorders among the general population had revealed that one in seven persons has a mental disorder, with the prevalence of anxiety and depression corresponding to 3.3%.[11] In India, the prevalence of anxiety and depressive symptoms is higher in doctors as compared to the general population[11]; however, our study carried out only screening based on symptoms and did not confirm anxiety or depressive disorder. Compared to other studies on Indian doctors having anxiety, depression, and stress, we found similar results.[12,13] However, these studies were carried out mainly among resident doctors who, as such, have higher stress, anxiety, and de-

TABLE 2.

Multivariate Analysis Showing the Factors Associated with Anxiety and Depression in Doctors

		β	SE	P Value	Exp (β) 95% CL
Anxiety[a] Gender (ref: male)		0.62	0.21	<0.001	1.85 (1.23–2.77)
Age group (years) (ref: >65)	20–35	2.29	0.81	0.01	9.88 (2.02–48.26)
	36–50	2.25	0.82	0.01	9.47 (1.91–46.82)
	51–65	2.10	0.83	0.01	8.14 (1.59–41.58)
Depression (ref: yes) Depression[b]		−2.66	0.20	<0.001	
Age group(years) (ref: >65)	20–35	−1.53	0.69	0.03	0.22 (0.06–0.84)
	36–50	−2.02	0.64	<0.001	0.13 (0.04–0.47)
	51–65	−1.81	0.59	<0.001	0.17 (0.05–0.52)
Duration of service (years) (ref: >21)	0–10	0.44	0.50	0.38	1.56 (0.59–4.16)
	11–20	0.87	0.42	0.04	2.38 (1.05–5.39)
Clinical specialty (ref: no)		−0.44	0.22	0.04	0.64 (0.42–0.99)
Education level (ref: bachelors)	Doctorate	0.59	0.29	0.04	1.80 (1.03–3.18)
	Masters	0.21	0.29	0.47	1.23 (0.70–2.15)
	Anxiety (ref: yes)	−2.63	0.20	<0.001	0.07 (0.05–0.11)

[a]The multivariate model comes from a backward logistic regression analysis. The model started with gender, age group, duration of service, clinical work, working place, and depression. [b]The multivariate model comes from a backward logistic regression analysis. The model started with gender, age group, education level, duration of service, clinical work, and anxiety. β: coefficient of regression, SE: standard error, CL: confidence limit.

pression due to long duty hours, clinical specialties, migration from other areas of the countries, and lack of recreational activities.[12,13]

A cross-sectional study from China during non-COVID days revealed the prevalence of anxiety and depression in doctors to be 25.67% and 28.13%, respectively.[5] Similarly, other studies from Norway, Canada, Britain, United States, Benin, and Japan revealed the prevalence of depression as 11%, 15.5%, 12%, 11.3%, 14%, and 8.8%, respectively.[14–19] The present study revealed similar depressive symptoms as compared to the Chinese study during non-COVID days and a high prevalence of depressive symptoms as compared to other developed countries during non-COVID days. The reason behind this could be social and cultural differences, the level of healthcare infrastructure, and apprehension due to the pandemic. In general, doctors in India and other developing countries are overworked. They have long hours of duty, limited resources, demanding patients, medicolegal issues, apprehension of transmitting the disease to the family members, inadequate emotional support from family members, and less family time; this leads to an increase in burnout, anxiety, and depression.[9,20,21] Our study has revealed a high prevalence of symptoms of anxiety and depression, which are likely due to uncertainty about disease course, potential mortality, inadequate infrastructure, lack of adequate protective equipment, lack of definitive drug treatment or prophylaxis, lack of a vaccine, and high incidence of infection among frontline healthcare workers.

The risk factors for anxiety were female gender, age groups of 20–35, 36–50, or 51–65 years, service bracket of 0–10 or 11–20 years, being in non-clinical specialties, and working in primary care hospital. A higher prevalence of anxiety symptoms in females is consistent with other studies from India and Western countries, and the reason could be gender discrimination, sociocultural factors, greater family responsibility, and perinatal factors.[21–23] The reasons for higher anxiety symptoms in younger doctors are probably the direct exposure and their longer working hours. Also, doctors with service > 21 years have an advisory role, predominant administrative responsibility, and less direct contact with patients during the pandemic. A study on faculty doctors from the southern part of India revealed high perceived job stress among doctors aged <45 years (73%) compared to 18% of those aged >45 years.[24] Our study revealed that doctors in clinical specialties had fewer anxiety symptoms than those in non-clinical specialties. Marital status and the current working department had no significant impact on the prevalence of anxiety symptoms.

The risk factors for depressive symptoms were being in the service bracket of 11–20 years, age more than 65 years, and working in non-clinical specialties. No significant association of depressive symptoms was found with gender, marital status, education level, working place, or current working department. Our study revealed higher symptoms of anxiety and depression among armed forces doctors in non-clinical specialties as compared to clinical. A study on psychological stress among resident doctors and faculty doctors had revealed higher stress in clinical specialties.[24,25] Our results do not corroborate with the results of the studies mentioned above, likely reasons are the inevitable shortage of doctors and the apprehension among doctors in non-clinical specialties who are roped into work in COVID-19 OPD/wards in view of the pandemic. Our results are consistent with data reported from other studies; notable among them are Chinese study during the COVID-19 outbreak and study during the SARS outbreak, which revealed a higher prevalence of anxiety and depressive symptoms in healthcare workers.[10,26]

To conclude, the present study has revealed a high prevalence of symptoms of anxiety and depression during the COVID-19 pandemic. No such studies are available on psychological stress among armed forces doctors during non-pandemic days; hence, the present prevalence of anxiety and depressive symptoms among armed forces doctors cannot be compared with pre-pandemic data. It is of paramount importance to prevent the attrition of limited doctors in the country. As such, prevalence of psychological stress is higher among armed forces personnel even in peacetime due to separation from family and unique working hours.[27] The present pandemic, as the study shows, is likely to augment their psychological stress further and requires measures to counter the same.

To reduce anxiety and depressive symptoms, we recommend training of non-clinical, young, and frontline doctors with adequate provision of personal protective equipment and medical facilities. The support system for the families of armed forces doctors should be enhanced too.

This study had some limitations. First, it was majorly conducted in hospitals of the armed forces of India, which limits its generalization to all doctors in the community. Secondly, this is a cross-sectional study and lacks long-/short-term follow-up. Thirdly, the tool used was for screening of psychological health and not for diagnosis. Lastly, the study was conducted within a very short time in the early phase of the pandemic, which might have caused underestimation of psychological stress.

Declaration of Conflicting Interests

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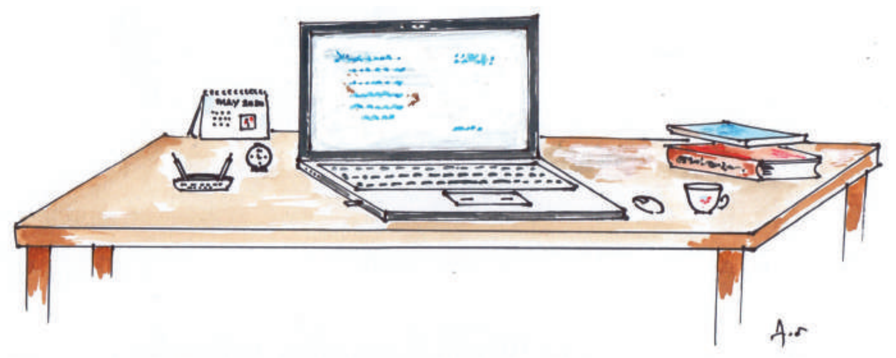
References

1. Lai CC, Shih TP, Ko WC, et al. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): the epidemic and the challenges. Int J Antimicrob Agents 2020 Mar; 55(3): 105924.
2. Ren LL, Wang YM, Wu ZQ, et al. Identification of a novel coronavirus causing severe pneumonia in humans: a descriptive study. Chin Med J 2020 May 5; 133(9): 1015–1024.
3. Wang FP, Fu X, and Chen J. Epidemiology of anxiety disorder among urban residents and their attitudes toward utilization of mental care service in central China. Med Soc (in Chinese) 2012; 25: 74–76.
4. Zhu DF, Xu SY, and Yang Q. Prevalence of anxiety, depression and influencing factors among urban residents of Zhejiang province. Chin J Public Health 2010; 26(4): 429–432.
5. Gong Y, Han T, Chen W, et al. Prevalence of anxiety and depressive symptoms and related risk factors among doctors in China: a cross-sectional study. PloS One 2014 Jul 22; 9(7): e103242.
6. Lee AM, Wong JG, McAlonan GM, et al. Stress and psychological distress among SARS survivors 1 year after the outbreak. Can J Psychiatry 2007 Apr; 52(4): 233–240.
7. Zhang C, Yang L, Liu S, et al. Survey of insomnia and related social psychological factors among medical staffs involved with the 2019 novel coronavirus disease outbreak. Front Psychiatry 2020 Apr 14; 11: 306. DOI: 10.3389/fpsyt.2020.00306
8. Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to Coronavirus disease 2019. JAMA Netw Open 2020 Mar 2; 3(3): e203976.
9. Dai Y, Hu G, Xiong H, et al. Psychological impact of the coronavirus disease 2019 (COVID-19) outbreak on healthcare workers in China 2020. medRxiv, 2020. DOI: 10.1101/2020.03.03.20030874.
10. Zigmond AS and Snaith RP. Hospital anxiety and depression scale. Psyc TESTS Dataset, 1983. DOI: 10.1037/t03589-000.
11. Sagar R, Dandona R, Gururaj G, et al. The burden of mental disorders across the states of India: the Global Burden of Disease Study 1990–2017. Lancet Psychiatry 2020; 7: 148–161.
12. Dave S, Parikh M, Vankar G, et al. Depression, anxiety, and stress among resident doctors of a teaching hospital. Indian J Soc Psychiatry 2018 Apr 1; 34(2): 163.
13. Sahasrabuddhe AG, Suryawanshi SR, and Bhandari S. Stress among doctors doing residency: a cross-sectional study at a tertiary care hospital in the city of Mumbai. Natl J Commun Med 2015; 6(1): 21–24.
14. Coomber S, Todd C, Park G, et al. Stress in UK intensive care unit doctors. Br J Anaesth 2002 Dec 1; 89(6): 873–881.
15. Lloyd S, Streiner D, and Shannon S. Burnout, depression, life and job satisfaction among Canadian emergency doctors. J Emerg Med 1994 Jul 1; 12(4): 559–565.
16. Ofili AN, Asuzu MC, Isah EC, et al. Job satisfaction and psychological health of doctors at the University of Benin Teaching Hospital. Occup Med 2004 Sep 1; 54(6): 400–403.
17. Schwenk TL, Gorenflo DW, and Leja LM. A survey on the impact of being depressed on the professional status and mental health care of physicians. J Clin Psychiatry 2008 Apr; 69(4): 617–620.
18. Vaglum P and Falkum E. Self-criticism, dependency and depressive symptoms in a nationwide sample of Norwegian physicians. J Affect Disord 1999 Jan 1; 52(1–3): 153–159.
19. Wada K, Yoshikawa T, Goto T, et al. Association of depression and suicidal ideation with unreasonable patient demands and complaints among Japanese physicians: a national cross-sectional survey. Int J Behav Med 2011 Dec 1; 18(4): 384–390.
20. Bhugra D, Bhui KS, and Gupta KR. Burnout and stress among doctors and dentists in North India. Int J Cult Ment Health 2008 Jun 1; 1(1): 24–29.
21. Atif K, Khan HU, Ullah MZ, et al. Prevalence of anxiety and depression among doctors; the unscreened and undiagnosed clientele in Lahore, Pakistan. Pak J Med Sci 2016 Mar; 32(2): 294.
22. Ferrari AJ, Charlson FJ, Norman RE, et al. Burden of depressive disorders by country, sex, age, and year: findings from the global burden of disease study 2010. PLoS Med 2013 Nov; 10(11): e1001547.
23. Picco L, Subramaniam M, Abdin E, et al. Gender differences in major depressive disorder: findings from the Singapore Mental Health Study. Singap Med J 2017 Nov; 58(11): 649.
24. Chichra A, Abhijnhan A, and Tharyan P. Job stress and satisfaction in faculty of a teaching hospital in south India: a cross-sectional survey. J Postgrad Med 2019 Oct; 65(4): 201.
25. Saini NK, Agrawal S, Bhasin SK, et al. Prevalence of stress among resident doctors working in Medical Colleges of Delhi. Indian J Public Health 2010 Oct 1; 54(4): 219.
26. Wong TW, Yau JK, Chan CL, et al. The psychological impact of severe acute respiratory syndrome outbreak on healthcare workers in emergency departments and how they cope. Eur J Emerg Med 2005 Feb 1; 12(1): 13–18.
27. Sharma S. Occupational stress in the armed forces: an Indian army perspective. IIMB Manag Rev 2015 Sep 1; 27(3): 185–195.

Ethical Considerations of Mental Health Research Amidst COVID-19 Pandemic: Mitigating the Challenges

During these difficult times of the coronavirus disease 2019 (COVID-19) pandemic, when routine clinical care has taken a back seat, it is not surprising to note that there is an almost complete suspension of research work (except those related to COVID-19). The same holds true for mental health research as well. However, times such as these call for greater prioritization of research. As the far-reaching mental health ramifications of the pandemic come to the fore, there is an urgent need to address these issues. A position paper published in *The Lancet Psychiatry* on 15th April 2020 suggests multidisciplinary collaboration and strategies to mitigate the mental health impacts both in the immediate context and the long term.[1] Various guidelines on research during an emergency such as the current pandemic suggest prioritizing research based on how essential it is, relevance to the current scenario, whether it is labor intensive, and the risk of harm vis-à-vis benefits.[2] Indian Council of Medical Research (ICMR) has a guideline for conducting research during humanitarian crises and disaster, which has addressed the ethical concerns pertaining to an epidemic like the present one.[3] An editorial in the *Nature Medicine* summarized other concerns such as drying up of funds to support further research, to support trainees, and for continuing career development, and premature termination of existing studies. It has also called for supporting scientists and future health research.[4] For this piece, we would like to discuss the ethical challenges for a specific type of health and mental health research.



Use of Information Technology in Mental Health Research

Mental health research is predominantly based on face-to-face interviews. However, such in-person communications in the context of the current pandemic would be potentially hazardous for both the participants and the researchers. An alternative solution is to conduct tele-assessments, that is, assessment of participants by a member of the research team using information technology for communication. The modes of communication could be video or chat (on video or chat platforms like Skype), audio (on the phone), or text (e.g., surveys using Google forms). Internet-based research has been classified into observational, interactive, and survey/interview-based. While observational research is the collection of information that is publicly available, interactive research is in which an investigator contacts the participants for permission to view their web content.[5] The former type of research is not particularly relevant in the Indian context (because of the lack of a public database), and the latter is not widely practiced in mental health. We would like to focus on the third type of research, that is, surveys and interviews, wherein the researchers share mailed surveys or links on social media and chat platforms, or conduct interviews on an online video platform (e.g., Zoom and Skype). However, this category of online research raises certain grave concerns related to privacy, participant recruitment, and informed consent.

Concerns of Privacy

Adequate provision to protect the privacy of the participants and the confidentiality of the data obtained is an integral part of any research involving human participants. A breach in privacy of either would pose a serious threat of exposure of sensitive and personal information or some illegal or embarrassing act.[6,7] The privacy and security threats of online video-meeting platforms (e.g., Zoom) are critical. Similar concerns also exist for social media networks (e.g., Facebook).[7] Although email communications have double-encryption, a large majority of the potential participants might not have a personal email address. Privacy threats exist in data storage and access too. Cloud could be a potential data storage space and uses double encryption. However, breach of privacy depends on the number of individuals with access to the space. Multiple researchers with access to the data repository would increase the odds of a breach in privacy and confidentiality. ICMR's ethical practice guideline discussed the measures to ensure the privacy of databases maintained in the electronic or digital format.[3] Telephonic interviews suffer from the problem of potential impersonification of participants. All these concerns would magnify in the case of a vulnerable population such as those with mental health problems, as a breach of privacy would further increase their vulnerability.[3]

Concerns About the Recruitment of Participants

Recruitment through the internet could be done using either push or pull technology. The former involves recruitment through social media. In contrast, the latter involves sending direct e-mails or text messages or having a dedicated webpage or mobile application (to be installed by the participants) for recruiting the participants. Both the categories have several limitations. In an ideal scenario, recruitment should follow the principle of justice, that is, it should be fair, and every eligible participant should have an equal chance of getting selected for the study. However, internet-based recruitment suffers from self-selection bias, and there are definite disparities in the access to internet and the expertise in handling online matters, depending on the socioeconomic and the educational backgrounds.[8] Additionally, the existence of multiple online identities, the use of pseudonyms, and the difficulty in verifying the age and demographic data could pose further challenges in internet-based recruitment.

Issues in the Informed Consent

Informed consent requires the participants' voluntary involvement in the study after weighing the potential risks and benefits. Ideally, it is a process in which the participants are provided with information clearly and concisely and they would have the time to read the text and contemplate and have their queries answered prior to consenting.[9] Implementing this is difficult on an online or digital platform, which would at best have a didactic component.[10] Wrong assessment of a participant's mental health capacity is another potential difficulty in the context of mental health research.[11] The latest guideline for biomedical and health research (2017) by the ICMR allowed online consent for "research involving sensitive data." The examples of such data cited were high-risk sexual behavior, use of contraceptives, behavior related to unsafe sexual practices, etc.[3] Therefore, informed consent obtained using online surveys, or even during a synchronous communication, for mental health research dealing with "non-sensitive" data (e.g., use of the internet during the lockdown and mental health impact of the lockdown) would be considered invalid. Moreover, the ICMR guideline identifies individuals who have mental illness as a vulnerable group and talks about empowering them to the maximum extent possible to enable them to make any decisions. Should the attempt of empowerment fail, legally authorized representatives (LAR) are to be contacted for consent.[3] Online process of obtaining informed consent complicates the application of both these aspects.

We would like to reiterate that these challenges are applicable to research among professionals as well. Online surveys using specific survey platforms or Google forms have become all the more relevant in the current context. Usually, these surveys are conducted in a specified group of professionals sharing a common characteristic (e.g., employees of a specific institute and members of a particular professional society), and in many instances, the researchers too belong to the same professional group. Despite the best intentions, it is almost impossible to protect the privacy and confidentiality of the respondents during such research. From age, demographic data, and professional affiliations, the participants' identities can be inferred even in the absence of definite personal identifiers (e.g., email ID and phone numbers). Informed consent is usually text-based and single-staged. Often, the researchers send these surveys multiple times, creating a subtle pressure on the prospective participant to respond. Sometimes, there is a direct incentive for participation (e.g., having authorship). All these are in direct contravention of the principles of informed consent.

The discussion would be incomplete without highlighting the role of the Ethics Review Boards, which, on the one hand, would have the task of ensuring a full adherence to research ethics and, on the other hand, have to minimize inadvertent delay in project approval. A recent paper from China showed that the approval rate during the COVID pandemic was significantly lower than the usual times, suggesting hasty preparation of documents.[12] We believe the journals' peer reviewers too must give additional emphasis on the ethical aspects. Internet-based research, because of its aforementioned challenges, would require special attention.

The bottom line is that information-technology-based research presents serious challenges to participants' privacy, fair opportunities for recruitment, and the process of informed consent. Mental health research has additional distinctive concerns with regard to the vulnerable population of interest and the nature of the data.

Mitigating These Challenges and a Window of Opportunity

Amidst all the hardship, pain, and suffering, the COVID-19 pandemic has presented a unique opportunity to revisit digital-platform-based research and to reorient the research ethics. Many of the issues discussed above with respect to the mode of communication are akin to those described in the telemedicine practice guideline drafted recently by the Board of Governors of the National Medical Council, India.[13] A similar guideline focusing on ethical practice in digital-technology-based research on human participants would be an important and much-needed step in this direction. At the international level, the Association of Internet Researchers published their latest guidelines this year.[14] As the nodal agency of health research in the country, ICMR might like to take the lead in drafting such a guideline. However, we acknowledge the diversity across internet cultures, values, and modes of operation, and understand the limits of a single set of guiding principles. Nevertheless, it would provide a foundation for further work. As already mentioned, mental health research would have a substantial stake in this kind of research practice. Hence, the Indian Psychiatric Society (in collaboration with other professional bodies involved in mental health research) might also consider publishing a guideline on the ethics of research based on online platforms.

As the world tries to adapt to life during and after COVID-19, an overhaul of the existing systems is inevitable. The field of research, which forms an integral part of any healthcare system, needs to adjust to these changes. A collective search for answers to the novel challenges one may encounter during the process of change is necessary to keep the system working effectively.

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References

1. Holmes EA, O'Conner RC, Perry VH, Tracy I, Wessely S, and Arseneault L. Multidisciplinary research priorities for the COVID-19 pandemic: A call for action for mental health science. *Lancet Psychiatr* [Online first]. DOI: https://doi.org/10.1016/S2215-0366(20)30168-1
2. Calain P, Fiore N, Poncin M, and Hurst SA. Research ethics and international epidemic response: The case of Ebola and Marburg hemorrhagic fevers. *Public Health Ethics* 2009; 2: 7–29.
3. Indian Council of Medical Research. *National ethical guidelines for biomedical and health research involving human participants*. New Delhi: Indian Council of Medical Research, 2017. Available from: https://www.icmr.nic.in/sites/default/files/guidelines/ICMR_Ethical_Guidelines_2017.pdf.
4. Ghebreyesus TA. Safeguard research in the time of COVID-19. *Nat Med* 2020; 26: 443.
5. Moreno MA, Goniu N, Moreno PS, and Diekema D. Ethics of social media research: common concerns and practical considerations. *Cyberpsychol Behav Soc Netw* 2013; 16(9): 708–713.
6. Buchanan E and Hvizdak E. IRBs and online surveys: Ethical and practical considerations. *J Empir Res Hum Res*. 2009; 4: 37–48.
7. Ohm P. Broken promises of privacy: Responding to the surprising failure of anonymization. *UCLA Law Rev* 2009; 57: 1701–1708.
8. Ameen S and Praharaj SK. Problems in using WhatsApp groups for survey research. *Indian J Psychiatr* 2020; 62(3): 327–328.
9. World Medical Association. WMA Declaration of Helsinki—ethical principles for medical research involving human subjects. *59th WMA General Assembly*, Seoul, Korea, 2008. Available from: www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/
10. McKee HA and Porter JE. *The ethics of internet research: A rhetorical, case-based process*. New York, NY: Peter Lang, 2009.
11. Avasthi A, Ghosh A, Sarkar S, and Grover S. Ethics in medical research: General principles with special reference to psychiatry research. *Indian J Psychiatry* 2013; 55: 86–91.
12. Zhang H, Shao F, Gu J, Li L, and Wang Y. Ethics committee reviews of applications for research studies at 1 hospital in China during the 2019 novel coronavirus epidemic. *JAMA*. Published online March 23, 2020. doi:10.1001/jama.2020.4362
13. Ministry of Health & Family Welfare. *Telemedicine practice guidelines*. New Delhi: Ministry of Health & Family Welfare, 2020. Available from: https://www.mohfw.gov.in/pdf/Telemedicine.pdf
14. Franzke AS, Bechmann A, Ess CM, and Zimmer M. Internet research: Ethical guidelines 3.0. 2020. Available from: https://aoir.org/reports/ethics3.pdf

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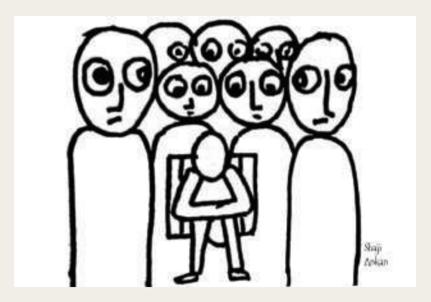
The “Untold” Side of COVID-19: Social Stigma and Its Consequences in India

Prama Bhattacharya[1], Debanjan Banerjee[2], TS Sathyanarayana Rao[3]

“Imagine a society of saints, a perfect cloister of exemplary individuals. Crimes or deviance, properly so-called, will there be unknown; but faults, which appear venial to the layman, will there create the same scandal that the ordinary offense does in ordinary consciousnesses. If then, this society has the power to judge and punish, it will define these acts as criminal (or deviant) and will treat them as such.”

—Émile Durkheim, Rules of Sociological Methods, 1895, p. 123 [1]

The Canadian sociologist Erving Goffman theorized that social stigma is an attribute or behaviour that socially discredit an individual by virtue of them being classified as the “undesirable other” by society.[2] There has been a long association of social stigma with illness. Through the process of othering, social stigma segregates the healthy from the ill. It creates stereotypes and prejudice. “Othering,” originally a philosophical concept given by Edmund Husserl, describes the reductive action of labeling and defining a person as a subordinate in terms of category.[3] This generates a “we versus they” dichotomy that helps in the establishment of a socioeconomic hierarchy. During times of social crisis (pandemics in this case), it can lead to discrimination and blame. Those who have any association with the illness are discriminated against and socially isolated, with their human rights being violated. The unknown factors about illness create fear, myths, and rumours around them that heighten social stigma. This can negatively affect the treatment and prevention of the illness. Especially, pandemics of infectious disease outbreaks have had a historical relationship with stigma and prejudice. Mary Malon, in the 18th-Century England, became infamous as “Typhoid Mary,” guilty of spreading the infection amongst affluent families, though she was unaffected. The concept of “asymptomatic carriers” came quite later; however, the textbooks still bear her name associated with an illness.[4] Transmission of infections has always been associated with “poverty, filth, and class,” to maintain a false sense of assurance and safety for the higher sections of society. The “pestilences” of bubonic plague, Asiatic flu and cholera, Middle East respiratory syndrome, and Ebola outbreak in Africa, all have been associated with polarization, racism, blame against certain ethnicities, and resultant psychological distress.[5,6] The concept of naming illnesses by the country or place of origin has been termed as “epidemic orientalism” and is considered to be a form of social labelling.[5] Even acquired immunodeficiency syndrome (AIDS) had been termed as the “Gay Plague,” being theorized as a “divine punishment” for homosexuality.[7] The tradition is reflected in the legislation of many countries that still prevent homosexual men from donating organs and blood. Research has shown that the fear and uncertainty of unknown infections affect human behavior significantly. Panic, illogical beliefs, aggression, blame, and “othering”



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are some of the unhealthy offshoots.[8] The need to hold someone accountable based on power and social hierarchy has been explained by the social attributional theories.[9] Through decades, humans have paid the price for being "social beings" by fostering hate-mongering as an inevitable accompaniment of biological disasters.

The outbreak of coronavirus disease 2019 (COVID-19) has created social stigma and discriminatory behavior towards individuals who are perceived to have any contact with the disease. This is one of the most large-scale outbreaks known to the modern world. It has affected more than 10 million globally and killed nearly 516,000—the numbers rising as we speak.[10] Pandemics such as these are much beyond just biological phenomena. They create lasting psychosocial consequences that persist longer than the infection itself. Besides the direct psychological impact of stress, fear, anxiety, and mass hysteria, COVID-19 has led to the emergence of significant stigma, "othering," prejudice, and blame that have strained both inter-regional and international relations. From the very time of its origin at Wuhan, China, the infection has been termed as "Chinese virus" or "Kung Flu," which later fostered conspiracy theories about biological warfare, which strained international relations. Ironically, social stigma has spread faster than the virus itself. This commentary briefly glances at the resultant social stigma of COVID-19 pandemic in India, the vulnerable populations, and the impact of it on the society at large. It then highlights the ways forward to mitigate this "social evil" associated with the outbreak.

The Victims of Social Stigma During the COVID-19 Pandemic

The stigma around COVID-19 stems from the fact that a lot is unknown about it. Scientists, researchers, and medical professionals around the globe are still working at a breakneck pace to figure out the strategies to deal with the novelty of this virus. The fear of the unknown has overwhelmed humankind evolutionarily. Human beings tend to distance and segregate themselves from the unknown. Deviant has been branded and stigmatized in all eras of human history, particularly in the history of medical science. Whenever there has been a lack of explanation, be it scientific or supernatural, the affected individuals have been segregated, labelled, and stigmatized, and therefore, ostracized as a consequence.

Social stigma towards the segregated appears to be normal behavior to the common mass. It gains social acceptance amidst the chaos of the unknown. Institutional segregation of those who are affected by a disease, at present COVID-19, further strengthens the stigma. We are aware of the social stigma experienced by those who are admitted to institutions for mental illness, leprosy, HIV Aids, or tuberculosis, even today.[11,12] Even the prevention of COVID-19 demands segregation; terms like quarantine, social distancing, and isolation have become an integral part of the household vocabulary. Hospitals have been allocated particularly for the treatment of COVID-19, separate laboratories been assigned, quarantine zones been set, containment zones have been created, and the country has been divided into color zones depending on the incidence rate. Indeed, these are steps to flatten the ever-rising graph. However, since a pandemic is much more than a biomedical phenomenon, all these steps have their own social implications as well. For example, the Air India crew members who brought hundreds of stranded Indians back home experienced being stigmatized by their neighbors when their homes were stamped "quarantined."[13] Similar experiences have been reported by home-quarantined individuals when the Delhi Government decided to put up notices outside their home.[11]

Incidents of social stigmatization towards those who are affected with COVID-19, including their family members, have been rampant. Individuals who have succumbed to the illness have been denied their last rites. In many cases, the families have refused to accept the bodies, and the state governments have performed the cremations instead.[14,15] As an action towards such ostracizing behaviors, some states of India even issued orders to bring criminal charges against anyone obstructing the performance of the last rites.[16] Many incidents have come to light where the survivors have been isolated by the neighborhood, forcing them to live a life that is far from ordinary. Being labelled with multiple tags like "super-spreader" only worsens their suffering.[17] The medical symptoms of COVID-19 subside, leaving behind the society to ostracize the survivors for days innumerable.

The stigma is directed not only towards those who have recovered from COVID-19, those who are undergoing treatment, or who are presumed to be affected or who have succumbed to it or their families. The brunt of social stigma is also faced by frontline workers, medical practitioners, nurses, police personnel, etc. They have been forced to leave the neighborhood and denied access to their houses and the families have been threatened. The insurmountable atrocities that they have been undergoing to win this race against the virus have been ignored. Instead, social stigma has overpowered the goodwill of those for whom they are fighting.[11] The way mental health practitioners are labelled as *paagolon ka doctor* (doctor for the mad person), the frontline workers who are tending to those affected by COVID-19 are being stereotyped against.

Social stigma towards certain marginalized groups like the homeless or the migrant laborers has also been witnessed. On returning home after months of being stranded in various parts of the country, the workers and their families have been singled out, sneered at, and harassed by the community members. At some places, they have been cast off even after completing the mandatory 14 days' quarantine.[18] Similarly, in the wake of the spurt of cases following a religious gathering in Delhi, the social media was flooded with communalistic and provocative sentiments.[19] In a country like India, with a history of multiple communal riots, such stigmatization might bear significant consequences. The Government of India issued an advisory on April 8, 2020, asking its citizens to act more responsibly in such a critical time and to refrain from stigmatizing any community or area.[20]

The "Dual" Burden: Struggle with COVID-19 and Related Social Stigma

Social stigma towards different stakeholders during a pandemic like COVID-19 might play a significant role in undermining social cohesiveness, enforcing social segregation.[21] The International Federation of Red Cross, WHO, and UNICEF issued guidance to prevent and address the social stigma around COVID-19.[21] The report identifies the impact social stigma might have on both treatment and prevention of the disease.

There have been multiple instances reported in various states of India where individuals have not reported their history of foreign travel or symptoms of COVID-19 due to the fear of facing social boycott and discrimination, leading to low testing and high mortality rates.[22,23] According to public health experts, the social stigma associated with being diagnosed is creating a fear among the public and is acting as a deterrent to the effective management of the disease, particularly in the urban setup.

The stigmatization is taking a heavy toll on the mental health of the frontline workers as well as those who are recovering or have survived the disease. Media has reported the influence of isolation and discrimination on suicides in India.[24] Experiencing isolation and stigma from social boycotting and religious discrimination can increase the risk of loneliness and self-harm.[25] Data related to suicides during the COVID-19 period in India is scarce. As per the cases reported in the media, 168 out of 326 non-coronavirus-related deaths in India (data till May 9, 2020) are due to suicide[26]; however, the source of this statistics has not been clearly mentioned. Reverse migration, the two-months-long lockdowns, and fear of job loss are making individuals vulnerable to self-harm and depression. Social stigma, as well as the self-inflicted stigma associated with the pandemic, is further catalyzing the process. However, these are largely media reports that can have their inherent bias. Systematic population-based studies over the next few months after the pandemic will help us estimate the actual risk of suicide attributable to COVID-19.

In an unprecedented event, hundreds of nurses (more than 350, as on May 17, 2020) quit their job from multiple private hospitals in West Bengal in two days.[27] Most of these nurses belong to other states, and they started returning to their native states. While the experts are still at a loss in understanding what led to such a mass resignation, fear of treating those who are affected with COVID-19 and the social stigma associated might have encouraged such unfortunate behavior.

Mitigating the Social Stigma: The Way Forward

Social stigma might threaten the basic structure based on which a society grows. In times like this, when "physical distancing" and "physical isolation" are much-required steps to keep oneself and the loved ones safe and healthy, society might need to act together to stand against all things, be it COVID-19 or the stigma associated, that challenge its cohesiveness.

Wording Sensitively

Historically, it has been seen that the terms that are used in connection to a disease, *pagal* (mad) for individuals with mental illness or *pagalkhana* for hospitals treating mental illness, can possibly shape the lens through which society is likely to perceive that disease. Illness creates othering. Coining terms to address those who are affected with COVID-19, or for that matter, any illness, widens the gap between self and others, instead of bridging it. It thus becomes critical to consider the words that are used in relevance to COVID-19 by not only medical professionals but also organizations like WHO and UNICEF, public directives and notices, promotional campaigns and advertisements, and media.[20] For example, "a person suffering from COVID" is more appealing than "COVID positive." Terms like "coronized," used in casual humor, can be perceived as labelling. Acknowledging the affected as victims of the pandemic, rather than the source, is helpful. Also, the frontline COVID warriors need community support and encouragement rather than discrimination.

Amplifying the Voices

It is relevant to involve and amplify the voices of those who are affected by COVID-19 the most, to develop stigma-mitigating strategies. It would involve those who have recovered from it, those who are undergoing treatment, their families, families of those who have succumbed to the disease, as well as frontline workers. Their lived experiences of COVID-19 and other intersecting stigmas can contextually inform public health strategies to mitigate stigma. Furthermore, the stories of recovery are likely to create hope in public that might help individuals come out with their symptoms instead of hiding them. As identified earlier, social stigma is deterrent to testing for the disease. Thus, learning from the survivors that recovery is possible would encourage people to deal with this stigma.

Furthermore, the everyday struggle of the frontline workers should also be focused on. Their experiences, when remaining unheard, might not generate the gratitude that they deserve from society. The life risk that is undertaken by them to provide us with a safe and healthy society stays in the background, while we express stigmatized behavior towards them.

Acting Responsibly

It is not only on the government and frontline workers to act responsibly in a critical circumstance like this. Apart from them, political leaders, media, and, most importantly, the citizens need to act responsibly and do their parts sincerely in fighting the pandemic and related stigma.

One must stay informed. Stigma can be heightened by insufficient knowledge. It is thus necessary to spread the knowledge about COVID-19 (e.g., what causes it, how it is transmitted, treatment, and prevention) without using medical jargons. While social media can be a useful platform to reach the maximum people while lockdown is practiced, its use must be done responsibly. In the past, the misuse of social media had created further stigma than reducing it.[28] At the same time, journalistic reports that focus on an individual's behavior or role in "spreading the virus" might create stigma among the public. Such publication must be dealt with sensitively, keeping in mind the disruption it might create in the life of those who are involuntarily forced under societal scrutiny. The Ministry of Health and Family Welfare, Government of India, has also issued a directive that highlights the importance of the responsible role the citizens need to play to empower the community to respond effectively and appropriately in the face of adversities.[29] Knowledge, attitudes, and practice (KAP) can actually be improved through community awareness. Based on the Zika outbreak model, Banerjee and Nair have proposed a community-based psychosocial toolkit that involves all levels of health care, with an active health-media liaison, to improve the information–education–communication (IEC) activities during the COVID-19 pandemic.[30]

Engaging social influencers such as religious leaders and celebrated actors and cricketers, and their take on COVID-19 and stigma, might also be influential in fighting stigma. The recently launched "Break the Stigma" campaign, featuring Amitabh Bachchan, is one such initiative undertaken by the Government of India.[31] Such steps would not only ease the struggle of the survivors against the stigma but would also deal with the infodemic of misinformation and rumor that is playing a crucial role in creating stigma and racism. Understanding the crisis in humanitarian perspectives is a collective responsibility. The "we versus they" dichotomy mentioned before can only add to a set of common processes and conditions that amplify group-based inequalities and marginality. Knowledge, awareness, care, and empathy are probably the generic but neglected pillars to change "othering" into inclusiveness, collectiveness, and belonging for better coping and resilience against the ongoing crisis.

Conclusion

At this juncture, when the number of individuals affected with COVID-19 has crossed six lakhs in India,[10] we are in dire need of more than just information to reduce the tension related to the pandemic and to mitigate the stigma surrounding it. Multilevel strategies are required to address the underlying stigma drivers and facilitators.[32] An intersectional lens can improve the understanding of the ways in which COVID-19 stigma might be intersecting with gender, race, immigration status, and health status, among others.[33] We had long taken the shelter of science to understand diseases and their pathogenesis. But, unfortunately, stigma exists beyond scientific understanding of diseases, at all societal levels. This is aided by misinformation and xenophobia during pandemics. Certain sections of the society are already vulnerable—for them, being targeted by society is a "dual pandemic" apart from COVID-19 itself. Very few times in history has the human race faced such uncertainty about itself. The pandemic will eventually cease, but the resultant stigma might prevail in the society for times unknown. Historically, pandemics have flared up hate but not "caused" it. It is unfortunate to see a civilization dealing better with medical rather than social management of infectious outbreaks. As COVID-19 is still in its early stages, unchecked stigma can lead to dire psychosocial comorbidities, the risk of psychiatric disorders and suicidality being one of them.[21] Pandemics or epidemics do not discriminate based on sociopolitical, ethnic, or economic divisions. More than ever, society requires its solidarity and cohesiveness to deal with this pandemic. By reducing the stigma around this pandemic, its prevention, and containment, we might be able to develop immediate and long-term strategies to build empathy and social justice for the days ahead. COVID-19 just gives us one more such opportunity to strengthen our social resilience

References

1. Durkheim E. *Rules of sociological method*. New York, NY: Simon and Schuster, 1895.
2. Goffman E. Stigma and social identity. in Rainwater L (ed), *Deviance and Liberty, Social Problems and Public Policy 1974*. New York: Routledge; 1974.
3. Canales MK. Othering: Toward an understanding of difference. Adv Nurs Sci 2000 Jun 1; 22(4): 16–31.
4. Leavitt JW. *Typhoid Mary: captive to the public's health*. Boston, MA: Beacon Press, 2014 February 18.
5. Anderson W. Immunities of empire: Race, disease, and the new tropical medicine, 1900–1920. Bull Hist Med 1996 Apr 1; 70(1): 94–118.
6. Davtyan M, Brown B, and Folayan MO. Addressing Ebola-related stigma: Lessons learned from HIV/AIDS. Global Health Action 2014 Dec 1; 7(1): 26058.
7. Van Wyngaard A. Towards a theology of HIV/AIDS. Verbum et Ecclesia 2006 Jan 1; 27(1): 265–290.
8. Manfredi P, and D'Onofrio A, eds. *Modeling the interplay between human behavior and the spread of infectious diseases.* Berlin: Springer Science & Business Media, 2013 Jan 4.
9. Kelley HH. Attribution theory in social psychology. In: Levine D (ed), *Nebraska symposium on motivation 1967*. Lincoln: University of Nebraska Press, 1967.
10. World Health Organization. *Coronavirus disease 2019 (COVID-19). Situation Report 163.* Geneva: World Health Organization, 2020.
11. Bharat S. A systematic review of HIV/AIDS-related stigma and discrimination in India: Current understanding and future needs. SAHARA J 2011; 8(3): 138–149.
12. Trani JF, Bakhshi P, Kuhlberg J, et al. Mental illness, poverty and stigma in India: A case-control study. BMJ Open 2015 Feb 1; 5(2): e006355.
13. Krishnatray P. COVID-19 is leading to a new wave of social stigma. *The Wire* [Internet]. May 12, 2020 [cited May 17, 2020]. https://thewire.in/society/covid-19-social-stigma
14. Sharma S. Kin of COVID-19 dead in Punjab refuse to attend last rites. *DownToEarth* [Internet]. April 10, 2020 [cited May 17, 2020]. https://www.downtoearth.org.in/news/health/kin-of-covid-19-dead-in-punjab-refuse-to-attend-last-rites-70379
15. Bajpai N. Noida DM performs last rites of COVID-19 victim as relatives refuse to receive body. *The New Indian Express*. May 13, 2020. https://www.newindianexpress.com/nation/2020/may/13/noida-dm-performs-last-rites-of-covid-19-victim-as-relatives-refuse-to-receive-body-2142919.html
16. Chavan V. Obstruct last rites of COVID-19 victims, face criminal charges. *Pune Mirror* [Internet]. May 8, 2020 [cited May 17, 2020]. https://punemirror.indiatimes.com/pune/civic/obstruct-last-rites-of-covid-19-victims-face-criminal-charges/articleshow/75610268.cms
17. Ram T. Branded "super spreader," family of Karnataka COVID-19 victim battles stigma. May 13, 2020 [cited May 17, 2020]. https://www.thenewsminute.com/article/branded-super-spreader-family-karnataka-covid-19-victim-battles-stigma-124482

18. Kumar C and Mohanty D. Migrant workers battle stigma, bias back home. *Hindustan Times* [Internet]. May 11, 2020 [cited May 17, 2020]. https://www.hindustantimes.com/india-news/migrant-workers-battle-stigma-bias-back-home/story-ouuRSEZfoickVOrPU2agGL.html
19. Krishnan M. Indian Muslims face renewed stigma amid COVID-19 crisis. Deutsche Welle: Made for Minds [Internet]. May 14, 2020 [cited May 18, 2020]. https://www.dw.com/en/indian-muslims-face-renewed-stigma-amid-covid-19-crisis/a-53436462
20. *The Economic Times*. Do not label any community or area for spread of COVID-19: Government. *The Economic Times* [Internet]. Press Trust of India; 2020 Apr 8 [cited May 18, 2020]. https://economictimes.indiatimes.com/news/politics-and-nation/do-not-label-any-community-or-area-for-spread-of-covid-19-government/articleshow/75051453.cms?from=mdr
21. UNICEF. Social stigma associated with the coronavirus disease (COVID-19) [Internet]. UNICEF [cited May 18, 2020]. https://www.unicef.org/documents/social-stigma-associated-coronavirus-disease-covid-19
22. *Hindustan Times*. Social stigma, low testing behind WB's high Covid-19 mortality rate: Report. *Hindustan Times* [Internet]. 2020 May 8 [cited May 18, 2020]. https://www.hindustantimes.com/kolkata/social-stigma-low-testing-behind-wb-s-high-covid-19-mortality-rate-report/story-VGGBAEy2IXueEplUxOGX3N.html
23. NDTV.com. Stigma reason for high COVID-19 mortality rate in Ahmedabad: AIIMS Chief. NDTV.com [Internet]. Press Trust of India; 2020 May 10. https://www.ndtv.com/india-news/coronavirus-stigma-reason-for-high-covid-19-mortality-rate-in-ahmedabad-aiims-chief-2226177
24. Banerjee A. Anxiety over COVID-19 leads to Phagwara woman's suicide. *The Tribune* [Internet]. 2020 Apr 6 [cited May 18, 2020]. https://www.tribuneindia.com/news/punjab/anxiety-over-covid-19-leads-to-phagwara-womans-suicide-66466
25. *The Times of India*. Madurai: Stigma over coronavirus testing blamed for man's suicide. *The Times of India* [Internet]. 2020 Apr 2 [cited May 18, 2020]. https://timesofindia.indiatimes.com/city/madurai/stigma-over-covid-testing-blamed-for-mans-suicide/articleshow/74939681.cms
26. Srivastav A. 168 of 326 non-coronavirus deaths till 9 May were suicides, finds report: COVID-19 lockdown may cost us dearer than economy, warn psychiatrists. *The First Post* [Internet]. 2020 May 13 [cited May 18, 2020]. https://www.firstpost.com/health/coronavirus-outbreak-168-of-326-non-coronavirus-deaths-till-9-may-were-suicides-finds-report-covid-19-lockdown-may-cost-us-dearer-than-economy-warn-psychiatrists-8357451.html
27. *India Blooms*. Kolkata nurse crisis: 169 more private-hospital nurses resign, leave West Bengal. *India Blooms* [Internet]. 2020 May 16 [cited May 17, 2020]. https://indiablooms.com/news-details/N/61686/kolkata-nurse-crisis-169-more-private-hospital-nurses-resign-leave-west-bengal.html
28. Betton V, Borschmann R, Docherty M, et al. The role of social media in reducing stigma and discrimination. Br J Psychiatry 2015 Jun; 206(6): 443–444.
29. MoHFW. Addressing social stigma associated with COVID-19 [Internet]. MoHFW. [cited May 18, 2020]. https://www.mohfw.gov.in/pdf/AddressingSocialStigmaAssociatedwithCOVID19.pdf
30. Banerjee D and Nair VS. Handling the COVID-19 pandemic: Proposing a community based toolkit for psycho-social management and preparedness. Asian J Psychiatry 2020 May 7; 51: 102152.
31. Tewari S. Govt launches #Breakthestigma campaign with Amitabh Bachchan for covid survivors. livemint [Internet]. 2020 May 12 [cited May 18, 2020]. https://www.livemint.com/industry/media/govt-launches-breakthestigma-campaign-with-amitabh-bachchan-for-covid-survivors-11589274819182.html
32. Stangl AL, Earnshaw VA, Logie CH, et al. The health stigma and discrimination framework: A global, crosscutting framework to inform research, intervention development, and policy on health-related stigmas. *BMC Med* 2019 Dec 1; 17(1): 31.
33. Logie CH and Turan JM. How do we balance tensions between COVID-19 public health responses and stigma mitigation? Learning from HIV research. AIDS Beh. 2020 Apr 13: 1–4.

Lived Experiences of COVID-19 Intensive Care Unit Survivors

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The COVID-19 pandemic can be considered one of the worst 'nightmares' of the century for both the general public as well as the health care workers (HCWs). Every day the world is seeing an increase in the death tally, despite all possible steps such as lockdown and other infection control measures.[1] Even though about 80% of COVID-19 cases remain asymptomatic or have minimal upper respiratory symptoms, about 5% become seriously ill, requiring admission to the intensive care units (ICUs) and mechanical ventilation.[2]

Being admitted in an ICU setting has been considered a traumatic event, and the existing literature suggests that ICU survivors suffer from several psychological/mental health problems, the most common ones being post-traumatic stress disorder (PTSD), depression, anxiety disorders, and cognitive impairment.[3,4] A diagnosis of COVID-19 infection, by itself, leads to significant anxiety and distress in the individual[5], which may be amplified by being admitted to an ICU.[6] This may be attributed to reports of mortality related to COVID-19 infection.[7,8] These detailed descriptions often induce more anxiety in the minds of the COVID-19 sufferer battling for life in the ICUs.

A few blogs and newspaper articles mention the long-term disability and prolonged recovery in COVID ICU survivors,[9,10] and some news reports are also available.[11] In this context, we discuss the lived experiences of three persons who were admitted to the ICU with COVID-19, all of whom had given verbal consent for publishing the same.

Narrative Experience-1: *"Will I Be Able to Survive, Will I Be Able to See my Family Again?"*

A 52-year-old lady, diagnosed with COVID-19, who had uncontrolled diabetes mellitus, was initially admitted in our COVID isolation ward and developed shortness of breath within hours of admission, with a drop in her oxygen saturation,[12] for which she had to be shifted to the COVID ICU. In the ICU, she was stabilized with nasal prongs and did not require ventilator support. However, she was found to be extremely anxious, was sweating despite maintaining normal oxygen saturation, and would appear worried. She was not able to sleep properly and would frequently ask "Will I be able to survive? Will I be able to meet my family again?" She would ask the HCWs to inform her if she was going to die soon, so that she can have a last-minute conversation with her husband, and would often become tearful. She would be comforted and reassured by the HCWs, which would make her feel relaxed for a few minutes. However, this would immediately be followed by re-emergence

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of the symptoms she had prior to being reassured. She remained in the ICU for five days in the same state. After that, she was shifted out of the ICU, following which her anxiety reduced, but she continued to have sleep disturbances and, therefore, was referred to the psychiatric services for telephonic consultation.

On probing deeper during the consultation, she revealed that after she came to know about the diagnosis of COVID-19, she developed severe anxiety and, after a few hours, had shortness of breath. Thereafter, she was admitted to the ICU owing to the oxygen saturation dropping to 93%. She reported that as she had seen in the news and read in the newspapers that having shortness of breath and being supported on oxygen were some of the signs of severe COVID-19, and after she had to be shifted to ICU, she started having recurrent thoughts that she was going to die. She further described that she had thoughts of being intubated, catheterized, tracheotomized, and so on, which were based on her knowledge about what usually happens with patients admitted to ICU, which led to further increase in the anxiety, shortness of breath, feeling of choking, and sense of being close to death. Whenever the HCWs would approach her, it would lead to a further increase in the anxiety and the apprehension of being intubated. Further, she reported that whenever she was approached for any kind of blood investigation, she would feel that she was very close to dying. After coming out of the ICU, she continued to have these memories and, resultantly, continued to remain anxious and, thus, was not able to sleep. Based on these, a possibility of acute stress reaction was considered.

Supportive sessions were started by a psychiatrist, with eight years of experience, on a daily basis for 15–20 minutes. Additionally, she was asked to maintain a schedule, keep herself active in the room, maintain sleep hygiene, communicate with her family members using audio and video calls, and follow her religious practices. Over the next 3-4 days, her anxiety came down, and her preoccupation with the experience of ICU reduced. During this period, her son, who was also diagnosed with COVID-19, was shifted close to her room, which led to further reduction in her anxiety. At the time of writing this report, she was currently waiting for her COVID-19 status to be declared negative so that she can be discharged. In the meanwhile, the psychological interventions have been planned to be continued. No psychopharmacological agents were started.

Narrative Experience 2: *"Happy that I Am with My Wife in ICU, We Will Die Together"*

A 58-year-old man, who was diagnosed with diabetes mellitus and had morbid obesity, was shifted from the isolation ward to the COVID ICU upon a drop in oxygen saturation below 92%. His wife was admitted to COVID ICU three days prior. He improved with oxygen support and conservative management and was again shifted back to the isolation ward after three days of ICU stay.

In his routine telephonic psychiatric evaluation, he reported that earlier he was anxious when his wife was shifted to the ICU and would worry if he would ever be able to see her again; this would lead to frequent night time awakenings. Later, when he was informed that he too would be shifted to the ICU, he had mixed feelings. He experienced rise in anxiety with respect to what is going to happen next, what will the doctors do with him—will they insert various tubings in his nose and mouth, etc., yet somewhere he felt relieved too, as shifting to the ICU was giving him an opportunity to have a glimpse of his wife: "I was happy that I am going to meet my wife; I will die with my wife with whom I have spent my entire life. Would pray to God for death before my wife, so that I don't have to see her dying in ICU (on the bed next to mine) and at the same time would thank God for sending me near my wife at this critical point of life, which I had never imagined." He further reported having thoughts that the ICU bed was his death bed. He would get thoughts about whether they both would be cremated with respect by their family members or not. These thoughts were based on his knowledge from the media reports of the piling of dead bodies of COVID patients in European countries, due to the inability of the family members to join the death rituals.[13] However, after coming out of the ICU and knowing about the improvement in his wife's condition in the ICU, he reported that he was quite hopeful of recovery and was less worried. At the time of writing this report, both the partners were stable physically and were waiting for their discharge. No specific psychiatric diagnosis could be ascertained based on the current nosological system. The plan ahead is to follow up with both of them for the emergence of any mental health morbidity and address their mental distress.

Narrative Experience 3: *"I Am Not Afraid of My Death, but What Will Happen to My Children and Wife After Me?"*

A 40-year-old male, diagnosed with diabetes mellitus, was admitted to COVID ICU upon a drop in his oxygen saturation to 90%. His eight-year-old daughter and 62-year-old mother were also admitted with him in the isolation ward. After six days of stabilization with oxygen and conservative management, he was shifted back to the isolation ward.

On routine telephonic mental health screening, he described that when he was shifted to the ICU, he started getting recurring thoughts that "my future is doomed; I may die or may get paralyzed; I may be bedridden for my entire life." He further reported that he was not afraid of dying but was worried about his family—would get recurring thoughts related to the future of his family and see images of his children and wife crying whenever he would try to sleep. He would be worried about their situation and future after his death. All of this would lead to severe anxiety. He would try to cope with his anxiety and worries by chanting the name of God, which would help him to ward off these negative thoughts. He would recollect the various investments and insurance policies he had made and wonder if he would be able to tell about them to his wife before his death. He would frequently ask the HCWs if he would survive or not. He would ask to be allowed to make a last call to his wife, to give her the details of his investments. The treating team would reassure him. He reported having many sleepless nights in ICU but, later on, he was hopeful of recovery, and upon being shifted back to ward, he was relaxed. However, he reported that he would never be able to forget those few days in the ICU and was quite thankful to the entire team of HCWs.

No specific psychiatric diagnosis could be ascertained based on the current nosological system. He had been discharged after being tested negative for COVID-19 after a hospital stay of 18 days and is being followed-up.

Discussion

These three narratives of lived experiences of the COVID-19 ICU survivors depict the mental agony they went through upon being admitted to the ICU. A few studies that explored the experiences of ICU survivors (non-COVID/general ICU patients) reported being bedridden, pain, general discomfort, daily needle punctures, family worries, fear of death, and uncertainty about the future as some of the common stressful experiences.[14] Some studies have also documented delusional memories (mostly related to delirium).[15]

However, when we compare the experiences documented in this report, it is evident that the experiences of COVID-19 ICU survivors had predominant themes of fear of being intubated, dying alone, or being away from family; concern whether they will be given respect after their death or not; feeling insecure about their families if they die; wish for a death prior to their near ones (admitted in the same ICU) and; worrying about the family. The different new experiences (other than those usually reported) could be because of the hype of information about high mortality rates of COVID-19, which induces a significant fear in the mind of people diagnosed with the disease and gets further exacerbated when they are shifted to the ICU. Further, none of the patients had an earlier experience of being admitted in an ICU setup, which could have possibly increased their anxiety in the background of COVID-19-related anxiety.

Further, in ICUs, generally, caregivers are allowed to meet the patient from a few minutes to a few hours a day, but in the case of COVID ICUs, considering the risk of infection, family members are not allowed to visit. This further adds to the fear and mental trauma of the COVID ICU patients. Fortunately, none of the above three patients required mechanical ventilation and they recovered quickly. Therefore, these lived experiences may not be generalized to all COVID ICU survivors.

These cases suggest that there is a pressing need to evaluate all the COVID survivors for the psychological consequence of their hospital stay. Another fact, apparent from the description of the first case, is that, possibly, the patient have had a panic attack, which was considered as the reason for the worsening of her physical health status resulting in ICU admission. Hence, all patients admitted to the COVID ward and ICU should be routinely screened by mental health professionals, telephonically or by video calling, for any emerging mental health issues. These must be addressed on priority in order to prevent apparent worsening of the clinical condition.

Although we assessed these patients very early during their recovery from the COVID-19, it can still be said that the narrative provided by the patients was retrospective and could have some amount of recall bias.

This case series of narrative experiences highlights the importance of evaluating the experiences of COVID ICU survivors, which may be different from those of general ICU survivors in terms of themes and lived experiences. The current ICU management recommendations of COVID-19 should also include psychological support, which is equally important for the individuals admitted into ICUs.[12]

Based on the findings, it can be suggested that all the patients admitted to the COVID ward should be counselled about the possible outcomes, with a special focus on providing information about the fact that shifting to ICU does not necessarily mean death. The decision to shift to ICU is based on their physical parameters. Further, they should be informed that all the patients shifted to ICU are not necessarily intubated. These can help in allaying the anxiety, as COVID-19 is associated with a fear of death.

Declaration of Conflicting Interests

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References

1. World Health Organization. Coronavirus [Internet; cited April 15, 2020]. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019
2. Sheth H. 80 per cent Covid-19 cases are mild or asymptomatic, there's no need to panic: Health Ministry [Internet]. Business Line, 2020 [cited May 5, 2020]. Available from: https://www.thehindubusinessline.com/news/80-per-cent-covid-19-cases-are-mild-or-asymptomatic-theres-no-need-to-panic-health-ministry/article31327625.ece
3. Davydow DS. The burden of adverse mental health outcomes in critical illness survivors. Crit Care 2010; 14(1): 125.
4. Kiekkas P and Aretha D. Psychiatric long-term complications of intensive care unit survivors. Crit Care Med 2011; 39(7): 1852–1853.
5. Huang Y and Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: A web-based cross-sectional survey. Psychiatry Res 2020; 288: 112954.
6. Bhatraju PK, Ghassemieh BJ, Nichols M, et al. Covid-19 in critically Ill patients in the Seattle region—case series. N Engl J Med [Internet; cited April 30, 2020] 2020; 382: 2012–2022. Available from: https://www.nejm.org/doi/full/10.1056/NEJMoa2004500
7. Kapoor C. COVID-19 in India: Mishandling infected dead bodies spell anxiety [Internet; cited April 30, 2020]. Available from: https://www.aa.com.tr/en/asia-pacific/covid-19-in-india-mishandling-infected-dead-bodies-spell-anxiety-/1778602
8. Das S. Coronavirus death in India: How to handle Covid-19 dead bodies [Internet; cited April 30, 2020]. India Today. Available from: https://www.indiatoday.in/information/story/coronavirus-death-india-how-handle-covid-19-dead-bodies-1657799-2020-03-20
9. Hamilton J. After the ICU, many COVID-19 survivors face a long recovery [Internet; cited April 30, 2020]. NPR.org. Available from: https://www.npr.org/sections/health-shots/2020/04/21/840343240/after-the-icu-many-covid-19-survivors-face-a-long-recovery
10. Servick K. For survivors of severe COVID-19, beating the virus is just the beginning [Internet; cited April 30, 2020].

Sci. AAAS 2020. Available from: https://www.sciencemag.org/news/2020/04/survivors-severe-covid-19-beating-virus-just-beginning

11. ABC News. Recovering coronavirus patient talks about ICU experience: "I owe my life to a ventilator" [Internet; cited May 5, 2020]. ABC News. Available from: https://abcnews.go.com/US/recovering-coronavirus-patient-talks-icu-experience-owe-life/story?id=70003513
12. Phua J, Weng L, Ling L, et al. Intensive care management of coronavirus disease 2019 (COVID-19): challenges and recommendations. Lancet Respir Med [Internet; cited April 29, 2020] 2020. Available from: https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(20)30161-2/abstract
13. Bettiza S. Why families in Italy can't say goodbye to the dead [Internet; cited May 5, 2020]. BBC News; 2020. Available from: https://www.bbc.com/news/health-52031539
14. Pieris L, Sigera PC, De Silva AP, et al. Experiences of ICU survivors in a low middle income country: A multicenter study. BMC Anesthesiol 2018; 18(1): 30.
15. Tembo AC, Parker V, and 'Higins I. The experience of delusional memories in ICU survivors-findings from a larger phenomenological study. Aust Crit Care 2017; 30(2): 131.

Adjuvant Trazodone for Management of Protracted Delirium Tremens

Sir,

Delirium tremens (DT) is a serious complication of alcohol withdrawal and without proper treatment, can lead to mortality in up to 20% of the patients.[1] DT usually starts around 48–72 hours after the last drink and subsides within a week.[1] A small proportion of patients can have protracted DT, with delirium lasting for more than 10 days.[2] When such a case is further complicated by a poor response to benzodiazepines (BZDs), the first-line drugs for DT, it poses a significant management challenge. Most of the studies in the past have used barbiturates, propofol, or antiepileptics in the management of protracted DT. However, these agents can lead to significant side effects. Trazodone, which is an alpha-1 receptor antagonist, 5-HT2A antagonist, and a sedative at lower doses, has not been tried for management of DT in the literature. In this case report, we present the successful management of a patient with alcohol dependence who developed protracted DT and had only a partial response to BZDs but responded to trazodone.

Case Summary

A 22-year-old married male visited our hospital with a history of alcohol use for eight years and daily drinking for the past four years in a dependent pattern. There was no history of complicated withdrawals either in the past or in the family. The patient had nicotine dependence but did not use any other psychoactive substances. In the past year, he had been consuming 3–4 bottles of local liquor per day. Due to the high dose of alcohol, and an inability to abstain on outpatient treatment, he was admitted. He had consumed alcohol about 7 hours before the admission.

Physical examination revealed bruises on the forehead due to physical fights under intoxication two days before admission. However, there was no history of ENT bleed/loss of consciousness/seizures following the fight. There were no other major findings on physical examination.

After admission, his withdrawals were monitored using the Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised (CIWA-Ar) scale. The baseline CIWA-Ar score on the first day was 11. At admission, he had moderate tremors in both hands when he held his arms extended. The other alcohol withdrawal symptoms at the time of admission were mild anxiety, nausea, increased pulse rate (128/min), and headache. He was oriented to time, place, and person. Based on the CIWA-Ar score monitoring, he was administered 25 mg of diazepam orally on the first day. On the second day, he had disorientation to time lasting for one hour and required 90 mg of diazepam orally. On the third day, his symptoms improved, with no disorientation, and the same dose of diazepam was continued orally. However, on the fourth day, he again had disorientation, visual hallucinations, and delusion of persecution, lasting for about 12 hours. As his liver function test was deranged (total bilirubin: 2.99; aspartate aminotransferase (AST): 106 IU; alanine aminotransferase (ALT): 161 IU; protein: 7.6 g/dl; albumin: 4.5 g/dl; globulin: 3.1 g/dl), diazepam was stopped and shifted to lorazepam orally. To rule out any liver disease or infection, USG abdomen and tests for HIV, hepatitis B, and hepatitis C were also done, which came out to be normal. Investigations to rule out other causes of delirium, namely CT Head, MRI brain, blood sugar, serum electrolytes, and kidney function test, were normal. He was given lorazepam 4 mg every 30 minutes, and his symptoms were monitored. On the fourth day, he required 40 mg of lorazepam (12 mg by intravenous injection route and the remaining 28 mg by oral route in the whole day) along with 6 mg of haloperidol (intramuscular route—initially 1 mg was given, and as the agitation was severe and uncontrollable, further 5 mg was given after 1 hour by intramuscular route) to control agitation and psychotic symptoms. He maintained well on the fifth day with 40 mg of lorazepam orally but again had intermittent disorientation and visual hallucinations on the sixth day, requiring a further increase in the lorazepam dose. However, he did not have any episodes of persecutory delusions from the fifth day onwards. As seen in **Table 1**, this pattern repeated—each time after an increase in lorazepam dose, his sleep improved and hallucinations and disorientation decreased. However, improvement remained for 1 to 2 days only, and he again had reduced sleep and worsening of disorientation, even with the same lorazepam dose. As he was neither very agitated nor drowsy, we did not shift him to the ICU setting. As his disorientation did not respond completely to an increasing dose of lorazepam, we could not start tapering BZDs. His liver function test gradually improved and after around two weeks of admission, the values were as follows: total bilirubin: 0.4 mg/dl; AST: 49 IU/L; ALT: 64 IU/L; protein: 7.0 g/dl; albumin: 4.3 g/dl; globulin: 2.7 g/dl. After around one week of normalization of bilirubin and improvement in SGOT and SGPT as above, we added trazodone 50 mg orally on the 20th day of admission, to improve his sleep. Following this, there was a dramatic improvement in his clinical condition, as can be seen from **Table 1**. He slept for nearly 11 hours, and his disorientation and hallucinations completely disappeared. We started tapering the lorazepam dose after two days of observation. As trazodone is hepatotoxic, we monitored his LFT after one week when it was found to be normal (bilirubin: 0.3 mg/dl; SGOT: 40 IU/L; SGPT: 38 IU/L; protein: 7.0 g/dl; albumin: 4.1 g/dl; globulin: 2.9 g/dl). He was discharged after 36th day on lorazepam 4 mg, disulfiram 250 mg, and naltrexone 50 mg. Lorazepam was later completely tapered and stopped on an outpatient basis. Trazodone was abruptly stopped after 35 days of discharge, with close follow up of the patient, and there was no sleep distur-

TABLE 1.

Clinical Features and Medication Dose

Day	Sleep (hours (hrs))	Visual Hallucination	Disorientation	CIWA-Ar	MMSE	Lorazepam Equivalent (Oral Route Except Where Another Route Is Mentioned Specifically) in mg	Haloperidol (Oral Route Except Where Another Route is Mentioned Specifically) in mg
1		No	No	11	–	5	–
2		No	Yes (1 hr)	17	–	18	–
3	5	No	No	16	24	20	
4	On & off	Yes (12 hrs)	Yes (12 hrs)	18	19	40 (12 mg by iv route and rest by oral route)	6 (im route)
5	6	No	No	7	17	40	–
6	7	Yes (intermittent)	Yes (1 hr)	–	–	44	–
7	6	Yes (intermittent)	Yes (1 hr)	8,5 & 17	24	44	–
8	3	Yes (3 hrs)	Yes	3	24	44	1
9	3	Yes (15 hrs)	Yes	5 & 3	25	48	1
10	6	Yes (intermittent)	Yes (intermittent)	5	18	48	1
11	3	Yes (intermittent)	Yes (intermittent)	3	29	52	1
12	6	Yes (intermittent)	Yes (intermittent)	0	24	52	1
13	2	No	Yes (6 hrs)	3	26	54	1
14	6	No	Yes (10 min)	0	30	54	1
15	5	No	Yes (1 hr)	0	30	54	1
16	2	No	Yes (6 hrs)	3	26	56	1
17	7 ½	No	Yes (8 min)	3	30	56	1
18	8	No	Yes (8 min)	3	28	56	1
19	4	No	Yes (2 hrs)	3	30	58	1.5
20[a]	4	No	Yes (10 min)	3	30	58	1.5
21	11	No	No	3	30	58	1.5
22	13	No	No	2	30	54	1. 5
23	10	No	No	2	30	50	Stopped
24	10	No	No	0	30	46	–
25	11	No	Yes (10 min)	0	30	46	–
26–36	8–11	No	No	0	30	44–4[b]	–

[a]Tablet trazodone 50 mg, added on the night of Day 20, was continued till around 35 days after discharge (total of 50 days). [b]Lorazepam dose tapered gradually by 4 mg daily from Day 26 to Day 35. CIWA-Ar: Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised; MMSE: Mini Mental State Examination.

bance reported after that. He remained abstinent for two months, following which he relapsed again. His compliance to treatment has been consistently poor after his relapse, and he is currently lost to follow up.

Discussion

In our patient, delirium started on the second day of alcohol withdrawal and lasted for 19 days. Even though the symptoms responded to high-dose BZDs, the response was incomplete, and he required gradually increased doses of lorazepam. Previously reported cases with protracted DT usually had medical co-morbidities[3] and required ICU setting. However, in our case, there was no major medical co-morbidity.

Persistence of DT despite high-dose BZDs is termed as refractory DT, though there is no standard definition. One study considered patients with DT requiring up to 2000 mg of BZDs without effect on sleep as refractory DT.[4] Another study reported persistence of withdrawals despite 10 mg or more lorazepam equivalent in the first hour or 40 mg or more lorazepam equivalent in the first 3 to 4 hours to be predictive of refractory DT.[5] Our patient had been responding to an increased dose of lorazepam for 1–2 days but then his condition deteriorated. Previous studies on refractory DT used barbiturates, propofol, antipsychotics, etc., to manage DT, but also reported serious complications with these medications.[4,6] As our patient was not very agitated and his sleep was disrupted, we decided to improve his sleep first and added trazodone. Trazodone has been found to reduce the need for BZDs in patients with alcohol withdrawal.[7] A systematic review of 20 articles found that among the various pharmacological agents used to manage insomnia in patients who are in alcohol recovery, trazodone had the best efficacy. However, the studies included had used trazodone only after detoxification from alcohol was completed. There is scant literature on the use of trazodone for insomnia during detoxification in patients with alcohol use disorder.[8] However, it is commonly used in our hospital for managing sleep disturbance in patients with alcohol use disorder during detoxification also, with good results.

The addition of trazodone as an adjuvant led to a dramatic improvement in the clinical course of our patient. It has been found that in some cases, DT ends abruptly when the patient sleeps for a longer duration, called "terminal sleep". Absence of terminal sleep has been proposed to be associated with atypical, recurrent course of DT.[9] The improvement in our case could probably be explained by the improvement in his sleep caused by trazodone.

Trazodone is an antidepressant with serotonin reuptake inhibitor and alpha-1 adrenergic receptor antagonist activity. At lower doses, that is, at the hypnotic dose of 50 mg, most of the alpha-1 adrenergic receptors get saturated.[10] It is well known that there is sympathetic hyperactivity during alcohol withdrawal.[11] Hence, trazodone, which acts as an adrenergic antagonist, could also have helped in the current case in reducing the severity of alcohol withdrawal, leading to improvement in DT.

Conclusion

In some patients, the duration of DT can be prolonged. Improving sleep in patients with DT not responding to a high dose of BZDs, using medications such as trazodone as adjuvants, could be tried, especially when DT is refractory or protracted.

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References

1. Mainerova B, Prasko J, Latalova K, et al. Alcohol withdrawal delirium—diagnosis, course and treatment. Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub 2015 Mar; 159(1): 44–52.
2. Feuerlein W and Reiser E. Parameters affecting the course and results of delirium tremens treatment. Acta Psychiatr Scand Suppl 1986; 329:120–123.
3. Miller FT. Protracted alcohol withdrawal delirium. J Subst Abuse Treat 1994 Mar;11(2): 127–130.
4. Lorentzen K, Lauritsen AØ, and Bendtsen AO. Use of propofol infusion in alcohol withdrawal-induced refractory delirium tremens. Dan Med J 2014 May; 61(5): A4807.
5. Hack JB, Hoffman RS, and Nelson LS. Resistant alcohol withdrawal: Does an unexpectedly large sedative requirement identify these patients early? J Med Toxicol 2006 Jun; 2(2): 55–60.
6. Fujimoto J, Lou JJ, and Pessegueiro AM. Use of phenobarbital in delirium tremens. J Investig Med High Impact Case Rep 2017 Nov; 5(4). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5686878/
7. Borras L, de Timary P, Constant E-L, et al. Successful treatment of alcohol withdrawal with trazodone. Pharmacopsychiatry 2006 Nov; 39(6): 232.
8. Kolla BP, Mansukhani MP, and Schneekloth T. Pharmacological treatment of insomnia in alcohol recovery: A systematic review. Alcohol Alcohol Oxf Oxfs 2011 Oct; 46(5): 578–585.
9. Kanzow WT. The clinical stages of alcoholic delirium and their therapeutic significance. Acta Psychiatr Scand Suppl 1986; 329: 124–128.
10. Stahl SM. Mechanism of action of trazodone: A multifunctional drug. CNS Spectr 2009 Oct; 14(10): 536–546.

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Propranolol Abuse: A Case Report on the Harmful Consequence of Over-the-Counter Medications

Sir,

Substance use disorders are frequently comorbid with anxiety disorders, which can be explained by the self-medication model.[1] The self-medication model, and the substance-induced model 1. General population epidemiological studies provide strong evidence of the frequency of the association for the most used substances: tobacco, alcohol, cannabis, and to a lesser extent sedatives, opiates, and cocaine. For substances that are less commonly used in the general population, the frequency of the co-occurrence can more precisely be studied in clinical samples. We provide the most recent literature results on the association of SUDs and anxiety, and evidence for one explicative model or the other when available. For substances with sedative properties (alcohol, benzodiazepines, cannabis, opioids The treatment modalities for anxiety disorders include psychotherapy and pharmacotherapy, with a better evidence for the combination treatment.[2] Though the mainstay of pharmacotherapy of anxiety disorders involve monoaminergic psychotropics, anxiolytics such as beta-blockers and benzodiazepines are also prescribed and procured over the counter (OTC). respectively.[3] There is a dearth of evidence regarding the abuse of beta-blockers and its consequences, probably because they are not considered as drugs with abuse potential. Hence, we report a case of propranolol abuse in a patient with generalized anxiety disorder.

Case Report

Mr S, a 60-year-old male who had recently retired from his job, consulted the psychiatric outpatient department. He had been diagnosed with generalized anxiety disorder 20 years ago when he had presented with excessive worries about day-to-day activities along with physical symptoms of anxiety such as tremors, palpitations, choking sensation, restlessness, and sweating. He had been treated with Tab. Imipramine 50 mg/day, Tab. Sertraline 100 mg/day, Tab. Propranolol 40 mg/day, and Tab. Alprazolam 0.25 mg/day, with which he had improvement in cognitive symptoms of anxiety such as excessive worries, but the physical symptoms had persisted for the past 20 years. No history of any substance use was reported.

Mr S had been on follow-up for the initial one year, after which he had been self-medicating with the above psychotropics in varying doses, procuring them OTC for the past 19 years, without any discontinuation. He had been taking sertraline and imipramine as prescribed but consuming higher doses of Tab. Propranolol at 280–320 mg/day and Tab. Alprazolam at 0.5–1 mg/day. He would alter the dosage of propranolol and alprazolam based on his assumption about the potential of the day's job to provoke anxiety, such as a change in workload or schedule as well as a change in the usual routine, such as traveling, or attending or organizing family events.

During a recent medical checkup, he was diagnosed with systemic hypertension and type-2 diabetes and was started on Tab. Olmesartan 20 mg/day and a combination of Tab. Glimepiride 2 mg and Tab. Metformin 500 mg twice daily. Prior to the current psychiatric evaluation, he had retired from his job and had cut down the dose of propranolol and alprazolam because his workload had reduced drastically and as he was apprehensive about continuing the psychotropics along with the new antihypertensive and antidiabetics. Following the reduction in the dosage of the anxiolytics, he experienced a worsening of tremors, palpitations, restlessness, choking sensation, and decreased sleep and was increasingly irritable towards the family members when they prevented him from consuming higher doses of propranolol and alprazolam. No history of nausea, vomiting, agitation, headache, or seizures suggestive of benzodiazepine withdrawal was noted.

On examination, he was found to have excessive perspiration and tremors, with an elevated heart rate of 120 beats/min and blood pressure of 180/110 mmHg. Systemic examination was found to be normal. Baseline investigations such as blood sugar, lipid profile, renal profile, and hemogram were within normal limits except for elevated HbA1C of 7.8% (normal range 4%–6%). Though electrocardiogram revealed sinus tachycardia, echocardiogram and an exercise stress test on the treadmill, for the evaluation of propranolol-withdrawal-related adverse cardiac events, were uneventful. Elevated blood pressure was controlled by an optimization of the antihypertensive regimen to Tab. Prazosin 10 mg/day, Tab. Olmesartan 40 mg/day, and Tab. Cilnidipine 10 mg/day.

The patient was changed over to sustained-release formulation of propranolol 80 mg/ day and Tab. Clonazepam 2 mg/day, with which he had an improvement in the sleep and the physical symptoms of anxiety. Over the following four weeks, Tab. Sertraline was increased to 150 mg/day, whereas Tab. Alprazolam and Tab. Imipramine were tapered and stopped, with the monitoring of anxiety symptoms and sleep. Concurrent nonpharmacological interventions, such as regular deep breathing exercises (15–20 minutes/day for four weeks), regular brisk walking (30 minutes/day for five days in a week for four weeks) and education on sleep hygiene, were provided. The patient has been on regular follow-up and is currently on Tab. Sertraline 150 mg/day and a tapering regimen of Tab. Propranolol 40 mg/day, whereas Tab. Clonazepam was tapered to 0.25 mg/day based on the benzodiazepine dependence tapering schedule along with the continuation of antihypertensive and antidiabetic medications. Informed written consent was obtained from the patient and his legally accepted representative.

Discussion

In patients with anxiety disorders, apart from the prescription of specific anti-anxiety drugs, various adjunctive agents help in early and enhanced symptom control. The adjunctive agents commonly used are benzodiazepines and sympatholytic agents. The existent literature cautions about the abusive use of anxiolytics such as benzodiazepines. This case study adds to the literature about the abuse of propranolol as OTC medication and the clinical factors leading to such abuse.

As highlighted in the present case scenario, the mainstay of management of anxiety disorders in resource-limited settings is pharmacological, despite the global literature supporting better efficacy for combination therapies.Though recent guidelines shun the use of beta-blockers and benzodiazepines in the management of anxiety, their conventional use by psychiatrists and medical personnel do continue.[4]

In our patient, the first use and regular use of propranolol were associated with the onset and gradual worsening of anxiety symptoms, respectively. Withdrawal from higher doses of propranolol is associated with rebound symptoms of anxiety, elevated blood pressure, and adverse cardiac events, as in this patient who required multiple antihypertensive medications.[5] However, the treating team considered different possibilities for the somatic anxiety symptoms: poor glycemic control/hypoglycemia, hypertensive crisis, benzodiazepine withdrawal, and propranolol withdrawal.

The treating team implicated psychotropic-withdrawal anxiety and ruled out diabetes mellitus and hypertension as causes because the onset of somatic anxiety symptoms was clearly preceded by the self-reduction in the doses of psychotropics (propranolol and alprazolam), whereas the oral hypoglycemic agents and antihypertensive drugs were taken without any dose modifications by the patient. Literature reveals that concurrent presentations of anxiety and hypertensive crisis can be precipitated by withdrawal of propranolol or alprazolam.[6] Due to the inherent overlap in causative roles for both propranolol and benzodiazepine in withdrawal anxiety, the treating team posited combined propranolol and benzodiazepine withdrawal. However, the absence of clinical signs specific to benzodiazepine withdrawal, such as nausea or vomiting, agitation, altered mental status, headache, or seizures suggested that propranolol could have played a greater role than alprazolam in precipitating withdrawal symptoms in this patient.

However, the complex interplay between anxiety and medical disorders (diabetes mellitus and hypertension) could underlie the propranolol abuse in our patient. The regular self-administration of increased doses of propranolol over the years could have been triggered and maintained by autonomic hyperactive states due to recurrent hypoglycemia and uncontrolled hypertension. Further, two other properties of propranolol, a non-vasodilatory beta-blocker, could have contributed to the worsening of the diabetic status: the "inherent metabolic side effects" (such as the worsening of glucose tolerance, insulin resistance, and dyslipidemia) and the "property to mask the self-recognition of hypoglycemic states" leading to poor glycemic control.[7]

Anxiety and depression have been found to have a predictive role in OTC medication procurement in the elderly population.[8] The abuse of propranolol has been previously reported in an individual with social anxiety where doses of up to 320 mg/day were used.[9] The intake of propranolol in social anxiety is usually situation-triggered. However, the use of propranolol at an increased frequency to control incessant anxiety, as noted in our patient, could have contributed to the progression of the use to an abuse. In addition, the clinical profile of this individual, with prominent physical symptoms of anxiety, has been known to be associated with an orientation towards pharmacotherapy and OTC preparations rather than psychotherapy.[10]

We conclude that a combination treatment of pharmacotherapy and psychotherapy, along with psychoeducation about the illness course and medications, would help in better management of anxiety disorders. Review visits should preferably entail evaluation for OTC medications and abuse in such patients. Identifying the risk factors such as old age, predominant physical symptoms of anxiety, and depressive symptomatology would prove beneficial in the prevention of anxiolytic abuse.

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References

1. Vorspan F, Mehtelli W, Dupuy G, et al. Anxiety and substance use disorders: Co-occurrence and clinical issues. Curr Psychiatry Rep 2015; 17(2): 4.
2. Thibaut F. Anxiety disorders: A review of current literature. Dialogues Clin Neurosci 2017; 19(2): 87–88.
3. Strawn JR, Geracioti L, Rajdev N, et al. Pharmacotherapy for generalized anxiety disorder in adult and pediatric patients: An evidence-based treatment review. Expert Opin Pharmacother 2018; 19(10): 1057–1070.
4. Kendall T, Cape J, Chan M, et al. Management of generalised anxiety disorder in adults: summary of NICE guidance. The BMJ [Internet] 2011 [cited 2019 Dec 13]; 342. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3230126/
5. Miller RR, Olson HG, Amsterdam EA, et al. Propranolol-withdrawal rebound phenomenon: Exacerbation of coronary events after abrupt cessation of antianginal therapy. N Engl J Med 1975; 293(9): 416–418.
6. Páll A, Becs G, Erdei A, et al. Pseudopheochromocytoma induced by anxiolytic withdrawal. Eur J Med Res [Internet] 2014 [cited 2020 Apr 27]; 19(1). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4196012/
7. Fonseca VA. Effects of beta-blockers on glucose and lipid metabolism. Curr Med Res Opin 2010; 26(3): 615–629.
8. Wongpakaran N, Wongpakaran T, Sirirak T, et al. Predictors of polypharmacy among elderly Thais with depressive and anxiety disorders: Findings from the DAS study. BMC Geriatr 2018; 18(1): 309.
9. Fontanella BJB. Social anxiety and propranolol abuse: A case study. Rev Bras Psiquiatr 2003; 25(4): 228–230.
10. Bystritsky A, Fogelson D, Doctor R, et al. Symptom differences among anxiety patients in clinics with differing treatment orientations: A pilot investigation. J Psychother Pract Res 1993; 2(2): 164–170.

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Diagnostic and Therapeutic Implications of Borderline Personality Disorder on Topical Steroid Dependence: A Case Report

Sir,

Topical steroids (TSs) are used to treat various inflammatory dermatological disorders. Increasing use of TS is being reported due to prescription by non-dermatologist doctors and increasing over-the-counter (OTC) purchase.[1] Personality attributes such as negative emotionality, neuroticism, and impulsivity, characteristic of borderline personality disorder (BPD) also predispose to substance abuse.[2] Substance use disorders are prevalent in up to 80% of those with BPD, with high novelty-seeking and poor coping strategies as risk factors.[3] We report a young adult female with topical steroid dependence (TSD), concurrent mood disorder, and BPD traits, to describe the role of maladaptive personality traits in the clinical presentation of TSD and the need for integrated psychobiological management in such patients.

Case Report

Miss S, a 23-year-old unmarried female, presented to the emergency services with acute onset (two weeks) of irritability, episodes of aggression, persistent low mood with frequent crying spells, decreased interaction with her family members, diminished interest in her usual activities, disturbed biological functions, and an episode of deliberate self-harm (DSH). The above symptoms were precipitated by interpersonal conflict. Her pre-morbid history was characterized by stormy affective changes, sensitivity to rejections in interpersonal contexts, impulsivity in social relationships, disturbances in self-image, and recurrent threats for self-harm, suggestive of BPD. Her past history revealed that over a period of three years, she had experienced two episodes of moderate depression, precipitated by interpersonal and family conflicts, with the last episode one year back. The past history was negative for mania, hypomania, and mixed episodes. Apart from hypothyroidism, for which she was on irregular treatment, there were no other medical co-morbidities. There was no history of oral/parenteral substance use. There was a history of alcohol dependence in her father and paternal and maternal grandfathers, as well as suicide in her mother, who passed away when the patient was aged five.

Mental status examination revealed mood swings, tearfulness, agitation, and demanding behavior. Hamilton Depression Rating Scale (HDRS) score was 10, indicative of mild severity. International Personality Disorder Examination (IPDE) ICD-10 revealed emotional instability, impulsivity, interpersonal sensitivity, and self-harm tendencies typical of the emotionally unstable type of BPD. Physical examination revealed pale facies, fatty hump on the nape of the neck, and thin skin with bruise-like lesions of prominent veins all over the body.

The forensic expert ruled out the likelihood of assault and bruises, due to the absence of typical progressive color changes and the presence of itching. The dermatologist opined that the pruritic reddish skin lesions are typical of TS abuse. A further detailed inquiry revealed OTC purchase and self-administration of skin-whitening creams for the past four years, which comprised of high-potency TSs (mometasone 0.1% and clobetasol propionate 0.05 %). While the first use was prescription-based, the subsequent usage was perpetuated by herself when she perceived that the cream improved her skin texture; this also led her to progressively apply the cream more frequently and in increasing amounts suggestive of craving. Any reduction in the usage of the creams would cause her itching, redness, and local swelling, as in the current presentation when she had stopped applying the cream after hospitalization. The absence of persistent preoccupation and associated checking and reassurance-seeking behaviors ruled out the possibility of body dysmorphic disorder.

Her blood biochemistry was normal. The panel revealed low basal serum cortisol (fasting, 8 AM) of 1.01 µg/dL (normal range: 7–28 µg/dL) and a normal serum adreno-corticotropic hormone level (fasting, 8 AM) of 5.70 pg/mL (normal range: 5–50 pg/mL) with a normal thyroid profile. The endocrinologist opined that the paradoxical low levels of serum cortisol with cushingoid features could be due to the sudden stoppage of steroid application leading to the hypothalamo-pituitary-adrenal (HPA) axis suppression.

She was diagnosed with recurrent depressive disorder, current episode moderate depression without somatic syndrome, BPD, TSD with withdrawal features, and iatrogenic ACTH-independent Cushing's syndrome due to TSs.

She was started on cap. fluoxetine (20 mg/day) and tab. olanzapine (10 mg/day) for her depressive symptoms, along with individual psychotherapy (focusing on building positive coping skills, emotional resilience, anger management, and relapse prevention strategies) and family interventions (psychoeducation about illness, personality attributes, and need for positive support system). Oral prednisolone was given with a tapering regimen for the acute steroid withdrawal (started at 5 mg/day for a week and tapered to 2.5 mg/day for another week and stopped), and the skin changes were topically treated with emollients. Physical features of Cushing syndrome gradually resolved. Improvement was noted in depressive symptoms (HDRS after four weeks = 5), craving for TSs, and impulsivity traits and had maintained well for further two months of follow-up, along with weekly therapy sessions. Informed written consent was obtained from the patient and the caregiver.

Discussion

The present case highlights the complex presentation of TSD and the role of BPD traits in predisposing and perpetuating the dependence. TSD is being increasingly reported due to unrestricted accessibility of TS and poor knowledge of its physical and psychological complications.[4] TSD is found to be common in young women in whom TSs are used along with beauty products.[5,6]

The patient developed TSD gradually, with signs of craving, tolerance, withdrawal, and loss of control, satisfying clinical criteria for dependence as per ICD-10. The interplay of genetic (positive family history of SUD), demographic (age, gender), and psychological (novelty seeking, emotional instability, impulsivity) risk factors and the unrestricted supply could have possibly led to the initiation and maintenance of TSD in the patient (**Figure 1**).[2]

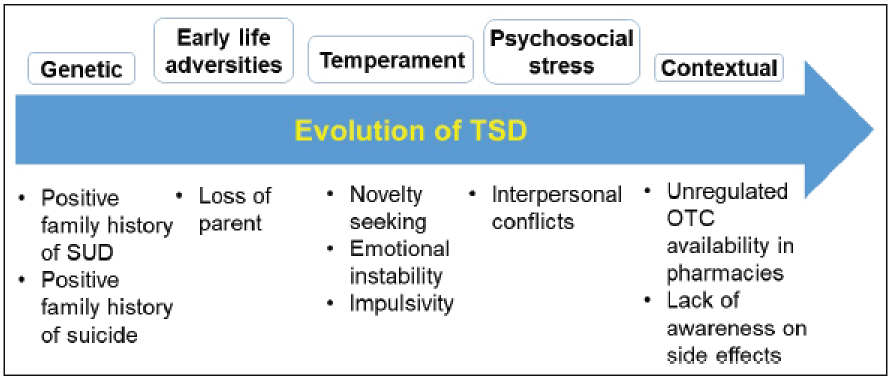
Atypical sites of bruises, a lack of typical color changes, and concurrent cushingoid features should strongly point towards TSD. The skin changes of TSD occur due to vasoconstriction, dermal atrophy, reduced cell proliferation, and diminished skin inflammation, leading to the spurious beautified skin texture.[7] The large surface area of TS application, increased bioavailability with high potency steroids, and use beyond three weeks could have led to Cushing syndrome equivalent to that of oral steroid use.[7,8]

The case also highlights the psychological and neurobiological aspects of mood dysregulation in patients with TSD and comorbid personality disorder. The mood dysregulation in our patient could have multiple etiological factors, namely (a) Cushing's syndrome causing negative mood states,[9] (b) frontal lobe damage by steroids leading to poor prefrontal lobe control over the limbic structures,[10] and (c) underlying maladaptive personality attributes of BPD.

The present report stresses the need for detailed evaluation and screening for all possible substances of abuse including TSs in those with maladaptive personality traits. Combined pharmacotherapy and psychotherapy is needed to address the symptoms of both TSD and BPD. We recommend further studies on estimating the prevalence of TSD, which will be helpful in spreading awareness and providing psychoeducation. A comprehensive evaluation, effective consultation-liaison services, and an integrated biopsychosocial model of management will underscore the holistic improvement in patients with TSD and maladaptive personality traits.

FIGURE 1.

Risk Factors Involved in the Development of Topical Steroid Abuse in Borderline Personality Disorder



TSD: topical steroid dependence, SUD: substance use disorder, OTC: over-the-counter.

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References

1. Coondoo A. Topical corticosteroid misuse: the Indian scenario. Indian J Dermatol 2014; 59(5): 451–455.
2. Belcher AM, Volkow ND, Moeller FG, et al. Personality traits and vulnerability or resilience to substance use disorders. Trends Cogn Sci 2014; 18(4): 211–217.
3. Kienast T, Stoffers J, Bermpohl F, et al. Borderline personality disorder and comorbid addiction. Dtsch Arztebl Int 2014; 111(16): 280–286.
4. Hon K-LE and Burd A. 999 abuse: do mothers know what they are using? J Dermatolog Treat 2008; 19(4): 241–245.
5. Hajar T, Leshem YA, Hanifin JM, et al. A systematic review of topical corticosteroid withdrawal ("steroid addiction") in patients with atopic dermatitis and other dermatoses. J Am Acad Dermatol 2015; 72(3): 541–549.e2.
6. Hameed AF. Steroid dermatitis resembling rosacea: a clinical evaluation of 75 patients. ISRN Dermatol 2013; 2013: 491376.
7. Beltrani VS, Barsanti FA, Bielory L. Effects of glucocorticosteroids on the skin and eye. Immunol Allergy Clin North Am 2005; 25(3): 557–580.
8. Manchanda K, Mohanty S, and Rohatgi PC. Misuse of topical corticosteroids over face: a clinical study. Indian Dermatol Online J 2017; 8(3): 186–191.
9. Bratek A, Koźmin-Burzyńska A, Górniak E, et al. Psychiatric disorders associated with Cushing's syndrome. Psychiatr Danub 2015; 27(suppl 1): S339–343.
10. Starkman MN. Neuropsychiatric findings in Cushing syndrome and exogenous glucocorticoid administration. Endocrinol Metab Clin North Am 2013; 42(3): 477–488.

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Tele-triaging: The Way Ahead for Tertiary Care Psychiatry in India Post-COVID-19

Sir,

The origin of the word “triage” is from the French word “trier.” It was originally applied to a process of sorting, in the 18th century, by Baron Dominique Jean Larrey, who was the Surgeon-in-Chief to Napoleon’s Imperial Guard. The original concept primarily focused on mass casualty situations in warfare. In the current practice, triaging is applied in disaster situations and emergency health care settings.[1] Health care triaging is practiced in the West, as their system works mostly based on a prior appointment with a general physician and by referral to the specialist. We outline the potential application of the principles of triage in tertiary care psychiatry practice in India, in the context and aftermath of the ongoing COVID-19 pandemic.

In India, patients have direct access to tertiary care psychiatry hospitals. Despite this, few centers offer tertiary care, and there exists a huge treatment gap of around 83%. The major reason for this gap is that there are only three psychiatrists per million population.[2] With the ongoing COVID-19 situation, recent surveys show that more than 80% of those polled perceived a need for mental health care,[3] which places a greater demand on the limited mental health care resources, over and above the existing treatment gap. Hence, tertiary care centers need to explore novel approaches to mental health care service provision, one such approach being tele-triaging. Tele-triaging would help the psychiatrist to make an informed decision about whether a patient requires tertiary care or can be effectively managed in a nearby facility. This is particularly important in the current context, where in-person hospital visits are best deferred to ensure physical distancing and more local access to health care has to be promoted to minimize travel. The three important factors on which the triage decision would depend are as follows: the person’s need for specialist mental health services, the level of risk to the person and/or others, and the urgency of the response required from the tertiary mental health services.[4]

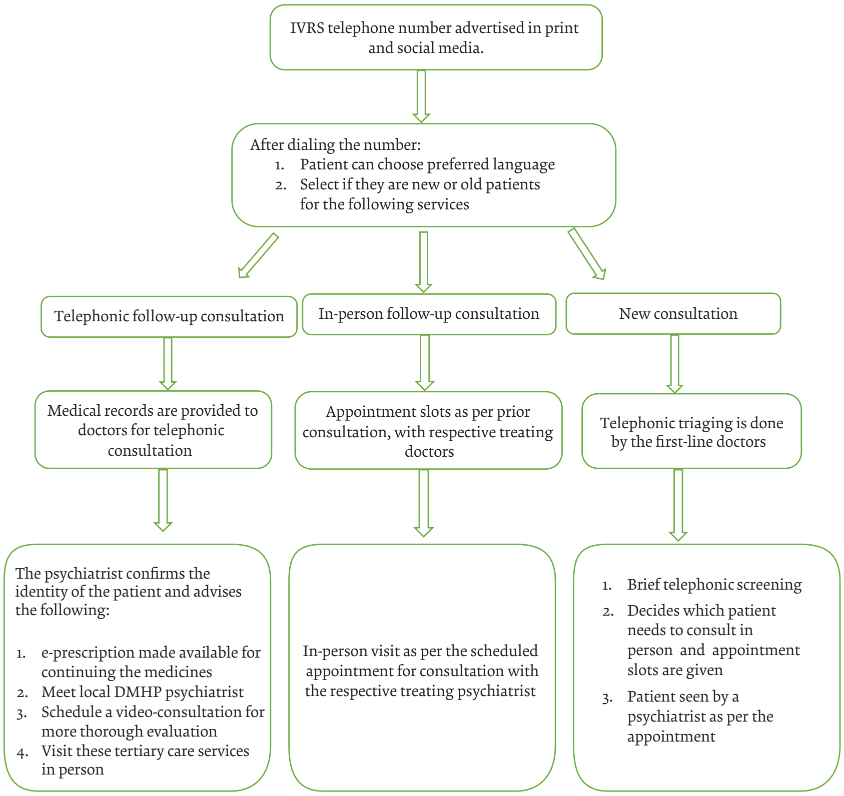
Tele-triaging has been recently initiated at our center. An integrated voice response system (IVRS) based follow-up service has been started for patients previously registered with the hospital, to register them for a telephone consultation with a qualified psychiatrist. The patient is then contacted by the qualified psychiatrist for a tele-assessment and is advised one of the following: continue the medications as prescribed with e-prescriptions being made available through the hospital information system, schedule a video consultation for a more thorough evaluation, meet the local psychiatrist at the district mental health center, or visit the tertiary care emergency services for immediate attention (**Figure 1**). Teleconsultation offers great privacy than in-person consultation and is likely to be more acceptable to patients who may not seek care from tertiary care centers on account of stigma. This system also reduces the travel costs for patients and makes it more feasible for a routine follow-up. The system is also devised to cater to the needs of a greater number of patients than what is currently being done. The advantage of this system is that it can cater even to people living in remote villages, as all it needs is access to a basic model mobile phone for contacting the center. Tele-triaging for new consultations is in the pipeline.

Mental health tele-triaging inherently carries some challenges, like knowledge about mental health emergencies, ethical and legal aspects of care, etc.[5] It, therefore, puts the onus on the experience of the mental health professionals. The following prerequisites should help in safe and appropriate decision making: adequate orientation to the triage role; proficiency in mental health assessment, including risk assessment; screening for problematic use of alcohol and other drugs, and the ability to assess the impact of a range of other health and social factors. In addition, communication and negotiation skills, access to well-developed algorithms for the assessment processes, knowledge of other services available in the local area and appropriate referral pathways, and a good understanding of the country’s mental health legislations.[4]

With limited tertiary services in India, tele-triaging will help us reach out to more people and ration the resources to those that need them the most. This is the right time for introducing tele-triaging. With outpatient services being closed in most tertiary hospitals, IVRS based telemedicine was introduced by all institutions such as All India Institute of Medical Sciences, New Delhi; National Institute of Mental Health and Neurosciences, Bengaluru; and Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry, to provide continued service. The Board of Governors in supersession of the Medical Council of India rapidly approved the guidelines for telemedicine practice, to guide telemedicine-based services. With travel restrictions and physical distancing likely to persist due to the ongoing pandemic, tele-triaging is the way forward for tertiary care psychiatry in India. The tertiary mental health service providers across the country could streamline their services on

FIGURE 1.

IVRS FlowChart



these lines in order to be able to cater to the increasing demand and to reduce the gap in service provision. There is a pressing need to bring about several changes at the policy level and form guidelines for tele-triage in psychiatry practice.

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References

1. Robertson-Steel I. Evolution of triage systems. Emerg Med J 2006; 23: 154–155.
2. Gautham MS, Gururaj G, Varghese M, et al. The National Mental Health Survey of India (2016): prevalence, socio-demographic correlates and treatment gap of mental morbidity. Int J Soc Psychiatry 2020 Jun; 66(4): 361–372.
3. Roy D, Tripathy S, Kar SK, et al. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. Asian J Psychiatry 2020 Jun; 51: 102083.
4. Victorian Government Department of Health. *Statewide mental health triage scale guidelines*. Melbourne, Vic: Victorian Government Department of Health, 2010.
5. Kevin J. An examination of telephone triage in a mental health context. Issues Ment Health Nurs 2002; 23: 757–769.

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Stigma and Aggression Against Health Care Workers in India Amidst COVID-19 Times: Possible Drivers and Mitigation Strategies

Sir,

As the COVID-19 pandemic rages across the globe, frontline as well as backend health care workers (HCW) face tremendous pressure owing to shortage of staff, concerns about their personal safety, the safety of loved ones, and shortage of equipment such as ventilators and protective gear.

In addition to these challenges, globally HCW are increasingly battling against a peculiar problem of stigma and aggression against them.[1] Moreover, stigma against infectious diseases has been a perennial problem in India.[2] This has manifested itself in several unsavoury incidents such as eviction of doctors from their homes,[3] acts of violence against field health workers,[4] and denial of burial space to HCW who expired in the line of duty.[5] More common stigmatizing behaviours include isolation within residential communities, local stores, as well as among friends and relatives.[6]

That this development happened in spite of the repeated appeals to the citizens to show appreciation to the health care personnel through social and community acts of clapping and saluting, by a person no less than the Prime Minister himself,[7] warrants closer examination. Further, stigma against HCW may have many negative ramifications; it may demotivate frontline HCW, increase their anxiety, reduce their efficiency, and trigger suicide, although rarely. Further, we offer some insights into the potential drivers of this behaviour in India and also outline some approaches to mitigate the stigma against HCW.

Potential Drivers of the Stigma and Aggression

1. Spread of misinformation through old as well as new age media platforms: Mass media, and now social media, have long been recognized as powerful instruments that shape public opinion. Sadly, a virtual "infodemic" composed of misinformation and rumours is spreading rapidly and promoting fear, confusion, and ostracization of HCW in a frantic attempt by the public to stay safe.
2. Fears against an extension of measures such as distancing, containment, and lockdown: Imposition of lockdown and social distancing norms have prevented the poor from earning their livelihood. Additionally, supply line disruptions have led to a struggle for essential supplies and a feeling of "being controlled" by the lockdown.[8] Any potential source of infection, such as bodies of expired HCW, which may contribute to a further extension of lockdown measures in an area, is therefore looked at with trepidation, and HCW are targeted as they are seen as COVID-19 carriers.
3. Perception of the poor that COVID-19 is a "disease of the rich": The coronavirus was brought to India, initially, by students studying at the Wuhan University. Subsequently, the media sources highlighted incoming international travellers as potential sources of the virus. This, together with the subsequent embargo on the incoming flights, supported the notion of COVID-19 being a "disease of the rich."[9] In a hitherto socially polarized society, this would understandably trigger considerable angst among the poor who perceive themselves to be receiving collateral damage for the "excesses" of the rich. Doctors are a perceived affluent lot in India, and this may explain some of the aggression against doctors and other HCW.

Suggestions to Reduce the Stigma and Aggression

The Indian government has recently promulgated an ordinance to protect HCW from acts of aggression. This is a good move, though restricted to pandemic times. Below, we offer some suggestions, a few of which may have more durable effects:

1. Greater community participation in COVID-19 response measures: Governments and local administration have to involve civil society volunteers to a greater extent in response measures than is being done currently. When the civil society participates more actively, the stigma against HCW may lessen because health becomes a shared responsibility. To implement this in India, we need to look no further than the Kerala model[10] that has been successful in flattening the curve using a variety of measures, including the involvement of community volunteers.[11]
2. Regular press releases and media briefings by hospitals: Every hospital and institution involved in COVID-19 care should issue regular press releases that contain all relevant information and updates in the firefighting exercise. This should include steps being taken to ensure the safety of HCW, such as the zoning of COVID-19 hospitals for better infection control,[12] the usage of protective equipment, and the mandatory quarantine for HCW on COVID-19 duty. This would lessen the tendency to view HCW as a potential source of infection and promote positive attitudes towards them. To further improve the accuracy and quality of official communications, institutions should consider appointing a doctor as a dedicated public relations officer during COVID-19 times.
3. Online support groups for HCW: This will help them to stay connected with their peers and draw upon each other's experiences in finding strategies that may work against stigma. Opportunities to talk openly about stigma may promote positive coping. Additionally, sharing of positive experiences while dealing with COVID-19 patients can boost their morale.[13]
4. Share credible sources of information with the public: Myths and misconceptions regarding the spread of coronavirus abound. Fear, fuelled by ignorance, is driving the mob behaviour against HCW.[4] Wrong notions about the spread of the disease should be proactively targeted through repeated and sustained information campaigns in the mass media as well as social media.
5. Immediate condemnation of stigma-related incidents by all stakeholders: This includes government,

non-governmental organizations, and members of the civil society who must be prepared to speak out and issue statements condemning such incidents as soon as they occur. These statements may also be shared on social media and official government Twitter handles for wider reach and acceptance. The Prime Minister connecting with the village heads (sarpanch) in the country over COVID-19 is a positive move.[14] As the sarpanch holds considerable sway over the rural folk, their services could be utilized to reduce stigma and spread awareness.

6. Rewarding and positive portrayal of HCW: Positively portraying HCW in the media and rewarding them with due recognition for their services could also be considered to reduce stigma.

In summary, stigma is a modifiable reaction to a disease. This is no time for stigma; on the contrary, pandemics are a time to stay more connected than ever. We must remember that our fight is against the COVID-19, not against HCW taking care of those affected with COVID-19.

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References

1. Ganapathy N. Healthcare workers in India face stigma amid fight against coronavirus [Internet]. *The Straits Times*, 2020 [cited April 26, 2020]. Available from: https://www.straitstimes.com/asia/south-asia/healthcare-workers-face-stigma-amid-fight-against-coronavirus
2. National Commission on Macroeconomics and Health. Background paper: Burden of disease in India, 2005.
3. Kolkata HE-PSAR. Indian doctors being evicted from homes over coronavirus fears [Internet]. *The Guardian*, 2020 [cited May 2, 2020]. Available from: https://www.theguardian.com/world/2020/mar/30/indian-doctors-being-evicted-from-homes-over-coronavirus-fears
4. Sakhadeo D. Healthcare workers attacked as fears about coronavirus take hold of India. Global Voices, 2020 [cited April 26, 2020]. Available from: https://globalvoices.org/2020/04/02/healthcare-workers-attacked-as-fears-about-coronavirus-take-hold-of-india/
5. Lobo S. Mob denies burial to Chennai doctor after Covid-19 death, many ask is clapping hands enough | 10 points [Internet]. *India Today*, 2020 [cited May 3, 2020]. Available from: https://www.indiatoday.in/india/story/chennai-doctor-dies-of-coronavirus-denied-burial-10-points-1669313-2020-04-21
6. News18. Is this how we treat our Covid-19 "soldiers?" Medics battle neglect, harassment & rape threats [Internet]. News18 [cited May 3, 2020]. Available from: https://www.news18.com/news/india/is-this-how-we-treat-our-covid-19-soldiers-medics-across-india-battle-neglect-harassment-rape-threats-2562473.html
7. India Today Web Desk, New Delhi. Those in white coats like gods: PM Modi appeals India to respect medical staff during coronavirus crisis [Internet]. *India Today*, 2020 [cited April 26, 2020]. Available from: https://www.indiatoday.in/india/story/those-in-white-coats-like-gods-pm-modi-appeals-india-to-respect-medical-staff-during-coronavirus-crisis-1659636-2020-03-25
8. Nair S. For a billion Indians, lockdown has not prevented tragedy [Internet]. *The Guardian*, 2020 [cited April 26, 2020]. Available from: https://www.theguardian.com/world/commentisfree/2020/mar/29/india-lockdown-tragedy-healthcare-coronavirus-starvation-mumbai
9. Pandya D. COVID-19: A rich man's disease and poor man's suffering! [Internet]. Lawstreet.co2020 [cited April 26, 2020]. Available from: https://lawstreet.co/speak-legal/covid19-rich-man-disease-poor-man-suffering/
10. Kurian OC. How the Indian state of Kerala flattened the coronavirus curve [Internet]. *The Guardian*, 2020 [cited April 26, 2020]. Available from: https://www.theguardian.com/commentisfree/2020/apr/21/kerala-indian-state-flattened-coronavirus-curve
11. സാമൂഹിക സന്നദ്ധസേന [Internet] [cited May 3, 2020]. Available from: https://sannadhasena.kerala.gov.in/
12. Government of Pakistan, Ministry of National Health Services Regulations and Co-ordination. Guidelines: Zoning of hospitals during COVID 19 outbreak [Internet]. 2020 [cited April 26, 2020]. Available from: http://covid.gov.pk/guidelines/pdf/20200327%20Guidelines%20for%20Zoning%20of%20Hospitals%200701.pdf
13. World Health Organization. Mental health and psychosocial considerations during the COVID-19 outbreak [Internet], 2020 [cited April 26, 2020]. Available from: https://www.who.int/docs/default-source/coronaviruse/mental-health-considerations.pdf
14. Hebbar N. Coronavirus | Biggest message from COVID-19 is that India must be self-reliant, says Modi [Internet]. *The Hindu*, 2020 [cited April 26, 2020]. Available from: https://www.thehindu.com/news/national/biggest-message-from-covid-19-is-that-india-must-be-self-reliant-says-modi/article31422674.ece

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The Psychology of Human Behavior During a Pandemic

Sir,

In the absence of a tested vaccine for COVID-19, shaping appropriate human behavior is our first line of defense in slowing the spread of the ongoing epidemic.

Here, we lay out the importance of understanding the psychology of human behavior during a pandemic, and how this can contribute to effectively managing the outbreak.

People respond in one of two ways when faced with the threat of an epidemic. The "monitors" are those persons who seek out as much information as possible about the illness. They adhere to government recommendations, albeit at the expense of heightened anxiety. The "blunters" tend to tune out all information about the epidemic, in order to reduce the associated anxiety, but as a result, are ill-informed about responsible individual behavior.[1] Most individuals use a combination of the two coping styles in varying proportions. Promoting a middle-of-the-road approach between these two styles is recommended, to minimize illness spread in the community.

The dissemination of information by public health agencies must be done keeping in mind the principles of both individual and mass psychology. Underplaying the health risks may have disastrous consequences, by failing to deploy sufficient safety nets to limit the spread of infection. Conversely, an overemphasis on the potential fallout of the epidemic may create a state of anxiety in the populace. It is, therefore, essential that information is provided in a calm, measured tone, with stress laid on the promotion of appropriate safety behaviors. For instance, the Prime Minister of New Zealand has earned accolades for her communication strategies during the nationwide lockdown, emphasizing humane, empathetic, and consistent messaging. Her call for people to "unite against COVID-19" while other nations were "declaring war" on the pandemic, helped maintain a sense of calm and encouraged the citizens to come together to defeat the pandemic. Her understanding of human psychology has resulted in New Zealand having one of the lowest rates of infection, per capita, worldwide.[2]

Safety behaviors to check the spread of infection are often basic interventions such as frequent hand washing. It is often seen, though, that there is a psychological mismatch in the minds of the general public between the perceived threat of a fatal illness and the simplicity of the recommended protective behavior, that is, hand washing. This contradiction may lead to poor adherence to recommendations, as people generally associate drastic scenarios with equally drastic preventive measures. Governments attempt to overcome this problem by the repetitive nature of public safety announcements. While doing so, public health officials must be careful to avoid information overload, as people may develop psychological fatigue and simply tune out the information, which would defeat the entire purpose of the information campaign.[3]

Uncertainty about the future and misplaced fear of scarcity drive irrational behaviors like panic-buying and hoarding. These may have domino effects, such as artificially created shortages and inflated prices. Social learning theory proposes that, in times of crisis, people acquire cues on how to respond by observing the reactions of others. Consequently, the widespread coverage about panic-buying in the media only served to promote the same behavior.[4] Hence, an understanding of why people behave in certain ways when under stress can help fashion public health interventions to prevent the trickle-down effects such as shortages of goods.

The concept of herd immunity lies at the heart of subduing a pandemic outbreak. Vaccination of a sufficient proportion of the population would guard against the unrestricted spread of disease, thereby protecting the most vulnerable persons. Psychological factors come into play here, as individuals would voluntarily have to subject themselves to vaccination. Fear surrounding the possible side effects of vaccines often acts as a barrier to timely vaccination.[5] Healthcare workers will have a major role to play in clearing misconceptions and disseminating correct factual information, to facilitate adequate vaccine coverage in the general population once an effective vaccine is synthesized in the coming years.

In summary, pandemics are often unprecedented in their unmitigated effects on entire populations. Human behavior and psychology play an integral role, both at an individual and community level, in limiting the spread of illness. A robust understanding of the psychology of human behavior during an epidemic can be invaluable, to apply recommendations in a manner that would facilitate better adherence to guidelines. This, in turn, can go a long way towards limiting the adverse health consequences of epidemics on the population.

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References

1. Miller SM. Monitoring and blunting: validation of a questionnaire to assess styles of information seeking under threat. J Pers Soc Psychol 1987; 52: 345–353. PMID: 3559895.
2. How NZ's 'team of five million' took on Covid-19 [Internet]. BBC News. 2020 [cited 27 May 2020]. Available from: https://www.bbc.com/news/world-asia-52344299
3. Thomas SP. Information fatigue syndrome: Is there an epidemic? Issues Ment Health Nurs 1998; 19(6): 523–524.
4. Arafat S, Kar S, Marthoenis M, et al. Psychological underpinning of panic buying during pandemic (COVID-19). Psychiatry Res 2020; 289: 113061.
5. Cherian V, Saini NK, and Sharma AK. Assessment of timely immunization in an urbanized agglomeration of East Delhi, India. Int J Community Med Public Health 2019 Mar; 6(3): 1156–1161.

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Processes for Scientific and Ethical Approval of Research Proposals: Better Oversight May Be Necessary

Sir,

Research proposals pass through two levels of scrutiny—one, for scientific merit and the other, for ethical standards. These processes are not independent; scientific reviewers also examine ethical issues and ethics committees (ECs) also consider scientific issues. Both processes are expected to be rigorous because clinical research involves time and money, patient comfort and safety, and the extension, with integrity, of scientific knowledge.

In this context, we draw the attention of readers to the retrospectively registered protocol of an apparently completed industry-sponsored randomized controlled trial (RCT) that is publicly available at the Clinical Trials Registry—India (CTRI), bearing registration number CTRI/2013/11/004127. This protocol was discussed as an activity in eJCIndia[1] in early April 2020.

The RCT examined the efficacy, tolerability, and safety of vilazodone in Indian adults with major depressive disorder (MDD). According to details available at the CTRI website, the study protocol was approved by the Drug Controller General of India (DCGI) in September 2013, and by the ECs in five centers between October 2013 and January 2015; in four other centers, the protocol was still under EC review at the time of CTRI registration, although the study recruitment status was recorded as having been completed. This means that the trial was conducted at only five of the nine listed sites because the remaining sites could not have recruited patients without EC approval.

The study was an 8-week RCT. There were three arms: vilazodone, dosed at up to 40 mg/day, escitalopram, dosed at up to 40 mg/day, and placebo. Several serious scientific and ethical concerns are immediately apparent from a reading of the protocol. First, with a stated sample of 375 patients, the study was strikingly overpowered for an efficacy RCT (vilazodone vs placebo, with escitalopram as the internal control for assay sensitivity); this means that the study was unethical because more depressed patients were exposed to placebo than was scientifically necessary. However, if the study was powered for a noninferiority design, it would still be unethical because a placebo group is not part of such a design.

Second, the authors dosed escitalopram at a target of 40 mg/day; this is unconscionable because the maximum licensed dose of the drug in MDD is 20 mg/day. Last but not least, the RCT was stated to be open-label. Does this mean that patients in the placebo group were actually told that they were receiving a placebo?

This is an example of a situation where multiple layers of oversight failed. What needs to be done to prevent the recurrence of such failures among investigators, in ECs, and under the supervision of the DCGI is a matter for perhaps more than just introspection.

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Reference

1. Thakurdesai A, Ghosh A, Menon V, et al. Electronic journal clubs for capacity building: a case study in psychiatry as a model for medical disciplines in developing countries. Asian J Psychiatr 2018; 34: 93-97.

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Remarks on "Cross-disciplinary Appraisal of Knowledge and Beliefs Regarding the Diagnosis of Autism Spectrum Disorders in India: A Cross-sectional Survey"

Jain et al.[1] reported a cross-disciplinary appraisal of knowledge and beliefs regarding the diagnosis of autistic spectrum disorders (ASD) in India. We have some comments on the objectives and methods of the study.

We believe that comparing knowledge about ASD across different groups of professionals is unwarranted. The three groups of professionals studied, clinical psychologists, speech therapists, and occupational therapists, by virtue of their training and expertise, could almost by definition be expected to have different levels of knowledge and would be expected to play different roles at different stages while managing ASD. Comparing knowledge across these three groups would therefore serve no scientifically useful purpose. It would have been more appropriate had the authors, for example, defined minimum thresholds of knowledge for each group of professionals and then studied their actual knowledge of the field. In this context, it should be noted that nobody can be expected to know everything.

The authors also reported modifying and adding to an existing instrument[2] without piloting the new instrument to understand its strengths, limitations, and psychometric properties.

Finally, the last paragraph of the Introduction contains a repetition for aims and objectives of the study. It would have been more meaningful for the authors to have instead stated primary and secondary objectives, with appropriate justification. The primary and secondary outcome measures should also have been stated and justified.[3]

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References

1. Jain A, Tiwari S, and Padickaparambil S. Cross-disciplinary appraisal of knowledge and beliefs regarding the diagnosis of autism spectrum disorders in India: A cross-sectional survey. Indian J Psychol Med 2020; 42: 219–224.
2. Atun-Einy O and Ben-Sasson A. Pediatric allied healthcare professionals' knowledge and self-efficacy regarding ASD. Res Autism Spectr Disord 2018; 47: 1–13.
3. Andrade C. The primary outcome measure and its importance in clinical trials. J Clin Psychiatry 2015; 76: e1320-3.

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Comments on "Knowledge and Beliefs About Autism Spectrum Disorders in Indian Healthcare Professionals"

Jain et al.[1] examined knowledge and beliefs about autism spectrum disorders (ASD) in healthcare professionals in India. These authors used an instrument that was adapted from an instrument developed by an Israeli team.[2] The adapted version excluded the self-efficacy component of the original instrument because participants were not comfortable with the section, particularly with the section on self-competence. However, self-efficacy is important because knowledge and beliefs are likely to influence self-efficacy, and discomfort in answering questions about self-efficacy suggests lack of self-competence. It would have been more important to revise the section to match the comfort and understanding level of participants than to remove the section from the adapted version.

Further, the authors replaced the self-efficacy section with a 26-item section testing knowledge about DSM-5 criteria for ASD. DSM-5 separates social deficit criteria from repetitive behavior criteria; so, the 26-item section of the study instrument was not unidimensional. Since internal consistency as a measure of reliability of an instrument assumes unidimensionality, when the assumption is violated, reliability will be low. This is the likely reason why the authors obtained a low Cronbach's alpha for the section. It would have been more appropriate for the authors to have examined Cronbach's alpha separately for the social deficit items and for the repetitive behavior items.[3]

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References

1. Jain A, Tiwari S, and Padickaparambil S. Crossdisciplinary appraisal of knowledge and beliefs regarding the diagnosis of autism spectrum disorders in India: a cross-sectional survey. Indian J Psychol Med 2020; 42: 219–224.
2. Atun Einy O and Ben Sasson A. Pediatric allied healthcare professionals' knowledge and self-efficacy regarding ASD. Res Autism Spectr Disord 2018; 47: 113.
3. Tavakol M and Dennick R. Making sense of Cronbach's alpha. Int J Med Educ 2011 Jun 27; 2: 53–55. DOI: 10.5116/ijme.4dfb.8dfd.

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Authors' Response to the Comments on "Cross-disciplinary Appraisal of Knowledge and Beliefs Regarding the Diagnosis of Autism Spectrum Disorders in India: A Cross-sectional Survey"

Harshe et al.[1] have commented that the comparison of knowledge about autism spectrum disorder (ASD) across groups of healthcare professionals[2] was unwarranted. It is a known fact that a multidisciplinary approach is preferred in the management of children with ASD.[3] Recent evidence also suggests an interdisciplinary approach being effective for the assessment of children with ASD.[4] Hence, knowledge about ASD in healthcare professionals is justified, given the multifaceted deficits in children with ASD. Furthermore, the literature on cross-disciplinary knowledge assessment[5,6] also supports the claims of our study.[2] The survey questionnaire in our study assessed the professionals' knowledge and beliefs about ASD, early ASD markers, and DSM-5 diagnostic criteria for ASD, which in turn is the basic knowledge required for identification and assessment of ASD. An estimation of minimum thresholds of knowledge for each professional group was beyond the scope of our study and requires further research.

To further answer the criticisms of Harshe et al.,[1] the instrument was modified, adapted, and validated before using it for the study purpose. The last para of the introduction is the formal statement of the aims and objectives (primary and secondary) of the study, and the outcome measures are the same as the measures in the objective statement(s). The justification for the objectives is also provided in the introduction para, before stating the aim and objectives.

Sharma and Andrade[7] have commented regarding the dropping of the self-efficacy section of the original questionnaire.[6] As mentioned in our paper, the participants were not comfortable answering self-efficacy and competence questions. Hence, it was not administered. Further, the study did not aim at measuring the self-efficacy the healthcare professionals had about assessment of children with ASD. The authors[7] further comment regarding replacing the self-efficacy section with the section on knowledge of DSM-5 criteria for ASD. The section on knowledge regarding the DSM-5 criteria for ASD is not a new one; rather, it already exists in the original questionnaire. The reliability measure of the overall scale, as well as this particular section on knowledge of DSM-5 criteria for ASD, was moderately good in the original study and, hence, in accordance with the reliability reported in our study.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Reference

1. Harshe D, Tekkalaki B, Bhise MC et al. Remarks on "Crossdisciplinary Appraisal of Knowledge and Beliefs Regarding the Diagnosis of Autism Spectrum Disorders in India: A Cross-sectional Survey." Indian J Psychol Med 2020; 42: 1.
2. Jain A, Tiwari S, and Padickaparambil S. Cross-disciplinary appraisal of knowledge and beliefs regarding the diagnosis of autism spectrum disorders in India: a cross-sectional survey. Indian J Psychol Med 2020; 42(3): 219–224.
3. Dalwai SH, Modak DK, Bondre AP, et al. Effect of multidisciplinary intervention on clinical outcomes of children with autism spectrum disorder in Mumbai, India. Disabil CBR Inclusive Dev 2017; 28: 95–116.
4. Gerdts J, Mancini J, Fox E, et al. Interdisciplinary Team Evaluation: an effective method for the diagnostic assessment of autism spectrum disorder. J Dev Behav Pediatr 2018; 39(4): 271–281.
5. Stone WL. Cross-disciplinary perspectives on autism. J Pediatr Psychol 1987; 12: 615–630.
6. Atun-Einy O and Ben-Sasson A. Pediatric allied healthcare professionals' knowledge and self-efficacy regarding ASD. Res Autism Spectr Disord 2018; 47: 1–13.
7. Sharma N and Andrade C. Comments on "Knowledge and beliefs about autism spectrum disorders in Indian healthcare professionals". Indian J Psychol Med 2020; 42: 1.

HOW TO CITE THIS ARTICLE: Jain A, Tiwari S, Padickaparambil S. Authors' response to the comments on "Cross-disciplinary appraisal of knowledge and beliefs regarding the diagnosis of autism spectrum disorders in India: A cross-sectional survey". *Indian J Psychol Med.* 2020;42(4): 405–406.

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Comments on "A Survey Among Teachers of Psychiatry to Improve the Quality of Undergraduate Training: Outcomes from Karnataka"

As medical students, we read with great interest the article by Kishor et al. regarding the need to improve undergraduate teaching, through a survey identifying the requirements of psychiatry teachers in Karnataka.[1] We were surprised to note that psychiatry teaching is not mandatory in order to graduate, considering an estimated one in seven individuals in India suffer from a mental health condition.[2] Thus, we recognize the importance of such articles that highlight the limitations in psychiatric teaching and would like to offer our reflections on the article alongside our training.

The survey included qualitative and quantitative analysis to assess the prevalence and methods of psychiatry teaching as well as ascertaining teachers' desires for teaching improvements. However, we note the relatively low response rate of 37%,[1] which poses a risk of self-selection bias. Perhaps those who responded were more engaged with psychiatry teaching compared to their peers.

A desire for more instruction in teaching methods was clearly established with a proposal of a one-day teaching workshop. Although a significant portion saw the need for the workshop, 35% of respondents were either unsure or did not wish to attend.[1] This is in direct contradiction with the desire for more instructions. We question why the authors did not pursue this point further by incorporating subsequent questions to clarify teachers' disinterest in attending. This leads us to query whether teachers believed their instruction was already adequate, workshops were not seen as a valuable teaching method, if the workshop was too short to be of consequence, or the inability of teachers to attend. The various reasons require distinctive actions and are all critical in the development of a standardized curriculum. Furthermore, a brief description of the creation of such a program was provided, with plans to implement similar workshops in other states, thus suggesting this had a positive impact. However, there was no formal assessment determining how useful this workshop was, and the authors also did not evaluate areas for further improvement of introducing this as a teaching strategy.

Comparatively, the psychiatry curriculum at our UK-based medical school incorporates a variety of teaching techniques that we found beneficial in understanding the specialty. It involves five weeks of dedicated placement and teaching. We note the limited teaching hours and placement availability described by Kishor et al.[1]; therefore, the quality of teaching provided is crucial. We believe that seeing clinicians interacting with patients suffering from mental health conditions, including the use of extended histories and mental state examinations, is essential. What we have found particularly useful was the implementation of problem-based learning involving discussion of complex clinical scenarios. These allowed students to work through psychiatry cases and practice history taking skills, consolidating learning. We found that reflecting on memorable psychiatric patients through essay-writing raised our engagement and improved self-directed learning. This allowed for further in-depth analysis of a psychiatric condition of student choice and simultaneously enabled the exploration of the biopsychosocial aspects of patients' well-being, which is key to patient management. The range of teaching methods used allowed us to form a more complete and holistic understanding of mental illness and its management.

Kishor et al. are successful in that they explore teacher viewpoints in order to address concerns of useful teaching styles and enhancing student engagement.[1] Nevertheless, students should also be involved in these discussions and surveyed in addition to teachers. A major challenge discussed was the difficulty in determining which teaching methods should be incorporated and the processes of ensuring student engagement with psychiatry teaching. The authors note that medical students had a low interest in psychiatry as it is not mandatory for assessment purposes.[1] However, in a clinical environment, psychiatry does not exist in isolation, and so medical students will encounter psychiatry in all fields of medicine. Furthermore, within the field of family medicine, psychiatric conditions are becoming increasingly common; therefore, knowledge of prevalent mental health conditions is in the best interest of medical students in the long term. It is important to emphasize this to students to increase their interest.

We commend the authors for implementing an invaluable survey clearly demonstrating the unmet needs of psychiatry teaching and the viewpoints of teachers. This has enabled the formation of forums and workshops to aid the development of specific teaching skills. However, more intensive work is vital for the exploration of student disinterest in psychiatry. Furthermore, we suggest teacher–student discussions are required in order to ascertain a well-structured psychiatry curriculum, with enhanced psychiatry teaching and increased student engagement.

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References

1. Kishor M, Mysore AV, Isaac MK, et al. A Survey among teachers of psychiatry to improve the quality of undergraduate training: outcomes from Karnataka. Indian J Psychol Med 2020; 42: 299–303.
2. Sagar R, Dandona R, Gururaj G, et al. The burden of mental disorders across the states of India: the Global Burden of Disease Study 1990–2017. Lancet Psychiatry 2019; 7(2): 148–161.

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Reply to Comments on "A Survey Among Teachers of Psychiatry to Improve the Quality of Undergraduate Training: Outcomes from Karnataka"

We value the comments 1 made about our article. Psychiatry teaching is mandatory; it has been wrongly noted otherwise in comments. However, learning psychiatry was not mandatory to obtain graduation as it was not incorporated anywhere in the MBBS examination process until 2018. In 2019, a competency-based medical curriculum was implemented, and it has incorporated psychiatry in the second paper of medicine for 50 marks; however, the marks are to be shared with dermatology and respiratory medicine!

The comments have raised questions regarding why some teachers were not keen on the workshop and the probable reasons for the same. We acknowledge the limitation that the survey had not further enquired about the disinterest. The post-workshop focus was on building the online platform for teachers of psychiatry based on their common felt need, and the majority of the participants are active in those platforms. However, we have not assessed the outcome of the workshop on individual teacher or the utility of the workshop.

We missed to mention in the article that all participants of the workshop were provided with many resources and materials that covered various teaching-learning methods such as problem-based learning and other methods tried in the Indian context. 2 Many methods were also presented and discussed. We agree that students should be involved at all levels, and it was one of the limitations of our survey. However, as a follow-up of the initiatives, a panel discussion involving medical students and psychiatry teachers from across the state was held at the Annual Conference of Karnataka Chapter of Indian Psychiatric Conference (KANCIPS) in 2019.3 In another progressive step, the Indian Psychiatric Society has set up a Psychiatry Faculty Training Task Force in March 2020 for the first time, and the authors (AMV and KM are Chairperson and Co-Chairperson, respectively, and MI is International Advisor) have been designated as its office-bearers. We are taking valuable input from teachers and students at all levels for the enhancement of teaching-learning in psychiatry.

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References

1. Comments on "A Survey among teachers of psychiatry to improve the quality of undergraduate training: Outcomes from Karnataka". Indian J Psychol Med 2020.
2. Kishor M and Vinay HR. Innovative ways and customizing psychiatry training for undergraduates. Indian J Psychiatry 2015; 57: 431–433.
3. Kishor M, Lakshmi V Pandit, et al. Building bridges between teachers and students in undergraduate training in psychiatry. In: Harbishettar V, NS M and Elizabeth S (eds) *Souvenir of 29th Annual state conference of Indian psychiatric society, Karnataka chapter (KANCIPS 2019); 2019 Aug 24–25, Bengaluru*. Karnataka chapter. Bengaluru: Indian Psychiatric Society, 2019: 62.

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Understanding the Difference Between Standard Deviation and Standard Error of the Mean, and Knowing When to Use Which

Chittaranjan Andrade[1]

Abstract

Many authors are unsure of whether to present the mean along with the standard deviation (SD) or along with the standard error of the mean (SEM). The SD is a descriptive statistic that estimates the scatter of values around the sample mean; hence, the SD describes the sample. In contrast, the SEM is an estimate of how close the sample mean is to the population mean; it is an intermediate term in the calculation of the 95% confidence interval around the mean, and (where applicable) statistical significance; the SEM does not describe the sample. Therefore, the mean should always be accompanied by the SD when describing the sample. There are many reasons why the SEM continues to be reported, and it is argued that none of these is justifiable. In fact, presentation of SEMs may mislead readers into believing that the sample data are more precise than they actually are. Given that the standard error is not presented for other parameters, such as difference between means or proportions, and difference between proportions, it is suggested that presentation of SEM values can be done away with, altogether.

Keywords: Standard deviation, standard error, standard error of the mean, confidence interval, statistical significance, graphs

Researchers who are knowledgeable about statistical tests are sometimes uncertain about the basics; few, for example, can correctly explain what the P value is.[1] In a similar vein, although most researchers know what the standard deviation (SD) and standard error of the mean (SEM) are, few can explain which should be used where and why. This article provides a simple clarification.

Standard Deviation

When we report our research, we need to describe our sample because the findings of our study can only be generalized to people who are similar to those whom we studied. We use descriptive statistics for this purpose. For quantitative variables, we report measures of central tendency and measures of dispersion. Measures of central tendency are the mean, median, and mode. Measures of dispersion are the range, SD, and interquartile range. It is as simple as that; we must report the SD as a measure of dispersion when we describe the sample, and the SEM does not come anywhere into the picture. This holds true whether we are describing the sample in numbers and words or in a figure.

What is the SD and why do we use it? If we regard distance from the mean as a positive number, the SD conceptually tells us how far from the mean the average person is. This indicates that if the SD is large, the values are widely scattered around the mean. In contrast, if the SD is small, the scatter is also small. Thus, the mean tells us what the average value is and the SD tells us what the average scatter of values is, around the mean. Taken together, especially along

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with the range, these statistics give us a good mental picture of the sample. Note, again, that the SEM does not come anywhere into this picture.

As an important aside, in a normal distribution there is a specific relationship between the mean and SD: mean ± 1 SD includes 68.3% of the population, mean ± 2 SD includes 95.5% of the population, and mean ± 3 SD includes 99.7% of the population. In this regard, published tables of area under the normal curve permit us to calculate the probability of finding a value at any distance from the mean when distance from the mean is expressed in terms of the SD. This is another use of the SD.

Standard Error of the Mean

The SEM is not a descriptive statistic. It tells us nothing about the sample. Therefore, it is illogical to state Mean (M) ± SEM when describing a sample; only M ± SD is correct. Then, when should the SEM be reported? A good answer could be "never" and the reason for this is that the SEM is best considered as an intermediate term in the calculation of 95% confidence interval (CI) and (where applicable) in the estimation of statistical significance.

What is the SEM? We know that the mean value that we obtain in our study is only an approximation of the mean value in the population. We also know that if we repeat our study a large number of times we will obtain different values for the mean, each time. The SEM is the SD of the means obtained in these different hypothetical studies. Thus, the SEM describes not our sample but the distribution of the means in these hypothetical studies. A large value for the SEM indicates that the means in the hypothetical studies are widely scattered. A small value for the SEM indicates that the means in the hypothetical studies are closely clustered. Therefore, the SEM is a measure of the precision of the study mean. If our study is an average study, the SEM is a measure of how far our study mean is from the population mean.

This implies that the SEM does convey some useful information to the reader. However, because the SEM is only an intermediate step in the calculation of the 95% CI, and because the 95% CI is, for various reasons, a preferred descriptor of the relationship between the study mean and the population mean,[2] it is better to report the 95% CI than the SEM.

As a point of interest, an increase in sample size makes it more likely that the sample is representative of the population, and hence that the sample mean is representative of the population mean. This is why, although an increase in sample size does not affect the value of the SD,[3,4] it does reduce the value of the SEM. The SD divided by the square root of the sample size gives us the value of the SEM.[5]

Concluding Notes

Whereas the SD describes the dispersion of data points in the sample, the SEM describes the precision of the study mean in the context of the population mean. The two concepts are so different that there is really no excuse for not knowing which value to report and where. So why do people continue to report the SEM along with the mean?

There are many "reasons." The commonest reason, especially in basic science reporting, is that others do it. This is inexcusable because it demonstrates a lack of application of mind. Another reason is that the SD is a simple concept, whereas the SEM, being more abstract, conveys an aura of high science, as is necessary in a scientific report. This is not acceptable, either, because statistics are furnished to explain, not impress.

The third reason is that the SEM is always smaller than the SD, and so when it is presented along with the mean, it makes the data appear more precise. This, as a reason, is deceitful. In fact, it is deceitful even when the reader fully understands what the SEM is. No reader will multiply the SEM with the square root of the sample size to get an idea of the SD of the sample. So, even the educated reader will read on, with an impression that the results in the sample are more precise than they actually are.

As a final reason why authors may use the SEM, because the SEM is smaller than the mean, when M ± SD data are presented in figures, SDs may take the error bars outside the box; in contrast, presenting M ± SEM data allows the figure to remain compact. This is unjustifiable because, as already explained, the reader can interpret M ± SD or M along with 95% CI; however, the reader has no theoretical framework to interpret M ± SEM as a sample descriptor because the pairing, as already explained, is illogical.

Some journals, now, explicitly require authors to present SDs, not SEMs.[3] Readers are referred to Streiner[5] and Altman and Bland[4] for a further discussion on the subject.

Finally, just as there is a standard error (SE) for the mean, there is an SE for the difference between means, an SE for a proportion, an SE for the difference between proportions, an SE for a correlation coefficient, and so on. Nobody reports the values for any SE other than the SEM; so why should the SEM ever be reported?

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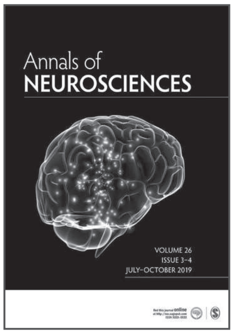
References

1. Andrade C. The P value and statistical significance: misunderstandings, explanations, challenges, and alternatives. Indian J Psychol Med 2019; 41(3): 210–215.
2. Andrade C. A primer on confidence intervals in psychopharmacology. J Clin Psychiatry 2015 Feb; 76(2): e228-31.
3. Bartko JJ. Rationale for reporting standard deviations rather than standard errors of the mean. Am J Psychiatry 1985; 142: 1060.
4. Altman DG and Bland JM. Standard deviations and standard errors. BMJ 2005; 331: 903.
5. Streiner DL. Maintaining standards: differences between the standard deviation and standard error, and when to use each. Can J Psychiatry 1996; 41: 498–502.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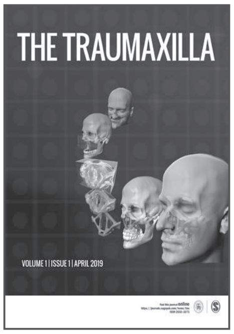
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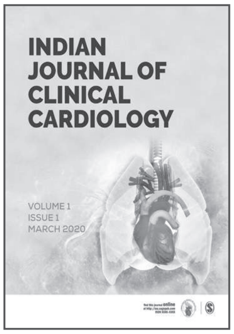
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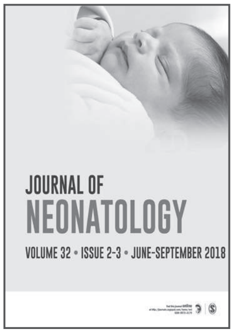
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