PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Mental health crisis in health care providers in the COVID-19 pandemic: A cross-sectional facility-based survey
AUTHORS	Sung, Chih-Wei; Chen, Chi-Hsin; Fan, Cheng-Yi; Chang, Jia-How; Hung, Chia; Fu, Chia-Ming; Wong, Li Ping; Huang, Edward Pei-Chuan; Lee, Tony Szu-Hsien

VERSION 1 – REVIEW

REVIEWER	Ahmad, Noor Ani Institute for Public Health, National Institutes of Health, Ministry of Health Malaysia
REVIEW RETURNED	10-May-2021

GENERAL COMMENTS	Title: Mental health crisis in health care providers early in the COVID-19 pandemic Abstract: i. to include time when the study was implemented instead of mention “early in the pandemic” ii. design: facility-based survey is more appropriate Introduction: To justify the need of evidence on “burnout and other mental health crises in the early stage of the pandemic” Methods: - study design: web-based anonymous survey, but why needs to review the medical charts? - Measures: o 19-item version of the Acute Stress Disorders Scale (ASDS): is it locally validated (in Mandarin)? If yes, kindly cite the findings o 6-item state version of the State–Trait Anxiety Inventory (STAI-6): is it locally validated (in Mandarin)? If yes, kindly cite the findings from the validity study o 10-item Short Form (CESD-10): is it locally validated (in Mandarin)? If yes, kindly cite the findings from the validity study o The single item, the Physician Work Life Study: is it locally validated (in Mandarin)? If yes, kindly cite the findings from the validity study Results: - how many respondents (and %) working at ACC? And how many % of those working at ACC have contact with COVID-19 patients? Discussion - single item burn-out may not able to differentiate burnout due to job or due to personal reasons - non-locally validated tools; might not be able to demonstrate actual scenario. Cut-off may be different locally

	- limitation of anonymous web-based survey: possibly those with problems used this survey to voice-out their problem, while those without issue might not respond to this survey - 59.9% of the respondents were nurses. Results might be different if equal distribution by occupation

REVIEWER	Kavoor, Anjana Queensland Health
REVIEW RETURNED	29-May-2021

GENERAL COMMENTS	This is an observational survey that examines burnout, acute stress disorder, anxiety disorder, and depressive disorder among health care providers in hospitals of Taiwan early during the COVID-19 pandemic which is a significant and relatively neglected issue. The study also examines factors associated with burnout in this population and has enumerated limitations of the study fairly. However, I have a couple of major concerns regarding incompleteness of referencing and a very similar paper published by the same authors which I have listed below along with a few other recommendations. 1. Authors have stated in their introduction that 'no study has demonstrated burnout and other mental health crises in early stages of the pandemic'. I recommend the authors to kindly reference DOI 10.1136/bmjopen-2020-045127 titled, 'Levels of burn-out among healthcare workers during the COVID-19 pandemic and their associated factors: a cross-sectional study in a tertiary hospital of a highly burdened area of north-east Italy' which was conducted relatively early in the pandemic between April-May 2020 and has also shown high burnout levels in healthcare workers and assessed factors associated with high levels of burnout. 2. Authors have mentioned the total number of respondents to the survey, however, it would be best practice to also mention how many recipients this survey was sent out to or how many total eligible recipients there were, (or if you were unable to determine this due to snowball sampling). Additionally, including the period of recruitment in the method section would also provide readers with a better understanding of the extent of outbreak during the time of study. 3. The paper has used a single item to measure burnout which has shown to be a reliable substitute for MBI:EE, however, the authors state that their 'study included a comprehensive questionnaire on burnout in health care providers' which may not be accurate. Could the authors please explain? 4. Page numbers mentioned in the STROBE checklist are inaccurate. Please amend. 5. The discussion contains more explanations for findings from other studies rather than this study. It could be more focussed on the results of this study. 6. I have concerns regarding another similar paper published by some of the authors of this study in DOI 10.1016/j.ajem.2021.01.082. Could the authors clarify the similarity between the 2 papers?

VERSION 1 – AUTHOR RESPONSE

Reviewer 1 — Dr. Noor Ani Ahmad
[Abstract]
1. To include time when the study was implemented instead of mention “early in the pandemic”
Response:
Thanks for the kind remark. In order not to make readers confused, we removed term “early in the pandemic, and added the definite time instead. In abstract, we pointed out the current study was implemented at the third month of COVID-19 pandemic.

2. design: facility-based survey is more appropriate
Response:
Thanks for the valuable suggestion. We corrected our design to “A cross-sectional facility-based survey”.

[Introduction]
3. To justify the need of evidence on “burnout and other mental health crises in the early stage of the pandemic”
Response:
Thanks for the valuable comment. Admittedly, the definition of early stage to a specific outbreak is vague. We are responsible to avoid confusion to our readers. We removed the description on “early stage”.

[Method]
4. Study design: web-based anonymous survey, but why needs to review the medical charts?
Response:
Thanks for the concern. We apologized for the mistake. We corrected the description as “The requirement of written consent was waived because the participants were anonymous”, which could be found in Method section.

5. Measures:
a. 19-item version of the Acute Stress Disorders Scale (ASDS): is it locally validated (in Mandarin)? If yes, kindly cite the findings
b. 6-item state version of the State–Trait Anxiety Inventory (STAI-6): is it locally validated (in Mandarin)? If yes, kindly cite the findings from the validity study
c. 10-item Short Form (CESD-10): is it locally validated (in Mandarin)? If yes, kindly cite the findings from the validity study
d. The single item, the Physician Work Life Study: is it locally validated (in Mandarin)? If yes, kindly cite the findings from the validity study
Response:
Thank you for the questions regarding the measures. References are added in the revised manuscript, and we briefly explained as below by each point.
a. Yes, this ASDS has been translated and validated in Chinese. The sensitivity and specificity of ASDS is 95% and 83%, respectively. The internal consistency of ASDS is great (Cronbach’s α = .96). Lu, C. H., Kung, Y. W., Su, Y. J., & Chen, S. H.* (2010). Psychometric properties of the Chinese version of Acute Stress Disorder Scale. Poster session presented at the 4th Asian Congress of Health Psychology, August 27-31, Taipei, Taiwan.

b. Yes, the 6-item state version of the State–Trait Anxiety Inventory (STAI-6) has been translated and validated in Chinese, including Hong-Kong (Shek, 1993).

Shek, D. T. (1993, May). The Chinese version of the State-Trait Anxiety Inventory: its relationship to different measures of psychological well-being. J Clin Psychol, 49(3), 349-358. https://doi.org/10.1002/1097-4679(199305)49:3

c. Yes, Chinese version of the 10-item Short Form (CESD-10) has been translated and validated in Taiwan (Lee et al., 2009).
Lee, K.-L., Ou, Y.-L., Chen, S.-h., & Weng, L.-J. (2009). The Psychometric Properties of a Short Form of the CES-D used in the Taiwan Longitudinal Study on Aging. Formosa Journal of Mental Health, 22(4), 383-410.

d. No, we did not choose the Chinese version of the Copenhagen Burnout Inventory due to dimensions with many items and medical staff responded that it is a timely matter when facing COVID-19. Hence, we focus on work-related burnout and The Physician Work Life Study, one item, is chosen and translated by the authors (Physician, Psychiatrist, and Psychologist).

[Results]
6. How many respondents (and %) working at ACC? And how many % of those working at ACC have contact with COVID-19 patients?
Response:
Thanks for this concern. As shown in Table 3, there are 778 (43%) who worked at ACC. Among them, 428 (55%) respondents have contacted confirmed COVID-19 cases.

[Discussion]
7. Single item burn-out may not able to differentiate burnout due to job or due to personal reasons
Response:
Thanks for the valuable comment. In spite of being validated by previous studies, single item burnout may fail to differentiate “one specific aspect” such as job, as your consideration. In this study, however, we did not judge whether the burnout originated from job or just personal issues. We sought to investigate the potential factors reflecting the burnout in the disease pandemic. This burnout, accompanying other emotional disorders, may be influenced the mental health in the healthcare providers during disease pandemic. The “personal reasons” may be reflected by other accompanying emotional disorders.

8. Non-locally validated tools; might not be able to demonstrate actual scenario. Cut-off may be different locally
Response:
Thanks for the valuable comment. Different cuff-off values may be existed in different population such as by countries, by ethnicities. We listed the potential bias (measurement bias) into the Limitation section. The following sentences could be found in Limitation (page 16).
“Also, different cut-off values in each inventory may be existed in different population such as by countries or ethnicities. Potential measurement bias may occur.”

9. Limitation of anonymous web-based survey: possibly those with problems used this survey to voice-out their problem, while those without issue might not respond to this survey
Response:
Thanks for the valuable comment. We could not exclude the potential issue regarding the effect of “voice-out problem.” In the Limitation section, we added this phenomenon to describe another selection bias. The following sentences could be found in Limitation (page 16).
“Second, another selection bias would be influenced the current results. Respondents who were interested in the questionnaire or who believed the survey could reflect the their minds tended to

response the questionnaire. In contrast, those who did not care the mental health would not response it so that the severity of mental health in healthcare providers would be theoretically overestimated."
10. 59.9% of the respondents were nurses. Results might be different if equal distribution by occupation
Response:
We again thank the reviewer's comment. As shown, 60% of the respondents were nurses. The authors agreed the reviewer's view that we could not exclude the possibility that different results may occur if we assigned equal distribution. However, several concerns raised so that we performed analysis in the current forms. First, the distribution was not equal in the hospitals around the world. Nurses were the top one population among the healthcare providers. The current results may reflect the condition (natural weighed). Second, the web-based anonymous survey could not assign the distribution of each group. We could not arrange intervention before the analysis.

Reviewer 2 — Dr. Anjana Kavoor
This is an observational survey that examines burnout, acute stress disorder, anxiety disorder, and depressive disorder among health care providers in hospitals of Taiwan early during the COVID-19 pandemic which is a significant and relatively neglected issue. The study also examines factors associated with burnout in this population and has enumerated limitations of the study fairly. However, I have a couple of major concerns regarding incompleteness of referencing and a very similar paper published by the same authors which I have listed below along with a few other recommendations.

1. Authors have stated in their introduction that 'no study has demonstrated burnout and other mental health crises in early stages of the pandemic'. I recommend the authors to kindly reference DOI 10.1136/bmjopen-2020-045127 titled, 'Levels of burn-out among healthcare workers during the COVID-19 pandemic and their associated factors: a cross-sectional study in a tertiary hospital of a highly burdened area of north-east Italy' which was conducted relatively early in the pandemic between April-May 2020 and has also shown high burnout levels in healthcare workers and assessed factors associated with high levels of burnout.
Response:
Thanks for the valuable comment and suggestion. We listed the study conduct by Lasalvia et al. as an important reference.

2. Authors have mentioned the total number of respondents to the survey, however, it would be best practice to also mention how many recipients this survey was sent out to or how many total eligible recipients there were, (or if you were unable to determine this due to snowball sampling). Additionally, including the period of recruitment in the method section would also provide readers with a better understanding of the extent of outbreak during the time of study.
Response:
Thanks for the valuable comment and suggestion. First, due to snowball sampling, it is difficult for investigators to know how many total eligible recipients there were. We listed it as a limitation (page 16). Second, in the method section, we added the sentence "The recruitment period was from March 12 to March 29, 2020" (page 8) for readers to understand the background of the extent of outbreak.

3. The paper has used a single item to measure burnout which has shown to be a reliable substitute for MBI:EE, however, the authors state that their 'study included a comprehensive questionnaire on burnout in health care providers' which may not be accurate. Could the authors please explain?
Response:
Thanks for the valuable comment. The original sentence would cause confusion and may be not precise to deliver the concept. We therefore removed the original sentence. Instead, we added the revised sentence "Our study included a single item to measure burnout, accompanying other emotional disorders indices in healthcare providers in hospitals at the outbreak of the COVID-19 "to make the context concise and clear (page 14).

4. Page numbers mentioned in the STROBE checklist are inaccurate. Please amend
Response:
Thanks for the valuable comment. We apologized for this mistake. We again carefully checked the numbers between STROKE checklist and manuscript. We uploaded the revised version of STROKE checklist.

5. The discussion contains more explanations for findings from other studies rather than this study. It could be more focused on the results of this study.
Response:
Thanks for the valuable comment and suggestion. We removed the second paragraph of the original manuscript because the old paragraph focused on the explanation of early fear of COVID-19 pandemic in our country. In the revised manuscript, the first paragraph of Discussion section brief summarized the current study, and the following paragraph compared the current results with other literatures, and further provided the possible explanations.

6. I have concerns regarding another similar paper published by some of the authors of this study in DOI 10.1016/j.ajem.2021.01.082. Could the authors clarify the similarity between the 2 papers?
Response:
Thanks for the important concern. Regarding the concern raised above, the current study is quite different from the previous one published in the AJEM. The current submission is different from the previous one in population, in outcome, and in parts of methodology.
In Huang's study in AJEM, the main issue focused on the effect "previous epidemic disease" (SARS) on COVID-19. Since SARS seriously stroke Taiwan in 2002 to 2003, we would like to investigate whether previous experience took positive or negative effect on current pandemic disease. It is the preliminary data of our database. Only physicians and nurses were included in the previous study, and the main outcome simply reflected the change of mental health.
In the current study, we comprehensively investigated the "burnout effect" in the whole healthcare providers including physicians, nurses, pharmacist, medical technologist, and medical radiation technologist. Also, we investigated different department such as emergency medicine, internal medicine, surgery, ENT, family medicine, etc. We compared different mental health index such as STAI-6, ASDS, CESD-10. And most important, we found the risk factor for burnout in these healthcare providers. A multivariate logistic regression model was made.

VERSION 2 – REVIEW

REVIEWER	Kavoor, Anjana Queensland Health
REVIEW RETURNED	10-Jul-2021

GENERAL COMMENTS	Please get the paper revised by a native english speaker to improve clarity of the article.

VERSION 2 – AUTHOR RESPONSE

Reviewer 2 — Dr. Anjana Kavoor

1. Please get the paper revised by a native english speaker to improve clarity of the article.

Response:

Thanks for the valuable suggestion. Our manuscript has been edited for English language, grammar, punctuation, and spelling by Enago, the editing brand of Crimson Interactive Consulting Co. Ltd. under Advance Editing B2C. The revised manuscript was confirmed again by all authors to assure the meaning of each sentence.