

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Modifiable Risk Factors Related to Burnout Levels in the Medical Workplace in Taiwan: a Cross-sectional Study
AUTHORS	Lin, Yu-Li; Chen, Cing-Hua; Chu, Wei-Min; Hu, Sung-Yuan; Liou, Yi-Sheng; Yang, Yi-Chien; Tsan, Yu-Tse

VERSION 1 – REVIEW

REVIEWER	Guillermo A. cañadas-De la Fuente University of Granada. Granada (Spain).
REVIEW RETURNED	30-Jul-2019

GENERAL COMMENTS	<p>The article is very interesting and methodologically correct. There are small correctable errors:</p> <p>ABSTRACT Page 2, line 10: The authors break down the sample and say there are 1406 nurses and then there are 570 nurses. The numbers are wrong. Authors should review them.</p> <p>INTRODUCTION: The introduction is short. The authors talk about burnout in Physicians but the sample is mixed. Therefore they should talk about burnout in nurses, resident doctors and others. There is a lot of research and meta-analysis that talk about burnout in clinical staff and non-medical healthcare staff. Authors must include it.</p> <p>METHOD: In the “Participants and study design” section they have not broken down the sample as they did in the Abstract. Authors should explain the composition of the sample in this section well.</p> <p>REFERENCES Many bibliographies are obsolete and some citations are incomplete. The bibliographic citations used are more than 5 years old (38, 7%). The authors must update and arrange the bibliography.</p>
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REVIEWER	Laura Andrea Hawryluck University Health Network, Canada
REVIEW RETURNED	01-Aug-2019

GENERAL COMMENTS	<p>Thank you for this very interesting study that adds to our understanding of this very important topic. Before accepting it for publication I would ask the authors to address the following:</p> <ol style="list-style-type: none">1. Methods:
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	<p>Can the authors further clarify the characteristics of the staff surveyed in any way: ie were they ward, outpatient, ICU? or a mix of all the above?</p> <p>Was the questionnaire complete multiple times by each participant or only once? If it was completed multiple times how did the authors control for changes in lifestyle over time?</p> <p>Were there seasonal differences in lifestyle habits? I note the study period spanned a year....</p> <p>Is eating out capturing the fact that hospital staff eat in cafeterias/restaurants during their shift or does it refer to their personal habits after hours during the workweek?</p> <p>Were any differences in eating and exercise habits on weekends captured (as what was done for sleep) -- if not, why not?</p> <p>2. Results: the authors should highlight that most participants were young, employed less than 5 years in the results section- I note they have discussed these limits in their results throughout the discussion</p> <p>Did they explore whether changes in eating and exercise habits on weekends were different and whether these had any mitigating effects on burnout? If this wasn't captured, why not?</p> <p>Can the authors describe if there were differences across spectrum of of burnout indices or just the total score?</p> <p>5. Discussion: This was nicely written. I think if the authors clarified the responses to my earlier questions it would be strengthened further.</p> <p>I believe the authors should comment that there is no way to have assessed quality of sleep vs its self-reported duration -- in fact perceived quality may affect perceived duration in participants self-reporting. This may also be a limit of their study. It does not mean their results are less interesting however but it is a limitation.</p> <p>i would also like to see a discussion of how changes in eating/exercise behaviours on weekends were accounted for (or not) and their possible effects on burnout-- do the authors feel this needs more research?</p> <p>I am not sure I understand the last few sentences of this article: are the authors stating they are planning a workplace intervention focused on sleep and/or other modifiable lifestyle and anticipate that this may affect future results should the study be repeated ?</p> <p>Can the authors comment on on the reasons why those with normal levels of workday sleep could have had higher WB rates?</p> <p>Finally- a minor point on p. 4 there is a typo -- it should read "modifiable factors are..." instead of modifiable factors is</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer(s)' Comments to Author:

Reviewer: 1

Reviewer Name: Guillermo A. cañadas-De la Fuente

Institution and Country: University of Granada. Granada (Spain).

ABSTRACT

Page 2, line 10: The authors break down the sample and say there are 1406 nurses and then there are 570 nurses. The numbers are wrong. Authors should review them.

Answer: Thank you for your suggestion. We have deleted the redundant words according to the above instruction.

INTRODUCTION:

The introduction is short. The authors talk about burnout in Physicians but the sample is mixed. Therefore they should talk about burnout in nurses, resident doctors and others. There is a lot of research and meta-analysis that talk about burnout in clinical staff and non-medical healthcare staff. Authors must include it.

Answer: Thank you for your suggestion. We have included related researches (References 4,5,6) and meta-analysis about burnout in nurses, physician assistants, resident doctors, administrative staff and medical technicians in the first paragraph of the introduction section.

METHOD:

In the "Participants and study design" section they have not broken down the sample as they did in the Abstract. Authors should explain the composition of the sample in this section well.

Answer: Thank you for your suggestion. We have detailed the composition of the sample in this section as follows: 'The voluntary participants included 167 visiting doctors, 191 resident doctors, 1406 nurses, 367 medical technicians, and 615 administrative staff (including 16 supervisors)'. Besides, we slightly modified the classification description of administrative staff in Table 1/2/3.

REFERENCES

Many bibliographies are obsolete and some citations are incomplete. The bibliographic citations used are more than 5 years old (38, 7%). The authors must update and arrange the bibliography.

Answer: Thank you for your suggestion. After revised, we had updated 12 new references (all in recent 5 years) and deleted 4 (more than 5 years). The citation rate of literature from 5 years ago has dropped to 20%, including the original literatures of various burnout and statistical assessment tool and articles from less popular research topics. We also revised some incomplete citations as your instruction.

Reviewer: 2

Reviewer Name: Laura Andrea Hawryluck

Institution and Country: University Health Network, Canada

Thank you for this very interesting study that adds to our understanding of this very important topic. Before accepting it for publication I would ask the authors to address the following:

1. Methods:

Can the authors further clarify the characteristics of the staff surveyed in any way: ie were they ward, outpatient, ICU? or a mix of all the above?

Answer: Thank you for your question. The Taichung Veterans General Hospital is a medical center in Taiwan. The staffs in our study came from different units, include ICU, ward, clinic, etc. Due to the limitations of the sample size, we did not subdivided staffs by unit. But we still divide the participants by profession categories (visiting doctors, resident doctors, nurses, medical technicians, and administrative staff).

Was the questionnaire complete multiple times by each participant or only once? If it was completed multiple times how did the authors control for changes in lifestyle over time?

Were there seasonal differences in lifestyle habits? I note the study period spanned a year....

Answer: Thank you for your question. The questionnaire was completed only once by each participant. A total of 2,746 participants completed the questionnaire throughout the year. Therefore, the season in which each participant fills out the questionnaire may indeed be different. However, the questions in the questionnaire about lifestyle habits are not limited to specific time or season, but rather long-standing lifestyle habits. Besides, we can't find the clear evidence about relationship between the season and lifestyle habits after literature review. However, this is indeed an issue that can be studied in the future. Thanks for your recommendations.

Is eating out capturing the fact that hospital staff eat in cafeterias/restaurants during their shift or does it refer to their personal habits after hours during the workweek?

Were any differences in eating and exercise habits on weekends captured (as what was done for sleep) -- if not, why not?

Answer:

Thank you for your question. In our culture, eating outside means eating a diet not at home. As a result, "dining in cafeterias/restaurants during shift" is generally considered as "eating outside". The items of questionnaire in our study were based on items in a questionnaire devised by experts for a nationally implemented occupational health program. For the eating and exercise, these items of questionnaire did not distinguish between workdays and weekend. The questionnaire only distinguished between workday sleep hours and weekend sleep hours, perhaps considering the impact of catch-up sleep.

2. Results: the authors should highlight that most participants were young, employed less than 5 years in the results section- I note they have discussed these limits in their results throughout the discussion

Answer: Thank you for your suggestion. We have revised the sentence in the "Characteristics of the participants" section as follows: 'Nearly half of the participants were young (between 21 to 34 years old, 47.34%), and around one third were employed for less than 5 years (34.38%)'.

Did they explore whether changes in eating and exercise habits on weekends were different and whether these had any mitigating effects on burnout? If this wasn't captured, why not?

Answer: Thank you for your question. Due to the limitations of the official questionnaire used in this study, we surveyed exercise duration per week, general meal times, and average number of times eating out per day, without distinguishing between workdays and weekends. We have added the above sentences into the fifth paragraph in discussion section.

Can the authors describe if there were differences across spectrum of burnout indices or just the total score?

Answer: Thank you for your question. Although the C-CBI 'work-related burnout' subscales consist of 7 items, the overall assessment of burnout level requires a total of seven items, rather than a single item, according to the "Guideline for Preventing Diseases Caused by Exceptional Workload" in Taiwan. As a result, this study did not investigate the effects of factors on individual burnout indicators.

5. Discussion: This was nicely written. I think if the authors clarified the responses to my earlier questions it would be strengthened further.

I believe the authors should comment that there is no way to have assessed quality of sleep vs its self-reported duration -- in fact perceived quality may affect C duration in participants self-reporting. This may also be a limit of their study. It does not mean their results are less interesting however but it is a limitation.

Answer: Thank you for your suggestion. We have mentioned this point in the last paragraph of discussion section (the limitation part) as follows: 'Third, there was no objective way to assess the quality of sleep or to verify the self-reported sleep duration in this study. In fact, perceived sleep quality may affect self-reported sleep duration, which should be taken into consideration when interpreting the results of this study.'

i would also like to see a discussion of how changes in eating/exercise behaviours on weekends were accounted for (or not) and their possible effects on burnout-- do the authors feel this needs more research?

Answer:

Thank you for your suggestion. Clemens Drenowatz, et al. found that weekend behaviors appeared to be of particular importance, even though overall physical activity levels were similar between weekdays and the weekend. 35 A possible explanation is the greater freedom of lifestyle choices during the weekend. Moreover, a nationally representative survey of diet among U.S. adults revealed that weekend consumption was associated with increased calorie intake and poorer diet quality. 36 The greater prevalence of fast-food and full-service restaurant consumption may contribute to poorer diet quality on weekends. A possible explanation for this phenomenon is that time away from one's occupation leads to more time spent on food-related activities, and social aspects of weekends are often paired with eating. 37

Although there are no studies directly focusing on the relationship between eating/exercise behaviours on weekends and burnout, unhealthy eating style and reduced physical activity level may tend to be more prevalent on weekend. Future research should distinguish the impact of lifestyle habits on workdays and weekends on burnout.

We have added the above sentences and cited new references(Ref 35~37) into the fifth paragraph in discussion section and slightly modified it.

I am not sure I understand the last few sentences of this article: are the authors stating they are planning a workplace intervention focused on sleep and/or other modifiable lifestyle and anticipate that this may affect future results should the study be repeated ?

Answer:

Thank you for your question. Although we found the relationship between these modifiable lifestyle factors and work-related burnout, we could not establish the causal relationship between them due to the study design. However, this article still provides important targets (unhealthy lifestyle) for workplace intervention in the future.

We have revised the last few sentences in the conclusion section as follows: 'Clinicians should pay particular attention to people with combined unhealthy lifestyle factors, especially short sleep duration without weekend catch-up sleep. Serious efforts must be undertaken to reduce modifiable risk factors in the workplace to promote the health of medical staff, although further prospective studies are still necessary to establish the causal relationships between unhealthy lifestyle behaviors and burnout.'

Can the authors comment on the reasons why those with normal levels of workday sleep could have had higher WB rates?

Answer:

Thank you for your question. In table 4 (after adjustment), those with "Workday sleep hours ≥ 7 hrs and catch-up sleep hours > 2 hrs" (> 9 hours in total on weekends) had higher OR for WB (6.74 compared to those with enough sleep). Generally, around 7 to 9 hours is regarded as the optimal duration of sleep in terms of psychological well-being and subjectively perceived health. 38 Although there is no evidence showing correlations between longer sleep durations and burnout, previous studies have found that long sleep duration (> 9 hours) was associated with an increased likelihood of depression, anxiety, and diabetes. 38 39 A potential underlying mechanism may involve increased levels of inflammation markers in long sleepers. 39 Moreover, weekend catch-up sleep behavior could be considered a violation of sleep hygiene rules. 15 Nonetheless, weekend catch-up sleep may

reasonably be expected to be associated with better health outcome in subjects with sleep debt, which was indeed borne out by our findings.
 We have added the above sentences and cited new references(Ref 38, 39) into the eighth paragraph in discussion section.

Finally- a minor point on p. 4 there is a typo -- it should read "modifiable factors are..." instead of modifiable factors is

Answer: Thank you for your suggestion and we have revised the sentence.

VERSION 2 – REVIEW

REVIEWER	Guillermo A. Cañadas-De la Fuente University of Granada (Spain)
REVIEW RETURNED	23-Sep-2019

GENERAL COMMENTS	<p>The article is very interesting and methodologically correct. There are small correctable errors:</p> <p>DISCUSSION Page 17, line 12-13: The authors say “First, the study design is cross-sectional, therefore a causal relationship could not be established”. If this study is transversal, relationships can be established, causality cannot be established. To establish causality the study must be longitudinal. It would be interesting to include implications for occupational health.</p> <p>REFERENCES Many bibliographies are obsolete and some citations are incomplete. The bibliographic citations used are more than 5 years old (32%). The authors must update and arrange the bibliography. There are many current meta-analytical studies that speak of burnout and related factors.</p>
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REVIEWER	Laura Andrea Hawryluck University Health Network, Toronto Canada
REVIEW RETURNED	25-Sep-2019

GENERAL COMMENTS	<p>I believe the authors have done an excellent job at answering my questions from my first review. It would be very interesting if there was more analysis on impact on physicians alone and an exploration of any differences among gender in physician groups. I know the numbers are small relative to their larger sample however as they point out physicians' lifestyles are less predictable as most do not work pre-defined shifts. Maybe this could be the subject of future research</p>
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VERSION 2 – AUTHOR RESPONSE

Reviewer(s)' Comments to Author:

Reviewer: 1

Reviewer Name: Guillermo A. Cañadas-De la Fuente

Institution and Country: University of Granada (Spain)

The article is very interesting and methodologically correct. There are small correctable errors:

DISCUSSION

Page 17, line 12-13: The authors say "First, the study design is cross-sectional, therefore a causal relationship could not be established". If this study is transversal, relationships can be established, causality cannot be established. To establish causality the study must be longitudinal.

It would be interesting to include implications for occupational health.

Answer:

Thank you for your suggestion. We really can only establish the relationships due to the cross-sectional design. We also consider conducting longitudinal research in the future to establish the causality for occupational health.

REFERENCES

Many bibliographies are obsolete and some citations are incomplete. The bibliographic citations used are more than 5 years old (32%). The authors must update and arrange the bibliography.

There are many current meta-analytical studies that speak of burnout and related factors.

Answer:

Thank you for your suggestion. We had added recent studies (include meta-analysis) about burnout in nurses, physician assistants, resident doctors, administrative staff and medical technicians in the first paragraph of the introduction section (References 4-6). Overall, we had added 12 new references (all in recent 5 years) and deleted 4 (more than 5 years). As a result, the citation rate of literature from 5 years ago (before 2015) has dropped to 20.5% (8/39). Among the eight articles from 5 years ago, five (Reference 19-23) are the original studies of various types of burnout and statistical assessment tools, and the other three (Reference 2, 31, 32) are from relatively less popular research fields. We also revised some incomplete citations in the references as your instruction.

Reviewer: 2

Reviewer Name: Laura Andrea Hawryluck

Institution and Country: University Health Network, Toronto Canada

I believe the authors have done an excellent job at answering my questions from my first review.

It would be very interesting if there was more analysis on impact on physicians alone and an exploration of any differences among gender in physician groups. I know the numbers are small relative to their larger sample however as they point out physicians' lifestyles are less predictable as most do not work pre-defined shifts. Maybe this could be the subject of future research.

Answer:

Thank you for your suggestion. For physician groups, younger age, female sex, long working hours were found to be predictive of burnout syndrome across the literature. However, there was no previous studies specifically focusing on the differences between doctors and other categories of burnout risk factors. We also consider conducting further research about the subject in the future.