PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (**http://bmjopen.bmj.com/site/about/resources/checklist.pdf**) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Association between insomnia symptoms, job strain, and burnout syndrome: a cross-sectional survey of 1300 financial workers.
AUTHORS	Metlaine, Arnaud; Sauvet, Fabien; Gomez-Merino, Danielle; Elbaz, Maxime; Delafosse, Jean-Yves; Leger, Damien; Chennaoui, Mounir

VERSION 1 - REVIEW

REVIEWER	JULIAN MANUEL DOMINGUEZ FERNANDEZ SERVICIO DE MEDICINA PREVENTIVA, SALUD PÚBLICA Y PREVENCIÓN DE RIESGOS LABORALES. HOSPITAL UNIVERSITARIO DE CEUTA. ESPAÑA.
REVIEW RETURNED	06-Jun-2016

GENERAL COMMENTS	Limitations of the study, being a cross-sectional study are important but could be solved by continuing with an additional prospective study after the one presented in this article. The relationships model between job strain, sleep, job satisfaction, anxiety and burnout, are very interesting and determine a way with encouraging results.

REVIEWER	Mijakoski, Dragan Institute of Occupational Health of RM-Skopje, WHO Collaborating Center, GA2LEN Collaborating Center, II Makedonska Brigada 43 Skopje R. Macedonia
REVIEW RETURNED	22-Jul-2016

GENERAL COMMENTS	Respected authors, The paper involves an assessment of burnout in financial workers and its' predictors and/or outcomes. It is our opinion that this manuscript should be accepted for publication after several minor revisions: - the study objective should stress that job strain and sleep disturbances were examined as potential risk factors (predictors) and/or outcomes of burnout; - similar terminology should be used in both abstract and main text (ex. job strain and sleep disturbances as prognostic vs. risk factors); - it is better to use terms "worker" or "employee" than "patient";

- it is important to indicate the response rate within Study design section;

- it is necessary to clearly define "what is burnout?" in the Methods section; it is a little bit confusing when describing categorization of burnout into low, moderate, and high levels (page 7);

- Did authors use two types of questionnaires for the assessment of Job strain? Or, only Job demand-control questionnaire (page 8)?;

- Please provide "professional" and "sleep" parameters (in brackets) included into Model 2 (page 10);

- Figure 1 should be positioned at the end, after tables;

- Job strain elements should be located centrally on Figure 1 (because they are the main components of the paper, together with sleep disturbances or insomnia and burnout);

- To reproduce Figure 1 because the quality is lower than usually;

- To delete columns about "Controls" (N and %) in tables 1, 2 and 3;

- English language should be polished;

REVIEWER	Maria do Socorro S. Valente, Professor – PhD State University of Pará, Belém, Brazil
REVIEW RETURNED	12-Aug-2016

| GENERAL COMMENTS | Comments to the author I think this an interesting study. I have some comments in some points, as outlined below: Abstract: - In the Abstract section, the authors say about polynomial analyze, however there is not description about this methodology in the Methods section. Methods: - On page 7, second paragraph and on page 8, third paragraph there is not the final "parenthesis"; - Authors say that "In our study we used part of the questionnaire that focused on sleep habits and insomnia" and "To assess insomnia symptoms we add questions based on new reference documents: the "International Classification of Sleep Disorders" (ICSD-3) and the "Diagnostic and Statistical Manual of Mental Disorders", 5 th revision (DSM-IV)." Please clarify it. Results: Authors say that "A total of 1,300 employees (575 males and 725 females) finally completed the questionnaire after excluding 45 employees who had at least one missing response on the questionnaires, 102 employees who did not met inclusion criteria, and 9 nine subjects with clinical depression". I'm confused because in the Abstract section you said that there were 1502 participants. Please, clarify it. -Table 1 and Table 2- There is a disconnect in this manuscript between a total of employees presented in the Table 1 and in the Table 2. - Page 13 – Authors say "The mean EVA score for….". Please clarify EVA. |

	- Pages 28 and 29 - the Tables 3 and 4 show social support, low strain, high strain, active job, passive job, however there is not comments about these issues in the Methods section. - Figure 1 - the text and especially the numbers are very hard to read. The authors might want to upload a better version of the figure, where the numbers have a larger font size. - Tables 3 and 4- Perhaps the authors should include in footnotes what mean "Model 1" and "Model 2". Discussion: - Page 15: Please clarify "VAS" - In general, the discussion section should be reviewed. Sometimes, the authors present the results as a longitudinal study. I would prefer to read more about the results in relation to the financial worker context. Limitations: - Authors say the reliability of MBI is unknown. However, several studies had shown the reliability of MBI in different countries and cultures (see, e.g. Gil-Monte, 2005; Loera et al, 2014; Chao et al, 2011).

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Limitations of the study, being a cross-sectional study are important but could be solved by continuing with an additional prospective study after the one presented in this article. The relationships model between job strain, sleep, job satisfaction, anxiety and burnout, are very interesting and determine a way with encouraging results.

Resp. Reviewer is right. A prospective study will be pertinent to clarify and demonstrate links between burnout and job strain and sleep disorders. This study is planned. We add a statement in the limitation study as follow "A prospective study is required to demonstrate the causal relationship between insomnia to burnout and job strain in our population of white-collar financial employees". We thank the reviewer for his encouragements and his help.

Reviewer: 2

Please leave your comments for the authors below
Respected authors,

The paper involves an assessment of burnout in financial workers and its' predictors and/or outcomes. It is our opinion that this manuscript should be accepted for publication after several minor revisions:

- the study objective should stress that job strain and sleep disturbances were examined as potential risk factors (predictors) and/or outcomes of burnout;

Resp. We agree with this remark and we thank the reviewer for his help to improve our manuscript. We added, in the study objective paragraph at the end of the instruction the following sentence: "The second objective was to examine whether job strain and sleep disturbances are potential risk factors (predictors) and/or outcomes of burnout. "

- similar terminology should be used in both abstract and main text (ex. job strain and sleep disturbances as prognostic vs. risk factors);

Resp. The reviewer is right. Abstract and main text has been corrected in order to use similar terminology. "prognostic" has been changed to "risk factor" in the abstract.

- it is better to use terms "worker" or "employee" than "patient";
Resp. We agree with the reviewer. "Patient" has been changed to "employees" throughout the manuscript.

- it is important to indicate the response rate within Study design section;
Resp. The reviewer is right. The response rate has been added in the result section as follow:" 1502 employees completed the questionnaire. We excluded 45 employees who had at least one missing response on the questionnaires, 102 employees who did not met inclusion criteria, and 9 nine subjects with clinical depression. Finally, a total of 1,300 questionnaires (575 males and 725 females) were analyzed (86.7 %)".

- it is necessary to clearly define "what is burnout?" in the Methods section; it is a little bit confusing when describing categorization of burnout into low, moderate, and high levels (page 7);
Resp. In order to clarify our manuscript we followed the reviewer recommendation and described burnout as follow in the Methods: "Burnout was considered as:
- low level if emotional exhaustion score was <16, cynicism < 6 and professional efficacy > 37.
- moderate level if emotional exhaustion between 17 and 26, cynicism between 7 and 12 and professional efficacy between 31 and 36.
- high level if emotional exhaustion was >27, cynicism >13, and professional efficacy <30."

- Did authors use two types of questionnaires for the assessment of Job strain? Or, only Job demand-control questionnaire (page 8)?;
Resp. We agree with this remark. The sentence induces confusion, it has been rewritten as follow:" Job strain level was calculated from job control and job demand scores from the validated French version of the Karasek job-content questionnaire (JCQ)."

- Please provide "professional" and "sleep" parameters (in brackets) included into Model 2 (page 10);
Resp. In the statistical part of the Methods paragraph, as well as in footnotes under figures, we clearly explained the factors adjusted in the model 2 as follow: "Model 2, in which OR was adjusted for sociodemographic, sociodemographic, professional (management position) and sleep parameters (habitual sleep time, week end sleep time, ESS)."

- Figure 1 should be positioned at the end, after tables;
Resp. Figure 1 has been positioned at the end of the manuscript

- Job strain elements should be located centrally on Figure 1 (because they are the main components of the paper, together with sleep disturbances or insomnia and burnout);
Resp. We thank the reviewer for his help to improve our work and manuscript. In our sample of financial workers, job strain represents a burnout risk factor only if associated with insomnia. Job strain is not an independent factor of burnout. Our figure has been constructed in order to show the relationships between risk factors and burnout and to underline dependences between risk factors.

- To reproduce Figure 1 because the quality is lower than usually;
Resp. Figure 1 has been corrected and the quality improved.

- To delete columns about "Controls" (N and %) in tables 1, 2 and 3;

Resp. As recommended we deleted the "Controls" columns in tables 1, 2 and 3.

- English language should be polished;
Resp. As recommended, our manuscript has been corrected by an English native speaker.

Reviewer: 3

Abstract:
- In the Abstract section, the authors say about polynomial analyze, however there is not description about this methodology in the Methods section.
Resp. We thank the reviewer for his help and recommendations. Polynomial analysis has been removed from our manuscript before submission because results confirm binomial analysis and don't give supplementary information. We corrected the abstract and removed the sentence.

Methods:
- On page 7, second paragraph and on page 8, third paragraph there is not the final "parenthesis";
Resp. Final parenthesis has been added.

- Authors say that "In our study we used part of the questionnaire that focused on sleep habits and insomnia" and "To assess insomnia symptoms we add questions based on new reference documents: the "International Classification of Sleep Disorders" (ICSD-3) and the "Diagnostic and Statistical Manual of Mental Disorders", 5 th revision (DSM-IV)." Please clarify it.
Resp. We clearly described that "To assess insomnia symptoms we add questions based on reference documents, particularly the "International Classification of Sleep Disorders" (ICSD-3)."

Results:
Authors say that "A total of 1,300 employees (575 males and 725 females) finally completed the questionnaire after excluding 45 employees who had at least one missing response on the questionnaires, 102 employees who did not met inclusion criteria, and 9 nine subjects with clinical depression". I'm confused because in the Abstract section you said that there were 1502 participants. Please, clarify it.
Resp. The reviewer is right. We clearly explain the participation and exclusions as follow: 1502 employees completed the questionnaire. We excluded 45 employees who had at least one missing response on the questionnaires, 102 employees who did not met inclusion criteria, and 9 nine subjects with clinical depression. Finally, a total of 1,300 questionnaires (575 males and 725 females) were analyzed (86.7 %).

-Table 1 and Table 2- There is a disconnect in this manuscript between a total of employees presented in the Table 1 and in the Table 2.
Resp. The reviewer is right. We corrected the number of questionnaires analyzed (n=1300) in the abstract.

- Page 13 – Authors say "The mean EVA score for….". Please clarify EVA.
Resp. We corrected the sentence and changed "EVA" to "Visual analogic scale (VAS)"

- Pages 28 and 29 - the Tables 3 and 4 show social support, low strain, high strain, active job, passive job, however there is not comments about these issues in the Methods section.
Resp. We agree with this remark and we added the following sentence in the method section: "Low strain job was defined as a job with high control and low demand, high strain as a job with low control and high demand, active job with high control and high demand and passive job as low control and low demand. Social support was defined as high if the score was higher than 23"

- Figure 1 - the text and especially the numbers are very hard to read. The authors might want to upload a better version of the figure, where the numbers have a larger font size.
Resp. The quality of the figure 1 has been improved.

- Tables 3 and 4- Perhaps the authors should include in footnotes what mean "Model 1" and "Model 2".
Resp. As recommended we added the following footnotes under the Tables 2 and 3:" Model 1, OR adjusted for sociodemographic parameters (age, weight, sex, BMI, physical activity, smoking and alcohol habits). Model 2, OR adjusted for sociodemographic, professional (management position) and sleep parameters (habitual sleep time, difference with week end sleep time).

Discussion:
- Page 15: Please clarify "VAS"
Resp. We defined "VAS", as visual analogic scale in the Methods.

- In general, the discussion section should be reviewed. Sometimes, the authors present the results as a longitudinal study. I would prefer to read more about the results in relation to the financial worker context.
Resp. We agree with the reviewer. The discussion was read and we changed all the confusing sentences. We add a recent paper of de Beer et al. 2014, related to burnout in white collar employees.
The following sentences have been added in the discussion:"
"In white collar employees, de Beer et al. observed 17% reporting "always" or "often" sleep difficulties and 37% "sometimes" sleep difficulties."
"In a recent study in white collar employees, de Beer et al. observed that the treatment of depression decreases the risk of sleep disorders and burnout."

Limitations:
- Authors say the reliability of MBI is unknown. However, several studies had shown the reliability of MBI in different countries and cultures (see, e.g. Gil-Monte, 2005; Loera et al, 2014; Chao et al, 2011).
Resp. We thank the reviewer for his remark. The sentence has been deleted.