PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

Title (Provisional)

Association of Occupational Noise Exposure and Shift Work with Non-alcoholic Fatty Liver Disease: A cross-sectional study of male workers in Chinese automobile manufacturing industry.

Authors

Jinwei, ZHANG; Zhang, Yuxia; Qiu, Cong xi; Wenfeng, ZENG; Yanmei, RUAN; Gao , Yun xia; Ma , Wei yu; Wu , Kang yong; Zhang , Jing wen; Cui, Jiaxin; Ye, Cui ping; Liang, Jiabin; Wang, Zhi

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VERSION 1 - REVIEW

Reviewer **1**

Name **Wu, Jian hui**

Affiliation **North China University of Science and Technology, Department of Epidemiology and Health Statistics**

Date **09-Apr-2024**

COI **Non**

1.The importance of noise protection equipment component ratios for NAFLD group in Table 1 do not add up to 100% , and the calculated component ratios in Table 1 should not be kept"%"

2.The rank sum test should be used for"Cumulative length of night shift work" and"CNE" in Table 1.

3.Results of univariate analysis of"Age, smoking and drinking status, fruit and vegetable, high-salt foods, high-fat foods, Late evening snack, BMI, sleep duration, physical activity, BP, ECG, FPG, HGB" and other indicators should be presented in Table 1.

4."3.3 The relationship between shift work and NAFLD" has no detailed results.

5.Increased interaction of noise and shift effects on NAFLD.

Reviewer **2**

Name **Baptista, Marcos C.**

Affiliation **Universidade de São Paulo, Department and Institute of Psychiatry**

Date **02-Jun-2024**

COI **No competing interests**

The study is relevant, innovative, and must be published with a few edits.

In section 2 "Materials and methods" // 2.2 "NAFLD diagnosis and collection of information on covariates," the authors describe high-salt foods (pickled vegetables, ham, and bacon) and high-fat foods (chips, chocolate, animal offal, and fried foods). However, it is unclear how this information was collected among participants. Was it part of the occupational health examination? If so, which specific tool or questionnaire was used to assess dietary habits? This information should be explicitly stated in the text for better clarity.

A critical gap exists within the study's methodology. While section 2, "Materials and methods," comprehensively details noise exposure assessment, it fails to provide equivalent information regarding the assessment of other occupational hygiene exposures. This omission is particularly concerning because Table 1 presents data on dust and aromatic hydrocarbon exposure, neither of which are addressed in the methodology section. It is well recognized that certain aromatic hydrocarbons can exhibit significant hepatotoxic effects, highlighting the potential health risks associated with these exposures. To strengthen the comprehensiveness and transparency of their research, the authors should revisit their methodology section and provide a more detailed explanation regarding how these additional occupational exposures were assessed. This should include specifying the methods employed, identifying the specific aromatic hydrocarbons detected, and outlining the potential hepatotoxic risks associated with these particular hydrocarbons.

In Table 4 - Association of CNE and cumulative length of night shift work with NAFLD, the authors must add p value for a better clarity of statistical significance.

VERSION 1 - AUTHOR RESPONSE

Reviewer **1**

Comment 1: The importance of noise protection equipment component ratios for NAFLD group in Table 1 do not add up to 100% , and the calculated component ratios in Table 1 should not be kept”%”

Response: Thank you for pointing out this issue. We have revised Table 1 and rechecked all tables in the article to correct any errors (Pages 9 to10, lines 241, Table 1).

Comment 2: The rank sum test should be used for“Cumulative length of night shift work” and “CNE” in Table 1.

Response: Thank you for your advice. We have made modifications according to the suggestions, and used rank sum test to analyze the differences of cumulative length of night shift work and CNE in different disease states. The specific modifications are shown in Table1 (Pages 10, Table 1).

Comment 3: Results of univariate analysis of “Age, smoking and drinking status, fruit and vegetable, high-salt foods, high-fat foods, Late evening snack, BMI, sleep duration, physical activity, BP, ECG, FPG, HGB” and other indicators should be presented in Table 1.

Response: Thank you for your insightful comment. We have revised this section to list these contents in Table 1 (Pages 9 to 10). However, due to the limitation of the paper's space, we put the variables with no statistical significance in the hypothesis test results in the Supplementary Table 1 .

Comment 4: “3.3 The relationship between shift work and NAFLD” has no detailed results.

Response: Thank you for your suggestions. We have revised this part to present the relationship between shift work and NAFLD in the form of pictures. We have revised Figure 1 to present the relationship between shift work and NAFLD in a more comprehensive way (Pages 12 and Figure 1).

Comment 5: Increased interaction of noise and shift effects on NAFLD.

Response: Thank the reviewer for pointing this out. We concur with the reviewer's evaluation. We have supplemented this part according to your comments, and added the analysis of the relationship between the interaction between noise work and shift work and NAFLD. See the Table 4 for specific modifications (Pages 12, lines 294).

Reviewer 2

Comment 1: In section 2 "Materials and methods" // 2.2 "NAFLD diagnosis and collection of information on covariates," the authors describe high-salt foods (pickled vegetables, ham, and bacon) and high-fat foods (chips, chocolate, animal offal, and fried foods). However, it is unclear how this information was collected among participants. Was it part of the occupational

health examination? If so, which specific tool or questionnaire was used to assess dietary habits? This information should be explicitly stated in the text for better clarity.

Response: Thank you for underlining this deficiency. In fact, the occupational health examination and the questionnaire survey were carried out at the same time. We used a self-designed questionnaire to carry out the survey. Regarding the suggestion about the methods, we changed this part (Pages 5 to 6, lines 132-155).

Comment 2: A critical gap exists within the study's methodology. While section 2, "Materials and methods," comprehensively details noise exposure assessment, it fails to provide equivalent information regarding the assessment of other occupational hygiene exposures. This omission is particularly concerning because Table 1 presents data on dust and aromatic hydrocarbon exposure, neither of which are addressed in the methodology section. It is well recognized that certain aromatic hydrocarbons can exhibit significant hepatotoxic effects, highlighting the potential health risks associated with these exposures. To strengthen the comprehensiveness and transparency of their research, the authors should revisit their methodology section and provide a more detailed explanation regarding how these additional occupational exposures were assessed. This should include specifying the methods employed, identifying the specific aromatic hydrocarbons detected, and outlining the potential hepatotoxic risks associated with these particular hydrocarbons.

Response:

As suggested by the reviewer, we have supplemented detailed exposure assessment methods for dust and benzene series in the methods section, as detailed on Pages 6 in the revision (Pages 6 to 7, lines 176-183).

The benzene series to which the subjects in this study were exposed refers primarily to benzene, toluene, and xylenes. And we have added an overview of the potential risks to the liver from these chemicals to the discussion, as detailed on Pages 18 and 19 in the revision (Supplementary Table 3, Pages 16, lines 388-404,).

Comment 3: In Table 4 - Association of CNE and cumulative length of night shift work with NAFLD, the authors must add p value for a better clarity of statistical significance.

Response: Thanks for your suggestion, we have annotated the results with $p < 0.05$ in order to more clearly express the relationship between the combined effect of CNE and cumulative length of night shift work in association with NAFLD, as detailed in Table 5 (Pages 13, lines 312).

We are grateful for the invaluable feedback provided by the reviewers. We have made detailed revisions based on the comments and we hope the revised manuscript meets your expectations.

VERSION 2 - REVIEW

Reviewer	**1**
Name	**Wu, Jian hui**
Affiliation	**North China University of Science and Technology, Department of Epidemiology and Health Statistics**
Date	**09-Jan-2025**
COI	

The author has basically responded to my suggestions one by one

Reviewer	**2**
Name	**Baptista, Marcos C.**
Affiliation	**Universidade de São Paulo, Department and Institute of Psychiatry**
Date	**19-Jan-2025**
COI	

In my opinion, the article is now suitable for publication after the authors' edits.