Author’s response to reviews


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Author’s response to reviews:

Dear Editors and Reviewers,


We have addressed reviewer comments to the best of our ability below:

REVIEWER 1

1) In the informed consent, were the participants promised anonymous handling of their responses?

Response: The following text was included in the informed consent for our study:

“Your responses are protected. We never share contact information or medical details. Your responses are assigned a code during data analysis rather than including your name. All findings are reported in a group without reference to individual identifiers.”

2) Were there differences between the online responders than those that completed a written survey (e.g. age, year of service, etc.)?
Response: There were differences between online and hard copy responders, which we discuss in the methods, results, and discussion sections:

“We calculated descriptive statistics for participant characteristics and health outcomes, and we compared participants taking hard copy and online questionnaires on key characteristics using Student’s t test and chi-square analysis.”

“Participants taking hard copy surveys differed from online survey takers in terms of age, tenure, sex, smoking status, and ethnicity, and were similar in terms of overweight, race, education, and past smoking history (data not shown).”

“We considered several explanations for our unexpected results, such as differences between hard copy and online questionnaire takers...Sensitivity analyses indicated that...results were robust when restricting analyses to participants who filled out a hard copy questionnaire.”

3) Were the number of live births recorded? Do flight attendants have fewer pregnancies than the comparable general population?

Response: Our study did not directly record the number of live births, though we did collect other questions regarding reproductive history, including about pregnancy health and outcomes. Our data did not allow us to compare the number of pregnancies of flight attendants to the general population.

4) Do flight attendants have diets (e.g. number of meals/snackers per day, types of food, amounts eaten, etc.) that differ from the comparable general population?

Response: Unfortunately, there is no data available on this topic, though anecdotally, flight attendants writing in to our study have told us that their diet is disrupted by their work, both in terms of meal timing and meal options available in airports and while traveling. We have added the following text to the discussion section of the manuscript to mention this factor:

“Flight attendants anecdotally report work-related disruptions to their dietary intake and nutritional patterns, in terms of both meal timing and availability of nutritious food while traveling, which could potentially affect multiple health outcomes as well.”

5) Do regional airline flight attendants have different occupationally related problems when compared to those working for a national airline?

Response: This is a good question; unfortunately, we do not have the ability to analyze this question in our dataset (as our flight attendants are almost entirely employed by national and international airlines), and to our knowledge, no previous study has been able to assess this either.
6) Does the airline or plane type influence flight attendant health?

Response: This is an interesting question, and one that there is also not hard data on, unfortunately. There is some possibility that older fleets have a greater likelihood of fuel leakage events, which could (arguably) result in some neurological symptoms.

7) Did all participants work only for North American based airlines?

Response: Yes, we restricted our analyses to only U.S. based flight attendants, as described in the methods section:

“Any current or former U.S. flight attendant was eligible to participate in the FAHS. We collected 1,642 surveys from returning participants, which represents a 40% response rate from the original cohort with still-valid addresses. In total, the 2014-2015 FAHS cohort enrolled 5,366 U.S. flight attendants with information on age and gender.”

8) Could the average number of landings per working day affect flight attendant health?

Response: There is no information on this topic, unfortunately.

9) “For example, the EU requires airlines to monitor radiation dose, organize schedules to reduce radiation exposure, and...” What is schedule organization? And, how would that protect flight attendants?

Response: Thank you for this question. We have edited the text to answer this question, as below:

“For example, the EU requires airlines to monitor radiation dose, organize schedules to reduce radiation exposure (e.g by rationing flight routes with higher radiation exposures, such as international or circumpolar flights), and inform workers of current studies and health risks [40].”

REVIEWER 2

1) At Line 216: Among the factors that can be associated with an increase of cancer risk, the authors could include sleep disorders [see: Medic G et al. Short- and long-term health consequences of sleep disruption. Nat Sci Sleep 2017;9:151-161].

Response: Thank you for this suggestion. We have edited the text accordingly, as shown below:

“Our results are also consistent with flight crews’ occupational exposures to ionizing radiation [2, 6], circadian rhythm disruption and resulting sleep disorders...”
2) Sleep disorders are associated with mental disorders and suicide. The observed association between sleep disorders and low quality of life can be discussed more in depth.

Response: We have expanded our discussion of sleep disorders and mental health, as follows:

“Furthermore, it should be noted that sleep disorders, which can be related to Circadian rhythm disruption, are independent risk factors for adverse mental health outcomes, including suicide [25, 26].”

REVIEWER 3

1) Line 50-54. The second half of the paragraph is supported by a year 2009 reference, whereas the initial part of the paragraph says it differently, i.e. “Some limited protections were implemented in 2014.” Can you elaborate it with the written OSH laws? Can you confirm from there that there is no written law or at least ministerial statement regarding ionizing radiations omission? I have come across the WHO factsheet where they have established radiation programs in accordance with member states. Please reconfirm either the statement (line 52-54) is still valid considering the reference is approximately 9 years old.

Response: Thank you for noting this. We have updated the text of our introduction to include more recent citations from the OSHA the CDC websites. The specific links we reference are:

https://www.cdc.gov/niosh/topics/aircrew/cosmicionizingradiation.html

and

https://www.osha.gov/dep/letters/04012014_AircraftCabinCrewmembers.html

2) Gap identification is not properly highlighted. Line 55-59. Shows different health-related outcomes of flight crew. The mixed findings as the researcher stated doesn't mean “it's a gap in the literature,” as written in the start of line no. 60. Can you draw a table of at least 5 most recent studies and highlight the gap from there? I believe mixed findings shows the inconclusiveness in past studies only. Please highlight in the table about what is missing in those studies and what different you are doing in this research. In this way, you will be clearly able to highlight the importance of this study along with what different steps you are doing.

Response: Thank you for noting this lack of clarify. We have clarified our statement on gaps in the literature, as follows:

“To address gaps in the existing literature (namely that (1) few U.S. studies have compared flight attendant health to that of the general population, especially for a comprehensive range of health outcomes, and (2) many previous studies of flight attendant health were of small sample size or prone to selection bias due to recruitment to investigate specific health issues), we launched the Harvard Flight Attendant Health Study (FAHS) in 2007 [14].”
3) Another concern related to gap identification: The environmental/physical/situational factors with their effects on health-related outcomes of cabin crew members will definitely be different in comparison to the general public. How do the authors address this issue? The health conditions on the basis of such factors can be compared with the people/workers work in the similar or somewhat related field. In this case, cabin crew falls in the service industry category. It will be fair enough to do the comparison of their health with any other related service industry workers. For instance, the health of the workers (on the basis of such factors) who works in the hazardous working environment such as petroleum industry can be compared with the health of the workers in another hazardous working environment industry like construction, agriculture, etc. because to some extent of similar work environment conditions. Please have a look on it.

Response: Thank you for your insightful comment. Unfortunately, we are not able to attempt an analysis of this type for the current study. However, we have added discussion of this issue in the limitations section of our manuscript, as follows:

“Because flight attendants may differ from a representative sample of the general population in ways that could affect health, we restricted NHANES respondents to adults of comparable socioeconomic status (as measured by family income to poverty ratio, educational attainment, and employment status) in order to make the two cohorts more comparable. Nevertheless, we recognize that further health-related differences may exist between flight attendants and even a restricted general population survey. Hence, future studies should compare flight attendant health with that of U.S. workers in similar occupations, such as nursing or service industry professions.”

4) Methodology is simple. The analyses are very simple. Please use the state of the art techniques i.e. second generation techniques in accordance with the objective of the study.

Response: Thank you for your suggestion. The analysis approach is not something that we can address in the current manuscript, as it is central to the study. We note, however, that our approach was designed by Professor Brent Coull, the senior author on this study and a world-renowned biostatistician.

Thank you again for your feedback and consideration of our paper. Please let me know if you have any additional questions or clarifications.

Sincerely,

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