


LETTER TO THE EDITOR

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Reply to: Letter to the Editor of Journal of Otolaryngology regarding “Risk of diabetes in patients with sleep apnea: comparison of surgery versus CPAP in a long-term follow-up study”

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Abstract

A recent Letter published, in the *Journal of Otolaryngology—Head & Neck Surgery* in response to our original article “Risk of diabetes in patients with sleep apnea: comparison of surgery versus Continuous Positive Airway Pressure in a long-term follow-up study” raised some issues we would like to address here. However, we thank the authors for their effort and time in analyzing our manuscript and we want to facilitate a balanced discussion on this topic with our reply.

Keywords Sleep apnea, Diabetes, Big data, Upper airway surgery

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Selection bias

Truong et al. [1] suggested that our findings were confounded by a selection bias. The cohorts of the study were balanced using propensity score matching. Multiple comorbidities were selected to be balanced; before running the analysis, the two cohorts were matched by selectively removing individuals to render the differences for the selected comorbidities statistically non-significant. The selection of comorbidities to balance was based on the typical comorbidities of obstructive sleep apnea (OSA) patients reported in the literature [2, 3]. However, it is impossible to prove empirically that a full set of cofounders has been included in the propensity score matching model [4], especially in a retrospective real-world data study. We considered that it was also essential to avoid adding too many cofounders to the propensity score matching model, which could have led to “overfitting” the data and a decrease in the population



representativeness of the sample [5]. Only patients with data going back at least three months before the procedure were included in the electronic health records to minimize bias due to data incompleteness.

The study's index event was the initiation of continuous positive airway pressure (CPAP)/surgery after OSA diagnosis, and the 5-year follow-up also included the beginning of treatment.

Coding and cohort queries

We excluded patients with cancer or those undergoing cancer treatment to ensure that the OSA was not caused by cancer/treatment. We excluded patients younger than 18 years of age. There is no code for UAS to treat sleep-disordered breathing. In CPAP, we also considered the CPT code 94660 to include ambulatory CPAP patients in the cohort. The SNOMED-CT code 47545007 and HCPCS A7034 were not included, but the number of patients with data for both was residual compared with the ICD and CPT codes.

OSA treatment efficacy and TriNetX limitations

It is not possible to identify adherence rates to CPAP using TriNetX. However, to date, no scientific randomized clinical trial has shown an association between diabetes and adherence to CPAP [6]. All published studies are based on the good glycemic control obtained when CPAP is used, but disease prevention is not addressed.

Updated risk of diabetes methods and results

We thank Truong et al. [1] for their effort in recalculating the study. They rebuilt the study, and their conclusions are basically the same as those in the original study, which is reassuring. We are grateful that our findings were subjected to their different approach to using this methodology.

Conclusions

Based on exploiting big data with two different methodologies, we conclude that UAS is more effective in preventing diabetes than CPAP.

Abbreviations

OSA	Obstructive sleep apnea
CPAP	Continuous positive airway pressure
UAS	Upper airway surgery
CPT	Current procedural terminology
SNOMED	Systematized nomenclature of medicine
ICD-10-PCS	International classification of diseases-10 procedure coding system

Acknowledgements

This project was supported in part by Trinetx.

Author contributions

Conceptualization, C.O.R. and L.R.A.; methodology, J.M.I. and M.T.G.I.; software D.P.R.; validation, I.M.A., D.P.R. and G.H.1.; formal analysis, M.C.L.L.; investigation,

C.O.R. and M.G.I.; resources, P.B.; data curation, G.P.; writing—original draft preparation, G.P.; writing—review and editing, C.O.R.; visualization, P.B.; supervision, G.P. and J.C.M.; All authors have read and agreed to the published version of the manuscript.

Funding

This research received no external funding.

Availability of data and materials

The data that support the findings of this study are available from Trinetx but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of Trinetx.

Declarations

Ethics approval and consent to participate

As a federated network, research studies using TriNetX do not require ethical approval. To comply with legal frameworks and ethical guidelines guarding against data re-identification, the identity of participating HCOs and their individual contribution to each dataset are not disclosed. The TriNetX platform only uses aggregated counts and statistical summaries of de-identified information. No Protected Health Information or Personal Data is made available to the users of the platform.

Consent for publication

Not Applicable.

Competing interests

No competing interest.

Received: 24 October 2023 Accepted: 17 November 2023

Published online: 01 December 2023

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