

EPH81:The preventable productivity burden of sleep apnoea in Australia: a lifetime modelling study



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BACKGROUND

- Obstructive sleep apnoea (OSA) is a sleeping and breathing disorder characterised by frequent recurrent reduction or arrest of the airflow while sleeping, due to partial or total collapse of the airways¹.
- 1 in 7 adults worldwide are living with OSA (almost 1 billion people worldwide)².
- Male sex, older age, and obesity are the main risk factors³.
- OSA is associated with increased risk of CVD, T2DM, depression, day time sleepiness and all-cause death⁴.
- The economic effect of OSA is also substantial. A recent economic analysis found that the healthcare system costs of sleep disorders in Australia was AU\$0.7 billion for the year 2019-20, while the total societal costs surpassed AU\$13.1 billion⁵.
- Productivity-adjusted life year (PALY) is a novel metric that quantifies the burden of disease through productivity. PALYs allows one to compare different diseases and thus inform allocative decisions based on the productivity burden⁶.

In this study, we assessed the impact of sleep apnea in Australia over the lifetime of the working population in terms of adverse events, years of life lost (YLL), QALYs, PALYs and healthcare costs.

METHODS

- Multistate Markov model to project the healthcare and societal costs of OSA for the Australian population aged 20 to 65 years, capturing the impact of OSA key morbidity and mortality due to CVD, T2DM, major depressive disorder and vehicle-related accidents.
- At the baseline year, 15,495,956 Australians of working-age were included in the model, of which 565,969 were living with moderate to severe OSA (an overall prevalence of 4%).

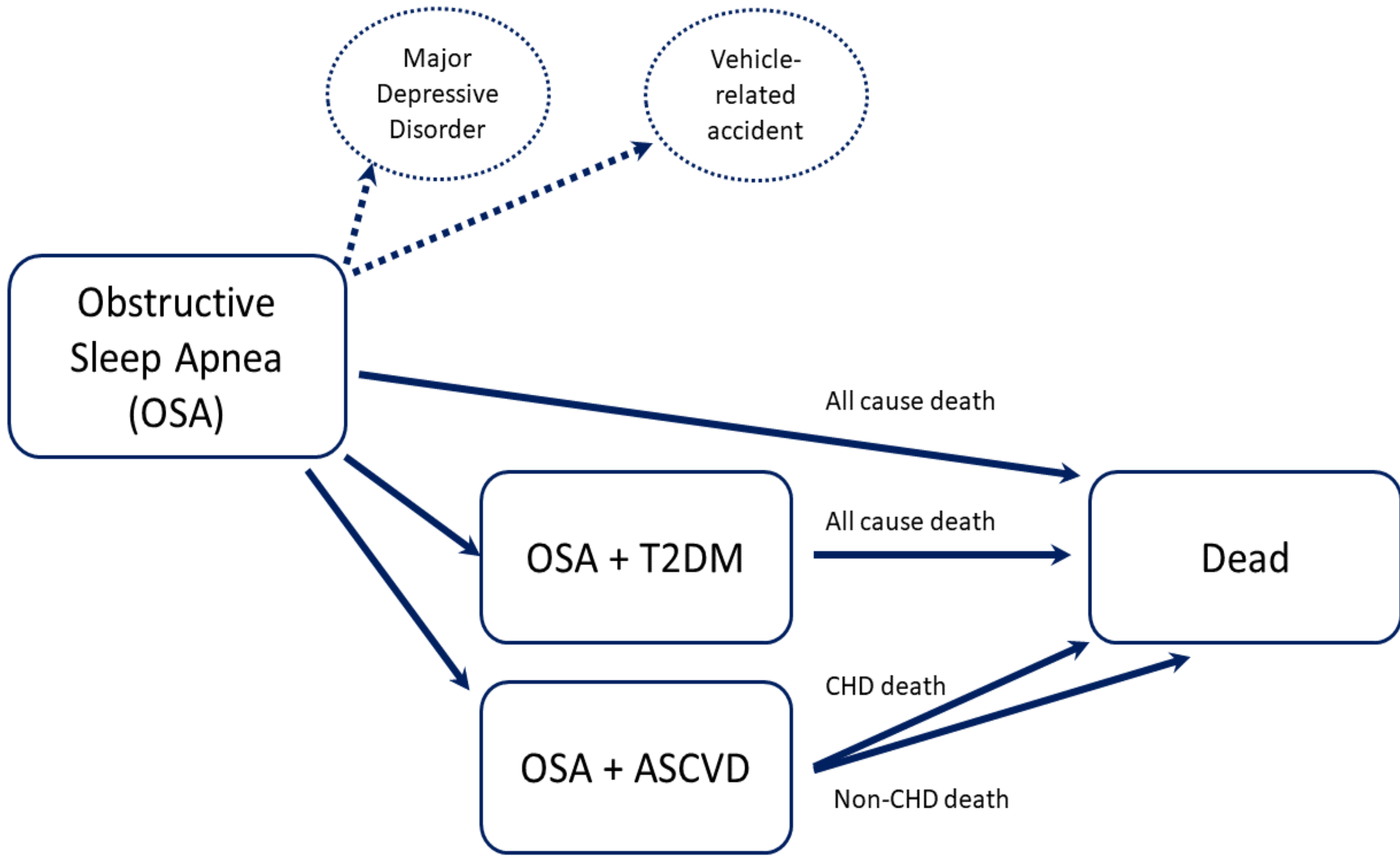


Figure 1. Markov model. T2DM, Diabetes Mellitus Type 2; ASCVD, Atherosclerotic CVD

RESULTS

Base-case results

First CVD event	365,982
Recurrent CVD event	23,812
Depression	598,108
Vehicle-related accidents	3,079
Deaths	130,338
YLL	193,713,441
QALYs	172,487,043
Acute costs	\$4,085,711,721
Chronic	\$549,188,169
Total healthcare costs	\$4,634,899,891
PALYs	182,737,644
GDP lost	\$31,093,592,392,017

Table 1. Results from the base-case analysis. CVD, Cardiovascular disease; YLL, Years of life lived; QALYs, Quality-adjusted life years; PALYs, Productivity-adjusted life years; GDP, Gross domestic product.

SCENARIO ANALYSES

Parameters	Total PALYs	Percentage difference with base-case
Base-case	182,737,644	
Discounting by 0% annually	333,530,360	80% increase
Discounting by 3% annually	225,536,614	24% increase
Discounting by 6% annually	166,532,933	9% decrease
Increase prevalence by 15%	182,570,236	1% decrease
Decrease prevalence by 15%	182,905,051	1% increase

Table 2. Results from scenario analyses. PALYs, Productivity-adjusted life years.

CONCLUSIONS

- Our study offers a contemporary quantification of the impact of OSA on Australians’ health and the burden on the healthcare system and the overall Australian economy. The modelled intervention highlighted the tremendous benefits of reducing the prevalence of OSA and call for urgent measures.

References:
1. Garvey et al., *J Thoratic Dis* (2015); 2. Benjafeld et al., *The Lancet Respiratory Med* (2019); 3. Lyons et al. *Respirology* (2020); 4. Wangt et al., *Respirology* (2013); 5. Streatfeild et al., *Sleep* (2021); Ademi et al., *PharmacoEconomics* (2021)



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