

## Association between sleep apnea and retinal changes; a systematic review and meta-analysis

Ali Mahmoud Ahmed, Wafaa Ali Alesaei, Nguyen Tien Huy, Ahmed Alosdody, Mahmoud Ibrahim, Ghaleb Mehyar, Mohamed Khattab, Moustafa Elziny, To Kim Sang, MHD.Ismael Zakaria

### Citation

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### Review question

The study aims to assess systematically the association between sleep apnea and retinal diseases , and if there is any practical evidence that can assure that sleep apnea is a risk factor for retinal diseases.

### Searches

Nine electronic databases including PubMed, Scopus, Google Scholar, ISI Web of science, WHO Global health library, POPLINE, VHL, NYAM (New York academy of medicine) and SIGLE (System for information on grey literature in Europe) will be used to conduct electronic search for relevant studies using the research term.

There is no restriction regarding language, publication period or population. These terms were adjusted to be suitable for each database.

### Types of study to be included

There are no restrictions on the types of study and articles

### Condition or domain being studied

Obstructive sleep apnea hypopnea syndrome (OSAHS) is a common sleep disorder associated with partial or complete obstruction of the upper airway leading to recurrent oxygen desaturation and neurological arousal[1]. Sleep is vital for learning, memory, healing, immune and emotional stability so abnormal sleep impacts our health safety and longevity. Recurrent hypoxia associated with(OAHS) leads to abnormal vascular perfusion, increased vascular resistance and hypoxia induced inflammations[2]. OSAHS has been reported in the last decade as a risk factor of many health problems as cardiovascular diseases, high blood pressure, stroke, diabetes, depression and obesity. Obesity and OSAHS are strongly interrelated. OSAHS prevalence increases within higher BMI levels[3]. OSAHS is a risk factor for obesity. Recently,many papers discussed the possible association between OSAHS and some retinal diseases. Recently, but not yet confirmed, it may cause chorioretinal disorders, The pathogenesis of central serous chorioretinopathy (CSC) is still not fully understood making it possible for the OSA to be a motivating factor too. Our aim is to systematically review and meta-analyse all published data to assess the retinal changes associated with obstructive sleep apnea.

### References:

[1] Stradling, J. R., and R. J. O. Davies. "Sleep- 1: Obstructive sleep apnoea/hypopnoea syndrome: definitions, epidemiology, and natural history."Thorax 59.1 (2004): 73-78.

[2] Pérez-Rico, Consuelo, et al. "Obstructive sleep apnea–hypopnea syndrome (OSAHS) and glaucomatous optic neuropathy." Graefe's Archive for Clinical and Experimental Ophthalmology 252.9 (2014): 1345-1357.

[3] Gould, G. A., et al. "The sleep hypopnea syndrome." American Review of Respiratory Disease 137.4 (1988): 895-898.

### Participants/population

#### Inclusion Criteria

- 1) Any primary study that discuss the effect of sleep apnea on any retinal disease
- 2) Reporting data on Human
- 3) No restriction on on race, age , sex , language , socioeconomic status , ethnicity, and geographical area/place
- 4) No restriction on publication date.

#### Exclusion Criteria

- 1) in vitro on non human studies .
- 2) Case report, Case series,letter ,editorial, thesis, reviews, protocol, conference or news .
- 3) Data cannot be extracted , overlapped data set.
- 4) Only abstract article or book chapter.

#### **Intervention(s), exposure(s)**

Any paper reporting an association between OSA and retinal changes

#### **Comparator(s)/control**

Patients with retinal changes, but without OSA

#### **Context**

##### **Primary outcome(s)**

The association between OSA and retinal changes

##### **Secondary outcome(s)**

Any choroidal changes with the retinal ones associated with OSA

#### **Data extraction (selection and coding)**

Articles resulted from electronic search will be screened according to inclusion and exclusion criteria with three independent reviewers. Then data extraction will take place and will also be done by three independent reviewers to avoid bias using a standardized form after training and piloting.

Discrepancies will be resolved by discussion and consensus between reviewers. When there are missing data and data error the corresponding author or the first author will be contacted via email for clarification. If no response the data will be considered missing. Trials published by the same research group will be checked for duplication.

#### **Risk of bias (quality) assessment**

Three independent reviewers will assess the quality of the included studies across several metrics including study design, full description of characteristic of subjects, data collection (prospective or retrospective), inclusion criteria, exclusion criteria, method quality assessment (such as detailed description and same method for case and control groups), and blinded interpretation of variables.

#### **Strategy for data synthesis**

Meta-analyses for particular factor will be performed separately using RevMan software (version 5.3) foe window).

**Analysis of subgroups or subsets**

Subgroups of different methods will be performed when needed

**Contact details for further information**

Mr Ahmed

ali.mahmoud@azhar.edu.eg

**Organisational affiliation of the review**

Faculty of Medicine, Al-Azhar University

**Review team members and their organisational affiliations**

Mr Ali Mahmoud Ahmed. Faculty of Medicine, Al-Azhar University, Cairo, Egypt. Ms Wafaa Ali Alesaei. Faculty of Medicine, Misr University for Science and Technology, Egypt. Dr Nguyen Tien Huy. Institute of Tropical Medicine (NEKKEN), Nagasaki University, Japan. Mr Ahmed Alosdody. Faculty of medicine, Menofia university, Menofia, Egypt. Dr Mahmoud Ibrahim. Faculty of Medicine, Ain Shams University, Egypt. Dr Ghaleb Mehayar. Al-Essra Hospital , Amman , 11941 , Jordan. Mr Mohamed Khattab. Faculty of Medicine, Al-Azhar University, Cairo, Egypt. Dr Moustafa Elziny. Cairo University. Cairo, Egypt. Dr To Kim Sang. Pham Ngoc Thach University of Medicine, Ho Chi Minh City, Vietnam. Mr MHD. Ismael Zakaria. syrian private university , damascus , syria

**Anticipated or actual start date**

03 October 2015

**Anticipated completion date**

10 April 2016

**Funding sources/sponsors**

None

**Conflicts of interest**

None known

**Language**

English

**Country**

Egypt

**Stage of review**

Ongoing

**Subject index terms status**

Subject indexing assigned by CRD

**Subject index terms**

Humans; Retina; Sleep Apnea Syndromes; Sleep Apnea, Obstructive

**Date of registration in PROSPERO**

06 February 2016

**Date of publication of this version**

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**Versions**

06 February 2016

**Stage of review at time of this submission**

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	No
Formal screening of search results against eligibility criteria	Yes	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

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