International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2016): 79.57 | Impact Factor (2015): 6.391

Prevalence of Obstructive Sleep Apnea in Obese People

Revianna Resna Ferdika Hutagalung[1], Ida Ayu Sri Wijayanti[2], Ign Budiarsa[2], Thomas Eko Purwata[2], I Putu Eka Widyadharma[2]

[1]Medical student, Faculty of Medicine Udayana University, Bali, Indonesia
[2]Department of Neurology, Faculty of Medicine Udayana University, Bali, Indonesia

Abstract: ***Obesity is considered to be a major risk factor in the development and progression of Obstructive Sleep Apnea (OSA). The prevalence of OSA in obese patients is almost twofold higher compared with normal-weight adults. The purpose of this study is to determine the prevalence of OSA in obese people who visited Puskesmas II South Denpasar. The research method is descriptive observational with cross-sectional approach involving 62 obese people who visited Puskesmas II South Denpasar. The result of descriptive research characteristic are women 59,7% and male 40,3%. The frequency of age with high risk OSA in adult age group 37%. Respondents with obese I classification with high risk OSA 52.3%, respondents with obese II classification with high risk OSA 60%. The prevalence of OSA in obese people is 54.83%. Based on this study can be concluded that the prevalence of OSA in obese people who visited the Puskesmas II South Denpasar was quite high.***

Keywords: OSA, Obese, Prevalence

1. Introduction

The increased prevalence of overweight and obesity in some countries has shown that it is become a global pandemic. In 2010, overweight and obesity was estimated at 3.4 million deaths. The prevalence of overweight and obesity increased 27.5% for adults and 47.1% for children between 1980 and 2013 [1].

According to Riset Kesehatan Dasar (RISKESDAS) 2013 the prevalence of Indonesian adult population with overweight 13.5% and obesity 15,4%. Denpasar city has the second highest rank and the number is 17.6% [2].

Obesity is associated with increase some chronic diseases, such as diabetes, hypertension, heart disease, and stroke. Obesity is also considered a major risk factor in the development and progression of Obstructive Sleep Apnea (OSA) [3].

The prevalence of OSA is estimated about 3 - 7% in adult males and 2 - 5% in adult females in the general population [4]. The prevalence of OSA in obese patients is almost twice as high as that of normal-weight adults [5].

Research of the incidence of OSA in obese people in Denpasar has not been done or published, while the incidence of obesity is expected continue to increase. Based on the considerations, researcher want to conduct research ot the prevalence of OSA in obese people in adult population in the coverage area of Puskesmas II South Denpasar.

2. Material and Method

Study subjects

The subjects of this study are obese people who visited Puskesmas II South Denpasar after signing an informed consent approved by the Local Ethical Reviewe Board. All study subjects met the inclusion criteria, which included the age between 25 to 65 years old, classified obesity according to Asia Pacific criteria. Exclusions included has anatomical abnormalities of the respiratory tract (such as tonsillar hypertrophy and nasal polyps adenoid, etc.), has history of chronic respiratory health disorders (such as asthma).

Study methods

The method used in this study is descriptive cross-sectional by using the primary data through the Berlin Questionnaire taken in June-October 2017 in Puskesmas II South Denpasar. Data taken include gender, age, weight, height, and risk of OSA.

Obesity is defined as an abnormal or excessive fat accumulation that distract the health. Obesity is one of the categories in body mass index. Body mass index (BMI) is a measure of body proportion by comparing body weight (kg) with the square of height (m).

Age is described as when the respondent was born until the data retrieval. The classification of age in this study are adolescents (17 to 25 years old), adult (26 to 45 years old), and elderly (46 to 65 years old).

The risk of getting OSA in this study is the risk of a person potentially suffering from a sleep disorder in the form of distraction or decrease in airflow repeatedly. High risk of OSA categorized if two or more categories are positive, and low risk of OSA categorized if only one category is positive.

3. Result

According to the study through collecting data descriptively cross-sectional in June-October 2017 at Puskesmas II South Denpasar obtained 62 respondents who filled inclusion criteria. The number of male respondents counted 25 people (40,3%) and female counted 37 people (59,7%). Respondents

with age range of adolescents (20-25 years) counted 13 people (20,9%), adults (26-45 years) counted 35 people (56,5%), and the elderly (46-65 years) counted 14 people (22,6%). Respondents with obesity I (IMT 25-29,9) counted 42 people (67,7%) and obesity II (IMT ≥30) counted 20 people (32,2%). Respondants with high risk OSA counted 34 people (54.8%) and low risk OSA counted 28 people (45.2%).

Age and Risk of OSA

Adolescent respondants with high risk OSA counted 6 people (9,7%), adult with high risk OSA counted 23 people (37,2%), elderly with high risk OSA counted 5 people (8.1%). Adolescent respondents with low risk OSA counted 7 people (11.2%), adult with low risk OSA 12 people (19.3%), elderly with low-risk OSA 9 people (14,5%) (Table 1).

Table 1: The descriptive frequency of respondents by age and risk of OSA

	Adolescent	Adult	Elderly
High risk	6 (9,7%)	23 (37,2%)	5 (8,1%)
Low risk	7 (11,2%)	12 (19,3%)	9 (14,5%)

BMI and Risk of OSA

Obesity I and high risk OSA counted 22 people (52.38%), obesity I and low risk OSA counted 20 people (47.61%). Obesity II and high risk OSA counted 12 people (60%), obesity II and low risk OSA counted 8 people (50%) (Table 2).

Table 2: The descriptive frequency of respondents by BMI and risk of OSA

	BMI	
	Obesity I	Obesity II
High risk	22 (52,38%)	12 (60%)
Low risk	20 (47,61%)	8 (40%)

Gender and Risk of OSA

Male and high risk OSA counted 16 pople (64.04%), male and low risk OSA counted 9 people (36%). Female and high risk OSA counted 18 people (48.64%), female and low risk OSA counted 19 people (51.36%) (Table 3).

Table 3: The descriptive frequency of respondents by gender and risk of OSA

	Gender	
	Male	Female
High risk	16 (64%)	18 (48,64%)
Low risk	9 (36%)	19 (51,36%)

4. Discussion

The study by Lopez, et al (2008), Leong et al (2013), Susanto, et al (2015) showed that weight, BMI, neck circumference, and abdominal circumference were closely related to OSA [6,7,8].

The study by Lopez et al (2008) found the prevalence of OSA in obese people is 78%, study by Leong et al (2013) found OSA prevalence is 69%. That is appropriate with this study that found the prevalence of OSA in obese people is 54.83%. The increase of your weight about 10% can increase risk of OSA as much sixfold. Increased weight can affect breathing during sleep through several mechanisms: 1) increased fat deposition around the pharynx causing constriction of the upper airway, 2) affecting nerve compensation in maintaining airway patency, 3) the respiratory control system becomes unstable, 4) decrease in residual capacity due to decreased upper airway stability [8].

The prevalence of OSA tends to be higher in the elderly population estimated at 13-32%, this is 3 times higher than in younger population. This is due to changes in upper airway structures including extension of the pharyngeal airway, decrease in hyoid bone especially in individuals with long faces, leading to increased pharyngeal resistance thus indicating a tendency to have airway collapse [9].

The prevalence of OSA in male is higher than in female. The male-to-female ratio is estimated between 3:1 to 5:1 in the general population. This amount is appropriate with this study which found the prevalence of OSA in male is 64% and 48.64% of female. This is because female do not show "classic" symptoms and many are undiagnosed. Women who experience sleepy symptoms during the day are often misdiagnosed with depression or other illnesses. Furthermore, it can also be caused by the fact that women are reluctant to mention about snoring. As well as male with the symptom was faster followed up by the clinician [10].

Study of Suryawan (2016) with samples are students of Medical Faculty of Udayana University found that there is significant correlation between obesity and risk of OSA. Based on the study found that the prevalence of high risk OSA in obese people is 80% and in non-obese people is 20%. It is appropriate with this study that found the prevalence is quite high (54,83%). This study found that male with high risk of OSA is 6,3% and female is 4,7%. It is appropriate with this study that found if male is higher than female. Because of the study use students as the sample, so the sample are categorized as adolescent, high risk of OSA is 6,3%. It is lower than this study that found high risk of OSA is 9,7%. The study found that the lower BMI of individuals the lower risk of getting OSA. It proves that obesity is one of the important factor that affects the risk of OSA [11].

5. Conclusion

Based on this study can be concluded that from 62 obese respondents, the OSA prevalence is 54.83% with male 64% and female 48.64%.

6. Conflict of Interest

The Author declares that they have no any conflict of interest.

Acknowledgments

Author of the current article take this opportunity to thank all of the patients who warmly co-operated in this research program.

References

[1] Ng, Marie, et al. "Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study 2013." The lancet 384.9945: pp. 766-781, 2014
[2] Riset Kesehatan Dasar (RISKESDAS), [Online] Available in: https://www.k4health.org/sites/default/laporanNasional%20Riskesdas%202007.pdf, 2007.
[3] DM. Nguyen, HB. El-Serag, "The Epidemiology of Obesity," Gastroenterol Clin North Am, XXXIX(1): pp. 1–7, 2010.
[4] Punjabi, M. Naresh, "The epidemiology of adult obstructive sleep apnea." Proceedings of the American Thoracic Society V(2): pp. 136-143, 2008.
[5] Romero-Corral, Abel, et al. "Interactions between obesity and obstructive sleep apnea: implications for treatment." Chest CXXXVII(3): pp. 711-719, 2010.
[6] Lopez, P. Peter, et al, "Prevalence of sleep apnea in morbidly obese patients who presented for weight loss surgery evaluation: more evidence for routine screening for obstructive sleep apnea before weight loss surgery." The American surgeon, LXXIV(9): pp. 834-838., 2008.
[7] Leong, Wen Bun, et al. "The prevalence and severity of obstructive sleep apnea in severe obesity: the impact of ethnicity." Journal of clinical sleep medicine: JCSM: official publication of the American Academy of Sleep Medicine IX(9): pp. 853, 2013.
[8] Susanto, D. Agus, et al, "Clinical symptoms and related factors of obstructive sleep apnea among overweight and obese taxi drivers." Medical Journal of Indonesia, XXIV(4): pp. 206, 2015.
[9] M. Glasser, et al, "Sleep apnoea in older people." Breathe, VII(3): pp. 248-256, 2011.
[10] A. Wimms, S. Ketheeswaran, D. Ramanan, et al, "Gender Differences in Obstructive Sleep Apnea," . SMGroup;2-3, 2016.
[11] P. Suryawan, K. Tirtayasa, "Hubungan Antara Obesitas dengan Risiko Menderita Gangguan Tidur Obstructive Sleep Apnea (OSA) pada Mahasiswa Program Studi Pendidikan Dokter Fakultas Kedokteran Universitas Udayana," OJS e-journal medica udayana, V(3), 2016.