

## **Quality of life of epilepsy patients with obstructive sleep apnea in Malaysia.**

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### **Abstract**

Sleep disordered breathing is a condition when upper airway has been obstructed and sleep pattern is not in normal cycles. It comprises of snoring, upper airway resistance syndrome, central sleep apnea and obstructive sleep apnea (OSA). The most commonly used treatment for OSA is Continuous Positive Airway Pressure (CPAP) [1]. Epilepsy like any other chronic disease has significant impact on the quality of life. Seizure frequency will influence quality of life in epilepsy patients and it can be influenced by disordered sleep[2]. This is a cross-sectional study done to measure quality of life for epileptic patients with obstructive sleep apnea and outcome of treatment of OSA. This study enrolled 180 epileptic patients who were seen in Neurology Clinic of the Hospital Universiti Sains Malaysia. Each patient was administered two set of questionnaires; Epworth Sleepiness Scales (ESS) and Quality of Life in Epilepsy patients (QOLIE-31). Quality of life in epilepsy patients was assessed using Malay version of QOLIE-31 [3] Patients with score of ESS more than 10 went for overnight Polysomnography test. Patients who were positive for OSA by overnight Polysomnography were treated with CPAP. After that patients were assessed again with QOLIE-31 questionnaires. In our study, the frequency of OSA was positively associated with age. Seizure worry was significantly more in epilepsy patients with OSA compared to those without OSA. (p value < 0.005) and quality of life scores were lower in this group with high seizure worry. There were significant differences (, p value < 0.005) in medication effects, cognitive functioning, overall quality of life and seizure worry. We conclude that patients with epilepsy and OSA may have frequently seizure attack or severe seizure which influences their QoL and this situation improved with treatment of OSA using CPAP.

**Keywords:** Sleep disorder, snoring, obstructive sleep apnea, continuous positive airway pressure

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### **Introduction**

Apnea is defined as the absent of air flow for a minimum 10 sec. Apnea usually associated with drop of oxygen saturation in the haemoglobin, followed by brief microarousal which result the sleep fragmentation and decreased amount of slow wave and REM sleep [4].

Obstructive sleep apnea (OSA) is common major seen in adult men with 24% where as 9% adult women and 2% in children [5; 6; 7]. The best estimates of OSAS based on several studies suggest prevalence in middle age men is 2-4 % and 1-2% of women [8].

The most available and usually treatment for OSA is Continuous Positive Airway Pressure (CPAP). The CPAP will

prevent air way collapse during respiration at sleep [1]. In early recognition of OSA the only effective treatment available is tracheostomy. This treatment will create a surgical airway which helps patients to breath during sleep [8].

The principle of CPAP is by applied a positive pressure via nose or mouth depend their types. The airway wall is strengthened and snoring is suppressed. The minimum period required to reduce symptoms is not know and probably varies in a complex way between each individuals [8].

Factors that influenced quality of life in epilepsy patients in [9] study were mood disorder and seizure frequency. In study conducted by [10] found that factors that significantly affected overall quality of life were female gender,

high seizure frequency, using of more than one antiepileptic drugs, high anxiety and depressive symptom.

Epilepsy patients with sleep disturbance specifically insomnia have impairment in their quality of life. In cross sectional study by [11] they found that sleep disturbances the most strong predictor had influence on QOLIE-31. Besides sleep disturbances socioeconomic status, female gender and high frequency also predicted to lower quality of life in epilepsy patients. According to [12] they revealed sleep disturbances associated with the greatest impairment in partial epilepsy patients.

In Polysomnography study by [13] they found that obstructive sleep apnea influence quality of life in patients and bed partners. To improve their quality of life patients and bed partners were given CPAP treatment.

Excessive sleepiness and lack of physical activity affected the quality of life in obstructive sleep apnea patients [14]. To improve quality of life in patients they should do physical activity and have healthy active life style.

In our study we investigate quality of life of epilepsy patients between patients with OSA and Non OSA by using Malay version QOLIE-31 [3]. Besides that we investigate quality of life of epilepsy patients before and after treatment with Continuous positive airway pressure (CPAP).

**Methods**

This is a cross-sectional study done to measure quality of life for epileptic patients with obstructive sleep apnea (OSA) and outcome of treatment of OSA. This study enrolled 180 epileptic patients from 200 epileptic who were seen in Neurology Clinic of the Hospital Universiti Sains Malaysia with principal diagnosis of epilepsy. The population was epilepsy patients who attended neuroclinic HUSM, Kubang Kerian, Kelantan between 2008 and April 2010. Each patient who attended in the clinic would be given two set of questionnaires; Epworth Sleepiness Scales (ESS) and Quality of Life in Epilepsy patients (QOLIE-31). Patients with score of ESS more than 10 went for overnight Polysomnography test. Patients who were had a positive for OSA by overnight Polysomnogra

phy were given treatment. After that patients will assess again with QOLIE-31 questionnaires.

Each variable from the patients of score ESS more than 10 and less than 10 was tested for the normality of the distribution. Differences between both groups were tested by using independent T-test. The data for the epileptic’s patients with OSA and Non OSA did not present normal distribution and were analyzed by non-parametric tests. Quality of life was compared to another by using Mann Whitney test. To analyze quality of life in five epileptic’s patients with OSA before and after treatment we used Wilcoxon. The Statistical package for Social Sciences (SPSS for Windows) was used for all statistical analyses. Values of p< 0.05 were considered statistically significant.

**Results**

**Table 1.** Demographic and clinical variables with OSA

	OSAS	Non OSAS	P value*
Gender			
Male	4	23	
Female	1	26	0.222
Age			
0-30	5	31	
> 30	0	18	0.031
Seizure type			
Partial seizure			
right temporal	3	23	
left temporal	2	26	
Generalized seizure	0	0	0.213
Medications			
One drug	2	18	
Two drugs	2	19	
Three or > drugs	1	12	0.124

Fisher Exact test. Value<0.05 is significant.

There was significant association between the age of patients with OSA in our study. There were no significant associations between AED usage, gender and seizure type.

**Table 2.** Quality of life in epilepsy patients undergo Polysomnography test

QOLIE-31 subscale	OSA n= 5	Non OSAS n= 49	P value
Social Functioning	73.60± 12.18	64.30±20.22	0.160
Medication Effects	60.56±27.53	50.22±25.31	0.288
Cognitive Functioning	52.55±16.35	58.65±18.95	0.570
Energy/ Fatigue	66.00±14.75	62.20±13.71	0.740
Emotional	71.20±14.53	64.88±13.21	0.292
Overall Quality of Life	74.50±17.71	69.80±16.59	0.549
Seizure worry	35.92±11.75	52.00±5.04	0.001

Mann Whitney test. P value <0.05 is significant.

**Table 3.** Quality of life in epilepsy patients with OSA before and after treatment with CPAP

QOLIE-31 subscale	Before treatment	After treatment	P value
	n= 5	n= 5	
Social Functioning	73.60± 12.18	85.60±5.17	0.068
Medication Effects	60.56±27.53	74.20±16.77	0.042
Cognitive Functioning	52.55±16.35	76.80±10.26	0.043
Energy/ Fatigue	66.00±14.75	82.60±4.87	0.066
Emotional	71.20±14.53	84.80±7.82	0.068
Overall Quality of Life	74.50±17.71	91.60±8.53	0.043
Seizure worry	52.00±5.04	82.80±5.76	0.043

*Wilcoxon signed rank test. P value <0.05 is significant.*

There is significant different in Seizure worry between group of OSA and non OSA patients. It showed quality of life in Seizure worry was lower in OSA compare to Non OSA. There were no significant different in others subscales, Social functioning, Medication effects, Cognitive functioning, Energy/Fatigue, Emotional and Overall Quality of Life. Table 3 shows the quality of life in epilepsy patient with OSA before and after giving treatment with CPAP. There were significant different in Medication effects, Cognitive functioning, Overall quality of life and Seizure worry. It showed that quality of life in five subscales was increased after using CPAP. The other subscales in QOLIE-31 have no significant different with p value more than 0.05.

## Discussion

### *Quality of life in epilepsy patients with OSA and Non OSA.*

Obstructive sleep apnea most common cause to excessive sleepiness among patients influenced to quality of life. In our study using QOLIE-31 to access quality of life it showed significant different between OSA and Non OSA in only Seizure worry subscale.

Seizure worry subscale consist of such items as worry about future seizures, apprehension over future injury resulting from seizures, trepidation over adverse side effects of medication regimens and social embarrassment over having seizure. We suggest that patients with epilepsy and OSA may have frequently seizure attack or severe seizure which influences their quality of life. Patients with epilepsy alone already have lower quality of life so when they have another symptom of OSA their quality of life will be worst. According to (15) their research across sixth epilepsy patients with OSA found that OSA would precipitate seizure among the patients. They found that OSA interrupted the architecture of sleep pattern then would cause seizures. Patients with sleep apnea syndrome typically reach only the light stages of sleep and may have frequent short arousals.

It is postulated that about one- third or more of patients with epilepsy would suffered from OSA and usually occur in medically unmanageable seizure patients. There was an evidence for the worsening of seizures in older adults who are diagnosed with OSA. It is also found that OSA was associated with increasing age, male gender and seizure during sleep [16].

A research by [17] show that coexistence of OSA in epilepsy patients unselected for sleep disorder is common. There is increase rate of OSA in a larger epilepsy patient's series that involved epilepsy with different epilepsy syndromes and various degrees of disease severity. Factors which associate between epilepsy and OSA are not fully understood. However it could derive from the fact of both disorders, when present in a single subject, interact with each other, facilitating reciprocal manifestations and emphasizing the comorbidity.

According to [18], it was observed that the co-occurrence of OSA and epilepsy was 5%. The high frequency of OSA among epilepsy patients suggests a link between both diseases. There is a possible temporal relationship between onset of OSA symptoms and change in seizure control in about two thirds of patients.

According to [19] OSA could contribute to a new seizure appearance in epilepsy older patients but they still did not get clear answer. Older patients are most at risk for seizure and for OSA. They confirmed older epilepsy patients would have high prevalence of OSA. In our subjects, the frequency of OSA was positively correlated with age. Our data not comparable with this study. Most of our OSA patients age from 30-72 years old, only one of the patients age around 70 years.

### *Quality of life in epilepsy patients with OSA before and after treatment with CPAP.*

In our study there were significant different in Medication effects, Cognitive functioning, Overall quality of life and Seizure worry. It showed that quality of life in five subscales was increased after using CPAP.

Medication effects measure task such as effects of medication to their physical, effects of medication to their mental and their worry taking medications will be bad if taken for a long time. Cognitive functioning measure task such as concerning memory, concentration, and reasoning. In this study we suggest that when a patient is well treated they will increase in their cognitive functioning because they will less worry about their seizure and effect of medication.

In our study after using CPAP as treatment for OSA in epilepsy patients showed increase of quality in Medication effects, Cognitive functioning, Overall quality of life and Seizure worry. As we know sleep disruption will triggered seizure attack [4]. We suggest when OSA symptoms is well treated by using CPAP patients will have a good quality sleeps as well as improving their quality of life.

The CPAP will prevent air way collapse during respiration at sleep [1]. In early recognition of OSA the only effective treatment available is tracheostomy. This treatment will create a surgical airway which helps patients to breath during sleep[8].In case report by [20] it showed dramatically improved in seizure control. When patients have less seizure attack they will definitely will less worry of their seizure and the effect of medication towards them.

## Conclusion

In our study using QOLIE-31 to access quality of life it showed significant different between OSA and Non OSA in only Seizure worry subscale. We suggest that patients with epilepsy and OSA may have frequently seizure attack or severe seizure which influences their quality of life. In our study, the frequency of OSA was positively correlated with age. In our study there were significant different in Medication effects, Cognitive functioning, Overall quality of life and Seizure worry. It showed that quality of life in five subscales was increased after using CPAP. We suggest when OSA symptoms is well treated by using CPAP patients will have a good quality sleeps as well as improving their quality of life.

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