Assessment of Obstructive Sleep Apnea Risk Among Pregnant Women at A Tertiary Care Hospitals in Lahore Pakistan

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ABSTRACT

Background: Repeated partial or complete closure of the upper airway while you sleep is a symptom of obstructive sleep apnea (OSA). OSA is frequently associated with pregnancy but in many patients it may go undetected which can result in complications for both mother and the off spring. **Objective:** To assess obstructive sleep apnea risk among pregnant women at tertiary care hospitals in Lahore, Pakistan. **Study Design:** Cross sectional study. **Settings:** Lady Atchison and Lady Willingdon) of Lahore, Pakistan. **Duration:** Six months from May 01, to October 30, 2022. **Methods:** Study was conducted with 288 pregnant females from two public sector maternity hospitals. **Results:** The majority of females 125 (43.4%) were between age 27-33 years. While almost all n=272 (96.4) had a gestational age >24 weeks. The results further revealed that among 288 pregnant females, 151 (52.4%) reported to have high risk for OSA while 137 (47.6%) had low risk for OSA. **Conclusion:** Most of the participants reported to have high risk of OSA. In order to reduce the burden of high-risk OSA and its foreseen complications, health care professionals must identify pregnant females for the risk of OSA during the beginning course of their follow-up.

Keywords: *Obstructive sleep apnea risk, Pregnant women, Frequency of OSA risk.*

INTRODUCTION

Obstructive sleep apnea is one of the commonest health conditions that is experienced by a pregnant female. Patients' care depends majorly on the symptoms.[1] According to estimates, the most prevalent type of sleep-disordered breathing, obstructive sleep apnea, affects about one billion people worldwide between the ages of 30 and 69.[1] During pregnancy, it has been estimated that the prevalence of OSA 58% and 66% in females with gestational age between 16 to 32 weeks and 32 to 36 weeks, respectively.[2]

Obstructive sleep apnea risk is rising and effecting all countries. From the past four decades, the reported factors which contribute towards OSA include obesity 43%, has increased in remarkable percentage globally.[3] Obstructive sleep apnea is highly prevalent in about 50% of general population.[4] Literature shows that 67% female population have obstructive sleep apnea because of improper positioning, pharyngeal size, and physiological changes during pregnancy.[5-8] Among these three reasons, almost 75% women developed dyspnea due to physiological changes. Furthermore, maternal respiratory compromise and oxygen desaturation put the fetus on risk of developing hypoxia.[9]

Similarly, various literature showed that the majority of patients remained under diagnosed due to nature of their pregnancy.[10,11] Pregnant women are more likely than non-pregnant women to acquire obstructive sleep apnea (OSA) because of the nature of pregnancy.[12]

To assess obstructive sleep apnea risk among pregnant women at tertiary care hospitals in Lahore, Pakistan.

METHODS

A Cross sectional research was carried out in two public sector maternity hospitals (Lady Atchison and Lady Willingdon) of Lahore, Pakistan.

A Simple random sampling technique was used to recruit pregnant women with third trimester of pregnancy. A total 288 pregnant women having age more than 18 years, >24 weeks of gestational age, and had no prior respiratory problems were included.

While the women diagnosed with Obstructive sleep apnea, had history of nasal problems and history of cardiac diseases were excluded from the study.

An adopted berlin questionnaire (Cronbach's alpha 0.74 – 0.98) a translated Urdu questionnaire was used to collect the data from the study participants. SPSS 25.0 was used for data analysis and descriptive analysis was carried out.

RESULTS

The majority of participants n=125 (43.4) were between the age of 27-33, 80 (27.8%) had a matric level qualification, 185 (64.2%) live in an urban residential area, 272 (94.4%) had gestational age more than 24 weeks, 133 (46.2%) had a weight of 71-90 kg, and 280 (97.2) had a height between 1.6 to 2.0 meters shown in table 1.

Table 1: Demographic variable

Variables		Frequency(n)	Percent (%)
Age	19-26	64	22.2%
	27-33	125	43.4%
	34-40	99	34.4%
Qualification	Middle	27	9.4%
	Matric	80	27.8%
	Inter	67	23.3%
	Graduation	47	16.3%
	Masters	17	5.9%
	Illiterate	50	17.4%
Residential Area	Rural	103	35.8%
	Urban	185	64.2%
Gestational age	12weeks	3	1.0%
	24 weeks	13	4.5%
	> 24 weeks	272	94.4%
Patients Weight	51-70 kg	37	12.8%
	71-90 kg	133	46.2%
	91-110 kg	100	34.7%
	111-131 kg	18	6.3%
Patients Height	1-1.5 m	8	2.8%
	1.6-2.0 m	280	97.2%

Table 2: The overall risk of obstructive sleep apnea among pregnant women

OSA Risk	f	%
Low Risk	137	47.6%
High Risk	151	52.4%

This table demonstrated the overall OSA Risk Scoring. A high-risk sleep apnea score means when two or more categories in the tool are positive while a low-risk sleep apnea means when one or no categories are positive. The results found that 151 (52.4%) females were at high risk of developing OSA based on the berlin questionnaire. Whereas, 137 (47.6%) females were reported to have low OSA risk.

DISCUSSION

The study revealed that the majority of participants n=125 (43.4) were between the age of 27-33, 80 (27.8%) had a matric level qualification, 185 (64.2%) live in an urban residential area, 272 (94.4%) had gestational age more than 24 weeks, 133 (46.2%) had a weight of 71-90 kg, and 280 (97.2) had a height between 1.6 to 2.0 meters. These findings are consistent with the study conducted by Wondie *et al*, 2022 in which majority of participants were having qualification up to secondary level and also live in urban area.[13]

Regarding the age, the findings are inconsistent with the study of Umoh & Akpan in which the average age of the patients was 56.2 ± 9.3 years. The youngest participant was 35 years whereas the oldest was 82 years, giving a range of 47 years.[14]

Furthermore, the findings of current study also revealed a Risk of OSA in majority of the participants. A recent study from the United States also found that sleep problems are highly prevalent, with 10% to 40% reporting any given problem and more than 90% of patients reported any examined sleep problem.[15] Similarly, the mean gestational age at the time of third-trimester sleep study was 33.6 (SD 2.5) weeks, respectively.[16] The majority of pregnant women with OSA had "mild" sleep apnea, over 20% had "moderate or severe" sleep apnea.[17]

Moreover ,the result of study supported by Na-rungsri, Lertmaharit[18] shows that women at high or low risk of OSA were similar with regard to maternal age; However, the study's findings indicated that compared to 1 (0.6%) out of 162 women who were 30 years or younger, 2 (3.9%) out of 52 women over the age of 30 had a moderate risk status for OSA.[19]

Similarly, OSA was found to be significantly associated with higher maternal BMI, higher body weight at delivery, and weight gain during pregnancy in the study's overall prevalence of 32.2%.[20] Similarly a study conducted by Sharma, Nehra[21] found that 18 (6.6%), 22 (8.0%), 14 (5.1%) and 26 (9.5%) has high blood pressure and chronic kidney disease and in gestation period that is three times or more had 30 times increased of rising high blood pressure during pregnancy.

CONCLUSION

Most of the participants reported to have high risk of OSA. In order to reduce the burden of high-risk obstructive sleep apnea and its associated complications, health care professionals must identify pregnant women

for the risk of OSA during the first course of their follow-up.

LIMITATIONS

Due to the study design, we were unable to assess how pregnant women at high risk for obstructive sleep apnea managed.

Only public sector hospitals were selected due to the diversity of the population in these hospitals.

SUGGESTIONS / RECOMMENDATIONS

Further Studies are needed to assess OSA prevalence at a national level by involving multiple health care centers from different cities of Pakistan.

Interventions need to be designed to reduce OSA risk in pregnant females.

In order to aid in the early diagnosis and treatment of OSA, it is essential to raise community awareness of this disorder and increase its recognition in the health sector.

Regression analysis needs to apply in the future study between the severity and characteristic OSA.

CONFLICT OF INTEREST / DISCLOSURE

The author declares no conflict of interest

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