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Original Research Article

Risk of obstructive sleep apnea in pregnant females in different trimester

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ABSTRACT

Background: Obstructive Sleep Apnea (OSA) is a common sleep-related breathing disorder, is characterized by recurrent collapse or blockage of the pharynx during sleep that causes intermittent cessation of airflow and a hallmark snoring gasping pattern. When OSA occurs in pregnancy, it is independently associated with increased risk of gestational hypertension, preeclampsia, gestational diabetes and possibly fetal growth restriction and other adverse neonatal outcomes. In particular, OSA affects sleep quality and duration of sleep in pregnant women. The aim was to study the risk of Obstructive Sleep Apnea in pregnant females in different trimester.
Methods: The study consists of a non-experimental, quantitative and cross sectional research design. A total of 60 pregnant females were included in the study and conducted at maternity clinic.
Results: By analyzing data we found that females in 3rd trimester shows symptoms of compromised breathing and thus are at high risk of developing OSA followed by 2nd trimester.
Conclusions: Our study shows that breathing limitation starts from 2nd trimester onwards, so, we conclude that starting breathing exercises early in antenatal period would be beneficial for the expecting mothers. The study concludes that there is high risk of obstructive sleep apnea in 3rd trimester of the pregnancy.

Keywords: Obstructive sleep apnea, Pregnant females

INTRODUCTION

Obstructive Sleep Apnea (OSA) is a common sleep-related breathing disorder, is characterized by recurrent collapse or blockage of the pharynx during sleep that causes intermittent cessation of airflow and a hallmark snoring gasping pattern.[1-3] Pregnant females with OSA decreased quality of life . In particular, OSA affects sleep quality and duration of sleep-in pregnant women.[4,5]

Pregnancy causes anatomic, physiologic, and endocrinology changes, including narrowing of the upper respiratory tract, which may increase the risk for OSA or worsen preexisting sleep apneas.[6,7] Studies have associated OSA in pregnant women with low birthweight (LBW) preterm birth, small for gestational age (SGA), cesarean section (CS), lower Apgar scores at birth and preeclampsia.[6-12]

Habitual snoring is a hallmark symptom of sleep disordered breathing (SDB), indicating upper airway restriction during sleep and increased risk of sleep apnea. Self-reported snoring is two to three times more prevalent during pregnancy than non-pregnancy and may be higher in women with cardiovascular pathologies.[13] Other contributing factors include progressive weight gain and upward displacement of the diaphragm. Several study showed treatment with continuous positive airway pressure is not tolerated by all OSA patients and is often not suitable in cases of mild OSA. Hence, alternative

methods to treat OSA and its cardiovascular consequences are needed.

METHODS

The study consists of a non-experimental, quantitative and cross sectional research design. A total of 60 pregnant females were included in the study. This study was conducted from October 2021 to March 2022 at Fetal Care Maternity Clinic in Faridabad, India. Participants were included as per inclusion and exclusion criteria. Subjects with underlying pulmonary and cardiac co-morbidities, any obstructive respiratory disease, active smokers, multifetal gestation, fatal fetal anomalies and who are not willing to participate were excluded. Subjects who were well versed with English language, aged between 20- 45 years, non-smokers, sedentary lifestyle and willing to participate were included in the study. Females were made counselled about the research and those who consented to participate were included in the study.

Data analysis for the collected data was carried out using the data analysis tool kit in Microsoft Excel 2017, initially the scoring of responses from the questionnaire was done. Mean and standard deviation values were calculated for the questionnaire. We found 14 females from 1st trimester 26 females from 2nd trimester and 20 from 3rd trimester. Study was conducted with approval from institutional ethical and research committees and after getting written informed consent from participants.

RESULTS

Table1 shows the demographic characteristics of the respondents mainly included, age, height, weight, and trimester of the total respondents (N=60), 14 respondents from first trimester out of 60, 26 respondents from second trimester out of 60, 20 respondents from third trimester out of 60.

Table 1: Sociodemographic characteristics of participants.

Demographics statistics			
Total (N)	1st trimester	2nd trimester	3rd trimester
Female (N=60)	14	26	20
Age groups	20-27 years	27-35years	More than 35
Total (N=60)	16	38	06
Body mass index	Under-weight	Healthy	Over-weight
	02	22	19

In terms of age 16 respondents of 20-27 year age group, 38 respondents of 27-35year age group, 6 respondents of more than 35year age group. In terms of BMI 2 respondents were underweight, 22 respondents were healthy, 19 respondents were over-weight, and 17 respondents were obese.

Table 2: Berlin scoring.

Findings of Berlin Scoring				
Trimester	1st	2nd	3rd	Total
No. of participants	14	26	20	60
Lies in 2 or more than 2 categories (High risk)	1	5	9	15
No or less than 2 categories (low risk)	13	21	11	45

Table 2 Berlin Scoring shows total 60 participants are included in the study, 14 participants are in 1st trimester from which 1 participant is at high risk according Berlin questionnaire scoring 13 participants are at low risk, 26 participants are in 2nd trimester from which 5participants are at high risk and 21 are at low risk and 20 participants are in 3 Rd trimester 9 participants are at high risk and 11 are at low risk according to Berlin questionnaire Scoring.

By analysing data, we found that females in 3rd trimester shows symptoms of compromised breathing and thus are at high risk of developing OSA followed by 2nd trimester. Females in 1st trimester are not at high risk of developing OSA.

It was noticed that females generally do not seek medical help in 1st trimester. Pregnant females visit the clinic more in 2nd and 3rd trimester. The results are diluted as the size of samples were unequal in groups.

DISCUSSION

Pregnancy is a beautiful phase of a woman's life but it is not without difficulty and hurdles. All females experience a great deal of different types of changes during this period (0 week to 40 week). It has been reported that in pregnant women with OSA, increased small airway and reduced lung volumes, particularly in late pregnancy, results in ventilation perfusion mismatch.[14] Pregnancy reduces pharyngeal dimensions as measured by the Mallampati scoring system.[15] As a result, keeping an eye on excessive weight gain during pregnancy is critical. Several prior studies have found that the prevalence of snoring in pregnant women increases as the pregnancy progresses in our study, we also discovered that there is a higher risk of obstructive sleep apnea in the third trimester.[16] There are several studies showing that physical activity, particularly breathing exercises, can help with obstructive sleep apnea. Recent research has concentrated on exercise programs for OSA patients because they are a low cost, simple-to-implement treatment modality. Physical activity is defined as "any bodily movement produced by the skeletal muscles that results in increased energy expenditure" and is currently seen as one of the most powerful health promoting behaviours.[17,18]

Limitation

The study sample size is small, unequal participation in different trimester, less time given by clinics to interview participant.

CONCLUSION

Our study shows that breathing limitation starts from 2nd trimester onwards, so, we conclude that starting breathing exercises early in antenatal period would be beneficial for the expecting mothers. The study concludes that there is high risk of obstructive sleep apnea in 3rd trimester of the pregnancy.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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