

# Assessment of Sleep Quality Among Women of Childbearing Age by Pittsburgh Sleep Quality Index

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## ABSTRACT

**Background:** Complaints of sleep disturbance are more prevalent among women. Women in childbearing age (15–49 years) are prone to sleep disturbances due to the menstrual cycle, pregnancy, and many other hormonal changes. So this study was designed with an objective to assess the sleep quality among women of childbearing age.

**Materials and methods:** This cross-sectional study was conducted in sleep disorder clinic and laboratory of Srirama Chandra Bhanja Medical College, Cuttack, Odhisa, India between October 2014 and September 2015. Two hundred eleven women of childbearing age participated. Sleep was assessed by the Pittsburgh sleep quality index (PSQI) scale.

**Results:** Among poor sleeper women 56.5% were from age 15 to 26 years which is higher from other age groups. About 61.9% of pregnant women were poor sleepers. About 83.3% of the second-trimester pregnant women were poor sleepers.

**Conclusion:** Sleep abnormality in women of childbearing age starts from a very early age. Most pregnant women suffer from sleep abnormality mainly in the second trimester.

**Keywords:** Pittsburgh sleep quality index, Pregnancy, Sleep quality, Women.

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## INTRODUCTION

Sufficient sleep is essential for immunocompetence<sup>1</sup> and for overall health.<sup>2</sup> Complaints of sleep disturbance are more prevalent among women than men across the entire lifespan.<sup>3,4</sup> Women in childbearing age (15–49 years)<sup>5</sup> are prone to sleep disturbances due to the menstrual cycle, pregnancy, and many other hormonal changes.<sup>6</sup> A decrease in sleep leads to an increase in inflammatory cytokines which are now believed to be important in the development of health problems.<sup>7</sup> This study was done with an objective to assess the sleep quality among the women of childbearing age.

## MATERIALS AND METHODS

This cross-sectional study was conducted at a sleep disorder clinic in the Department of Physiology, Srirama Chandra Bhanja Medical College, Cuttack, Odisha between October 2014 and September 2015. Those women who gave written consent to participate were included in the study. Women taking any hormonal drugs and women of any chronic diseases were excluded in this study. A total of 211 women of childbearing age were included in the study. Sleep quality was assessed by using the PSQI.<sup>8</sup> The PSQI is a self-rated instrument used to measure sleep quality in clinical samples to provide a reliable, valid, and standardized measure of sleep quality to discriminate between “good” and “poor” sleepers. Global PSQI score ranges from ‘0’ to ‘21’. PSQI score  $\leq 5$  indicates good sleepers and PSQI score  $> 5$  indicates poor sleepers. The data were tabulated in MS Office Excel. Graphs were made using MS office. Statistical analysis was done SPSS software. Analysis of variance (ANOVA) test was applied for comparative analysis. *P* value  $< 0.05$  was considered as significant.

## RESULTS

A total of 211 women of childbearing age were included in the study. They were between 15 years and 49 years with the mean age of  $29.53 \pm 6.69$  years and mean body mass index (BMI) of  $24.02 \pm 1.03$  kg/m<sup>2</sup>. Graph 1 shows sleep quality according to different age

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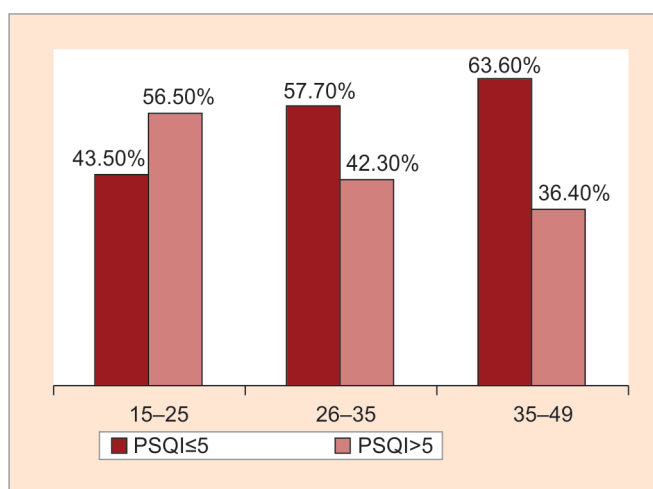
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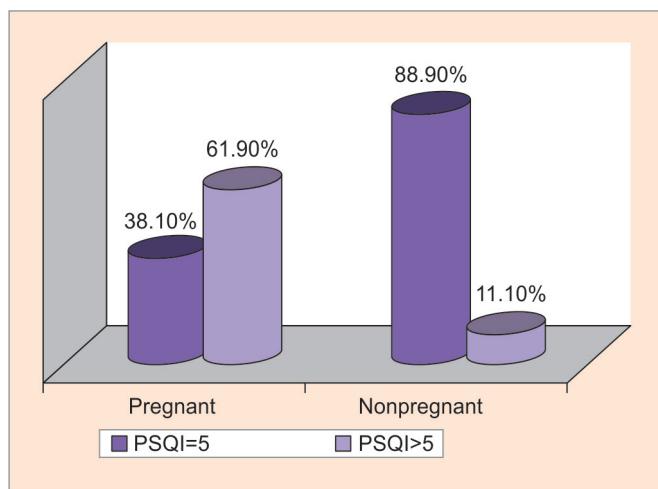
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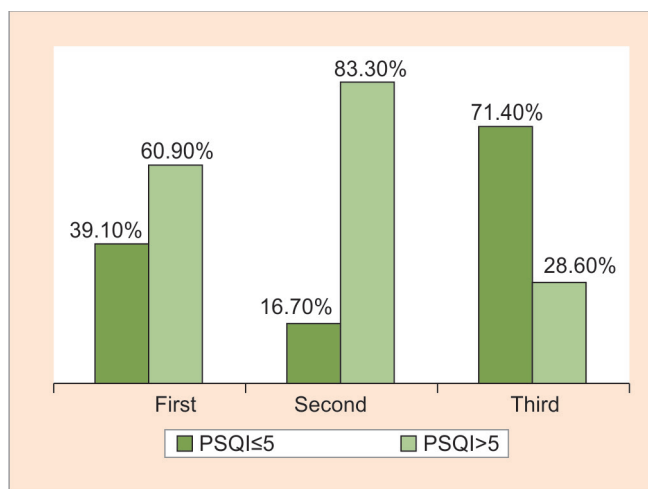
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Graph 1: Age group vs. PSQI score



Graph 2: Global PSQI score with pregnant and nonpregnant status



Graph 3: Trimesters of pregnancy vs. PSQI score

groups. Nearly 43.5% of women were in the age group of 15–25 years, 57.7% in the age group of 26–35 years and 65.6% women in the age group of 35–49 years were good sleepers. Among poor sleeper, 56.5% of women were in the age group of 15–26 years, 42.3% were in the age group of 26–35 years, and 36.4% were in the age group of 35–49 years.

Global PSQI score with the pregnant and nonpregnant status of women is shown in Graph 2. About 38.1% of pregnant and 88.9% of non-pregnant women were good sleepers whereas 61.9% of pregnant and 11.9% of nonpregnant were poor sleepers. The difference was statistically significant ( $p < 0.05$ ).

Graph 3 shows the PSQI score in the three trimesters of pregnancy with sleep. 39.1% in the first trimester, 16.7% in the second trimester and 71.4% in the third trimester were good sleepers. Among poor sleeper pregnant women 60.9% were from the first trimester, 83.3% from the second trimester and 28.6% were from the third trimester. The difference was statistically significant for pregnant women in the 2nd trimester ( $p < 0.05$ ).

## DISCUSSION

Pregnancy is related to multiple sleep disturbances. There can be many biological reasons for sleep disturbances associated with pregnancy, hormonal changes being the most common.<sup>9</sup> Progesterone administration has resulted in changes in sleep cycle in animal studies.<sup>10</sup> The common sleep problems reported in pregnancy include changes in duration and pattern of sleep, insomnia, restless leg syndrome, and snoring.<sup>9,11</sup>

In this study, 211 women of childbearing age (15–49 years) were taken as study subjects. Women taking any hormonal drugs and women of any chronic diseases were excluded from the study. 56.5% of women from age group 15–25 years had PSQI >5, i.e. poor sleepers which was highest from other age groups. Pucci et al.<sup>12</sup> also got a similar finding. They concluded that sleep abnormalities start from early adulthood. This study also revealed that most of the pregnant (61.9%) women were a poor sleeper in compare to nonpregnant women. This result is similar to the study conducted by Sahota et al.<sup>13</sup> and Bourjeily et al.<sup>14</sup> who also found that sleep disturbance was a common sleep abnormality in pregnancy. Among pregnant women, maximum sleep abnormalities were found in the second trimester (83.3%) in comparison to another trimester of pregnancy. This result is in contrary to a study conducted by Sedov et al.<sup>15</sup> which says maximum

sleep abnormalities in the third trimester, next is second and least in the first trimester of pregnancy.

A future longitudinal study should be done to assess how this sleep quality change affects pregnancy.

Insomnia or excess sleepiness which develops during pregnancy is called pregnancy-associated sleep disorder.<sup>16</sup> Patients should be advised on sleep hygiene techniques, and pregnancy-related conditions should be addressed. A careful history is needed to identify specific sleep disorder, and patients can be subjected to further testing if needed.<sup>9</sup>

## CONCLUSION

In this study, we found that sleep quality changes in women start at a very early age (15–25 years). Most women suffer from sleep problem during pregnancy among which maximum in the 2nd trimester of pregnancy. So sleep quality management is very much essential in women particularly in pregnancy.

## LIMITATIONS OF THE STUDY

As PQSI is a subjective questionnaire-based tool, sleep disorders were not objectively identified. Polysomnography could not be done. We could not make out the exact cause of poor sleep in pregnant patients as there are many causes for poor sleep in them.

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