Sleep quality and restless leg syndrome among antenatal women attending government healthcare facilities in urban bangalore

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ABSTRACT

Introduction: Sleep changes are more common in pregnancy and lack of sleep in antenatal women can lead to hypertension, postpartum depression, abortions, and preterm babies. **Objectives:** 1. To assess sleep quality and daytime sleepiness among pregnant women attending government health care facilities in Urban Bangalore. 2 To measure the association between sleep quality, daytime sleepiness with restless leg syndrome (RLS) in the same study population. **Methodology:** A cross-sectional study was conducted in March and April 2018 among all antenatal women attending the Government District Hospital, Anekal Taluk and Primary Health Centre, Sarjapur, in Urban Bangalore. The calculated sample size was 255 and we interviewed 260 women using the Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale and RLS rating scale along with details on socio-demography. **Results:** According to PSQI, 83.1% had good sleep quality, 14.2% had daytime sleepiness and 21.9% had RLS. The RLS was significantly associated ($P < 0.05$) with trimester, sleep onset position, sleep quality, and daytime sleepiness. On logistic regression, there are 3.6 times the chances of having RLS when the sleep quality is bad and 5.3 times more chances of having RLS when there is daytime sleepiness. **Conclusion:** RLS is significantly associated with daytime sleepiness and sleep quality in antenatal women. Health education on the importance of sleep and about RLS should be included during antenatal visits.

Keywords: Daytime sleepiness, pregnant women, restless leg syndrome, sleep quality

Introduction

Among the various physical, mental, and social changes a woman must go through when she gets pregnant, sleep changes are one of the most common and most important. Compared to women in the general population, antenatal women sleepless.[1] Apart from the physical tiredness that ensues, lack of sleep also leads to mental stress,[2] hypertension in pregnancy,[3] postpartum depression,[4] abortions,[5] increased inflammatory cytokines,[6] and preterm babies.[7]

On average, a normal adult takes 22 min to fall asleep and sleeps about 7 h a night.[8] Common sleep disorders are obstructed sleep apnea, restless leg syndrome (RLS), and insomnia.[9] Among these, restless leg syndrome is the most common one in antenatal women.

"RLS or Willis-Ekbom disease (WED) is a common sensorimotor neurological disorder that is characterized by an urge to move the legs due to unpleasant sensations. The symptoms occur at rest, are relieved by movement, and usually worsen in the evening."[10] The two most common causes of secondary RLS are iron deficiency and pregnancy, and these two are coupled together in antenatal women making them more vulnerable for RLS.

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Even though women undergo lots of sleep-related problems at various stages of life, most of the sleep studies are done on men. There is a dearth in literature when it comes to the association between sleep quality, daytime sleepiness with RLS in pregnant women in Indian settings. So, our study was done with the following objectives.

Objectives

1. To assess the sleep quality and daytime sleepiness among pregnant women attending Government Health Care Facilities in Urban Bangalore.
2. To measure the association between sleep quality, daytime sleepiness with RLS in the same study population.

Methodology

This was a cross-sectional study done among all antenatal women attending the Government District Hospital, Anekal Taluk and Primary Health Centre, Sarjapur, in Urban Bangalore. A previous study done in 2003 in Japan showed the prevalence of RLS in pregnant women is 19.9%.[11] The sample size was calculated to be 255 with 5% fixed precision and alpha at 1.96. Inclusion criteria were women availing maternal and child health care services in Government District Hospital, Anekal and Primary Health Centre, Sarjapur, in Urban Bangalore.

We obtained institutional ethical clearance and permission from the Administrative Medical Officer of the Government District Hospital in Anekal and the Medical Officer of Primary Health Centre, Sarjapur. We did a consecutive sampling of the antenatal women in both the centers. One on one interviews were conducted after explaining the study and obtaining informed consent. Data collected included sociodemographic details, sleep quality, daytime sleepiness, and RLS.

Socio-demographic details included data on age, socio-economic status, income, occupation, family type and details on the obstetric score, high-risk pregnancy, history of psychiatric illness, epilepsy. Sleep quality was assessed by using the Pittsburgh Sleep Quality Index[12] in which components like subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of medication of sleep are measured. Daytime sleepiness was measured using the Epworth Sleepiness Scale[13] in which no and mild categories were classified as having no daytime sleepiness whereas moderate and severe categories were classified as the presence of daytime sleepiness.

RLS was assessed by using the RLS rating scale.[14] The International RLS Study Group criteria for the diagnosis of RLS[14] includes,

1. Desire to move the extremities usually associated with discomfort or disagreeable sensations in the extremities.
2. Motor Restlessness in which the patients move to relieve the discomfort

3. Symptoms are worse at rest with at least temporary relief by activity.
4. Symptoms are worse later in the day or at night

The final scores were dichotomized into the presence or absence of RLS.

The data collected were entered in Microsoft Excel and analyzed using percentages, mean, standard deviation and z-scores SPSS 16.

Results

We interviewed 260 women in total and the mean age was 23.15 years (±2.95) with a median income of Rs. 15,042 (3000–40,000). The average weight of the participants was 51.24 kg (±9.5) and their mean hemoglobin was 10.31 mg/dL (±1.17). They slept around 7.61 (±0.7) hours a day on an average and their mean habitual sleep efficiency was 94.37 (±3.9).

The majority of the participants have studied up to high school (38%) and 3.8% of them were uneducated. They were 84% Hindus, 12% of Muslims, and 4% Christians. According to the modified BG Prasad socioeconomic scale of 2017, 40% were middle class and 38% were upper-middle class. The women were predominantly from nuclear (46%) and three-generation (44%) families. For most of the women, this was first pregnancy (51.9%) and second pregnancy for 41.5%.

Of the women interviewed, 41.1% were in their second trimester and 36.5% were in their first and rest in the third trimester. Employment status showed that 85% of the women were not doing any income-generating work and among the working women, the majority were involved in semi-skilled work like tailoring.

Sleep onset position was left lateral among 59.6% of the women and supine in 33%. Iron and folic acid tablets were being taken by 95% of the women. According to the Pittsburgh Sleep Quality Index, 83.1% had good sleep quality. The various components of sleep quality are shown in Figure 1. Based on the Epworth Daytime sleepiness scale, 14.2% had daytime sleepiness. The prevalence of RLS was 21.9% among our study participants.

The presence of RLS was significantly associated with trimesters and sleep onset position [Table 1]. There was no correlation between age, income and hemoglobin levels with the RLS scores. Also, the RLS was not associated with family type, socioeconomic status, religion, parity and weight. There was a significant association between sleep quality and RLS with RLS being lesser among women with good sleep quality [Table 1]. RLS was also significantly associated with daytime sleepiness with RLS being present in 92% of women with daytime sleepiness [Table 1].

On doing a multivariate logistic regression, we found that only sleep quality and daytime sleepiness were significantly associated
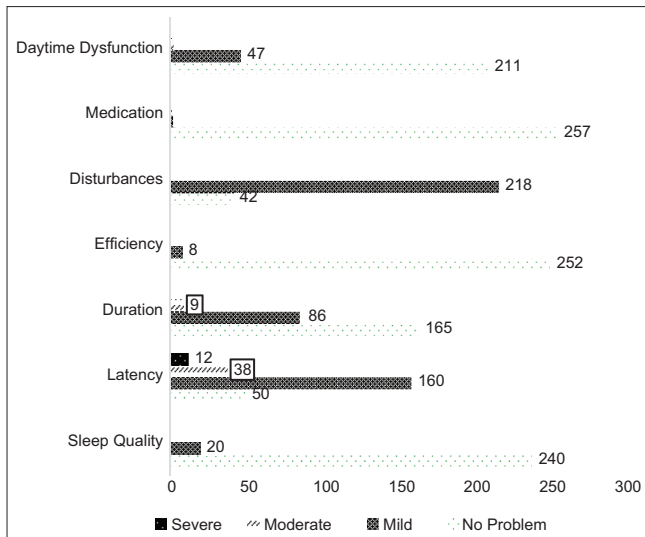
Figure 1: Components of Pittsburgh sleep quality index

Table 1: Association between trimester, sleep patterns and restless leg syndrome (RLS)

Factor		Restless leg syndrome		P
		Present	Absent	
Trimester	First	17 (17.9%)	78 (82.1%)	P<0.05
	Second	22 (20.5%)	85 (79.5%)	
	Third	15 (25.9%)	43 (74.1%)	
Sleep onset position	Left lateral	32 (17.6%)	150 (82.4%)	P<0.01
	Right lateral	5 (37.7%)	9 (64.3%)	
	Supine	17 (42.5%)	23 (57.5%)	
Sleep quality	Good	27 (12.5%)	189 (87.5%)	P<0.001
	Moderate—Bad	30 (68.2%)	14 (31.8%)	
Daytime sleepiness	Yes	34 (91.9%)	3 (8.1%)	P<0.001
	No	23 (10.3%)	200 (89.7%)	

Table 2: Logistic regression showing odds of getting RLS

	Factor		OR	95% CI		Significance
RLS	Sleep quality	Good	-	-	-	P=0.010
		Poor	3.673	1.209	3.907	
	Daytime sleepiness	No	-	-	-	P=0.005
		Yes	5.348	1.352	5.184	

with RLS. There are 3.6 times the chances of having RLS when the sleep quality is bad and 5.3 times the chances of having RLS when there is daytime sleepiness [Table 2].

Discussion

The study was done in a peri-urban area of Bangalore. Since most of the women go to their mother's house during their antenatal period, they are looked after well and made to work less. sometimes they stop working also which contributes to their sleep latency of 30–60 min to fall asleep. Also because of other stress to the body due to pregnancy, the whole sleep pattern of a woman changes.

In a large-scale study done by Kenshu Suzuki[11] in Japan among pregnant women, the prevalence of RLS was 19.9% and the mean hours of sleep were 7.6 h. In our study, the prevalence of RLS was 21.9% and the average sleep time was 7.61 h. In a recent study by Silvestri[15] among the pregnant women in Italy in 2019, the prevalence of RLS was 25–30%. Also, the Japanese study found an association between other factors such as subjective evaluation of sleep, difficulty initiating sleep, difficulty maintaining sleep, early morning waking, and excessive daytime sleepiness. Our study showed an association between these components in the Pittsburgh Sleep Quality Index (PSQI) with RLS.

In a study by Okun[2] in Pittsburgh among pregnant women, 28% of women sleepless but, in our study, only 4.2% have poor sleep quality. In a study by Kentia Naud[16] in 2006 in Quebec, there was a deterioration of sleep from PSQI scores of 5.26 in the second trimester to 6.73 in the third trimester whereas in our study it was from 5.34 to 6.15. In a case-control study done by Almeneessie[17] *et al.* in 2020, he reported an increasing chance of having RLS as the gestational age increases. The study by Silvestri[15] in Italy (2019) showed that the occurrence of RLS peaks in the third trimester. This is in line with our finding of an increased prevalence of RLS in the third trimester ($P < 0.05$).

In the Egyptian study by Razek,[18] 42.5% of pregnant women took about 30–60 min to fall asleep whereas in the present study, 47.8% of pregnant women took at least 30 min to fall asleep. This can be attributed to lesser physical activities, daytime napping and the most commonly reported reason for thinking about pregnancy and family when trying to sleep. The anxiety about delivery is one of the main reasons for increased sleep latency and poorer sleep quality in the third trimester.[11]

Women should know the value of good sleep in the night and when there is sleep deficiency, there will be complications like RLS. Health education was given to all the women attending the antenatal clinic regarding the importance of good sleep and how to achieve it in terms of sleep hygiene. We taught the pregnant women attending the antenatal clinic on the do's and do not before sleep; the added importance of iron supplementation in protection against RLS. Creating awareness of these topics should be part of the routine health education programs for antenatal mothers in hospitals. The main aim of primary care is to give importance to non-pharmacological interventions like cognitive behavior therapy, massages, and yoga can be promoted.[19] Advice regarding physical activity during pregnancy should also be undertaken.

The accredited social health activists (ASHAs) and the auxiliary nurse midwives (ANMs) are the foot soldiers when it comes to caring for pregnant women. The onus is on creating awareness among the ASHAs and ANMs in looking for the signs of RLS, ask about the sleep patterns and also educate the pregnant women regarding the benefits of good sleep. Also, pregnant women should be specifically screened for RLS in their second and third trimesters as RLS can affect their quality of life and the fetal

outcomes.[20] If the primary prevention for RLS is undertaken with care, a lot of health hazards and health expenditure can be avoided.

Conclusion

More than three-fourths of the antenatal women in our study had good sleep quality and almost one-sixth had daytime sleepiness. More than one fifth has RLS and chances of getting RLS are significantly high when there is an increase in gestational age, poor sleep quality or daytime sleepiness. There is a need for health education on sleep hygiene to improve sleep quality and reduce RLS.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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