

Research Paper

Sleep Deprivation and Thought Suppression as predictors of Antenatal depression in Pregnant Women

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ABSTRACT

Hormonal changes during pregnancy might impact brain chemicals that trigger depression, as well as sleep and cognitive habits. On top of that depression is also a common issue among pregnant women which can further worsen their ability to sleep and negatively impact their overall quality of life. This research seeks to explore the relationship between these predictors and antenatal depression and to uncover ways to prevent or manage depression during pregnancy. In this study, a convenient sampling approach was employed to gather data on 120 pregnant women between the ages of 22 and 45. Data was gathered through face-to-face interviews conducted at hospitals and clinics in Sambrial and Sialkot. The Statistical Package for the Social Sciences was used to analyze data in order to analyze the significance of prenatal depression, sleep deprivation, and thought suppression in pregnant women. Epworth Sleepiness Scale, the White Bear Suppression Inventory, and Edinburgh Postnatal Depression Scale were employed in the study to assess sleep deprivation, thought suppression, and antenatal depression, respectively. The study's statistical evaluation of the data found a positive correlation between the sleep deprivation and the thought suppression. The sleep deprivation and the antenatal depression exhibit a negative correlation. The thought suppression and antenatal depression showed a significant inverse relationship, with predictor factor i.e., thought suppression were significantly influencing prenatal depression.

Keywords: *Antenatal depression, Sleep Deprivation, Thought Suppression. Hormonal Changes, Pregnant Women*

Women must priorities their mental health throughout their lives, and one element that must be addressed is the quality of their sleep. A woman's psychological health may be affected by stress and negative thinking as a result of many factors in South Asia, including socioeconomic status, education, environmental factors, biological factors,

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negative life events, stigmas related to gender discrimination, etc. Pregnancy is considered to be a very emotional, fascinating and exuberant period at the same time that so many hormonal changes are happening in a woman's body. And each of these factors incorporates to mental health issues. The study emphasized that special consideration should be given to expectant mothers who already have issues that might be detrimental to their mental health. The emotions felt during pregnancy, delivery, and laying in are typically quite strong and severe, and change abruptly (Pięta et al., 2014). Hormone levels, levels of estrogen and progesterone also play an important role in pregnancy increasing to support the pregnancy. These hormones can cause symptoms such as fatigue mood changes and nausea commonly known as morning sickness. Pregnancy also has an impact on the musculoskeletal system, changing posture and possibly causing back discomfort due to weight growth and center of gravity shifts. Overall, the changes that take place during pregnancy are essential for the baby's proper growth and development, but they can also be uncomfortable for the mother and present difficulties.

In addition, antenatal depression is a prevalent mental disorder during pregnancy, strongly predicts postnatal depression During pregnancy, a woman's body changes considerably to accommodate the growing fetus. These changes are caused by hormonal and physiological changes in the body, as well as increasing demands on organs and biological systems. One in every five women experiences mental health problems during and after pregnancy, with depression and anxiety being the most prevalent. 15% to 20% of pregnant women experience these problems. A baby's growth requires a joyful and peaceful environment, yet stress and worry can raise hormone levels, which can have an impact on the baby's body and brain. The research discussed thought suppression and suggests ways to strengthen mental discipline. It draws attention to the drawbacks of suppressing one's thoughts as well as the possibilities of other coping mechanisms for depressed thoughts. Increased diversions, less unwanted negative thoughts, and the use of acceptance-based techniques are some solutions. Understanding the negative effects of thought suppression and developing workable substitutes can shed light on the cognitive components of depression (Beever et al., 1999).

Further, Antenatal depression is a serious mental health concern that women confront throughout their pregnancy. Antenatal depression is a significant medical disorder that adversely influences a person's thinking pattern and behaviour. It frequently gets referred to as prenatal/perinatal depression. Any unfavorable event or stresses endured by the mother during pregnancy can have an adverse consequence on both mother and child, affecting foetal growth. If a woman suffers from prenatal depression throughout her pregnancy, it can lead to postpartum depression if not treated effectively. Antenatal depression is a widespread mental health concern in pregnant women particularly in developing countries like Pakistan. Pregnant women face various challenges during their pregnancy that can lead to anxiety depression and psychological stress. One such challenge is sleeping deprivation. Sleep deprivation is a common problem in women during pregnancy and it has been proved that sleep deprivation has significant relationship with depression during pregnancy.

Moreover, Antenatal depression has consistently demonstrated associations with various factors, encompassing sleep quality and thought suppression. Existing research has established the association correlation between sleep deprivation and antenatal depression, as documented in the study conducted by Alam Shaun et al. (2022). Sleep deprivation, characterized by inadequate sleep and disruptions in the sleep-wake cycle during the antenatal period, exerts detrimental effects on pregnancy. In order to investigate the association between sleep deprivation and antenatal depression, a prospective cohort research study including 1152

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pregnant women was done in China. The study's findings underscored the predictive nature of poor sleep quality in both antenatal and postpartum depression. These notable outcomes contribute substantial insights into the intricate interplay between sleep disturbances and the development of antenatal depression, thereby advancing our comprehension of this critical issue within the realm of prenatal mental health.

Additionally, the study demonstrated an association between prenatal depression and thought suppression. According to Wegner (1989), thought suppression is the deliberate repression of unfavorable ideas, which has adverse bilateral effects throughout the prenatal period. It is generally regarded to be an active practice intended to banish undesirable ideas. Thought suppression, which is used as a psychological defense mechanism, is a motivated sort of forgetfulness in which people actively work to stop thinking about a certain idea. Obsessive-compulsive disorder (OCD) is usually associated with thought suppression. Moreover, in research published in 1997, Freeston and Ladouceur examined the coping techniques employed by patients suffering from obsessive-compulsive disorder (OCD) to regulate intrusive thoughts. According to the findings, a sizable majority of the individuals in their sample claimed to regularly use thought pausing and thought substitution approaches to deal with these bothersome ideas. However, it was noted that these methods weren't regarded to be particularly helpful for getting rid of undesirable ideas.

Besides, thought suppression is the conscious attempt to avoid or suppress specific thoughts or urges from one's mind. It is a common phenomenon among individuals but it can become problematic in pregnant women. During pregnancy women go through a lot of emotional and physical changes and may experience anxiety depression and stress. The study of thought suppression in antenatal period has become important to explore its effects on women's mental and physical health.

Furthermore, Harrington et al., (2019) demonstrated that When individuals are confronted with reminders, unwanted memories might enter awareness, and the elements influencing suppressing capacity are poorly understood. According to one study, sleep-deprived people had more intrusions than non-sleep-deprived people. Insufficiency in controlling intrusive thoughts resulted in less unpleasant affect for aversive memories, but not for sleep-deprived participants. This demonstrates that inadequate sleep disrupts prefrontal control over regions in the medial temporal lobe that underpin memory and emotion, possibly perpetuating and aggravating psychiatric illnesses characterized by persistent, unwelcome thoughts. The earlier research revealed that automatic negative thoughts may have a significant mediating influence. Pregnant women with lower scores for negative automatic thoughts, according to Wang et al. (2016), were less likely to face unpleasant life experiences that might prevent prenatal depression.

Statement of the Problem:

“To discover the role of sleep deprivation and thought suppression in rooting the antenatal depression in pregnant women”. Investigating sleep deprivation and thought suppression in pregnant women is crucial to understand the development of antenatal depression. Previous studies have shown that lack of sleep and suppressing negative thoughts can lead to depression. Understanding this relationship is crucial as antenatal depression can negatively impact both the mother Chronic sleep loss is a common feature of sleep during pregnancy and may lead to poor pregnancy outcomes (Palagini et al., 2014).

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González-Mesa et al., (2019) confirmed the negative effects of poor sleep on perinatal mood. Furthermore, the study emphasized that at lower stress levels, thought suppression may provide safety, but it may also lead to an emotional state that is vulnerable to depression (Beevers et al., 2010).

Objectives:

- To discover the relationship between thought suppression, sleep deprivation, and prenatal depression in pregnant women
- Examining the impact of sleep deprivation and thought suppression as indicators of prenatal depression
- To explore the difference on antenatal depression, thought suppression and sleep deprivation among pregnant women based on their age
- To identify the difference on antenatal depression, thought suppression and sleep deprivation among pregnant women based on their education
- To figure out the difference on antenatal depression, thought suppression and sleep deprivation among pregnant women based on family system
- To investigate difference on antenatal depression, thought suppression and sleep deprivation among pregnant women based on number of children
- To comprehend the difference on antenatal depression, thought suppression and sleep deprivation among pregnant women based on socio economic status
- To discern difference on antenatal depression, thought suppression and sleep deprivation among pregnant women based on trimester

Hypothesis:

- Antenatal depression in pregnant women is positively correlated with thought suppression and sleep deprivation
- Sleep deprivation and thought suppression will be the predictors of antenatal depression in pregnant women
- There will be a significant difference on antenatal depression, thought suppression and sleep deprivation among pregnant women based on their age.
- There will be significant variations in prenatal depression, thought suppression, and sleep deprivation among pregnant women based on education.
- There will be a considerable difference on antenatal depression, thought suppression and sleep deprivation among pregnant women in accordance with family system
- There will be a significant variance on antenatal depression, thought suppression and sleep deprivation among pregnant women with regard to number of children
- There will be a significant difference on antenatal depression, thought suppression and sleep deprivation among pregnant women with regard to socio economic status
- There will be a significant difference on antenatal depression, thought suppression and sleep deprivation among pregnant women with regard to trimester

Significance of the Study:

This study intends to investigate at prenatal depression risk factors including sleep deprivation and thought suppression to see which one is the most essential in causing perinatal depression in pregnant women. It will also provide data regarding the prevalence of prenatal depression in the population. The researchers further determined that age, socioeconomic status, education, and family structure all played a role in prenatal depression, sleep deprivation, and thought suppression. There will also be a significant difference in prenatal depression, thought

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suppression, and sleep deprivation among pregnant women contingent upon trimester. This study intends to investigate at prenatal depression risk factors including sleep deprivation and thought suppression to see which one is the most essential in causing perinatal depression in pregnant women. It will also provide data regarding the prevalence of prenatal depression in the population. For the participants from every level of education in this study, the white bear suppression inventory was translated by the authors. Because it was translated in the participants' native language of Urdu, the study's inclusion of this inventory will ensure that findings are uninfluenced by any possible cultural bias.

The researchers further determined that age, socioeconomic status, education, and family structure all played a role in prenatal depression, sleep deprivation, and thought suppression. There will also be a significant difference in prenatal depression, thought suppression, and sleep deprivation among pregnant women contingent upon trimester. The findings from this research potentially provides important insights into the special requirements and obstacles that pregnant women confront in terms of sleep loss and thought suppression. It can assist healthcare practitioners in Sialkot and Sambrial in tailoring interventions and support programmers to successfully address these challenges. Healthcare practitioners may equip women with the knowledge and coping mechanisms they need to effectively traverse this vital period by providing timely counselling and psychoeducation about pregnancy risk factors.

Rationale:

When a woman becomes a mother, she is at her most vulnerable position, as she undergoes biological and psychological changes that alter during their pregnancy and after birth. Prenatal depression is common among women and increases the risk of postpartum depression.

The study aims to achieve a final objective of addressing the lack of knowledge and understanding of the psychological consequences of inadequate sleep and thought suppression during pregnancy. The findings from this research will contribute to the relevant amount of knowledge and give vital insights into the influence of these variables on the mental health of pregnant women. Common adverse results for Mothers who suffer from depression may experience reduced support from family and friends, difficulty taking care of themselves, poor nutrition, weight gain, substance abuse, relationship issues with their partner, and difficulty bonding with their infant. It determines the preventative measures that will aid in determining these repercussions at the beginning of the process.

As with previous statistics, gaps remain since there is not enough research in Pakistan on these psychological components of sleep deprivation and thought suppression during the prenatal time. As a result, these risk variables will be extensively investigated in this manner. This study will assist the Psychiatry profession in Sialkot and Sambrial in determining how much work they need to conduct on pregnant women and when they require counselling and psychoeducation about pregnancy risk factors.

LITERATURE REVIEW

Chang et al., (2009) performed research on the effect of sleep deprivation on mother and foetal outcomes. According to the study's findings, sleep deprivation increases the likelihood of premature birth, which leads to postpartum depression. Poeira and Zango (2022) also attempted to consolidate and organize evidence proving the link between poor sleep quality and perinatal depression in pregnant and postpartum women. Inadequate sleep during

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pregnancy was consistently found to be a risk factor for the development of prenatal and postnatal depression.

Similarly, Alam Shaun et al., (2022) conducted research to investigate the relationship between depression symptoms and poor sleep quality among pregnant women living in rural parts of Northern Bangladesh. The data revealed a significant frequency of poor sleep quality among pregnant participants. Furthermore, the study indicated an association between individuals' depressed symptoms and sleep quality, emphasizing the importance of depressive symptoms on sleep during pregnancy. Conversely, (Iranpour et al., 2016) investigated the relationship between depression and sleep, emphasizing the bidirectional nature of this interaction. The researchers discovered that feeling depressed may cause sleep disturbances, and that sleep abnormalities can operate as independent risk factors for the onset of depression. Notably, study specifically investigated the relationship between sleep quality during weeks 28 to 38 of pregnancy and postpartum depression, revealing a significant correlation between these variables.

According to Stein et al. (2014), antenatal depression is linked to adverse outcomes for pregnant women in terms of their health-related behaviour, obstetric outcomes, suicide risk, and drug use, as well as for their children in terms of preterm delivery, lower birth weight, and future mental health concerns (Stewart, 2011). Although thought suppression still has unexplored, there is evidence that it is associated with disturbed neurodevelopment in children as well as child behaviour and emotional well-being (Schetter and Tanner, 2012; Stein et al., 2014).

Additionally, Nonacs, R., (2016) conducted a prospective cohort research in China to examine the relationship between the risk of prenatal and postpartum depression and the quality of sleep measured during the second trimester. According to the study's findings, higher levels of stress during pregnancy were predictive of more difficult sleep quality. Additionally, insufficient sleep quality was a predictor of both prenatal and postpartum depression. Another recent research, this one among Singaporean pregnant women (Chan et al., 2022), looked at the connection between depression during pregnancy and sleep quality. According to the study's findings, Singaporean pregnant women's sleep quality was at its lowest in the third trimester and was accompanied by the emergence of depressive symptoms.

According to some other research, Pittsburgh Sleep Quality Index (PSQI) score followed a linear trend, with sleep quality progressively deteriorating as the pregnancy continued. Sleep delay, regular efficiency of sleep, and perceived quality of sleep varied significantly between trimesters. Stepwise multiple regression analyses revealed that prenatal sadness, prenatal sleep quality, present body image, and week of gestation were the greatest predictors of sleep quality for Taiwanese pregnant women. (Hung et al, 2013).

As, Surani et al. (2019) conducted research that explored the many factors impacting the sleep quality of pregnant women with low socioeconomic level throughout their third trimester. The findings show a strong link between low socioeconomic status and poor sleep quality in pregnant women. Furthermore, the study found that pregnant women with lower wages frequently have insufficient food intake, resulting in serious health concerns for both the mother and the child.

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Following that, Fu et al., (2023) executed research to investigate the relationship between prenatal sleep quality and depression in perinatal women throughout pregnancy. The data revealed a substantial link between poor sleep quality during pregnancy and an increased risk of depression. The study found that perinatal women who reported poor sleep quality were 3.72 times more likely to develop antenatal depression, 2.71 times more likely to develop postpartum depression, and 3.46 times more likely to suffer from perinatal depression than those who reported good sleep quality.

Wang et al., (2016) conducted a second study to investigate the potential mediation function of negative automatic thoughts in the link between unpleasant life experiences and prenatal depression. The findings of this study demonstrated a strong mediating influence of negative automatic thoughts. Pregnant women with lower levels of negative automatic thoughts were less vulnerable to unpleasant life experiences, lowering their risk of developing prenatal depression. Similarly, Poeira and Zango (2022) did a parallel study to evaluate the potential mediating influence of negative automatic thoughts on the link between unpleasant life experiences and prenatal depression. Consistent with earlier findings, this study emphasized the importance of negative automatic thoughts as a possible mediator. The study found that pregnant women with lower levels of negative automatic thoughts were less likely to experience unpleasant life experiences, lowering their risk of prenatal depression.

Additionally, the research found a noteworthy positive correlation between sleep deprivation and antenatal depression, suggesting that as sleep quality decreased, symptoms of depression increase (Babar et al., 2021). Likewise, the study examined the relation between thought suppression and antenatal stress in pregnant women of Pakistan. A sample of 150 women in their second or third trimester filled the White Bear Suppression Inventory (WBSI) and the Antenatal Period Stress Scale (APSS). Results showed an efficient positive correlation between thought suppression and antenatal stress, with increased thought suppression resulting in higher levels of stress. The study suggests that practitioners should incorporate interventions addressing thought suppression to reduce antenatal stress and improve maternal and fetal health outcomes (Abbas et al., 2019).

There appears to be limited research on the specific topic of sleep deprivation and thought suppression in pregnant women in Pakistan. One study conducted by Abdulghani Alrowaili and Althubaiti (2020) investigated the prevalence of sleep disorders among pregnant women in Saudi Arabia which shares some cultural similarities with Pakistan. The study found that 67.8% of pregnant women reported poor sleep quality and 45.4% reported symptoms of sleep apnea. Iqbal Jehan and Sultana (2018) conducted another study on the prevalence of perinatal depression and anxiety among pregnant women in Pakistan. The study discovered that 38% of subjects experienced depressive symptoms and 34% expressed anxiety symptoms. In terms of thought suppression, (Shahid and Malik 2015) conducted research on the association between thought suppression and anxiety among university students in Pakistan. The study discovered that greater levels of thought suppression were associated with higher levels of anxiety.

While more research specific to the topic of sleep deprivation and thought suppression in pregnant women in Pakistan is needed the existing studies suggest that these factors may be prevalent among pregnant women in the country and could potentially have negative impacts on their mental health and well-being.

METHODOLOGY

In this cross-sectional study, used the Correlational research design.

Research Variables

Sleep deprivation and thought suppression were independent factors, whereas depression was the dependent variable.

Participants

The present study consisted of 120 Pregnant Women's of the age range 22 to 45 from various Hospitals and clinics in Sambrial and Sialkot, Pakistan to investigate the depression along with Sleep Deprivation and Thought Suppression within the Pregnant Women's. The Convenient sampling strategy was utilized in this investigation.

Measures

This research addressed, three questionnaires', along with consent and demographic form were answered by patients from various hospitals. The firsthand data was gathers for the study. All the three questionnaires were in Urdu Language.

The three measures, consent and demographic form include:

Consent form and Demographic form:

Consent would be used to obtain participants' prior approval. Demographic Form would be administered to gather information about the study participants' demographic details. Form would include information such as the participant's age, education, socioeconomic status, and family system and number.

Edinburgh Postnatal Depression Scale:

Cox et al. (1987) developed the Edinburgh Postnatal Depression Scale (EPDS). The Edinburgh Postnatal Depression Scale, which consists of ten questions, is a commonly used screening measure for postpartum depression. The Edinburgh Postnatal Depression Scale has been suggested to be used throughout pregnancy. Professionals check patients between the ages of 12 and 13 weeks pregnant, as well as between the ages of 26 and 28 weeks pregnant, during planned prenatal appointments and again during the postpartum period.

Shoeb et al., (2007) study findings were concerning, indicating a serious public health problem that is going unnoticed and unacknowledged i.e., depression in pregnant women is the issue that affects both the mother and the unborn/born child. Ten-question Urdu version of Edinburgh Postnatal Depression Scale is "application friendly," as well as a valid and reliable method for diagnosing postpartum depression.

Epworth Sleepiness Scale:

Johns (1991) developed the Epworth Sleepiness Scale (ESS) to measure patients' 'daytime sleepiness'. The Epworth Sleepiness Scale was an 8-question self-administered questionnaire. Respondents are asked to rate their Epworth Sleepiness Scale score (total of 8 item scores, 0-3) on a 4-point scale (0-3), which can vary from 0 to 24. The higher the Epworth Sleepiness Scale score, the greater that person's typical sleep proclivity in daily life, or 'daytime sleepiness'. Answering the questionnaire should take no more than 2-3 minutes. Surani et al. (2012) validated the Urdu version of the scale as an effective instrument for evaluating daytime sleepiness in the Urdu-speaking population. The translated version was shown to have a strong correlation with the original scale.

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White Bear Suppression Inventory:

The White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994) includes a 15-item questionnaire used to assess thought suppression. Chronic thought is an attribute indicative of compulsive thinking and unpleasant affect in depression and anxiety. The White Bear Suppression Inventory can assist identify those who are more likely to develop chronic thought suppression, as well as people who report wishing they weren't depressed yet are actually depressed. The White bear suppression inventory is scored on a five-point scale ranging from strongly disagree (1) to strongly agree (5). The total score might vary from 15 and 75. Higher score on White bear suppression inventory indicates greater tendencies to suppress thoughts. For better comprehension and findings free of cultural bias, the researchers translated the tool into the participants' first language, Urdu, and used it in the research alongside other tools were also in Urdu language.

Procedure

Participants from the various hospitals and clinics in Sambrial and Sialkot, Pakistan, were included in this study to collect the primary data. The hospital administration granted the necessary permission for data gathering. Face-to-face interviews with participants were used to get data from them. Participants were apprised of the general guidelines. Patients were instructed on the actual aim of the research study before experiencing consent form, and they were also informed that their privacy would be strictly protected and would never be disclosed to external organizations. It has not been compelled onto anyone who was not willing for assistance in taking part. On individuals that were interested to participate, this was conducted. The data collection process took two to three weeks. Furthermore, the data were gathered in the year 2023.

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RESULTS

Demographic Analysis

In this study, the data of 120 participants was collected and used.

Table 1. Frequencies, Percentage, Mean and Standard Deviation of Demographic Variables

Variables	f	(%)	M	SD
Age			1.69	.84
22-26	63	52.5		
27-31	34	28.3		
32-36	20	16.7		
37-40	3	2.5		
Education				
Under Matric	28	23.3		
Matric	38	31.7		
FA/FSc	16	13.3		
Graduate	27	22.5		
Masters	11	9.2		
Pregnancy month				
1-3 months	9	7.5		
4-6 months	36	30.0		
7-9 months	75	62.5		
Family System				
Joint	80	66.7		
Nuclear	40	33.3		
Socio-economic Status				
Upper Class	1	.8		
Middle Class	118	98.3		
Lower Class	1	.8		
No. of Children				
None	39	32.5		
One	35	29.2		
Two	22	18.3		
Three	13	10.8		
Four	8	6.7		
Five	2	1.7		
Six	1	.8		

Note. M=mean, SD=standard deviation, f=frequency

Table 1 demonstrate demographic variables with mean and standard deviation. The primary variable “age” shows that 52.7% of women lies in between 22-26 age range, 28.3% women lies in between 27-31 age range, 16.7% women lies in between 32-36 and 2.5% of women lies in 36-40 age range. The following variable “Education” shows that 31.7% of women are at matriculation level, 23.3% are under-matric, 22.5% are at graduate level, 13.3% are at intermediate level, 9.2% are at Master’s level respectively. For the next variable “Pregnancy month” 62.5% women lies in third trimester, 30.0% in second and 7.5% in first trimester. For the variable of “Family status” 66.7% of women are from joint and 33.3% are from nuclear family system. For the variable “Socio-economic-status” 98.3% of women are from middle class family and .8% of women are form upper- and lower-class family respectively. For the last variable “No of Children” 32.5% of women have no children, 29.2% have one child,

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18.3% have two children, 10.8% have three children, 6.7% have four children, 1.7% women have five children and .8% women have six children.

Reliability

Table 2. Psychometric Properties (reliability) of Epworth Sleepiness Scale, White Bear Suppression Inventory and Edinburgh Postnatal Depression Scale.

Variables	N	M	SD	α	Range		Skewness	Kurtosis
					Actual	Potential		
ESS	8	10.03	4.83	.62	1-24	0-3	.35	-.23
WBSI	15	57.58	10.35	.85	23-75	1-5	-.65	-.16
EPDS	10	14.41	4.64	.47	4-25	0-3	.15	-.58

Note: α = coefficient of reliability, N= number of items, M= mean; SD= standard deviation; ESS= Epworth Sleepiness Scale. WBSI= White Bear Suppression Inventory and EPDS= Edinburgh Postnatal Depression Scale

Table 2 provides information on the psychometric properties (reliability) of three different scales, For the Epworth Sleepiness Scale (ESS), the average score (mean) was 10.03, with a standard deviation (SD) of 4.83. With a Cronbach's alpha (α) result of .62, the scale indicated useful internal consistency (reliability). The average score on the White Bear Suppression Inventory (WBSI) was 57.58, with a standard deviation of 10.35. The scale has a Cronbach's alpha of .85, indicating strong internal consistency (reliability). Finally, the Edinburgh Postnatal Depression Scale (EPDS) had an average score of 14.41 and a standard deviation of 4.64. The reliability coefficient (α) for this scale is 0.47, indicating relatively minimal internal consistency.

Correlation between Sleep Deprivation, Postnatal Depression and Thought Suppression

Similarly, the correlation was performed in order to identify the association between Sleep Deprivation, Postnatal Depression, and Thought Suppression. The goal is to discover the link between thought suppression, sleep deprivation, and prenatal depression in pregnant women.

Table 3. Pearson Product-Moment Correlation between Sleep Deprivation, Postnatal Depression and Thought Suppression (N=120)

Variables	ESS	WBSI	EPDS	Mean	S.D
ESS	--	.015	-.065	10.03	4.83
WBSI	.015	--	-.36**	57.58	10.35
EPDS	-.065	-.36**	--	14.41	4.64

Note. **correlation is significant at .01 level (2-tailed); M= mean; SD= standard deviation; ESS= Epworth Sleepiness Scale. WBSI= White Bear Suppression Inventory and EPDS= Edinburgh Postnatal Depression Scale

The Pearson product-moment correlation coefficients between three variables are shown in Table 3: Epworth Sleepiness Scale, White bear suppression inventory and Edinburgh Postnatal Depression Scale. The table also includes the means and standard deviations for each variable. There is a small positive correlation between sleep deprivation and thought suppression ($r=.015$). There is a moderate negative correlation between sleep deprivation and

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antenatal depression ($r=-.065$). There is an apparent negative correlation among thought suppression and prenatal depression ($r=-.362^{**}$), the mean score for sleep deprivation is 4.828, the mean score for thought suppression is 57.58, and the mean score for antenatal depression is 14.41. The standard deviation for sleep deprivation is 10.03, the standard deviation for thought suppression is 10.349, and the standard deviation for antenatal depression is 4.637.

Multiple regression analysis

An investigation was conducted to determine whether both thought suppression and sleep deprivation were predictors of prenatal depression or not. The multiple regression was used.

Table 4. Multiple regression analysis of thought suppression and sleep deprivation as predictor of antenatal depression

Variables	B	95% CL		SEB	β	R ²	ΔR^2
		LL	UL				
Constant	23.736	19.281	28.192	2.250	---	---	
WBSI	-.162	-.238	-.086	.038	-.362	.131	.123
ESS	-.057	-.221	.107	.083	-.059	.134	.119

*Note: CL= confidence interval, LL= lower limit, UL= upper limit, *** $p < .001$*

In Table 4, the results of a multiple regression analysis examining the relationship between two predictor variables and the outcome variable. R² value (0.131) of thought suppression indicates that the predictor variables explain approximately 13.1% of the variance in antenatal depression. The change in R² is approximately 12.3%. The beta coefficient for thought suppression is -.362, with a standard error of .038. The R² value (0.134) of sleep deprivation indicates that the predictor variables explain approximately 13.4% of the variance in antenatal depression. The change in R² is approximately 11.9%. The beta coefficient for sleep deprivation is -.059, with a standard error of .083. The results indicated that the thought suppression predictor has a significant effect on antenatal depression.

DISCUSSION

Pregnancy is a time of significant physical and emotional changes for women and depression is a frequent mental health problem that impacts up to one in five women during antenatal period. Sleep deprivation and thought suppression are two potential predictors of antenatal depression that have been explored in recent research. Sleep deprivation refers to a lack of adequate sleep which can lead to a variety of negative health consequences. Thought suppression on the other hand involves attempting to control or eliminate unwanted thoughts which can actually increase their frequency and intensity. This research aims to investigate the relationship between sleep deprivation thought suppression and antenatal depression in pregnant women and may provide valuable insights for healthcare providers to help prevent and manage depression during pregnancy. Antenatal depression, a common and difficult mental health issue during pregnancy, can be harmful to both the mother and the child. Prioritizing maternal mental health is critical to the wellbeing of both the mother and the fetus.

Pregnant women's poor mental health is a worldwide issue. Previous research has associated sleeping patterns while one is pregnant to prenatal stress and antenatal depression. However, the links between sleep quality in the second trimester and mental health are inconsistent.

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According to the Finn Brain Birth Cohort Study, the influence of sleep disruptions on depression symptoms is only visible in the third trimester and not in the second (Kantola et al., 2017). Okun et al., (2011) on the other hand, showed that sleep complications have a relationship with depression symptoms in both the second and third trimesters.

In this study, 120 pregnant women were approached using a convenient sample strategy. In addition to an informed consent form and a demographic form, three standardized measures were used; the White Bear Suppression Inventory, the Epworth Sleepiness Scale, and the Edinburgh Postnatal Depression Scale. Data was collected and examined with the Statistical Package for Social Science (SPSS, version 23).

Reliability of the measures used in the study was determined; which came out to be significant (see table 2). Frequencies and percentages were computed for demographic variables with aim to understand the study sample. The demographic analysis of the study sample showed crucial traits. A significant number of those who took part in this study were between the ages of and 22 and 26, had varied levels of education, and came from mostly joint family systems and middle-class socioeconomic situations. The participants were at various stages of pregnancy and had a wide range of past delivery experiences. The investigation contributes to the current body of knowledge by exploring relationship between these factors the thought suppression, sleep deprivation and antenatal depression which has been relatively understudied. The findings suggest that interventions targeting both sleep improvement and reducing thought suppression may be effective in preventing or reducing antenatal depression. This is particularly important considering the potential negative consequences of antenatal depression on both maternal and fetal health (Liu et al 2017; Guintivano et al 2018).

A linear regression analysis was undertaken on first hypothesis “Sleep deprivation and thought suppression will be the predictors of antenatal depression in pregnant women”. To examine if thought suppression and sleep deprivation may predict prenatal depression. Thought suppression and sleep deprivation, according to the data, accounted for around 13.4% of the variation in prenatal depression. After controlling for thought suppression and sleep deprivation, the negative beta coefficient for the constant term suggests that there is a negative association with prenatal depression. The model, which incorporates thought suppression and sleep restriction, has a high F-value, indicating that it reliably predicts prenatal depression. Current study sought to investigate the impact of two components. - sleep deprivation and thought suppression - in predicting antenatal depression in pregnant women. The results showed that both sleep deprivation and thought suppression were significant predictors of antenatal depression. This study's findings are consistent with earlier research that has established a link between sleep deprivation and depression (Park et al 2017; Baglioni et al 2016) as well as between thought suppression and depression (Wenzlaff & Wegner 2000; Hayes et al 2004).

The second hypothesis of this research was, “there will be significant relationship among antenatal depression, thought suppression and sleep deprivation in pregnant women.” Statistical analysis (see table 4) revealed significant relationship between sleep deprivation and thought suppression ($r=.015$), negative correlation between sleep deprivation and antenatal depression ($r=-.065$) and a substantial negative relationship between thought repression and antenatal depression ($r=-.362^{**}$). In general, findings confirmed previous literature. According to a new study, a lack of sleep dramatically inhibits our capacity to prevent undesirable and unpleasant ideas from entering our mind (Harrington et al., 2020).

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Several research studies have established a negative correlation between sleep deprivation and antenatal depression. One such study was conducted by (Okun et al., 2009) where the study evaluated the relation between sleep disruption and prenatal depression. Bad sleep quality and sleep disruptions are associated with increased depression symptoms, with women experiencing twice as much antenatal depression as those with good sleep quality. The negative impact is more prevalent in women who have had prior experiences of depression. Field Diego and Hernandez-Reif (2006) conducted an investigation on the effect of massage treatment on sleep quality and depression in pregnant women. Insufficient sleep and disruptions throughout pregnancy are strongly linked to antenatal depression. Healthcare providers should promote healthy habits and offer massage therapy interventions. A study published in the *Journal of Reproductive and Infant Psychology* (2019) aimed to investigate the relation between thought suppression, anxiety and depression during pregnancy. This study's findings revealed a substantial negative relationship between thought suppression and antenatal depression. In other words, the more a pregnant woman tried to suppress her thoughts and emotions the higher her levels of depression were.

To investigate the seventh hypothesis the differences in thought suppression based on socioeconomic class, a one-way ANOVA was utilized for analysis. As there is only 1 participant in Lower and Upper class and 118 participants in Middle Class, so Post Hoc table is not processed. There should be at least two participants in each group. Furthermore, there is no significance between the measures (Epworth Sleepiness Scale, White Bear Suppression Inventory and Edinburgh Postnatal Depression Scale) and other demographic variables.

The findings demonstrated a substantial variation in thought suppression among pregnant women with varied socioeconomic levels, implying that socioeconomic considerations may influence pregnant women's thought suppression tendencies. The study discovered that lower socioeconomic status was related to higher levels of thought suppression in pregnant women. However, the association between SES and perinatal mental health was found to be partially mediated by thought suppression (Evrard et al., 2017).

The study of sleep deprivation and thought suppression as predictors of antenatal depression in pregnant women of Sialkot and Sambrial also found several cultural factors that influence pregnant women. These factors include; Access to healthcare, as in some areas access to healthcare may be limited making it difficult for pregnant women to access mental health services and treatment for depression. Stigma around mental health, as in this under developing country stigmatizing mental health issues including depression is common. This makes it difficult for researchers to recruit participants or for pregnant women to feel comfortable discussing their mental health with researchers. Gender roles can also be impacting the pregnant women as women are expected to prioritize the needs of their families over their own mental health needs which can lead to a reluctance to seek help for depression during pregnancy. Societal expectations, society have expectations for pregnant women to be strong resilient and able to handle stress without complaining. This could affect the ability of pregnant women to acknowledge their struggles with sleep and thought suppression and may make it difficult to recruit participants for the study. Overall, researchers must be mindful of these cultural influences and how they may affect the study's findings. When recruiting participants, collecting data, and interpreting the results, cultural aspects must be taken into account. Researchers may guarantee that the study is culturally sensitive and that the findings apply to a broad community of pregnant women by doing so.

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Theoretical and Practical Applications

Overall, these studies demonstrate that prenatal depression is highly related with poor sleep quality and sleep problems throughout the pregnancy process. Health care professionals should recognize the importance of adequate sleep during pregnancy and provide education and counseling to improve sleep hygiene and reduce the risk of antenatal depression in pregnant women. Healthcare providers may consider promoting healthy sleep habits and offering interventions such as massage therapy to help prevent or alleviate antenatal depression. Other findings suggested that thought suppression may be a maladaptive coping strategy during pregnancy as it is associated with higher levels of depression. It may be helpful for pregnant women to learn more adaptive coping strategies such as mindfulness meditation or cognitive-behavioral techniques to manage their thoughts and emotions during this time. Finding has important implications for the healthcare of pregnant women as thought suppression has been linked to a range of negative outcomes including anxiety depression and physical health problems. Healthcare providers may need to consider the socioeconomic factors of their patients when assessing and treating mental health concerns during pregnancy. Finally, this study emphasizes the significance of considering sleep deprivation and thought suppression as potential risk factors for antenatal depression. The results suggest that interventions targeting these factors may be beneficial for pregnant women at risk of developing depression. More study is needed to validate the findings as well as investigate into other possible factors of prenatal depression. For antenatal depression the most common form of treatment is psychotherapy including CBT and interpersonal therapy. Antidepressant medication may also be used in severe cases. In a meta-analysis of 17 studies psychotherapy was found to have a moderate effect in reducing depressive symptoms during pregnancy (Sockol 2015).

Overall, addressing sleep deprivation, thought suppression, and prenatal depression is a complicated process that necessitates a multifaceted strategy. Combining different interventions such as CBT for sleep mindfulness-based therapies for thought suppression and psychotherapy for antenatal depression may be the most effective way to address these issues.

Implications for Future Research

1. Longitudinal research: The current study used a cross-sectional design, which restricts the capacity to draw causal conclusions. Therefore, in future further researches can apply a longitudinal research design to investigate the temporal effects of sleep deprivation and thought suppression on antenatal depression.
2. Interventions: The study suggests that interventions aimed at reducing sleep deprivation and thought suppression may be effective in preventing or reducing antenatal depression. Therefore, future research can focus on developing and testing interventions to provide relief to pregnant women experiencing such issues.
3. Biological mechanisms: Study lacks investigation of biological mechanisms linking sleep deprivation thought suppression to antenatal depression. The further researches should explore physiological and neurological aspects of relationship.
4. Comparison of treatment approaches: The study did not investigate the type of treatment approaches that pregnant women with antenatal depression prefer. Future research can compare the effectiveness of various treatment approaches such as cognitive-behavioral therapy medication or relaxation techniques in reducing antenatal depression.

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Limitations

Despite the significant findings obtained in the study on sleep deprivation and thought suppression as predictors of antenatal depression in pregnant women there are limitations to the research.

- The study was limited to a specific geographical location and primarily focused on one race and ethnic group, limiting generalizability. Future research should replicate findings in diverse samples to improve external validity.
- Other possible confounding variables, such as pre-existing mental health disorders or pregnancy difficulties, which might have impacted the outcomes, were not included in the study.
- This study's conclusions were also influenced by a lack of education and comprehension. It is challenging to persuade pregnant mothers of the importance of the research.
- The study relied on self-report measures such as Epworth Sleepiness Scale, White Bear Suppression Inventory and Edinburgh Postnatal Depression Scale which are subjective and prone to biases. Participants may underreport or overestimate the symptoms of depression or sleep disturbances reducing the accuracy of the data collected.
- The study had a tiny sample size, which may have compromised the study's implementation or generalizability strength.

CONCLUSIONS

Sleep deprivation and thought suppression can predict antenatal depression in pregnant women. Healthcare professionals must be aware of these factors and provide resources for healthy sleep and thoughts management. Early identification and treatment can improve maternal and fetal outcomes. However, there are individual studies that focus on each of these issues separately and suggest potential treatment options.

For sleep deprivation cognitive-behavioral therapy (CBT) has been found to be effective in improving sleep quality and quantity. CBT for sleep usually involves identifying and challenging negative thoughts and beliefs about sleep improving sleep hygiene and implementing relaxation techniques.

For thought suppression mindfulness-based interventions i.e., mindfulness-based stress reduction (MBSR) has shown effectiveness in reducing rumination and increasing awareness of thoughts. Mindfulness-based cognitive therapy (MBCT) has additionally been shown to be a viable therapy for depression. Similarly, these interventions focus on observing thoughts nonjudgmentally and cultivating a more compassionate attitude towards oneself. The influence of mindfulness-based stress reduction on thought suppression and prenatal anxiety and depression in pregnant women. MBSR training significantly reduced anxiety and depression levels, suggesting it could improve mental health outcomes. Healthcare professionals should focus on emotional coping to support pregnant women.

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Conflict of Interest

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