

Prenatal Stress and Sleep Quality Influence on Antenatal Women Psychological Capital in Mother/Child Hospital in Akure, Ondo State

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Abstract

The study examined the influence of prenatal stress and sleep quality on pregnant women psychological capital before birth. A cross-sectional survey was used in the study. Convenience sampling technique was used to select 238 antenatal women attending Mother/Child clinic in Ondo State. The result showed significant relationship between prenatal stress and psychological capital among antenatal women. Also sleep quality had a significant influence on psychological capital among antenatal women. It was concluded that inadequate sleep and prenatal stress affect psychological capital. Based on the study findings, it was recommended that health practitioners and maternal health policy makers and nongovernmental agencies should provide adequate prenatal stress management training for antenatal women and maternal health care providers should also provide important information about good sleep quality in relations to their conditions to enhance their psychological capital.

Keywords: Psychological capital; Prenatal stress; Quality sleep

Introduction

Antenatal women positive psychological resources of hope, efficacy, resilience, and optimism could be affected by prenatal stress and inadequate sleep quality. Antenatal period is a supportive stage whereby pregnant women receiving instrumental, emotional, and informational supports from professionals, colleagues and family members to improve psychological capital for their safe delivery. Antenatal Women psychological capital is their positive psychological state of development that is characterized by having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging task, making a positive attribution (optimism) about succeeding now and in the future, persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed, and when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to attain success in delivery [1].

Pregnancy is unavoidable for women and associated with physiological, psychological and social challenges that could affect their psychological capital [2]. The main reason to provide antenatal care for pregnant women is to manage the intensive effect of prenatal stress on their psychological resources such as hope, efficacy, resilience, and optimism for safe delivery. Prenatal stress can change the metabolic environment of the fetus and accounts for some of these early programming effects on brain development of the conceived child. Prenatal stress can associated with premature delivery, reduced birth weight and smaller head circumference in humans.

Studies show that unmanaged prenatal stress that leads to miscarriages, and child lost during birth can be associated with later neurodevelopmental affective disorders that may affect the psychological resources such as hope, efficacy, resilience, and optimism. Such disorders include attention and temperament disorders, schizophrenia, autism, and anxiety disorders [3,4]. In

addition, elevated prenatal cortisol is associated with aborted fetuses, hyperactive fetuses, delayed fetal growth and development, premature birth, low birth weight, and chronic adult illnesses [5]. Prenatal administration of exogenous, synthetic GCs such as dexamethasone has been linked to a higher prevalence of infection, most likely due to the immunosuppressive role of GCs [6].

Rodent studies of prenatal stress revealed various stressors that associated pregnant barriers. Kofman, study shows that severe stressors include restraint stress, cold exposure, and electric shock will associate with complications during child delivery. Wilson, Koenig et al. studies show that offspring's whose mothers were exposed to prenatal stress show significantly higher corticosterone levels than undressed after mothers were exposed to an intense acute stressor. However, most of those emerging evidence that indicated prenatal stress has negative effect on pregnant women psychological capital are conducted on animals [7,8].

Sleep is an inevitable daily activity that can affect physiological, psychological and social well-being individuals if not properly observed. Therefore, sleep quality can affect the psychological capital of antenatal woman which is their ability develop positive psychological state. Actual definition of sleep is the state of the organism, in which its environmental interaction is reversible, partially and periodically lost and can be revoked by various external stimuli. Sleep quality is an essential factor for health and well-being. Good sleep quality buffered better health, less daytime sleepiness, greater well-being and better psychological functioning. Poor sleep quality is one of the defining features of chronic insomnia. WHO described the consequences of inadequate sleep quality into three categories such as physical effects (sleepiness, fatigue, hypertension), cognitive impairment (deterioration of performance, attention and motivation), and diminishment of mental (concentration and intellectual capacity and increase of the likelihood of accidents at work and during stimuli and mental health complications) [9-14].

Emerging evidence indicates that inadequate sleep quality is the major problems experiencing by pregnant women which some time affect their psychological capital. Also numbers of empirical evidence revealed those inadequate sleep quality factors that affect pregnant women psychological capital such as sleep loss such as short sleep duration poor sleep quality [15-20].

Objective of the Study

The main of objectivity of study was to assess pregnant women psychological capital before birth. These specific objectives are to examine the influence of prenatal stress on antenatal women psychological capital; and investigate the influence of Sleep quality has no antenatal women psychological capital.

Method

Research design

A cross-sectional survey design was used to examine the influence of prenatal stress, sleep quality on antenatal women psychological.

Participants

The study population consisted of pregnant women attending antenatal clinic at Akure, mother/child clinic hospital in Akure, Ondo State. The study used convenient sampling technique; where by available potential respondents were approached individually on their antenatal clinic days to select 238 participants.

Research instruments

Psychological Capital Questionnaire (PCQ): Psychological Capital Questionnaire was developed by the Luthans, Avolio, Avey & Norman. PCQ consists of 24 items. The PCQ comprises four subscales with equal weight: (1) hope, (2) optimism, (3) self-efficacy and (4) resilience. Each of these subscales consists of six items with response options on a six-point Likert scale ranging from 1 ('strongly disagree') to 6 ('strongly agree'). Good internal consistency for the respective subscales (hope: 0.72, 0.75, 0.80, 0.76; optimism: 0.74, 0.69, 0.76, 0.79; self-efficacy: 0.75, 0.84, 0.85, 0.75; and resilience: 0.71, 0.71, 0.66, 0.72) on the four samples utilised in the Luthans, Avolio, Avey, & Norman study were reported. Also Gørgens-Ekermans & Herbert reported reliability Cornbrash's alpha coefficients 0.70 on optimism, self-efficacy and resilience.

The A-Z Stress Scale: A to Z stress scale developed by Kazi. The A-Z Stress Scale consists of 30 items which measure pregnancy related stress. The A-Z Stress Scale containing three subscales measuring family-related concerns (husband, children, in-laws and parents), socioeconomic concerns and pregnancy-related concerns. The A-Z Stress Scale using Thurstone scaling, items were ranked 0-10 scale of severity (0 as "no stress" and 10 as "maximum stress"). The reliability of scale is 0.91 (inter rater) and validity of the scale used in Cronbach method is 0.82 reported by Kazi.

Pittsburgh Sleep Quality Index: The Pittsburgh Sleep Quality Index (PSQI) was used to assess the antenatal women sleep quality. The PSQI is based on eighteen self-reported questions; measuring the components of: (1 subjective sleep quality), (2 sleep latency), (3 sleep duration), (4 habitual sleep efficiency), (5 sleep disturbances), (6 use of sleeping medication), and (7 daytime dysfunction). Based on the responses to the questions, each sub-score will be calculated on a scale of 0 to 3, with a score of 0 indicating no presence of the habit and 3 indicating a high presence of the habit. All sub-scores are totaled forming a global score, which ranges from 0-21. A cutoff score of 5 or above is indicative of a sleep disturbance. The PSQI has been shown to be reliable (Interclass correlation (r)=0.87) between test and re-test sessions.

Procedure: Ethical was sought and obtained from research committee of Mother/Child clinic Akure, Ondo State. The questionnaires were administered individually to the respondents by the researcher on their antenatal clinic days (Thursdays and Fridays) within the hospital premises. All respondents were been instructed to fill the questionnaire privately, and to submit to the researcher the same day. This is to guarantee the respondents confidentially and privacy.

Analysis of data: Data collected were analyzed using regression and One-Way Analysis of Variance was used to test the hypotheses. All analyses were carried out with the programme of the Statistics Package for Social Sciences (SPSS Version 22.0) [21-23].

Results

A total of 238 participants were included in the study. The Table 1 presented that age of the respondents ranged between 29 - 46 years with the Mean and SD (\bar{x} =31.53; SD=6.78). Most 37.5% had tertiary educational level, 28.2% were civil servants, 45.8% of the respondents already had children between 3 to 6, and only 55.5% of the respondents were Christian.

| Characteristics | Groups | Frequency | Percentages (%) | Mean(σ) |
|--------------------------|---------------------|-----------|-----------------|------------------|
| Age | | | | 31.53 (6.78) |
| Educational Level | Primary | 34 | 14.3 | |
| | Secondary | 71 | 29.8 | |
| | Tertiary | 89 | 37.4 | |
| | No formal Education | 44 | 18.5 | |
| Occupation | Civil Servants | 67 | 28.2 | |
| | Farmer | 18 | 7.6 | |

| | | | | |
|------------------------------|--------------|-----|------|--|
| | Tailor | 37 | 15.5 | |
| | Trader | 62 | 26.1 | |
| | Unemployed | 22 | 9.2 | |
| | Others jobs | 32 | 13.4 | |
| Number(s) of Children | 1-3 | 82 | 34.5 | |
| | 3-6 | 140 | 58.8 | |
| | 7 and above | 16 | 6.7 | |
| Religion | Christianity | 132 | 55.5 | |
| | Islam | 96 | 40.3 | |
| | Traditional | 10 | 4.2 | |

Table 1: Socio-demographic characteristics of the respondents (N=238).

Hypothesis 2 stated that sleep quality has no significant influence on psychological capital among Antenatal Women in Mother/Child Clinic Akure, Ondo State. This hypothesis was test with ANOVA was presented. The result showed that sleep quality has significant influence on psychological capital $F(2,235) = 32.040, p < 0.05$. The alternative was accepted while the Null hypothesis was rejected. Hypothesis 1 stated that there is no significant relationship between

prenatal stress and psychological capital among antenatal women in mother/child clinic Akure Ondo state. This hypothesis was test with Pearson simple correlation which presented in Table 2. The result showed that there is significant relationship between prenatal stress and psychological capital $r = 0.257, p < 0.05$. The alternative was accepted while the Null hypothesis was rejected.

| Variables | M | SD | R | P |
|------------------------------|---------|----------|-------|-------|
| Psychological Capital | 35.7353 | 11.60393 | 0.257 | 0.002 |
| Prenatal Stress | 31.8235 | 9.79636 | | |

Table 2: Pearson simple moment correlation analysis between prenatal stress and psychological capital among antenatal women in mother/child clinic Akure, Ondo State (N=238).

The Table 3 presented the Post Hoc analysis comparison of psychological capital by sleep quality groups among antenatal women. The result showed that antenatal who experience good sleep quality ($\bar{x} = 41.75$) where more significant than poor (Mean=29.56, Std.

Error=1.69, MD=12.19, $p < 0.05$) on psychological capital. The result also showed that antenatal who experience moderate sleep quality ($\bar{x} = 38.99$) where more significant than poor (Mean=29.56, Std. Error=1.57, MD=9.42, $p < 0.05$) on psychological capital (Table 4).

| Source | df | SS | MS | F | p |
|-----------------------|-----|-----------|----------|--------|-------|
| Between Groups | 2 | 6837.385 | 3418.693 | 32.040 | 0.000 |
| Within Groups | 235 | 25074.938 | 106.702 | | |
| Total | 237 | 31912.324 | | | |

Table 3: One-way analysis of variance of psychological capital by sleep quality among antenatal women in mother/child clinic Akure, Ondo State.

| Group1 | Group2 | M1 | 2 | Std. Error | MD | p |
|-------------------------------|--------------------|-------|-------|------------|-------|-------|
| Good Sleep Quality | Poor Sleep Quality | 41.75 | 29.56 | 1.69 | 12.19 | 0.000 |
| Moderate Sleep Quality | Poor Sleep Quality | 38.99 | 29.56 | 1.57 | 9.42 | 0.000 |

Table 4: Post hoc multiple comparison analysis of psychological capital sleep quality groups.

Discussion

The study examined the prenatal stress and sleep quality on psychological capital among antenatal women. The study results affiliated previous studies that showed prenatal stress is associated with later neurodevelopmental affective disorders that impair the ability to cope with stress and hope, efficacy, resilience, and optimism. Such disorders include attention and temperament disorders, schizophrenia, autism, and anxiety disorders. This result supported studies conducted on animal's prenatal stress such as rodent studies of prenatal stress expose pregnant barriers to various stressors. Mild to moderate stressors include saline injections and unpredictable noise. Severe stressors include restraint stress, cold exposure, and electric shock. Exposure to prenatal stress results in offspring that have similar baseline corticosterone levels as control rodents. Prenatal stress offspring show significantly higher corticosterone levels than unstressed control offspring after exposed to an intense acute stressor.

The result of the study confirmed recent studies individual that always had good sleep quality have less and no complications in child delivery while those also showed that worker who have always adequate sleep quality perform better than their counterparts that who experience inadequate sleep quality. Large numbers of empirical evidence revealed that inadequate sleep quality factor that affects pregnant women psychological capital such as sleep loss such as short sleep duration, poor sleep quality, poor sleep efficiency with an increase in time spent awake during the night.

Those bodies literature on the area of prenatal stress were conducted on animals and not properly linked to psychological capital of pregnant women. Also sleep quality studies were directed to job performance, work engagement, and less attention was paid to sleep quality effect pregnancy but was not adequately linked with antenatal psychological capital. Therefore, this study has played significant role by provided the insight of the existing relationship between prenatal stress and psychological capital and the influence of good sleep on psychological capital among antenatal women.

Conclusion

The study conducted the inadequately managed prenatal stress and poor sleep quality associated with antenatal women negative psychological capital and may led to complications during child delivery. Since psychological capital of pregnant women is the development of positive psychological state, experience deep happiness, resilience, hope, optimism, self-efficacy.

Recommendations

Based on the study findings, it was recommended that health practitioners and maternal health policy makers, nongovernmental agencies should provide adequate prenatal stress management training for antenatal women and maternal health care providers should also provide important information about good sleep quality in relations to their conditions to enhance their psychological capital.

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