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Affect, emotion dysregulation, and sleep quality among low-income women

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ABSTRACT

Objectives: To examine the underlying mechanisms through which steady-state emotions, specifically affect and emotion regulation, influence sleep quality among young adult low-income women.
Design: Cross-sectional.
Setting: Stress and Health Study (2006-2012) in southeast Texas.
Participants: A subgroup (n = 392) of racially and ethnically diverse young adult women ages 18-31.
Measurements: Participants provided measures of positive and negative affect, difficulties in emotion regulation, and sleep quality. Structural equation models were designed to identify differential mediating roles of emotion dysregulation in the association between both positive and negative affect and sleep quality.
Results: The relationship between positive affect and improved sleep quality operated completely through domains of emotion regulation ($\beta = -0.054$; 95% confidence interval [CI], −0.08 to −0.03), whereas the adverse effects of negative affect exhibited both direct ($\beta = 0.142$; 95% CI, 0.06-0.23) and indirect ($\beta = 0.124$; 95% CI, 0.08-0.16) effects on poor sleep. Negative affect was associated with poor sleep quality via 2 pathways—it directly influenced sleep quality, and it indirectly influenced sleep quality among women experiencing difficulties in emotion regulation.
Conclusions: Therapies targeting improvement and maintenance of healthy emotion regulation domains, while delineating the positive affect state from the negative affect state, may lessen the burden of poor sleep quality among low-income women.

Introduction

Overall health and psychological functioning are often linked to poor sleep-related outcomes.[1] Poor sleep quality is a common complaint among individuals with physical conditions as well as affective disorders including depression, anxiety, and bipolar disorder.[2,3] Although emotion regulation has been implicated, a growing body of research supports the hypothesis that regulatory emotional processes contribute to sleep outcomes.[2,4] An interplay between affect and emotion regulation has been proposed in predicting sleep quality, but the roles of positive and negative emotions and their subsequent dysregulation to distinguish sleep quality remain largely unknown and have been highlighted as a research priority.[2,5]

The effects of sleep, specifically sleep deprivation, on emotions and moods have been well-documented in the experimental literature, but despite acknowledgement in the literature of a bidirectional relationship between emotions and sleep, the mechanisms through which emotions impact sleep have received less attention.[6] Maladaptive strategies for managing affect are associated with difficulties in emotion regulation, which in turn may increase the risk for poor sleep quality.[6–8] In a recent time-lagged analysis using daily diary data, Kouros and El-Sheikh (2015) examined bidirectional associations between sleep and mood in a community sample of 142 elementary school children.[9] Findings suggested that, within individuals, a day with worse mood than usual predicted poorer sleep quality that night, but between individuals, poor sleep increased negative mood.[9]

Positive affect and negative affect are 2 dominant and distinct dimensions of mood associated with different regional activities in the prefrontal cortex.[10] Conceptual models suggest that high

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negative affect, characterized by adverse mood states, is an independent predictor of chronic pain and cardiovascular disease, whereas high positive affect, characterized by high energy and full concentration, may buffer the influence of stress on health outcomes.[11–14] Both high negative affect and low positive affect have been proposed as direct predictors of poor sleep, and high positive affect may additionally act as a buffer of negative affect as well as other psychosocial risk factors (chronic life stress, social relationships, and psychological distress) on sleep problems.[2,15]

The relationship between high negative affect and poor sleep may also be mediated by stress, coping strategies, and emotion regulation.[16,17] Gross and John (2003) hypothesized that positive affect and negative affect are related to different emotion regulation strategies—increased positive affective experience and expression are associated with reappraisal regulation, whereas increased negative emotion expression is related to suppression regulation.[18] Although often considered a symptom of sleep problems, emotion dysregulation is also a contributor to psychopathology and clinical disorders, including those related to sleep.[4,6,19,20] Tsypes et al (2013) identified difficulties with emotion regulation as a mediator of the relationship between generalized anxiety disorder diagnosis, which is correlated with both dimensions of affect, and problems with sleep.[21] Thomsen et al (2005) highlighted the need to investigate emotion regulation for individual differences in negative affect after finding that it accounted for more variation in negative affect than either age or sex.[22] Both theoretical support and empirical support exist for a model where affective states prompt emotion regulation. Calkins (1994) detailed a theoretical framework in which behavioral traits influence emotion regulation and argued that positive or negative affect acts as a source of individual variation in emotion regulation.[23] More recently, empirical investigations have investigated emotion regulation as a mediator between negative affect and aggression.[24] Kim-Spoon et al (2013) found that the effects of emotion negativity on internalizing symptoms were completely mediated through emotion regulation.[25]

We have focused the present study on the role of emotion dysregulation as a mediator of the relationship between positive and negative affect and sleep quality on a racially diverse group of low-income women. Problems with sleep quality and sleep duration are more common among individuals with low-income and education levels.[26–28] In a sample of more than 150,000 participants from the 2006 Behavioral Risk Factor Surveillance System, lower income was associated with a higher likelihood of sleep complaints, and this association was stronger among women.[29] Poor sleep is often considered in the causal pathway between low-income and socioeconomic status and increased disease risk, likely due to a combination of both mediating and moderating effects of psychosocial and physical health factors, as well as the built environment.[30] There has been a paucity of research, however, focusing specifically on mechanisms through which sleep is impacted among low-income groups. We hypothesized that negative affect is positively associated with worse sleep quality and that this relationship is mediated by distinct domains of emotion dysregulation. In contrast, we hypothesized that positive affect is negatively associated with worse sleep quality, also mediated by emotion dysregulation. Based on previous studies looking only at direct associations, we expected negative affect to have a greater overall influence than positive affect on emotion dysregulation as well as on sleep.[31]

Methods

Participants

A subgroup of low-income women attending 1 of 6 University of Texas Medical Branch (UTMB) family planning clinics and participating in the Stress and Health Study (2006-2012) provided data for this analysis.[32] Inclusion criteria were as follows: female; not pregnant; age ≥18 years; non-Hispanic white, non-Hispanic black, or Hispanic; able to speak English or Spanish; and able to consent. Participants completed questionnaires related to demographics, positive affect, negative affect, and emotion dysregulation. All survey instruments and consent forms were translated into Spanish by bilingual research assistants (all research assistants were bilingual), and all instruments have been previously validated in Spanish.[33–35] All participants had follow-up bimonthly telephone interviews as a part of the larger longitudinal study (n = 886). A subgroup of 409 women was sequentially consented from telephone interviews to provide information on sleep quality, with the number of subgroup participants limited by research assistant availability. Participants with complete data (n = 392) on positive affect, negative affect, and emotion dysregulation were retained for analysis and did not differ from the larger sample (n = 409) in age, race, education, employment status, and income. The study was approved by UTMB's institutional review board, and all participants provided written informed consent.

Measures

The Positive and Negative Affect Schedule (PANAS) is a valid and reliable self-report measure of positive affect and negative affect consisting of two 10-item scales to capture the respective dimensions of affect.[36] For each item, participants were asked to indicate on a 5-point scale the extent to which they had experienced each item in the past 8 weeks. Responses were labeled "very slightly or not at all," "a little," "moderately," quite a bit," or "extremely." The internal consistency estimate from the present study (Cronbach $\alpha = .85$ for positive affect and $\alpha = .87$ for negative affect), as well as correlation between the 2 scales ($r = -0.09$, $P > .05$), matches previous estimates of the orthogonal relationship between positive affect and negative affect as measured by the PANAS,[36] and scores did not vary based on timing of entry to the study ($P > .05$, data not shown but available upon request).

The Difficulties in Emotion Regulation Scale (DERS) is a 36-item self-administered Likert-type scale used to assess emotion dysregulation trait, comprising 6 related dimensions including nonacceptance of emotional responses, difficulty concentrating on and accomplishing goals, impulsive behavior, lack of awareness of emotion responses, limited access to effective strategies to regulate emotions, and a lack of clarity about the emotions being experienced.[37] Participants were instructed to indicate how often the items applied to themselves, with responses ranging from 1 ("almost never") to 5 ("almost always"). To assess dysregulation specifically, many DERS items prompted participants to respond to situations in which they felt distress. DERS items were recoded so that high scores on each item reflected greater dysregulation. The internal consistency estimate of reliability for the DERS items was excellent (Cronbach $\alpha = .92$), and mean emotion dysregulation scores did not significantly vary based on timing of entry to the study.

The Pittsburgh Sleep Quality Index (PSQI) is a 19-item questionnaire that measures 7 components of self-rated sleep quality and habits on a 0 to 3 scale, with higher scores indicating poorer sleep.[38] The PSQI was self-administered—participants were asked to answer items based on their sleep during the previous month. A global index of sleep quality was created by summing component scores and was treated as a continuous variable and the primary outcome of the study. The PSQI showed good internal consistency (Cronbach $\alpha = .84$), and scores did not significantly vary based on timing of entry to the study ($P > .05$, data not shown).

Information on age, race and ethnicity, education, employment status, marital status, and income was collected and coded as dummy variables.