Introduction

A growing body of research suggests systemic inflammation is one biological pathway underlying racial/ethnic disparities in cardiovascular disease (CVD). Existing research shows poor sleep is both patterned by race/ethnicity and associated with inflammation. However, few studies have examined the extent to which sleep contributes to racial/ethnic variations in inflammation.

Aims

This study had two overarching aims:

1. Examine the relationship between race/ethnicity and inflammation
2. Examine whether sleep accounted for racial/ethnic variation in markers of inflammation

Data and Methods

Data come from a sample of 392 nurses employed with one of two regional hospitals in Texas from a larger parent study on the effects of sleep on antibody response to influenza vaccine. The sample consisted of non-Hispanic White (n = 270), Black (n = 26), Hispanic (n = 42), Asian (n = 39) and Other (n = 15) nurses.

The outcomes for this study were four markers of inflammation (C-reactive protein [CRP], Interleukin-6 [IL-6], Interleukin-1 beta [IL-1β], and tumor necrosis factor-alpha [TNF-α]). For 7 days, participants wore an actigraphy device (Actiwatch Spectrum Pro) and completed sleep diaries to assess mean and total sleep time (TST; hours) and intraindividual variability (IIV) in TST.

Multivariable linear regression models were used to examine (1) whether race/ethnicity was associated with inflammation; and (2) whether accounting for mean and IIV in TST reduced race/ethnic gaps in inflammation. All analyses adjusted for age and sex.

Descriptive results showed disparities in actigraphy- and diary-determined sleep by race/ethnicity: White nurses had the highest mean TST, followed by Hispanics, while Black nurses had the lowest TST. White nurses had the lowest IIV in actigraphy- and diary-determined sleep, while Hispanic nurses had the highest IIV in actigraphy-determined sleep.

Results from linear regression models showed racial/ethnic differences in IL-6. Black nurses had significantly higher IL-6 compared to White nurses. After adjustment for mean and IIV in TST, Black nurses were no longer more likely to have higher IL-6.

The relationship between impaired sleep and elevated levels of inflammation was not universal across race/ethnicity. These findings suggest that sleep deprivation may be a mechanism underlying elevated levels of inflammation in Black nurses.

More work is needed to clarify the influence of sleep on multiple measures of inflammation across racially/ethnically diverse samples.