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Sleep health in a black community sample☆

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ABSTRACT

Background: Poor sleep health is a major health disparity and public health concern. The primary goal of this study was to accurately obtain the rates of self-reported sleep disorders, sleep dysfunction, and daytime sleepiness in a true community sample of black adults.
Methods: We used a community-based participatory research design to identify a health priority to design a study that could (*a*) provide an accurate assessment of the problem, (*b*) help to better understand the barriers to treatment, and (*c*) provide the community with access to care. Subsequently, 470 black adults, approached at salons, barber shops, and churches throughout Brooklyn participated. They underwent anthropometric measurement and completed a self-reported sleep assessment.
Results: Sleep disorders (insomnia, obstructive sleep apnea) were found in 34% of the sample, and 75% of the population that had a sleep disorder was unaware of it. Fourteen percent of the sample self-identified as having obstructive sleep apnea, 38.0% reported having Insomnia, and 38% reported having excessive daytime somnolence. People with a sleep disorder described less satisfaction with their sleep quality and poorer health than did those without a sleep disorder.
Conclusion: The variability in the reported rates of sleep disorders in black samples suggests that the true rates of these conditions are not well-known. However, the large number of black individuals who have sleep disturbances warrants increased scientific and public health attention. In addition, with increased community involvement in research, there can be increased buy-in and greater accuracy in the assessments and reduced barriers to treatment.

Racial health disparities exist across many medical conditions, and sleep health inequities have been gaining scientific attention. Poor sleep health is a major public health concern as it has been associated with a wide array of health complications,[1] such as cardiovascular disease and stroke.[2–4] Poor sleep is also associated with impaired daily functioning and productivity in the home and workplace, decreased quality of life, and increased risk of physical harm.[5–7] Research suggests that there are dangerous public health consequences to impaired sleep, primarily greater risk of occupational and vehicular accidents.[8–11]

One of the most severe sleep disorders is obstructive sleep apnea (OSA), which is responsible for 38,000 cardiovascular deaths yearly and costs $42 million on related hospitalizations, according to estimates from the National Commission on Sleep Disorders Research.[12] It has been defined by the National Sleep Foundation as a sleep disorder in which repeated pauses in breathing that last at least 10 seconds interrupt sleep. OSA has been associated with increased rates of mortality, hypertension, cardiac arrhythmias, myocardial infarction, daytime somnolence,[13] diabetes, obesity, depression, anxiety, and other psychiatric disorders.[14]

OSA is highly prevalent in the general population, with studies estimating that 1 in 15 adults has moderate to severe OSA.[15–17] OSA is disproportionately more prevalent among blacks compared with other racial/ethnic groups.[18–20] A case-control family study

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comparing 225 blacks and 622 whites showed that 31% of blacks vs 10% of whites had OSA.[21–23] Furthermore, there appears to be an age by race interaction, such that there is a greater prevalence of OSA in blacks who are younger than 25 years and older than 65 years, as compared with other racial groups.[20,24]

Insomnia is another highly prevalent, often debilitating, and economically burdensome condition that can occur as a primary disorder, a comorbid disorder, or as a symptom of a mental or physical illness. It is defined by the National Sleep Foundation as difficulty falling asleep or staying asleep, even when the person has the chance to do so. Many studies have established that insomnia is highly comorbid with medical illness and psychiatric disorders,[25] and is associated with significant disability.[26–38]

Prevalence of insomnia as a primary disorder has been estimated at 5% to 10%.[39,40] Approximately 30% of adults report one or more symptoms of insomnia, including difficulty initiating sleep, difficulty maintaining sleep, early morning awakening, and nonrestorative sleep.[41] Reviews of the literature indicate that there are ethnic differences in symptoms of insomnia, with blacks reporting lower overall rates of insomnia, but more disordered sleep symptoms than white Americans.[42–44] In a large-scale survey study of 32,749 adults, black respondents had an increased risk of being short (<6 hours) and long (>8 hours) sleepers relative to white or Hispanic respondents.[45] A second survey study of 5502 adults between the ages of 30 and 79 years found that black and Hispanic men report shorter sleep duration than white men.[31] Studies examining objective sleep data have also demonstrated ethnic differences in sleep. Results from the CARDIA study indicate that blacks have lower mean sleep duration, lower sleep efficiency, and higher sleep latency than do their white counterparts.[46] Similarly, results from the Multi-Ethnic Study of Atherosclerosis Sleep cohort study revealed that compared with whites, blacks had shorter sleep durations and poorer sleep quality.[44]

For some individuals, sleep impairment does not meet symptom criteria for OSA or insomnia, but still significantly impacts their overall functioning and quality of life. Excessive daytime somnolence (EDS), defined as persistent sleepiness, even after apparently adequate nighttime sleep, for example, can make it difficult for people to be productive at home and in the workplace[47] and can lead to more serious outcomes such as vehicular accidents.[48]

There are few methodologically rigorous studies examining the prevalence of daytime somnolence.[49] Two studies that used a cutoff score of 10 on the Epworth Sleepiness Scale (ESS) found EDS prevalence estimates of 17.5%[50] and 18%.[51] There may be ethnic differences in the rates of EDS, with blacks reporting greater daytime somnolence than whites and Hispanics. The Sleep Health Heart Study found significant differences in excessive daytime sleepiness across ethnic subgroups, with blacks reporting greater EDS (32%) as compared with whites and Hispanics (24% each).[52]

Overall, there are significant ethnic differences across sleep variables, with blacks experiencing greater impaired sleep than whites and Hispanics. To date, however, sleep health disparities are still poorly understood and relatively understudied. It is unclear whether the higher rates of sleep disturbance observed in black samples are due to reporting bias, are a methodological artifact, or perhaps represent a meaningful difference in sleep pathology. Thus, the overall aim of this study was to accurately describe sleep health parameters within a black community sample. In particular, the rates of self-reported sleep disorders, sleep dysfunction, and daytime somnolence were of interest.

Methods

Data for the current study were collected as part of a larger ongoing randomized controlled trial of a telephone health education intervention designed to address barriers to OSA assessment and treatment. A more detailed description of the formative work for the development of the protocol and the study's initial protocol is available.[53]

Unique to the development of this study was the involvement of the community in the development of the research design. We used a community-based participatory research (CBPR) model to first identify an illness or condition that holds particular relevance to the members of the community, and then to design a study that would leverage the strengths and resources of the community in order to provide an accurate assessment of the problem. Consultation with a Community Advisory Board composed of community leaders and representative officials resulted in the identification of cardiovascular risk factors, such as sleep apnea, as a primary target for research. Sleep disorders was selected for several reasons: (1) it is a highly prevalent condition among blacks; (2) availability of scientific expertise among the research personnel; and (3) feasibility of recruitment and data collection from community resources including barbershops, salons, and churches. Local business owners and community members provided valuable input regarding perceived barriers to assessment and treatment of sleep disorders in the community. Engagement with community members also resulted in increased trust and significant community buy-in. Because of their inclusion at the inception of the research design, beauty salon and barbershop owners, as well as church leaders, remained actively involved in promoting recruitment by providing a supportive environment and access to a typically unreached segment of the population. They not only provided access to their clientele but also modeled a trusting relationship with the researchers and recruiters that facilitated client participation.

Study community

This study was concentrated in central Brooklyn, encompassing neighborhoods often referred to as East New York, Bushwick, and Crown Heights. Brooklyn has substantial health inequities, and these neighborhoods are of the poorest, have the highest concentration of public housing, and have high concentrations of blacks (near 90%). There are also significant health disparities in these neighborhoods. As an example, the rates for hospitalization due to a myocardial infarction are the highest in these neighborhoods in comparison to all other neighborhoods in New York City.[54]

Procedures

The study protocol was approved by the SUNY Downstate Institutional Review Board.

Training procedure

A team comprising 11 undergraduate and graduate students from local Brooklyn institutions were responsible for participant recruitment in the community. Prior to implementation, recruiters completed advanced training in research ethics, the study protocol, safety measures, and cultural sensitivity.

Recruitment procedure

Individuals at various personal care establishments throughout Central Brooklyn, including barbershops, beauty salons, and unisex spaces, as well as at churches and various community events (eg, health fairs), were approached for the current study. These sites were identified through a combination of community input, proximity, and a history of collaboration. Overall, 15 different personal care locations and 20 churches and community fairs served as recruitment sites. Recruiters introduced themselves and asked the potential participants whether they could talk to them about their