Study Objectives: To date, conflicting observations have been made regarding ethnic differences in sleep patterns. Plausibly, differing sampling strategies and disparity in the cohorts investigated might help explain discrepant findings. To our knowledge population-based studies investigating ethnic differences in sleep complaints have not addressed within-group ethnic heterogeneity, although within-group health disparities have been documented.

Design: Volunteers (n = 1118) in this study were community-residing older European Americans and African Americans residing in Brooklyn, New York, which were recruited by a stratified, cluster sampling technique. Trained interviewers of the same race as the respondents gathered data during face-to-face interviews conducted either in the respondent’s home or another location of their choice. Data included demographic and health risk factors, physical health, social support, and emotional experience. Relationships of demographic and health risk factors to sleep disturbances were examined in multiple linear regression analyses. Within-group differences in sleep complaints were also explored.

Participants: N/A

Interventions: N/A

Measurements and Results: Of the factors showing significant associations with sleep disturbance, European American ethnicity was the most significant predictor ($r^2 = 0.20$). Worse sleep and greater reliance on sleep medicine were observed among European Americans. Caribbean Americans reported less sleep complaints than did U.S.-born African Americans, and immigrant European Americans reported greater complaints than did US-born European Americans.

Conclusions: As expected several health risk factors were predictive of sleep disturbance among urban community-dwelling older adults, but ethnicity was the most significant predictor. The present data suggest both between-group and within-group ethnic differences in sleep complaints. Understanding of demographic and cultural differences between African Americans and European Americans may be critical in interpreting subjective health-related data.

Key words: Ethnicity; sleep complaint; insomnia; health status; culture; aging

INTRODUCTION

IT HAS BEEN ARGUED THAT ETHNIC FACTORS AFFECTING DISEASE STATES1,2 OR GENETIC FACTORS PREDISPOSING PEOPLE TO EXPRESS DIFFERENT DISEASES3 might differentially influence sleep regulatory processes. The observation that disease expressions may vary contingent upon individuals’ ethnicity is important, as effective treatment approaches must reflect those nuances.4-8 In that regard, one might speculate that sleep complaints, which are invariably linked to medical and psychiatric illnesses among older adults,9-14 might differ according to which illness modalities are expressed. Indeed, there are data showing cross-ethnic differences in sleep regulation among patients with depression,4,6,15 although no inherent cross-ethnic differences have been found among healthy sleepers.15,16 To date, conflicting observations have been made regarding ethnic differences in sleep complaints.

About four decades ago, prevalence data from residents (ages 18 and above) of Alachua, an urban county in Florida, indicated that African American respondents (40%) experienced greater difficulty sleeping than their European American counterparts (33%).17 However, according to the Cardiovascular Health Study, a more recent study of non-institutionalized Medicare enrollees (≥65 years old) in four U.S. cities (Forsyth, Sacramento, Washington, and Pittsburgh), nocturnal awakenings were reported by 68% of European Americans and by 62% of African Americans.18 Evidently, the age disparity in these two samples precludes a direct comparison of the two studies, and in effect it might explain differences in the overall frequency of reported sleeping difficulty in the two studies. Nonetheless, it is important to note that African Americans in the latter sample reported less sleeping difficulty than did European Americans, suggesting that the frequency of sleeping difficulty reported by African Americans in Florida might be influenced by a greater sleep problem of younger African Americans relative to younger European Americans. Unfortunately, this could not be verified in the Florida report because no age-by-ethnicity contrasts were available; still, the suggestion is supported by survey data obtained from college students, showing better sleep for European American students.19-21 The finding of less sleep complaints among African Americans relative to European Americans is supported by data from the Duke Established Populations for Epidemiologic Studies of the Elderly, a longitudinal study of adults ≥65 years old selected from urban and rural counties of North Carolina.12

In the initial report of Duke’s data, 24% of the respondents complaining of wakeful sleep were African Americans and 76% were European Americans; other factors also favored better sleep for African Americans. However, when Duke’s data on incidence rates for insomnia were compiled, African Americans...
showed an incidence rate of 16%, and European Americans, 14%. These results would seem contradictory except that the criteria used for incident insomnia included only trouble falling asleep and early morning awakening, but not difficulty maintaining sleep. Furthermore, the overall incidence rates noted for African Americans were influenced by greater incident insomnia among African American women (19%) compared with African American men (12%). The investigators reasoned that higher rates of insomnia among African Americans might be due to higher incidence of morbidity, but cohort differences are also suspected. Indeed, according to one report the percentages of African Americans and European Americans reporting physical disability and poor health were 19% vs. 14% and 31% vs. 22%, respectively. One might expect that higher rates of incident insomnia among African Americans would be attributable to greater depressive symptomatology, as these factors are intricately linked. In effect, the presence of depressed mood is predictive of incident insomnia, and its absence is suggestive of remission. However, according to Duke’s data, virtually no ethnic differences in the frequency of depressive symptoms were found when controlling for education, income, cognitive impairment, chronic health problems, and disability.

That African Americans were characterized by a higher rate of incident insomnia may be explained by the finding that their relative risk for sleep-disordered breathing, a condition characterized by respiratory arrests disrupting sleep, is twice that of age-matched European American elders. According to a San Diego study, older African Americans and European Americans showed mean Respiratory Disturbance Indices of 72 and 43, respectively, with an index of 20 or greater considered as the criterion for severe sleep-disordered breathing. One case-control family study of individuals ages 2 to 86 years has even indicated that this condition is expressed much earlier among African Americans, suggesting that younger African Americans might be at increased risks for showing sleep-disordered breathing than age-matched European Americans. Another finding from the San Diego group has shown greater respiratory abnormalities for African Americans ages 40—64 years. To some degree, these data suggest that findings of greater sleep complaints among young African Americans might be indicative of the presence of undiagnosed sleep disorders.

Insomnia complaints among African Americans might not result necessarily from reduced sleep length. Data reported in 1997 from the National Health and Nutrition Examination Survey, which used a nationally representative probability sample of non-institutionalized adults, revealed that a greater proportion of African Americans (11%) compared with European Americans (8%) slept more than eight hours, the recommended sleep time according to reports from the National Sleep Foundation. Interestingly, although African Americans slept more than did European Americans, the survey showed that 19% of African Americans, compared with 16% of European Americans, complained of daytime somnolence. About a decade earlier, estimates of sleep length greater than eight hours were 11% for European Americans and 18% for African Americans, based on the National Health Interview Survey of Alameda County residents. These data are important since sleeping greater than eight hours is a correlate of observed comorbidities and is predictive of mortality. Perhaps, the fact that a greater proportion of African Americans slept longer than eight hours should not be viewed as conferring any adaptive advantage. Rather, it may be suggestive of greater comorbidities as has been documented in this ethnic group.

Considering the extant literature on self-reported data, the finding of better sleep for African Americans is by no means universal. Plausibly, differing sampling strategies and lack of parity in the cohorts investigated might help explain discrepant findings; one might also consider the nuances in the outcome measures reported in those studies. To our knowledge previous studies have not addressed within-group heterogeneity in sleep complaints, although variability in disease expressions, potentially affecting sleep patterns, have been documented for several ethnic groups. To explore further ethnic differences in reported sleep complaints, data from a population-based study of older adults living in Brooklyn, New York were examined.

First, we assessed the unique contribution of several demographic, lifestyle, stress, and health factors in explaining the variance in reported sleep problems. Thus, regression models were constructed to test whether ethnicity contributes unique variance to explaining sleep disturbances, over and above the variance accounted for by other sociodemographic and health factors considered. Consistent with evidence showing ethnic disparity in health status, we examined ethnic differences for each sleep-related complaint. Furthermore, since the African American stratum included both U.S.-born and immigrant (Caribbean) Americans and the European American stratum included both U.S.-born and immigrant Americans, we also explored whether differences in sleep complaints existed within ethnic subgroups.

**METHODS**

**Participants and Procedures**

Volunteers (62% female) were community-residing European Americans and African Americans living in Brooklyn, New York, which were recruited by a stratified, cluster sampling technique. Initially, data on census blocks were gathered from the Household Income and Race Summary Tape file 3A of the Census files. Blocks were then stratified by ethnic group (African Americans, European Americans) and by income (high, medium, and low). Random selection without replacement was used to choose samples of block groups from each stratum. A total of 1118 respondents provided valid data and received $20 for their participation. Overall, the response rate was 39%, which is probably not atypical of studies involving the recruitment of older ethnic minority populations residing in urban areas; there was no between-group difference in response rate. The enactment of new restrictive welfare and immigration legislation may have exacerbated our recruitment problems, as the study began shortly thereafter.

Table 1 shows the characteristics of the sample represented by means and percentages based on within-group contrasts. U.S.-born African Americans were respondents whose parents were also not born in the Caribbean. The Caribbean American subgroup contained mostly individuals born in the Caribbean. The immigrant European American subgroup included mostly persons from Eastern Europe. At the time of the interview, specific information on the origin of U.S.-born respondents was not...
Table 1—Characteristics of participating older adults

<table>
<thead>
<tr>
<th>Variable</th>
<th>African American (60%)</th>
<th>Caribbean (n = 435)</th>
<th>European American (40%)</th>
<th>U.S.-Born (n = 274)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (SD)</td>
<td>74 (6)</td>
<td>73 (6)</td>
<td>73 (6)</td>
<td>76 (6)</td>
</tr>
<tr>
<td>Mean Household Income, K (SD)</td>
<td>16 (14)</td>
<td>19 (18)</td>
<td>16 (17)</td>
<td>23 (24)</td>
</tr>
<tr>
<td>Mean Body Mass Index (SD)</td>
<td>30 (12)</td>
<td>28 (5)</td>
<td>27 (5)</td>
<td>27 (4)</td>
</tr>
<tr>
<td>% Female</td>
<td>64</td>
<td>60</td>
<td>65</td>
<td>60</td>
</tr>
<tr>
<td>% Married</td>
<td>23</td>
<td>37</td>
<td>57</td>
<td>31</td>
</tr>
<tr>
<td>% No High School Degree</td>
<td>59</td>
<td>68</td>
<td>38</td>
<td>31</td>
</tr>
</tbody>
</table>

obtained. Of the U.S.-born African Americans, 11.4% were Methodist; 59.7% Baptist; 6.8% Catholic; 6.6% Pentecostal; and 15.5% Other, whereas 20.2% of the Caribbean Americans were Methodist; 13.8% Baptist; 20.9% Catholic; 13.1% Pentecostal; and 32.0% Other. Of the U.S.-born European Americans, 2.9% were Methodist; 33.6% Catholic; 54.4% Jewish; and 9.1% Other, whereas 18.5% of the immigrant European Americans were Catholic; 73.4% Jewish; and 8.1% Other.

Trained interviewers of the same race as the respondents gathered data during face-to-face interviews conducted either in the respondent’s home or another location of their choice; interviews lasted approximately an hour and a half. In a standard order, several scales/questionnaires were administered. Measures for the present analysis included demographic and health risk factors: age, sex, race, education, income, body mass index, smoking status, and alcohol consumption.

Physical health was measured with the Comprehensive Assessment and Referral Evaluation Scale. This instrument is used to assess physical disability and has been used extensively in investigations involving older individuals in minority populations and has shown good construct validity as well as concurrent and predictive validity. In the present analysis, five subscales were included: heart disease, respiratory disease, arthritis, hypertension, and sleep disorder (Cronbach α = 0.89; 0.86; 0.72; 0.91; and 0.92, respectively). Five questions comprise the sleep disorder subscale: “Do you depend on medicine to sleep?”; “Do you have difficulty falling asleep?”; “Do you wake up often during the night?”; “Do you wake up early or wake feeling tired?”; and “Do you sleep during the day for more than two hours?”.

Social support was assessed with the Network Analysis Profile (α = 0.89). Stress was measured with the stress index scale used in the National Survey of Black Americans. Respondents rated on a four-point scale the degree to which a set of items provoked stress in the past month or two. Emotional experience was assessed with a 30-item trait version of the Differential Emotions Scale, version III. This scale is widely used to assess emotions of geriatric patients and has three items for each of 10 fundamental emotions (joy, surprise, interest, fear, sadness, anger, contempt, disgust, shame, and guilt). Respondents indicated, on a scale of 1—5, how much each emotion characterized their day to day life. Two sub-scales were examined in our analysis: sadness and fear (α = 0.78 and 0.85, respectively).

Statistical Analysis

To determine the unique contribution of the selected sociodemographic, stress, and health risk factors in explaining the variance in sleep disturbance, two multiple linear regression analyses were performed. In the first model, the dependent variable was a severity index of sleep disturbance based on combined scores for the three nighttime sleep questions. In the second model, the dependent variable was a severity index of sleep disturbance based on combined scores for the five sleep questions; preliminary logistic regression analyses showed that the sleep variables were significantly correlated with ethnicity (see Results). Explanatory variables considered in the regression analyses are believed stress-responsive and are associated with different aspects of sleep problems, based on previous research. Variables were examined for normality (income was log-transformed and stress was square-root transformed) and tested for collinearity. The regression models tested the hypothesis that ethnicity contributes unique variance to explaining sleep disturbances, over and above the variance accounted for by health and sociodemographic factors. Consistent with the literature showing between- and within-group ethnic disparities in health status, we used chi square to test whether ethnic group differences are also found for each sleep complaint.

RESULTS

Logistic regressions showed that ethnicity was the most likely predictor of the complaints of difficulty initiating sleep (β = 0.93, Wald = 24.13, p < 0.0001), of difficulty maintaining sleep (β = 1.25, Wald = 52.81, p < 0.0001), of early morning awakening (β = 0.92, Wald = 25.77, p < 0.0001), and of relying on sleep medicine (β = 1.51, Wald = 22.48, p < 0.0001). However, whether or not respondents suffered from arthritis, rather than their ethnicity, predicted the likelihood of a complaint of daytime sleep (β = 0.85, Wald = 8.61, p < 0.01).

In the first linear regression model, which used the combined nighttime sleep complaints as the dependent variable, 32% of the variance in sleep disturbance was accounted for (F17, 1100 = 30.23, p < 0.001). When the variable combining the five sleep complaints was entered as the criterion, 31% of the variance in sleep disturbance was accounted for (F17, 1100 = 22.93, p < 0.001). These results demonstrate that the model remained relatively stable, suggesting that either criterion could be used as an index of sleep disturbance. Indeed, both models revealed that European American ethnicity was the most significant predictor of sleep disturbance (r² = 0.20). Table 2 shows the contribution of each factor entered in the second regression model; values found in the first model were similar to those reported in the table.

Spearman correlation analysis revealed a moderate correlation...
coefficient between ethnicity and sleep disturbance ($r_s=0.43$, $p<0.01$). Given the disparity in the religious identifications of the respondents, which might affect this correlation, we further controlled for religion finding a negligible covariation with sleep disturbance (partial $r=0.41$, $p<0.01$).

The percentages of African Americans and European Americans reporting sleep complaints are compared in Table 3. Worse sleep and greater reliance on sleep medicine were observed for European Americans. Within-group contrasts examining differences in sleep complaints between U.S.-born and immigrant Americans revealed that Caribbean Americans reported less sleep complaints than did U.S.-born African Americans overall, but a significantly lower proportion experienced daytime sleep ($\chi^2=15.78$, $p<0.01$). Immigrant European Americans reported significantly greater difficulty initiating and maintaining sleep than did U.S.-born European Americans ($\chi^2=11.20$, $p<0.01$; $\chi^2=3.57$, $p<0.05$, respectively). Within-group analysis, examining the likelihood of sleep medicine consumption by U.S.-born and immigrant African Americans or European Americans, showed differential patterns of reliance on sleep medicine based upon the nature of the sleep complaints (see Table 4).

Compared with African Americans, a greater proportion of European Americans reported respiratory problems (64% vs. 32%), heart diseases (69% vs. 53%), and arthritis (83% vs. 67%); comparable proportions reported hypertension (54% vs. 53%). European American respondents were characterized by greater sadness and stress than African American respondents (Median=8 vs. Median=5; Median=8 vs. Median=5, respectively).

DISCUSSION

Sleep-Related Complaints: Comparisons Between European Americans and African Americans

As expected, several health factors were predictive of sleep disturbance as reported by urban community-dwelling older adults, but ethnicity was the most significant predictor, accounting for 20% of the variance in sleep disturbance. Although the cohort we examined differed in many respects from those reported previously, sleep complaints of older African Americans in our sample showed some similarities with published studies regarding the three main indices of sleep disturbance: difficulty initiating sleep, difficulty maintaining sleep, and early morning awakenings (see Tables 3 and 5). By contrast, a greater number of European Americans reported sleep complaints relative to African Americans in the same sample or both European Americans and African Americans in previous samples. Except for the Florida sample, which does not permit direct examination
of ethnic differences in sleep complaints of older adults, the finding of fewer sleep complaints among African Americans seems ubiquitous, having been observed in different geographic locations and with differing cohorts. It is important to note, however, that compared with previous data complaints of daytime sleep did not differ between African American and European American respondents. Indeed, ethnicity was not the most likely predictor of daytime sleep.

The finding of similar proportions of sleep complaints of African Americans, as found in mixed samples, is important and suggests in some respect that European Americans in our sample were probably reporting substantially greater complaints overall (see Tables 3 and 5). It is also possible, however, that African Americans may be under-reporting sleep complaints to some degree, although we could not assume that African Americans in our sample might have experienced greater sleeping difficulty without objective sleep recordings. Interestingly, these have tended to show that African Americans are characterized by worse sleep patterns than European Americans.24 The possibility of a bias in reporting among African Americans is consistent with the fact that they also reported significantly less self-perceived health problems than did European Americans, whereas converging epidemiologic and vital statistics data demonstrate quite the contrary.2,35 Indeed, according to the National Center for Health Statistics, the age-adjusted proportion of African Americans with fair or poor health status was 76% greater than for European Americans, and death rates among African Americans were much higher than among European Americans considering the leading causes of death (e.g., heart disease and cancer).2

The notion of a reporting bias among older African Americans is also supported by studies comparing African Americans and European American caregivers, finding that African Americans used more positive reappraisal than did European Americans.45 Relative to European Americans, African American caregivers often appraised patient’s problems as being less stressful and reported less depressed moods and higher self-efficacy in managing caregiving problems.46 Based on appraisal and coping research, several hypotheses have been advanced suggesting that older African Americans might have developed effective strategies to deal with hardships due to poverty, racism, segregation, and other life stresses. These over time would have fostered effective reframing of difficult life experiences that could not be easily changed.46 While this may be true for African Americans, positive reframing among European Americans is not believed protective; rather, it may lead to increased psychophysiological distress.45

Conceivably, lower rates of sleep complaints among African American elders may be explained by an acceptance of sleep disturbance as part of the aging process, as they might for health problems as well; except for hypertension, rates for other medical illnesses were lower for African American respondents. Interestingly, cognitive behavior therapy, employed to treat late-life insomnia, attempts to promote acceptance of sleep, when deemed in the normal range, by specifically targeting dysfunctional sleep-related beliefs or negative cognitions about sleep. It is believed that reduction of dysfunctional beliefs (or self-perceived stress) obviates sleep complaints even among those with severe sleeping difficulty.47,48 This belief is based on the finding that highly stressed older adults with insomnia symptoms exhibit anxious, depressed, negative cognitive-affective dispositions, whereas older poor sleepers with less self-perceived stress cope well with age-related sleep changes and display similar psychological adjustment as do good sleepers.49 It would be interesting to determine whether African Americans, reporting less sleep complaints, are in fact characterized by relatively greater positive reappraisal than their counterparts or whether they experience verifiably less sleep problems. There is a body of research showing that some self-described normal sleepers may endure significant sleeping difficulty with no corresponding reports of sleep complaints, and others, even when admitting sleeping difficulty, may yet fail to report sleep-related dissatisfaction.49,50 It is not clear whether the finding of a relatively low proportion of African Americans (3%) reporting reliance on sleep...
medicine could be due to lower sleep complaints per se in that stratum. It might have been assumed that differences in socioeconomic status, as found in our study (see Table 1), could predict the likelihood of sleep medicine consumption, but income or education were not independent predictors of sleep disturbance. African Americans in general are less inclined to use prescription or over-the-counter medications than are European Americans, albeit consumption of certain medications tends to be more prevalent in one stratum than in the other, as disease expressions vary. Restricted access to health care, either because of economic barriers or cultural barriers, has also been argued as a likely cause for lower medication use. One might surmise, therefore, that such restrictions could have influenced our data as well. Unfortunately, this view remains speculative, as issues involving access to health were beyond the scope of our study.

Sleep-Related Complaints: Consideration of Within-Group Differences

Besides the confirmation of existing data showing that African Americans reported fewer sleep complaints, analysis of the present data has allowed the recognition of within-group heterogeneity in sleep complaints. Population-based sleep studies reported heretofore in the literature have not addressed this possibility, although it might have been suggested by the multitude of studies showing ethnic disparities in physical health. Indeed, even within a specific ethnic group homogeneity of disease expressions cannot be assumed as lifestyle, cultural, economic, and environmental factors enhancing or attenuating the incidence or the prevalence of diseases may vary. Similarly, our data showed no within-group homogeneity in sleep complaints; 49.2% of U.S.-born African Americans reported either difficulty initiating sleep, difficulty maintaining sleep, or early morning awakenings compared with 41.8% of Caribbean Americans; 87.3% of immigrant European Americans indicated at least one of those sleep complaints compared with 82.1% of U.S.-born European Americans. We also found that compared with Caribbean Americans (8%), a greater proportion of U.S.-born African Americans (19%) experienced daytime sleep, suggesting further ethnocultural heterogeneity. Of note, although within-group disparities were found, seemingly they did not disproportionately influence (negatively or positively) the rate of sleep complaints of each ethnic group overall.

It is noteworthy that a larger percentage of Caribbean Americans did not obtain a high school degree, but they reported higher income and were more likely to be married compared with U.S.-born African Americans. However, reliance on sleep medicine did not differ substantially between these subgroups regarding difficulty initiating or maintaining sleep, but twice as many Caribbean Americans were dependent on sleep medicine to combat early morning awakenings. There was a greater likelihood for immigrant European Americans to be married compared with U.S.-born European Americans, but the latter reported higher educational attainment and greater household income. The higher economic status of U.S.-born European Americans might explain why they were more likely to rely on sleep medicine than their counterparts, despite the fact that immigrant European Americans indicated greater sleep complaints. We also note that the average household income for an immigrant European American was comparable to that of a U.S.-born African American, and it was indeed lower than that of a Caribbean American. Nonetheless, a greater proportion of immigrant European Americans depended on sleep medicine relative to African Americans, U.S.-born or Caribbean. Thus, income by itself may not account for the differences in the likelihood of sleep medicine consumption by elders in these ethnic groups.

Conclusion

Arguably, ethnic disparities in the utilization of health services is an important explanatory factor when examining health-related data. One might also consider differences in religious or cultural beliefs. In effect, we observed significant within-group heterogeneity in the religious identifications of the respondents, but religion itself was not a significant independent predictor of sleep disturbance.

One could posit that the ethnic composition of the subgroups necessarily reflected immigration practices that have occurred in New York. Accordingly, U.S.-born respondents may have been originally from Western Europe, whereas immigrant Europeans were predominantly from Eastern Europe. Thus, differences in reported sleep or health complaints may not be explainable solely on the basis of immigration status. One cannot discount the possibility that specific ethnocultural factors may have differentially influenced the response styles of these two groups. Similarly, one would not be surprised if it were shown that Caribbean respondents differed in their response styles considering their divergent ethnocultural origin. Unfortunately, these important hypotheses could not be tested with our data. Such hypotheses should be explored in future investigations, as our analyses showed both between-group and within-group ethnic differences in sleep complaints.

Conceivably, African Americans (U.S.-born or immigrant) may benefit from a unique cultural background, which provides a positive context for reframing sleep need, as they would for other life challenges that are not easily resolvable. Likewise, a predilection for traditional medicine might account for so little reliance on sleep medicine in that ethnic stratum. Evidence suggests that some Caribbean Americans might resort to an elder family member, to a pastor, or to a folk practitioner to deal with health-related issues. In sum, while economic and cultural barriers limiting access to health care might prevent adequate medical care where morbidities are expressed, paradoxically these may set in motion the processes leading to decreased somatic and sleep complaints among African Americans.

The proportions of African Americans and European Americans in our sample do not reflect the ethnic composition of New York as a whole, nor do they represent the ethnic distribution in other states. Consistent with growing interest in studying minority populations, an effort was made to gather data in clusters likely to contain both U.S.-born as well as immigrant American elders. The benefit of that strategy was the possibility of investigating within-group heterogeneity in reported sleep complaints, which heretofore has not been addressed. We acknowledge that generalizability of our results is somewhat limited, but our findings suggest that differences in sleep complaints between European Americans and African Americans may be real and replicable in other geographic locations. Understanding of demographic and cultural differences between African Americans and European Americans may be critical in interpret-
ing subjective health-related data.

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REFERENCES

2:132-147.
45. Knight BG, McCallum TJ. Heart rate reactivity and depression in African American and white dementia caregivers: reporting bias or positive coping? Aging and Mental Health 1998;23:212-221.
50. Ohayon MM, Cautel M, Guilleminault C. How a general population perceives its sleep and how this relates to the complaint of insomnia. Sleep 1997;209:715-723.