Introduction

StROKE is a non-communicable disease of increasing socioeconomic importance, which has become the third leading cause of mortality in African Americans in the United States. A combination of differences in risk factors and low SES as a result of race have been shown to account for an estimated 50% of the African American excess stroke incidence. It has been noted that the stroke incidence rates for African Americans are higher for every age group which can be attributed to a larger proportion of individuals having a lower SES. The excess incidence rate contributes to a minimum of 80,000 excess strokes in the United States every year. Areas that are considered to have a greater socioeconomic disadvantage- as measured by manual occupations, lower educational levels and low income- have been shown to have higher rates of stroke incidence. Even among African American populations, those individuals that have a higher socioeconomic status and higher educational levels exhibit an inverse relation with stroke incidence and mortality.

Question

What is the relationship between low SES and stroke events in African Americans?

Methodology

Literature review was performed through PubMed, Google Scholar, and Cochrane Review by utilizing key words such as: “effect of socioeconomic status on stroke,” “african american stroke SES”, “stroke racial disparities,” and “impact of SES on african americans.” We limited our review to studies performed in the United States, published in English, and those that were free of cost. We also limited our search to studies with large sample sizes and a valid definition of SES.

Results

<table>
<thead>
<tr>
<th>Author</th>
<th>Methods</th>
<th>Findings</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Howard et al., 2011</td>
<td>Cohort Study: 25,714 black &amp; white men &amp; women, ≥ 45 years and stroke-free at baseline, were followed for 4.4 years. Mediation analysis using proportional hazards analysis assessed the contribution of risk factors to racial disparities.</td>
<td>At 45 years, stroke risk was 2.90×’s more likely in blacks than in whites and 1.66×’s at 65 years. Adjustment for SES resulted in total mediation of 47% &amp; 53% to relative risks of 2.01 &amp; 1.30.</td>
<td>Could not account for residual confounding &amp; non traditional risk factors which could contribute to disparity. Potential measurement error.</td>
</tr>
<tr>
<td>Howard et al., 2016</td>
<td>Cohort Study: 24,873 black &amp; white stroke-free patients ≥ 45 were examined to establish a baseline of health. Follow-up interviews every 6 months assessed for an incident stroke over 7.5 years. Each patient’s neighborhood was given an nSES based on 6 variables including income, education, and work.</td>
<td>There is a linear trend for increasing stroke risk with decreasing nSES (p &lt; 0.0001). The association remained after adjustment for demographics, age, &amp; race. Results for black &amp; white participants did not differ.</td>
<td>General neighborhood SES numbers may not accurately represent each individual. Baseline residence was used and was not reassessed throughout. Past SES experiences were not available.</td>
</tr>
<tr>
<td>Kessela et al., 2004</td>
<td>Cross-sectional Study: Screened medical records of all stroke cases in Cincinnati over one year. A sampling scheme was used to ascertain stroke cases in outpatient setting. SAS version 8.2 was used for data analysis and race-specific incidence was calculated.</td>
<td>3,136 strokes showed higher incidence for blacks at every age with 2-5 fold increased risk in young &amp; middle aged blacks. Fatalities did not differ significantly between black and white patients.</td>
<td>Age, race, and sex-specific strata may have limited statistical precision. Potential selection bias from missing stroke dx or miscoding.</td>
</tr>
</tbody>
</table>

Discussion/Conclusion

Previous studies have shown that poverty can negatively impact an individual’s life span and effectively decrease the average lifespan by up to ten years. The economic burden upon the US in terms of total cost of care, medications and missed days of work were estimated at $73.7 billion in 2010. In the United States and Europe, it has been shown that lower SES is associated with a higher stroke rate. This effect is not limited to any one population as evidenced by increased hypertension prevalence and stroke risk in both African Americans and whites from lower SES. These findings highlight the critical need to understand the disparity in the number of stroke events.

There is a greater prevalence of lower SES in African American communities which is a large contributor to the higher stroke incidence rates for African Americans. Lower SES is correlated to an overall lower quality of health which has been linked to the higher stroke event rates. This substantial difference in stroke incidence among blacks represents one of the most serious public health problems facing the United States. The burden upon the individual and the community as a whole is enormous and needs to be lessened.

We conclude that SES plays a significant role in stroke incidence in African Americans. However, SES is not the only cause of racial disparities in stroke incidence, and therefore, efforts must be focused on preventing risk factors and increasing awareness about stroke in susceptible populations.

Further Research

Many questions are left to be answered in terms of the etiology of strokes in African Americans and the foundations for SES differences that can manifest as stroke events. A large contributing factor is due to the difficulties that are involved in attaining an accurate measurement of aspects contributing to stroke risks and events. The majority of studies that have been dedicated to reviewing the variations that are present in stroke incidence have been restricted to limited age-groups and races within a population. When reviewing previous literature, it is clear that many of the population-based studies have not included a significant proportion of minorities that took individual history and SES into consideration.