The Impact of Socioeconomic Factors on Cardiovascular Health

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ABSTRACT:

Background

Socioeconomic status plays a significant role in the cardiovascular health of an individual. The purpose of this paper is to synthesize and affirm the specific socioeconomic factors associated with changes in cardiovascular health.

Methods

This scoping review paper synthesized results from 5 research papers that were conducted across over 20 countries, including the United States, Canada, and Sweden. Pubmed and Google Scholars were the search engines of choice with key terms being socioeconomics and cardiovascular diseases, Education and Cardiovascular Health, and/or Occupation and Cardiovascular Diseases.

Results

Level of education plays a larger role in the determination of cardiovascular health compared to income. The difference in cardiovascular mortality between a highly educated person and poorly educated person can be between 20-40% difference, with higher educated individuals being less susceptible. Occupation is less of a determinant, but there is a slight correlation between occupation and cardiovascular diseases, notably in blue collar jobs, where cardiovascular health tends to be worse.

Discussion

Given the critical role education plays in cardiovascular health, further initiative should focus on investing in more equitable education to improve the overall cardiovascular health of the general population.

INTRODUCTION:

Socioeconomic status is a measurement of the economic and social environment of one's life. There is an inverse relationship between such socioeconomic status and cardiovascular diseases [1]. For example, both educational level and occupation are associated with cardiovascular health. [2]. Countries of lower macro-socioeconomic status have a much larger risk of a stroke incident when compared to countries of higher macro-socioeconomic status [3]. In part, the association between educational level and cardiovascular health may be due to diet, with college graduates more likely to eat healthier items, such as whole fruit, vegetables, and whole grains, while people of lower educational status consume more saturated fat and sodium [4]. The

objective of this paper is to synthesize the recent findings that describe socioeconomic status's impact on cardiovascular health.

METHODS:

Search Strategy

The search was conducted through PubMed, and the search terms were socioeconomics and cardiovascular diseases, Education and Cardiovascular Health, and/or Occupation and Cardiovascular Diseases

Inclusion and Exclusion Criteria

The inclusion criteria was that the sample size was at least 1000 participants or a survey was nationally done, the paper was in English and that the sample size represented a general population (no research focusing on only one demographic). The exclusion criteria was if the sample size was too small, only focused on a certain group rather than a general population, papers not in English, or if the sample population only included one county or one city.

RESULTS:

Study 1: Statistical Analysis from National Self-Reported Surveys in the United States

Across Black, Mexican, and White populations, hypertension was less common amongst individuals with a high school education or above [5]. In addition, individuals with less than a high school education were more likely to engage in smoking and less likely to be physically active with Mexican women having one exception (Mexican women with a high school education or higher were more likely to smoke) [5]. However, obesity rates didn't follow quite the same trend; although white individuals with a high school education or above were less likely to be obese, blacks and Mexicans with a high school education or above were more likely to be obese [5].

Study 2: Cohort study in 20 countries

Education level has a strong inverse correlation with major cardiovascular disease rates in high and middle income countries. However, this relationship is weaker in low income countries; between non-secondary educated individuals, secondary educated, and higher level educated individuals, secondary educated had the highest rates of major cardiovascular disease in poor countries [6]. There is a weak association between wealth and cardiovascular episodes [6]. In addition, education and healthy lifestyle choices of cessation from smoking, healthy eating, and physical activity have a positive correlation, with the exception of lower income countries for physical activity: non-secondary and secondary educated individuals and more physical activity than post secondary educated individuals [6].

Study 3: Statistical Analysis from US wide Cross-Sectional surveys

For risk factors of cardiovascular diseases, men tended to engage in riskier lifestyle choices than

women. There is a gradient between education level and smoking for all sexes, and a gradient for women between education level and HDL cholesterol for women [7]. The correlation between income and cardiovascular disease and occupation and cardiovascular disease were weaker than the correlation between education and cardiovascular disease. However, one notable trend was that managers and executives displayed lower average blood pressure, and were the least likely to smoke [7].

Study 4: Case Control Study in Japan

Manual workers were the most likely to face the stroke subtypes of cerebral infarction, intracerebral hemorrhage, and subarachnoid hemorrhage amongst the 81 standard Japanese categories of occupations [8]. Amongst professional careers, the risk of the three stroke subtypes listed above were less prominent, with the exception of healthcare professionals, such as doctors, dentists, and veterinarians, and journalists/writers,who were at greater risk of cerebral infarction and subarachnoid hemorrhage [8]. Another exception was musicians, stage designers, and natural resource engineers, who were at greater risk of subarachnoid hemorrhage [8]. In addition, women were generally at a greater risk of cerebral hemorrhage and acute myocardial infarction for almost every occupation category [8].

Study 5: Meta-analysis in China

There is a strong correlation between educational level and cardiovascular diseases, where those with lower educational levels had a higher risk for all-cause mortality, stroke-specific mortality, recurrent stroke, and cardiovascular episodes, even with adjustment for lifestyle choices, such as smoking and drinking, age, and sex [9]. This association was independent of income [9]. This was attributed to often poor life management for cardiovascular health often found in lower educated communities [9]. There is an increasing gradient of cardiovascular episodes from college educated to middle school educated to primary school educated to illiterate, with those who are illiterate displaying the highest rate of cardiovascular complications [9].

DISCUSSION:

While income and wealth are often thought to be the socioeconomic factor with the greatest impact on cardiovascular health, this scoping review has falsified this misconception. Education seemingly has a much larger impact on cardiovascular health, with occupation also playing a small role. However, it should be noted that education level is often tied with wealth despite wealth being independent of cardiovascular health. For example, a person of higher income is more likely to acquire higher level education, but should they get poor education, their wealth is not a determinant in their cardiovascular health. Occupation is a relatively weak determinant compared to education, but the fact that labor-intensive blue collar workers are more likely to experience strokes while managers and executives have healthier blood pressures cannot be ignored; a physically demanding career takes a toll on the body. The data demonstrates the importance of addressing inequitable education, particularly in the United States, where

educational funding is based on local taxing. Policy makers should focus on offering American children equal educational opportunities starting from primary school, in turn ensuring improved cardiovascular health for the nation. For blue collar workers, employers should make an effort to at least ease the labor intensiveness of their worker, whether through some automation or better equipment.

One limitation of this review is that 1 of the 5 sources is over 20 years old. However, this only emphasizes that this trend has been going unaddressed for a while, with newer studies yielding results that further strengthen the credibility of the older one.

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