A study of identifiable risk factors associated with sudden cardiac death among adults in the United States.

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Abstract

Currently, many Americans continue to be diagnosed with critical health issues and various forms of chronic diseases, health and medical assessments within specific target communities and regions have been found to be necessary in order to effectively examine and analyze identifiable risk factors which may attribute to some of the more serious health concerns in the United States of America. As ever increasing rates of disease and other negative health outcomes continue to impact American citizens, it could become more necessary for American health systems and institutions to thoroughly examine some of the behavioral factors which may be associated with some of the more serious health concerns that may impact the quality of life for many Americans. It could be probable that some modifiable behavioral practices could be associated with some of the most serious health conditions which may attribute to high mortality rates of American citizens. The Centers for Disease Control and Prevention reported that cardiovascular disease (CVD) has attributed to high mortality rates in the United States. Research has also found that CVD is associated with high rates of sudden cardiac death (SCD), and SCD has attributed to the largest cause of natural death within America, which results in roughly 325,000 adult related deaths in the United States every year.

Keywords: Cardiac, Chronic, Health, Obesity, Disease.

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Introduction

Today, many American citizens continue to be diagnosed with critical health issues and various forms of chronic diseases. Health and medical assessments within specific target communities and regions have been found to be necessary in order to effectively examine and analyze identifiable risk factors which may attribute to some of the more serious health concerns in the United States of America. It may be imperative to investigate the many existing health problems in the U.S. which may be interrelated due to various types of unhealthy behaviors. It is possible that certain types of unhealthy behaviors may serve as identifiable risk factors capable of increasing the probability of diagnoses with one or more of the top ten disease killers or preventable causes of death in America. Cardiovascular Disease (CVD) is one such disease which has often attributed to high prevalence rates of Sudden Cardiac Death (SCD).

There were more than 17.3 million cardiac related deaths in 2012 worldwide (World Health Federation, 2016). Cardiovascular diseases were the main cause of death in many countries around the world, and has accounted for 35% of all deaths in 2009 [1-3]. Sudden cardiac arrest (SCA) significantly impacts mortality rates among adults over the age of 40 nearly worldwide and more than 350,000 Americans have died each year of SCD, about 680 Americans have died every day of each year, and nearly one-half of the worldwide SCD death toll, has occurred in those persons under 65 yrs of age [4]. The number of people who die each year from SCD around the world is roughly equivalent to the number of people who die from Alzheimers disease, assault with firearms, breast cancer, cervical cancer, colorectal cancer, diabetes, HIV, house fires, motor vehicle accidents, prostate cancer, and suicides combined [4].

There are numerous health and medical research programs in the United States which are currently operational and designed to attempt to examine and potentially eliminate some of the identifiable risk factors of various health concerns. Unhealthy lifestyle behaviors could be directly associated with the possibility of CVD diagnosis. This could in part be due to one's socioeconomic status, sedentary lifestyle, and the high expenses of food products often associated with a healthy diet. In addition to behavioral and environmental factors which may be directly related to disease outcomes in the U.S., it is may also be imperative that American citizens receive or have access to health educational information and resources which provide guidance on measures to help promote awareness on health promotion and disease prevention strategies, in order to reduce disease prevalence and mortality rates in America.

The American Heart Association (2011) has recognized CVD as a disease of the heart and the blood vessels which may also include a number of other significant health concerns, in which many such concerns may often be associated with atherosclerosis [5]. Atherosclerosis has been defined as a health condition resulting from the buildup of fatty deposits which eventually form a hard substance along the walls of the arteries referred to as plaque [6]. The fatty plaque buildup could cause a narrowing of the artery walls, which could eventually interfere with the process of normal blood flow and also lead to one suffering from a heart attack or stroke. CVD has been recognized as one of the most prevalent and expensive health concerns facing American society currently, as well as one of the more preventable types of disease outcomes [7]. The Centers for Disease Control and Prevention [1] has found that CVD is the major causes of illness, disability, and cardiac death for men and women and is estimated to cost the Americans hundreds of billions of dollars each year in annual healthcare expenditures and lost work productivity.

Purpose

The purpose of this study was to examine identifiable risk factors and disease outcomes which may be associated with SCD in American adults (N=3,984,918). The age of the study samples were American adults over the age of 20 years. It was determined based on the 2010 U.S. Census, that the sample for this study was fairly representative of the population of American adult citizens. The researchers of this study were hopeful that the overall findings would serve to help to promote awareness of potential CVD and SCD identifiable risk factors, which could attribute to health behavioral changes across American communities.

There is limited research which has examined identifiable risk factors for SCD rates among adult groups. Additionally, although current data has provided an indication that U.S. citizens may be at risk specific types of chronic diseases, health or medical research which has examined the possible association between behavioral, environmental, and social factors on adults who may have been diagnosed with major health concerns appears to be extremely limited.

Materials and Methods

A large random sample (N=3,984,918) of American adults was examined in this research study. A multiple regression analysis was conducted to determine if seven identifiable risk factors were found to be significant predictors for cardiac death (a=0.05). The seven risk factors which were analyzed were Hypertension, Atherosclerosis, Chest Pain, Diabetes, Obesity, Drug Abuse, and Alcohol Abuse. In this research study, SCD was defined by Heart Failure (HF) resulting in death. A Pearson r analysis was also conducted to determine the strength of the relationship between HF and the seven identifiable risk factors. The National Inpatient Sample Database (NIS, (2017) data examined in this research study were collected from American hospitals in 46 U.S. states.

Results

The results of this research study found that the majority of the sample population showed high prevalence rates for all eight health conditions which were analyzed in this study (Table 1). The Pearson r analysis results showed very strong statistically significant correlations with HF and the factors of hypertension, atherosclerosis, chest pain, diabetes, substance abuse, and drug abuse (Table 2). In addition to these results, the study results also revealed a statistically significant multiple regression model ($F=63.275$, $p<0.01$) and found that factors of chest pain, hypertension, diabetes, alcohol abuse, and drug abuse, were significant predictors of heart failure in American adults (Table 3).

Discussion

Based on the findings of this study, the researchers concluded that healthy behavioral changes of American adults may be warranted to both establish and enhance quality health promotion and disease prevention practices. It is recommended that more educational and community-based programs such as General Health Outreach Programs, and tactics such as an Action Plan [8] should be implemented to reach people outside of traditional health care settings to address potential risk factors for CVD. The programs should be developed to sufficiently address some of these critical health conditions

Table 1: *Disease Prevalence Rates for American Adults (a=0.05).*

Diseases	n
Heart Failure	4,30,955
Hypertension	5,09,695
Atherosclerosis	5,26,680
Chest Pain	5,32,510
Diabetes	11,24,619
Obesity	8,01,196
Drug Abuse	3,12,860
Alcohol Abuse	2,96,810

Table 2: *Pearson R Analysis results for Strength of Relationships (a=0.05).*

Diseases	Heart Failure	P value
Hypertension	0.977	0.002
Atherosclerosis	0.876	0.026
Chest Pain	0.896	0.02
Diabetes	0.93	0.011
Obesity	0.735	0.079
Drug Abuse	0.905	0.017
Alcohol Abuse	0.925	0.012

Table 3: *Multiple Regression Analysis Coefficients (a=0.05).*

Diseases	B	P value
Hypertension	1.249	0.004
Atherosclerosis	0.993	0.052
Chest Pain	0.239	0
Diabetes	0.293	0
Alcohol Abuse	3.059	0
Drug Abuse	0.887	0.035

which may attribute to SCD outcomes. It is also recommended that more effective and current health education guidelines through family-healthcare providers should be implemented to adequately provide advice on the diagnosis and management of CVD relative to SCD outcomes. Despite this, it is significant to acknowledge that the information provided to patients is communicated on the level of patients' understanding in hopes of encouraging them to consciously decide on positive behavioral changes for their health.

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