Introduction

The dictionary of epidemiology defines a health indicator as “a variable susceptible to direct measurement that reflects the state of health of persons in a community.” The U.S. Department of Health and Human Services has embarked on the Health People initiative since 1979, which sets health objectives for the coming decade. It has now launched Healthy People 2020. To monitor progress, a set of 10 leading health indicators was chosen on the basis of their ability to motivate action, the availability of data, and their importance as public health issues. Of the ten, physical activity, overweight and obesity, tobacco use, substance abuse, responsible sexual behavior, environmental quality and immunization can be considered indicators of health determinants. Overweight and obesity, substance abuse, mental health and injury and violence are health status indicators. Furthermore, mental health, immunization and access to care are health care indicators. Some indicators belong to more than one category; for example, obesity, which is both a health condition and risk factor for other disease; and immunization as a preventive health service is also a protective factor infectious diseases. The first goal of Healthy People 2020 is to help individuals of all ages increase life expectancy and improve their quality of life.[i]

To do this, measures such as mortality rates are used to better understand a population. In addition, race/ethnicity interact in complex ways with socioeconomic status (SES), income, education, employment, occupation, living conditions, health insurance, quality of care, and other social factors to influence

differences in cancer risk factors, screening, incidence, mortality, and survival among minority populations.[ii]

Background

United Neighborhood Health Services (UNHS) clinics provide health services for residents of Davidson County for free or reduced rates. The population of Davidson County in 2000 was 569891. UNHS serves over 27,000 patients annually, which is around 5% Davidson County's population. Therefore, they impact the health outcomes of many residents in Davidson County. For this reason, it is important for UNHS to constantly review and create new intervention initiatives to make sure that their patients are receiving optimal care. Hyperlipidemia, hypertension, and obesity are among the majority of chief complaints of UNHS patients. These risk factors, although largely preventable through proper diet and exercise, are the major causes of heart disease, stroke, and diabetes, which were among the Top 10 leading causes of death in the United States, according to the CDC National Health Statistics for 2011.

A major health concern and leading cause of death in Davidson County and the U.S., is Ischemic heart Disease. However, if Ischemic Heart disease is combined along with other heart diseases and hypertension, the result is coronary heart disease. Coronary heart disease is the most common type of heart disease. In 2005, 445,687 people in the US died from coronary heart disease.[iii] In addition, heart disease is the leading cause of death for both men and women.[iv] It is the leading cause of death for people of most ethnicities in the

United States, including African Americans, American Indians or Alaska Natives, Hispanics, and whites. Below is the percentage of all deaths caused by heart disease in 2004, listed by ethnicity.[iii]

Table 1: Percentage of All Deaths caused by Heart Disease by Ethnicity in the USA (2004)	
Race of Ethnic Group	% of Deaths
African Americans	25.8
American Indians or Alaska Natives	19.8
Asians or Pacific Islanders	24.6
Hispanics	22.7
Whites	27.5
All	27.2
Source: National Center for Health Statistics, 2004	

African Americans have the highest rate of high blood pressure of all groups and tend to develop it younger than others.[v] Studies have shown that socioeconomic status, reflected in income and education, underlie a substantial portion, but not all, of the higher rate of heart disease in minority populations.[vi] Overall, minority and low-income populations have a disproportionate burden of death and disability from coronary vascular disease (CVD). As discussed earlier in the Health Indices section, males and people with a family history of premature cardiovascular disease have an increased risk of atherosclerosis. These risk factors can't be controlled. However, research shows that reducing the controllable risk factors of atherosclerosis, reduces CHD risk. These risk factors include: High blood cholesterol (especially LDL or "bad" cholesterol over 100 mg/dL), cigarette smoking and exposure to tobacco smoke, high blood pressure, diabetes mellitus, obesity and

physical inactivity.43 In fact, the top two most controllable risk factors, obesity and physical inactivity are the major contributors to CHD according to Table 2. In 2003, approximately 37% of adults reported having two or more of the risk factors listed below.[vii]

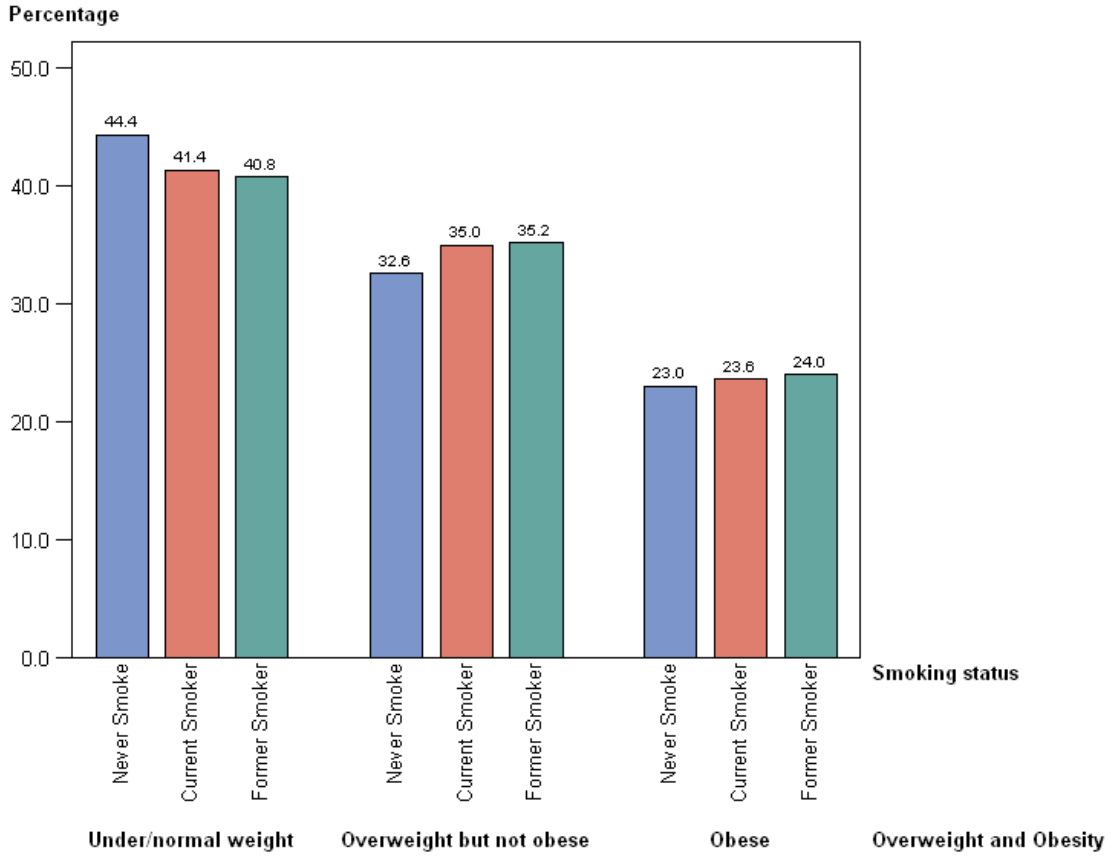
Table 2: Percentage of U.S. adults with heart disease risk factors in 2005-2006	
Risk Factor	%
Inactivity	39.5
Obesity	33.9
High Blood Pressure	30.5
Cigarette Smoking	20.8
High Cholesterol	15.6
Diabetes	10.1
Source: National Center for Health Statistics, 2008	

The reality is, however, that there are only three factors that you can't evade: age, sex, and heredity. Over 83 percent of people who die of coronary heart disease are 65 or older. At older ages, women who have heart attacks are more likely than men are to die from them within a few weeks.[viii]

Men have a greater risk of heart attack than women do, and they have attacks earlier in life. Even after menopause, when women's death rate from heart disease increases, it's not as great as men's. Finally, children of parents with heart disease are more likely to develop it themselves. African Americans have more severe high blood pressure than Caucasians and a higher risk of heart disease. Heart disease risk is also higher among Mexican Americans, American Indians, native Hawaiians and some Asian Americans. This is partly

due to higher rates of obesity and diabetes. Most people with a strong family history of heart disease have one or more other risk factors. Just as you can't control your age, sex and race, you can't control your family history. Therefore, it's even more important to treat and control any other risk factors you have.[30] Aside from these three uncontrollable factors, CHD is usually caused by characteristics in lifestyle. Tobacco smoking, high blood cholesterol and pressure, physical inactivity, obesity and diabetes mellitus are all factors that can be controlled to decrease the prevalence of CHD.[30] Figure 1 shows that most people in the overweight and obese sections were either former smokers or current smokers. The non-smokers hold the highest percentage in the Under/Normal weight category. This goes to show that smoking and obesity go hand in hand with one another, which, in turn, greatly affect Ischemic Heart disease.

Figure 1: Smoking Status correlated with Overweight and Obesity.



Source: Epiquery

As a result, factors like smoking and obesity progressively damage the body. They trigger a cascade of health problems that eventually lead to hospitalization due to heart attack or stroke.

Methods

Now that the importance of prevention has been explained, the method of intervention will be discussed. Since UNHS sees 27,000 patients annually, this gives one an opportunity to implement many intervention initiatives. One such initiative utilizes the waiting room area in each clinic. The focus of the

intervention will be obesity, the root of many chronic diseases. In fact, more than one-third of American adults are obese. [ix] If we apply this proportion to Davidson County's population, about 189,964 people are obese and UNHS's sees around 9,000 obese patients. For this reason, an intervention for prevention of obesity is imperative. The method of intervention will be through a nutritional video that addresses (1) how to read a nutrition label (2) the myths of fast food being cheaper than healthy food (3) how to make healthy food swaps. In addition, health data for Tennessee and Davidson County was collected. This data included obesity-ranking, number of fast food restaurant, access to healthy food, and population by race.

Results

Tennessee has the 17th highest obesity rates in the United States. [x] When we observe Davidson County, we find that 51% of the restaurants in the area are fast food restaurants. In addition, 10% of the population has limited access to health food. As of 2009, 14.2% of the population has Poor-Fair health, 13.5% lack health insurance, and a startling 63.7% of Davidson's population is overweight or obese, or about 380,220 residents!

Obesity has been linked to the increased consumption of fast food by Americans. During 2007–2010, fast food was consumed the most by adults aged 20-39, non-Hispanic blacks, or obese. [xi] Non-Hispanic blacks also consumed the more calories from sugar than their non-Hispanic White and Hispanic counterparts. This data is compelling enough for an intervention that could be initiated at

UNHS. Through the use of nutritional video, we can educate patients about the ailments of being obese through poor eating habits. In fact, about 70% of adults in Davidson County report having less that 5 serving of fruits and vegetables a day.[ix]

Regarding the demographics of Davidson County, 27% are Non-Hispanic Blacks, 61% are Non-Hispanic Whites, and 7% are Hispanic. Twelve percent of families and about 16% of individuals live below the poverty line. [xii]

Discussion

To reassert the findings of this report, further research should be done into the health indices of the UNHS population. Data should be compiled regarding the rates of diabetes, heart disease, stroke, obesity, smoking, etc. Focus groups should then be created to test the effectiveness of the nutritional video and whether or not patients are willing to adhere to the advice presented in the video. After patient feedback, the video should be tailored to better meet their needs. The fact is, at the UNHS clinics, waiting time can vary from 10 minutes to 4 hours in some clinics. That is an important window of opportunity one can use to perform patient education and this nutritional video is a great start.

Conclusion

Obesity is costly both to one's health and to the health system. For a largely preventative disease, there are not enough resources to control its dissemination. It is the underlying cause of many chronic diseases such as

diabetes, heart attack, and stroke. By implementing early interventions in health clinics, such as UNHS, we can measure the effectiveness of prevention and educate patients on the morbid consequences of obesity and malnutrition.

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