Leading Health Risks, Diseases And Causes Of Mortality Among Hispanics In United States Of America (USA)
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Citation

Abstract
According to the recent United States (US) Census, Hispanics account for 12.6% of the US population. Hispanics have unique risks, disease prevalence and mortality compared to the general USA population. These risk-disease relationships have not been elucidated carefully and completely as in the other ethnic groups. In order to understand Hispanic health within the paradigm of risk, disease and mortality, the key determinants of disease or health among Hispanics in the USA will be presented and discussed. Testing of the various risk-disease associations is clearly required to understand the peculiar health risks among Hispanics and the various sub-groups. This is especially significant from a public health standpoint as the Hispanic population is expected to rise in the next several decades.

INTRODUCTION
According to the United States of America (USA) Census 2000, there are more than 35 million Hispanics living in USA accounting for approximately 12.6% of the population. Hispanic Americans are the fastest growing demographic group in the United States with a 58% increase in population between 1990 and 2000. By recent estimates Hispanics would account for 24.4% of the total population (102.6 millions) in the year 2050. In year 2000, 58.5% of the Hispanics were Mexican Americans with a population of 20.6 million. Puerto Ricans and Cubans made up 9.6 and 3.5 percent respectively, while 28.4 percent of Hispanics were categorized in survey data as other Hispanics. Hispanics predominantly live in the South and West, and are more likely (91%) to live in large cities around the USA. New York City has the largest Hispanic population among all metropolitan cities in USA (2.9 millions) followed by Los Angeles (1.7 millions).

Hispanics have unique risks, disease prevalence and mortality compared to the general USA population. Though they share many aspects such as language, Hispanics vary significantly by country of origin. Their health profiles differ significantly among Hispanic cultures. This diversity and peculiarity in disease pre-disposition, prevalence and mortality is especially significant from a public health standpoint as the Hispanic population is expected to increase rapidly. Based on heightened risk for certain diseases such as diabetes, obesity and HIV along with poor socio-economic status, one would expect a higher mortality and morbidity in Hispanic populations. However, national mortality data suggest lower age adjusted mortality rates for Hispanics (629.3 per 100,000 Hispanic population versus 837.5 per 100,000 among Caucasians in year 2002) (Figure1) though some population-based studies do not support this finding. However, mortality for Hispanic population may be seriously understated due to underreporting on death certificates. Within the Hispanic groups, death rates vary considerably. Further, Hispanics suffer higher proportional mortality rates due to certain diseases and conditions such as accidents, diabetes, liver disease and homicides. (Table 1)
Leading Health Risks, Diseases And Causes Of Mortality Among Hispanics In United States Of America (USA)

Table 1: Comparison of age-adjusted mortality rates for the top ten diagnoses between All Whites and Hispanics in the US during year 2002.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Diseases</th>
<th>AMR/100,000</th>
<th>%</th>
<th>AMR/100,000</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disease of heart</td>
<td>71.9</td>
<td>23.8</td>
<td>28.9</td>
<td>25.5</td>
</tr>
<tr>
<td>2</td>
<td>Malignant neoplasms</td>
<td>59.7</td>
<td>19.8</td>
<td>22.9</td>
<td>20.5</td>
</tr>
<tr>
<td>3</td>
<td>Accidents (unintentional injuries)</td>
<td>36.1</td>
<td>8.6</td>
<td>6.6</td>
<td>59.5</td>
</tr>
<tr>
<td>4</td>
<td>Chronic lower respiratory diseases</td>
<td>16.6</td>
<td>5.5</td>
<td>5.5</td>
<td>49.2</td>
</tr>
<tr>
<td>5</td>
<td>Diabetes mellitus</td>
<td>15.3</td>
<td>5.0</td>
<td>4.3</td>
<td>38.7</td>
</tr>
<tr>
<td>6</td>
<td>Chronic liver disease and cirrhosis</td>
<td>8.8</td>
<td>2.9</td>
<td>2.8</td>
<td>34.9</td>
</tr>
<tr>
<td>7</td>
<td>Assault (non-negligent)</td>
<td>8.1</td>
<td>2.7</td>
<td>2.8</td>
<td>34.9</td>
</tr>
<tr>
<td>8</td>
<td>Chronic lower respiratory diseases</td>
<td>7.9</td>
<td>2.6</td>
<td>2.6</td>
<td>23.5</td>
</tr>
<tr>
<td>9</td>
<td>Influenza and pneumonia</td>
<td>7.3</td>
<td>2.4</td>
<td>1.6</td>
<td>13.9</td>
</tr>
<tr>
<td>10</td>
<td>Certain conditions originating in the perinatal period</td>
<td>6.2</td>
<td>2.1</td>
<td>1.4</td>
<td>12.2</td>
</tr>
</tbody>
</table>

* AMR/100,000 – Age –adjusted mortality rate per 100,000 population

Source: National Center for Health Statistics.

The apparent mortality advantage is noted mainly among elderly Hispanics and not in younger Hispanics when compared to the White population (Figures 1 & 2) and may be related to the younger age distribution of the Hispanic population. (Figure 3)

Figure 2
Figure 1: Mortality by age < 25 years

Figure 3
Mortality by age: Comparison between Non-Hispanic Whites & Hispanics > 25 yrs of age

About 50 – 70% of the populations in the neighborhood surrounding our institution in the South Bronx, New York City consist of Hispanics from various origins. (5) Among subjects who receive health care at our hospital, a majority are also Hispanics. (6) Several paradoxical and unique features of health risks, disease and mortality have been noted among our Hispanic patients. In order to understand these disparities in Hispanics' health within a paradigm of risk, disease and mortality, we present an analysis of contemporary data on the multiple factors that could explain this problem. In the following sections, the determinants of disease and mortality or health among Hispanics in USA are discussed in detail.

1. LEADING DISEASES AMONG USA HISPANICS

I. Heart disease

a) Disease & Mortality

Heart disease is the leading cause of mortality among the Hispanic population in USA. According to the National Center for Health Statistics (NCHS), the age-adjusted death
rate (ADR) for heart disease in Hispanics is 173.2 per 100,000 population. However, this is lower compared with ADR of 228.2 per 100,000 for Whites and 300.2 per 100,000 for African Americans. (7) The age-adjusted prevalence of heart diseases including coronary heart disease among Hispanics is lower (7.7% and 4.5%) than the US population (11.2% and 6.0% respectively). (2)

b) Risk factors for Cardiovascular Diseases

In order to understand the prevalence and mortality from heart disease among Hispanics data on major risk factors for heart disease (8) is discussed below. (Figure 4)

Cigarette smoking

1.1 Prevalence of cigarette smoking is generally lower among the Hispanic population (16.4%) than all other US ethnic groups, except Asian Americans.

1.2 There are significant variations in smoking among Hispanic subgroups. 27.7% of Cuban American are smokers compared to 20.1% of Puerto Ricans, 17.3% Mexican-Americans, 13.0% of Dominicans and 11.8% of Central-South Americans. (9)

1.3 The proportion of women who smoke is half that of Hispanic men. (10) Puerto Rican women are twice as likely to smoke as other Hispanic women. (11). Acculturation in women is associated with more smoking, including smoking during pregnancy. (12)

Figure 5

Figure 4: Cardio-vascular risks, disease and mortality among Hispanics

1.

1.4 Among smokers, Puerto Ricans and Cuban Americans are likely to be heavy smokers than other Hispanic groups. (11)

2. Hypertension

2.1 The prevalence of hypertension among both, Hispanics men and women are lower than others. (13)

2.2 Mexican Americans were the only Hispanic subpopulation sampled in the NHANES survey (14) and information for the other Hispanic subpopulations remains insufficient. The age-adjusted prevalence of hypertension among Mexican Americans is lower than the US prevalence (20% versus 28%).

2.3 But, age-standardized and age-specific death rates due to hypertension have been recently shown to increase significantly for adult Hispanic population. (14).

3. Cholesterol abnormalities

3.1 Cardiovascular risk profile is often less favorable with greater prevalence of diabetes, obesity, especially central obesity, and lower HDL-cholesterol and higher triglyceride levels. (15–18)

3.2 Although, Hispanics on average have higher CHD risk scores than non-. Hispanic Whites (14), a study of Puerto
Rican Hispanics indicates that Framingham scoring overestimates actual risk. (19)

3.3 However, the percentage of deaths due to heart diseases among Hispanics (23.8 % of all deaths) is similar to that of Whites (28.9 % of all deaths). Therefore Hispanics must not be treated less aggressively than other groups. (20)

4. Diabetes

4.1 The prevalence of diabetes in Hispanics (9.8 %) is higher than the general age-adjusted non-Hispanic White (5.0 %). Diabetes is more common in Hispanic men (5.5 %) than in women (4.5 %) (21)

4.2. According to the thrifty gene hypothesis, a clustering of different genetic defects or polymorphisms, developed as genetic advantage in some populations, could predispose some ethnic groups to insulin resistance and Diabetes in presence of an increase food supply. Pima Indians living in Arizona have a much higher prevalence of diabetes compared with the Mexican Pima Indians. (22)

4.3 The prevalence of diabetes among Mexican Americans who have first-degree relatives with diabetes was twice as great as for those with no family history of diabetes.

4.4 Mexican Americans are likely to suffer more severe complications of Diabetes than the general population. The San Antonio Heart Study showed that Mexican Americans with Diabetes are six times more likely to develop end stage renal disease, requiring dialysis than non-Hispanics Whites. (23)

5. Obesity

5.1 Hispanics also have a high prevalence of obesity, especially central obesity. Three-fourths of Mexican Americans are overweight. About 29% of men and 40% of the women among Mexican American are obese. (24)

5.2 The age-adjusted prevalence of metabolic syndrome is highest among Mexican Americans than any other group in the United States (31.9%), with a somewhat higher prevalence in women (35.6%) than in men (28.3%). (25)

6. Physical Activity

7.1 Among all races, a high proportion of Hispanics report “No leisure time” activities (37 % of the population). (26)

7. Age distribution 7.1 As per US Census 2000, Hispanic population has the lowest median age (25.8 years) compared to other groups. (27) A large proportion of Hispanics in the US are found to be distributed within the younger age groups (Figure 3)

7.2 This may contribute to the lower cardiovascular mortality risk and explain partly the Hispanic paradox of high cardiac risk profile and lower mortality from cardiovascular disease.

7.3 Also, the proportion of Hispanics following American Heart Association recommendations for regular physical activity is much less than Whites (37.1 % versus 49.1%). (28)

8. Psycho-social

8.1 There is a dearth of information with respect to psychosocial risk factors across socio-economic strata of various ethnic groups including Hispanics in the US. (28)

II. Cancer

a. Disease and mortality

1.1 Cancer is the second leading cause of deaths in the Hispanic population and cancer incidence varies across the various groups based on behavioral factors, country of origin, genetic pre-disposition, socioeconomic status and degree of acculturation.

1.2 Incidence rates are lower among Hispanics compared to Non-Hispanics except stomach, liver and cervical cancer. (Table 2) (29)
Leading Health Risks, Diseases And Causes Of Mortality Among Hispanics In United States Of America (USA)

Figure 6
Table 2: Incidence rates and deaths rates for certain cancer among Hispanic and non-Hispanic population

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Incidence rates</th>
<th>Deaths rates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hispanic</td>
<td>Non-Hispanic</td>
</tr>
<tr>
<td>Prostate</td>
<td>132.5</td>
<td>158.2</td>
</tr>
<tr>
<td>Breast</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lung &amp; Bronchus</td>
<td>42</td>
<td>81.5</td>
</tr>
<tr>
<td>Gall Bladder</td>
<td>1.2</td>
<td>0.8</td>
</tr>
</tbody>
</table>

1.3 Selected cancers among Hispanics:

1.3.1 Lung cancer:
Hispanics are at lower risk for lung cancer compared to other ethnic groups. This appears to be directly linked to the lower rate of cigarette smoking among Hispanics. (10) Lung cancer is the leading cause of cancer death among Hispanic men and second among Hispanic women. Death rates among Hispanic men are higher (39.6 per 100,000) compared to Hispanic women 14.9 per 100,000. (29) Lung cancer death rates especially are higher among Cuban-American men than Puerto Rican or Mexican men. (30)

1.3.2 Prostate Cancer:
In Hispanic men, this is the most commonly diagnosed cancer, but cancer incidence and prevalence are lower compared to Non-Hispanics. Between 1992 and 1999, prostate cancer rates among Hispanics were 25% lower than non-Hispanics. However, prostate cancer is the second common cause of cancer deaths among Hispanics. (29)

1.3.3 Breast Cancer:
In Hispanic women, the most commonly diagnosed cancer is breast cancer. Although less common than in non-Hispanic women, disease is advanced by the time diagnosis is made. Breast cancer is the leading cause of cancer deaths in Hispanic women as opposed to lung cancer in White women. The annual rate of decline in breast cancer mortality is slower among Hispanic women compared to Caucasians (1.8% versus 2.65 per year). (29)

1.3.4 Colorectal cancer:
Colorectal cancer is the third leading cancer among Hispanic women. For Hispanic men it ties with prostate cancer as the 2nd leading cause of death. Although the incidence rate for Hispanic is lower than non-Hispanic (43.8 Vs 64.1 respectively); the decline on death rates is at a lower pace for Hispanics than Whites (0.7% decline per year for Hispanics, and 1.8% decline per year for Whites). (29)

1.3.5 Stomach Cancer:
Rates of stomach cancer among Hispanics are 75% higher than others in the US. The increase may be attributed to diet rich in smoked foods, pickled vegetable, low in fresh vegetables and prevalence of helicobacter pylori infection in lower socio-economic strata. (29)

1.3.6 Liver cancer:
Hispanics experience a 60% higher rate of incidence of liver cancer compared to others. A higher prevalence of hepatitis B & C infection, alcohol use, consumption of hepatotoxins such as aflatoxins are probable risk factors for the increase rate of liver cancer in this population. (29)

1.3.7 Cancer of cervix:
Hispanic women in South America have thrice the risk of cervical cancer compared to US women. In the US, Hispanic women still have twice the risk of other women. Death rates among Hispanic women are about 40% higher than others. Increased incidence of human papilloma virus may be associated with the increased risk from cervical cancer. (29)

b. Risks factors for cancer (See table 3)
1. Smoking: see section (I.1)
2. Obesity: see section (I.5)
3. Population age: see section (I.6)
4. Diet
Leading Health Risks, Diseases And Causes Of Mortality Among Hispanics In United States Of America (USA)

Figure 7
Table 3: Cancer risks, disease and mortality among Hispanics in the US

<table>
<thead>
<tr>
<th>Cancers</th>
<th>Risks</th>
<th>Disease prevalence</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>Smoking - low</td>
<td>low</td>
<td>low</td>
</tr>
<tr>
<td>Breast</td>
<td>Obesity - High Screening - low?</td>
<td>low</td>
<td>low</td>
</tr>
<tr>
<td>Prostate</td>
<td>Age - low Screening - low</td>
<td>low</td>
<td>low</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Screening - low Diet - better</td>
<td>low</td>
<td>low</td>
</tr>
<tr>
<td>Stomach</td>
<td>Diet - poor H. pylori infection</td>
<td>high</td>
<td>high</td>
</tr>
<tr>
<td>Liver</td>
<td>Hepatitis B &amp; C - high Diet - poor Alcoholism - high</td>
<td>high</td>
<td>high</td>
</tr>
<tr>
<td>Cervix</td>
<td>HPV - high? Screening - low</td>
<td>high</td>
<td>high</td>
</tr>
</tbody>
</table>

4.1 It is speculated that the lower than expected incidence of cancer and cardio-vascular diseases in the U.S. Hispanic population is due to Hispanic diet. Spanish speaking Hispanics tend to eat healthier diet than English speaking ones.

4.2 According to studies among Mexican-American women, the quality of their diet declines from the first generation to the next, as a result of acculturation. (31)

5. Helicobacter pylori (H. pylori) infection

5.1 Age adjusted sero-prevalence of Helicobacter antibodies are higher among Hispanics especially Mexican Americans than the Caucasian population.

5.2 The prevalence of H. pylori infection among immigrating Mexican Americans was higher (68.2%), compared with 53.4% in US-born Mexican Americans. (32)

6. Viral Hepatitis

6.1 Prevalence of Hepatitis B antigen and antibodies to Hepatitis C correlates with incidence of liver cancer (33). Among NHANES III study participants there was a higher age-adjusted prevalence of Hepatitis B infection among Mexican Americans (4.4 %) compared with Whites (2.2 %) (34)

The age-adjusted prevalence of antibodies to Hepatitis C of 2.9% among Mexican Americans compared to 1.5% among non-Hispanic Whites. (35)

6.2 However among Hispanic pregnant women, a lower prevalence of hepatitis antigen positivity (0.14%) was noted compared to non-Hispanic Whites (0.6 %). (36)

7. Human Papilloma Virus (HPV) infection

7.1 A southern US study found that Hispanic women had a lower overall prevalence of HPV infection compared with non-Hispanic white women (9.7% versus 13.7%) (37).

7.2 Despite lower risk profile for HPV infection among Hispanic women rate of infection were higher among immigrants than US born Hispanic (38)

7.3 HPV 16 was the most common type of virus causing high grade squamous intraepithelial neoplasia among Mexican American women; this could be due to sexual behavior among men. (39)

8. Cancer screening:

Mammogram

Cancer screening among Hispanics are now comparable to non-Hispanic Whites.

65.4% of Hispanic women aged 40 or above reported receiving a mammogram in the past year, compared with 62.9% of non-Hispanic White women. (40)

8. 2. Pap Smear

Pap testing among Hispanics (83.4%) is comparable to that of non-Hispanic white women (87.2%). (40)

8.3 Colorectal cancer screening

In 2001, only 15.4% eligible Hispanics were estimated to have had a fecal occult blood test in the past year, compared with 24.1% of Whites and 21.6 % of African Americans. Among Hispanics, 31.2% were estimated to have had a screening sigmoidoscopy or colonoscopy in the past 5 years, compared with 39.2% of Whites and 35.3% of African Americans. (40)

8.4 Prostate Cancer Screening

Screening for prostate cancer, either through a prostate-specific antigen test or a digital rectal exam among Hispanics (46% & 41.4% respectively) were lower compared to White men (58.2 % & 57.4 % respectively) (40)
III. Accidents (Un-intentional injuries)

a. Accidents and mortality

Overall, the injury rate for Hispanic Americans is lower than for non-Hispanics. (7)

1.2 Motor vehicle crashes are the leading cause of death for Hispanics from 1-34 years of age (41) and the third cause of death for Hispanics of all ages, surpassed only by heart disease and cancer. It is the leading cause of death for the same age group of all races, both sex according to data from 2005. (20)

b. Risks Factors for accidents (Figure 5)

Figure 8
Figure 5: Accident risks and mortality among Hispanics

1. Genetic factors

1.1 The impact of Alzheimer's disease on Hispanic communities in the U.S. is serious and getting worse. Hispanics have a higher rate of Alzheimer's than non-Latino whites, and onset of dementia occurs seven years before they do in non-Latino whites contributing to most of the cases of pre-senile dementia in Hispanics.

1.2 Approximately 1.3 million Hispanics will have Alzheimer's disease by the year 2050 placing them at higher risk for getting involved in Accidents including MVC. (42)

2. Behavioral factors

2.1 Hispanic drivers have lower safety belt use rates than non-Hispanic whites, with correspondingly higher fatality rates in MVCs. (43)

2.2 Although Hispanic and black male teenagers travel fewer vehicle miles than their White counterparts, they are nearly twice as likely to die in a motor vehicle crash. (44)

3. Drug and Alcohol Abuse

3.1 Hispanic Americans have similar rates of alcohol consumption than non-Hispanic whites. Hispanic women have very low rates of alcohol and other drug use. (41)

3.2 Among Hispanics, Mexican Americans have higher rates of heavy drinking and drink larger quantities of alcohol in each sitting. Rates of substance abuse are higher among U.S.-born Mexican Americans compared to Mexican-born immigrants. (12)

3.3 The illicit drug use was the lowest among Asians and highest among African Americans whereas 7.6 % of Hispanics and 8.1% of whites were noted to be involved in illicit drug use in 2005. (45)

4. Environmental & Socioeconomic factors:

4.1 Pedestrian accidents. In Atlanta USA, pedestrian fatalities were less frequent for Hispanics, during the years 1994-1998; but the rate of fatalities was highly increased. The rate of pedestrian fatalities here is higher than the rest of the country but the characteristics of the population are the same. Hispanics walk 58 % more than non-Hispanics. (46)

4.2 Cataracts. Prevalence of cataract even after adjusting for other risk factors such as diabetes appears to be high among Mexican Americans, than African-American or White individuals. Hispanic population also has less access to surgery. (47) Patients who underwent cataract surgery had half the rate of crash involvement during the follow-up period compared with cataract patients who did not undergo surgery. (48)

4.3 Age. Hispanics who are younger than 18 years of age are more likely to be on the road and get involved in motor vehicle crashes (MVCs). (7)

4.4 Undocumented Licensed Drivers. Hispanic immigrants are among the largest group who do not possess a valid driver's license. The need to drive on the roads to work and provide for their families, which makes them more prone to MVCs as compared licensed drivers. (49)
IV. Cerebro-vascular disease

Disease and mortality

1.1 Epidemiological studies of cerebro-vascular disease among Hispanics in the United States are limited due to the diversity and heterogeneity of the groups. However, similar death rates for Hispanics and non-Hispanic whites have been noted less than 65 years of age, with lower rates for Hispanics at age 65 and over for 1981 through 1991. (50)

b) Risks factors for Stroke (Figure 6)

Figure 9
Figure 6: Stroke Risks and Mortality among Hispanics

1.1 Limited prospective cohort studies have published data on stroke incidence or risk factors in US Hispanics. (50)

1.2 USA Hispanics have higher levels of diabetes, smoking, and overweight but lower levels of blood pressure and serum cholesterol compared with non-Hispanic whites. (See section 1. Heart disease)

1.3 Incidence rates of stroke among Hispanics and African Americans are 2.0 and 2.4 fold higher than general population respectively. (51)

1.4 Risk factors for stroke among Hispanics are diabetes, physical inactivity and hypertension compared to CAD and atrial fibrillation among Whites. (51)

V. Diabetes

a) Disease and mortality

1.1 Diabetes mellitus affects an estimated 2.5 million Hispanics in the US and is the 4th leading cause of death among Hispanic women and Hispanic elderly. Among the Hispanics, diabetes is even more common in Mexican-American and Puerto Rican adults. Cuban Americans have a lower rate of diabetes than Mexican-Americans and Puerto Ricans, but still higher than that of non-Hispanic whites. (52)

1.2 More than 10% of all Mexican Americans 20 years or older have diabetes. (52)

1.3 Diabetes has an earlier onset in Hispanics, especially among Puerto Ricans and Mexican Americans. (53)

1.4 Hispanics are twice as likely as other populations to experience complications such as heart disease, high blood pressure, blindness, and kidney disease, amputations and nerve damage. (52)

b. Risk Factors for Diabetes (See figure 7)

1. Family history and genetics .See section (I. b-4)

2. Overweight – see section 1(e)

3. Sedentary lifestyle. – See section (I. 5)

4. Smoking – See section (I. 1.)
According to 3rd National Health and Nutrition Examination Survey data on patients <65 years of age, Mexican-Americans have lower rates of health insurance coverage than Caucasians and African-Americans. (54)

VI. Chronic liver disease and Cirrhosis

a. Disease and mortality

The National Institute on Alcohol Abuse and Alcoholism analysis of data from 1997 after inclusion of Hispanic origin on death certificates revealed that risk for liver cirrhosis mortality is higher among Hispanics than among non-Hispanic black and white Americans. (55)

b. Risk factors for chronic liver disease (Figure 8)

1. Hepatitis B and C: See risks factors for liver cancer (Section II. B.6)

2. Alcoholism:

2.1 Alcoholic liver disease is a major source of alcohol-related morbidity and mortality, it is estimated than 10-15 % of alcoholic will develop cirrhosis. (56) Drinking pattern among Hispanics men reflects heavier consumption of alcohol in terms of quantity, frequency and duration of drinking than White men. (55)

3. Gender and age

3.1 White Hispanics men have an age adjusted death rate for all liver cirrhosis higher than Hispanics women (19.6 % Vs 6.8 %) and also of liver cirrhosis with mention of alcohol (12.6 Vs 2.2). (55)

3.2 Cirrhosis was the 12 th leading cause of all deaths for the year 2000, but the fourth leading cause of death in the 45 -54 year group. (56)

4. Socioeconomic Status

4.1 There was an inverse association between death for cirrhosis and years of education among Hispanic population, this association perhaps is indicative of lower SES and decreased access to or use of health services among this
ethnic group. (55)

5. Ethnicity

5.1 Hispanics ranked higher for mortality of cirrhosis of the liver. The largest subgroups of white Hispanics liver cirrhosis decedents are of Mexican ancestry. (55)

VII. Homicide

a. Homicide and mortality

Deaths due to homicide are higher among Hispanics compared to general population (11.6 vs. 6.1 per 100,000 population). The death rate is especially higher among younger age groups of 15-24 (29.6 per 100,000 population). However, the rates are showing a decreasing trend for all ethnic groups, in the last decade. (7)

b. Risk Factors for violence:

1.1 Gender & Pregnancy. Hispanic women are frequent victims of abuse by their male partners in Latin countries. Retrospective studies of woman in shelters documented that 40-60% of the women were abused during pregnancy. (57)

1.2. Abuse during pregnancy in general varies according different studies from 3.9 to 8.3%. In Hispanics pregnant women the estimate is about 13%.

1.3 Hispanic women are more vulnerable to violence during pregnancy. Risk factors found to be associated with such abuse include low maternal weight gain, increased alcohol and drug abuse, late initiation of prenatal care, and higher incidence of smoking, and low birth-weight neonates (57)

1.4 Stressful events were found to occur more frequently among non-Hispanic mothers than among Hispanic subgroups. Low-income first generation immigrant Hispanic women may be protected from the effect of daily stressors by frequent interaction with other woman from their culture of origin. (58).

Population growth rate and Age distribution

2.1 The Hispanic population numbers has increased dramatically in recent years. In addition, the median age for Hispanics in the United States is lower (26 years) compared to African Americans and Whites (34 and 36 years respectively). (1)

2.2 Male gender and younger age are risk factors for aggressive behavior as well as be the target of aggression. More differences were found related to gender than ethnicity for aggressive behavior. (59)

3. Poverty and Education. A greater degree of poverty and poor educational attainment cause the Hispanic population to be more vulnerable to violence. (60)

4. Use of firearms. Firearms are involved in a great percentage of homicides. The Youth Risk Behavior Survey of 2005 showed that the Hispanic, Black and White high school students were equally involved in carrying a weapon (19.0%, 16.4% 18.7% respectively) at least once in the month preceding the survey. (61)

5. Substance abuse. Alcohol and drugs also play an important role in violent assaults and crimes. Risk-taking behaviors included self-violence, drunken driving, unintended pregnancy and use of alcohol, drugs and cigarettes. The mean number of risk behaviors was higher in Hispanic immigrants and native-born Hispanics compared to non-Hispanic whites. Native-born Hispanics had a high usage of alcohol and marijuana, while Hispanic immigrants had higher rates of unintended pregnancy and self-violence. This pattern of heavy drinking and alcohol-related problems has also been documented in Hispanic adults. (61)

6. Civil wars in countries of origin - An additional factor is that sections of the immigrant Hispanic population come into the United States from countries that have experienced the effects of civil war, creating massive amounts of exposure to violence. When these people are re-exposed to violent situations, they may identify with the perpetrators and continue the cycle of violent behaviors. (62)

VIII. Chronic lower respiratory diseases

a.1 Disease and mortality from Asthma

1.1 The asthma prevalence rates overall in Hispanics are lower than other ethnic groups. Among Hispanics, Puerto Ricans have the highest asthma prevalence rates while Mexican Americans have the lowest rate. (63)

1.2 The differences among Hispanic groups were not explained by location, household size, use of homes remedies, educational levels, or by the country in which their education was completed (64).

1.3 In 2001, Hispanics had an age-adjusted death rate of 1.4 per 100,000 due to asthma. This rate is 61% lower than the rate in African Americans but 14 higher than in Whites. The
cause of these differences remains unknown. (65)

a.2 Disease and mortality from COPD

1.1 Death rates of COPD among Hispanics are significantly lower than in other ethnic groups. The prevalence rate of emphysema among Hispanic Americans (5.8 per 1000 persons) is also much lower than in Whites (20 per 1,000) and African Americans (9.8 per 100,000) in year 2004. (66)

1.2 The chronic bronchitis prevalence rate seen in Hispanics is (25 per 1000 persons) significantly lower than that of Whites (47.3 per 1,000) and African Americans (37.1 per 1,000) (66)

b.1 Risks factors for asthma (Figure 9)

Figure 12
Figure 9: Chronic lower respiratory disease among Hispanics

According to analysis of the NHANES III data set showed that important risk factors for asthma and wheezing are: race/ethnicity, female sex, low socio-economic status (SES), cigarette smoking (see section 1-a), obesity (see section 1-e), hay fever and pet ownership. (63)

1. Low socio-economic status

1.1 Hispanics have the lowest median income per family next to African Americans. Roughly one third of Hispanic population is poor or near poor. (60)

1.2 Lack of insurance and access to health care has been associated with low socio-economic status in minority population. However, poverty alone cannot explain the differences between Hispanics subgroups, Puerto Rican and Mexicans. (67)

2. Home ventilation & indoor air quality

2.1 A large number of Hispanics live in areas failing to meet one or more national standards for air pollutants. According to epidemiological study, 80% of Hispanics live in areas that failed to meet one U.S. EPA air quality standard, compared with 65 percent of African Americans and 57 percent of Whites. (68)

2.2 Hispanics (34%) are more likely than either African Americans (16.5%) or Whites (14.7%) to live in areas with elevated risks of particulate matter that are associated with increase risk of premature death. (68)

2.3 Puerto Rican Hispanics were at increased risk for multiple indoor and outdoor allergies compared with Whites. However, the extent to which this population is affected by asthma due to allergies is unclear. (69)

Hay fever

3.1 Hay fever has been found to be associated with asthma. However, NCHS data shows that Hispanic children under 18 years of age have lower prevalence of hay fever (7.3% of hay fever patients) compared to Whites (9.6 %) and Blacks (7.9%). (70)

4. Pet ownership

4.1 Although pet-ownership has been shown to be associated with prevalence of asthma data on pet ownership is lacking among Hispanic population.

B.2 Risks factors for COPD (Figure 9)

1. Smoking – See section (I. 1)

2. Air quality- See section (VIII b)

3. Occupational exposure

3.1 Mexican Americans who worked in office building services, agriculture, construction and personal services (hairdressers and cosmetologists) are two to four times more likely to develop COPD than controls. (71)

Genetic
4.1 Serum alpha one anti-trypsin deficiency (A1AT) is a well-known risk factor for emphysema. Lower levels of serum A1AT has been noted among New York Puerto Rican children with asthma. (72). However, no data shows an increased prevalence of A1AT in Hispanics.

IX. Influenza and Pneumonia

a. Disease and mortality

According to National Center for Health Statistics data, (NCHS) Hispanics have the lowest age-adjusted mortality rates due to influenza and pneumonia among all ethnic groups. Influenza and pneumonia ranked as the 6th leading cause of death in the Hispanic over 65 years old. (69)

b. Risks factors for influenza & Pneumonia: (Figure 10)

**Figure 13**

Figure 10: Influenza/Pneumonia risks and mortality among Hispanics

1. Extremes of age – See section (1.6)
2. Chronic lower respiratory disease – See section (VII)
3. Cardiovascular diseases – See section (I)
4. Diabetes – See section (V)
5. Immune-compromised illnesses: See section (3. III)
6. Influenza & Pneumonia Vaccination rates
   6.1 Among individuals over 65 years old, Influenza vaccination rate is 48% for Hispanics which is lower than White.

6.2 A lower percentage of Hispanic population received pneumonia vaccination (26%), compared to African Americans and Whites (35% and 54% respectively. (69)

X. Perinatal mortality:

Based on 1983 and 1984 National Linked Birth and Infant Death data sets, among all Hispanic groups, the neonatal mortality risk was higher among Puerto Rican and lower among Cuban-Americans and Mexican-Americans. The post-neonatal mortality risk (28 to 364 days) was highest among continental Puerto Ricans and lowest among Cuban-American. (73)

2. OTHER SELECTED DISEASES IN HISPANIC POPULATIONS

I. Mental health

a. Disease and mortality (Figure 11)

**Figure 14**

Figure 11: Mental Health Disease risks and mortality among Hispanics

1.1 The rate of mental disorders among Hispanic Americans is similar to that of non-Hispanic White Americans. Immigrants have lower rates of mental disorders than those living in the US. (74)

1.2 Culture-bound syndromes including susto (fright),
nervios (nerves), mal de ojo (evil eye), and ataque de nervios are seen among Hispanics. Symptoms of ataque de nervios may include screaming, crying, trembling, verbal or physical aggression, dissociative experiences, seizures-like or fainting episodes and suicidal gestures. (74)

1.3 Even though suicide rate are low among Hispanics, Hispanic adolescents reported more suicidal ideation and attempts than others.

1.4 Only about 5-20 % of Hispanic Americans with Mental Health Disorders have access to Mental Health Specialists or general health care providers. (74)

1.5 Hispanics Vietnam War Veterans were at higher risk for war-related post-traumatic stress disorder than were black and non-Hispanic white veterans. Prevalence of post-traumatic stress disorder among Central American refugee patients range from 33 to 60%. (74)

II. Chronic kidney Diseases (CKD)

a) End stage renal disease among Hispanics

1.1 Hispanics of Mexican ancestry have a high risk of developing chronic kidney failure, particularly due to diabetes. (74) Data collected by Health Care Financing Administration from 1997 suggest that 7% of the End Stage Renal Disease patients are of Mexican ancestry and another 4% are of Hispanic ancestry from areas other than Mexico. (75)

b) Risk factors for Kidney diseases among Hispanics (Figure 12)

Risk factors that can lead to chronic kidney disease include genetic background, diabetes mellitus, hypertension, obesity, elevated cholesterol levels, and a family history of chronic kidney disease, smoking, substance abuse, age, male gender, and being of non-White race. (23)

1. Genetic pre-disposition to CKD

1.1 See section (1 –b-4))

1.2 Health disparities in Hispanics also include delay in referral to nephrologists. (76)

III. HIV/AIDS among Hispanics

a. Disease and mortality

1.1 In 2002, HIV/AIDS was the third leading cause of death among Hispanic men aged 35 to 44 years old and the fourth leading cause of death among Hispanic women in the same age group. (2)

b. Risk factors for HIV/AIDS (Figure 13)
Figure 16
Figure 13: HIV risks and mortality among Hispanics

1. Ethnicity

1.2 Although Hispanics make up only about 14% of the population, they account for 18% of AIDS cases diagnosed since the beginning of the epidemic. Hispanics have the second highest rate of newly diagnosed AIDS (26.0/100,000), after African Americans (76.4 cases per 100,000 people). (77) Hispanics born in Puerto Rico are more likely to contract HIV because of injection drug use, whereas sexual contact with other men is the primary cause of HIV infection among Mexican American men. (77)

2. Poverty

Limited access to high quality health care due to poverty directly or indirectly increases the risk for HIV infection. Recent immigrants face additional challenges, such as lack of information about HIV/AIDS and social isolation, which increase the risk of exposure to HIV. (77, 78)

Denial

Values such as machismo (sense of maleness) preclude communities to acknowledge homosexuality. Many Hispanics homosexual men identify themselves as heterosexual and do not adopt prevention measures developed for homosexual men. (77, 78)

Heterosexual Risks for HIV

4.1 Overall, 16.4% of heterosexual Hispanics reported an HIV risk factor. Among heterosexual Hispanics at risk for HIV, the distribution of the risk was as follows: Multiple sex partners: 64% (two or more sexual partners in the last 12 months); risky main sexual partner 26% (HIV plus IDU in the past five years); blood transfusion 7%; intravenous drug use (past 5 years) 3%. (79)

4.2 Injection drug use is a significant risk factor for Hispanics. Sharing needles, engagement in high-risk behaviors, such as unprotected sex, when they are under the influence of drugs or alcohol are risks for HIV in this group. (77, 79)

4.3 Hispanics are about twice as likely to have gonorrhea or syphilis compared to Whites. Sexually transmitted infections increase the likelihood of HIV transmission. (77, 80)

IV. Tuberculosis

a) Incidence rate of tuberculosis among Hispanics

1.1 In 2004, Hispanics, Blacks and Asians had TB rates of 7.5, 8.3 and 20 times higher than Whites respectively. (81)

1.2 Hispanics have represented the racial/ethnic group with largest number of TB cases in Los Angeles County for the past several years. There has been no significant change in this proportion (45%) since 1996 (82)

1.3 In 2004, TB in Hispanics increased 1.2%, from 4,109 in 2003 to 4,160 in 2004, which is more than any other ethnic group in the US. However, the TB rate for Hispanics decreased, from 10.3% in 2003 to 10.1% during this time. This is due to a 3.6% increase in the 2004 U.S. population of Hispanics compared with 2003. (83)

b) Risk factors for TB infection among Hispanics (Figure 14)
1. HIV infection – See section on HIV /AIDS (III. b 4.2)  
2. Diabetes – See section (V)  
3. Foreign-born people from countries with high TB rates  
3.1 Despite the declining incidence of Tuberculosis during the past decade in the US, the rate is still high for foreign-born individuals from countries with high TB rates.  
3.2 The highest proportions of foreign-born TB cases (56%) were reported in persons from Mexico, Philippines, Vietnam, India and China. (83)  
4. Occupational exposure - People who work in or are residents of long-term care facilities (nursing homes, prisons, and some hospitals) and health care workers and others such as prison guards are at increased risk for tuberculosis. (84)  
5. Malnutrition - Based on surveys conducted by Hunger in America 2006, the percentage of Hispanics (17%) who are emergency food clients at charitable feeding agencies are lower than Whites (39%) and African Americans (38%). However, prevalence of obesity remains higher among Hispanics. (85)  
6. Alcoholism – see section on chronic liver disease. (VI)  
7. Drug users – see section on HIV/AIDS. (III. b 4.2)  
8. Homelessness- According to Housing and Urban Development data sampling on homelessness, the proportion of Hispanics who are homeless is however seems equivalent compared to others ethnic groups. (86)

V. Epilepsy  
The true prevalence of epilepsy in the US is unknown. This is partly due to lack of methods in public health data collection systems to check for seizures or epilepsy. The incidence or prevalence and impact of epilepsy among Spanish-speaking populations and other distinct population groups are also unknown at this time. (87)

VI. Dental Health issues  
1.1 According to the US Surgeon General report on oral health, Blacks, Hispanics, and American Indians and Alaska Natives generally have poor oral health than other groups.  
1.2 Hispanic preschoolers are found to have 2.5 times more tooth decay than White children.  
1.3 Destructive periodontal disease occurs in 25% of Mexican Americans adults as opposed to 20% of Whites. (88)  
1.4 Hispanic adults are twice as likely, as whites to report absences from work or school because of a dental problem.  
1.5 Minority groups are also less likely than Whites to have had an annual dental visit. (88)

VII. Sleep apnea and sleep disorders of breathing (SDB):  
1.1 Mexican Americans may have higher prevalence of sleep apnea than other Hispanic subgroups. Ethnic disparities related to obesity may also contribute to disparities related to SDB in Mexican Americans. (89)  
1.2 Frequent snoring is more commonly reported between African American and Hispanics compared to Whites, independent of obesity. Hispanics have increased prevalence of sleep-disordered breathing compared to Whites. (90)

VIII. Dementia  
1.1 Hispanic individuals have an unexplained earlier age at symptom onset than Whites by 6.8 years suggesting that they may suffer an increased burden of Alzheimer’s dementia. (91)
Prevalence estimates of dementia among Hispanics are lacking. However, based on a New York study, the incidence rate for AD was found to be significantly higher among Caribbean Hispanic elderly individuals compared to White individuals. (92)

Advanced age, presence of an APOE-4 allele, low levels of education and Cardiovascular risks pre-dispose Hispanics to an increase incidence of dementia. (93)

IX. Sepsis

1.1 Sepsis is the 15th leading cause of death among Hispanic patients. (94)

1.2 In a large observational study, Hispanic patients had a higher mortality than White patients but lower than African Americans due to severe sepsis (95)

X. Osteoporosis

According to the Surgeon General's Report on Bone Health and Osteoporosis, in the United States, the prevalence of osteoporosis in Hispanic women is similar to that in White women. (96)

1.2 Osteoporosis occurs in up to 10% of all women above 50 yrs of age. The incidence of hip fractures among some Hispanic women appears to be increasing. Hispanic women consume less calcium than the recommended dietary allowance in all age groups. An increased prevalence of diabetes pre-disposes Hispanic women to increased risk of osteoporosis. (96)

DISCUSSION

As presented above, mortality rates and the leading causes of death among Hispanics are different from those for non-Hispanic whites. For certain health conditions such as diabetes, liver disease, HIV, homicide, cervical and stomach cancers, child health Hispanics bear a disproportionately higher burden of disease, injury, death, disability and years of potential life lost when compared with non-Hispanic whites. Among risk factors, Hispanics have lower rates of health insurance, screening, vaccinations, prenatal care, physical activity and obesity, whereas tobacco use and exposure to secondhand smoke and alcohol intake are higher than non-Hispanic whites.

In addition, socioeconomic factors (e.g., education, employment, and poverty), environmental factors (e.g., neighborhood and work conditions), also contribute to ethnic health disparities. (26, 29, 40, 60, 68, 97) Acculturation and assimilation are important determinants of health risk and disease in the Hispanic population. (12) Recent immigrants can be at increased risk for chronic disease and injury, particularly those who lack fluency in English and familiarity with the U.S. health-care system or who have different cultural attitudes about the use of traditional versus conventional medicine. Such health disparities can mean decreased quality of life, loss of economic opportunities, and increased morbidity among US Hispanics. Further the expected increase in Hispanic population in the next few decades will magnify the adverse public health impact of such disparities in the United States.

Thus, there is an enormous need to perform systematic epidemiologic studies in the Hispanic population. Due to the diversity of the Hispanic cultures and ethnic origin, research must be conducted including all Hispanic subgroups. Multi-center studies are being advocated to analyze the effect of socio-economic, geographic, environmental, urbanization on Hispanic health. Hispanics of varying immigration status may be an interesting focus of study in order to elicit the effects of acculturation on the various sub-groups. Strong community support has been advocated for high participant recruitment and retention and to gain trust among Hispanic participants. New and valid data collection tools for use in Hispanic populations need to be developed and tested. Focus must also be placed on improving health care access and follow-up of health problems identified during studies. Valid US national estimates of risks, diseases and mortality must be determined among all Hispanic subgroups. The “Hispanic paradox”, is a term used to denote the phenomenon of lower mortality rates despite increased risks especially related to CVD. This may be related to under-reporting of disease and mortality. For this purpose, some areas of research that have been recommended by a National Heart, Lung, and Blood Institute (NHLBI) report on epidemiological research in Hispanic populations (98), include a) CVD b) Asthma c) Obesity d) Acculturation & health e) Genetic and pedigree analysis.

Based on the above recommendations, the National Institutes of Health have now funded the largest long-term study of health and disease in Hispanic populations called the Hispanic Community Health Study. The study involves 16,000 participants of Hispanic/Latino origin between ages...
18 to 74 years, who will undergo a series of physical examinations and interviews to help identify the prevalence of and risk factors for a wide variety of diseases, disorders, and conditions. This study will also determine the role of cultural adaptation and disparities in the prevalence and development of disease. The study will emphasize differences among Mexican Americans, Puerto Ricans, Cuban Americans, and Central/South Americans. (99)

U.S.A. Department of Health and Human Services (DHHS) has also coordinated several initiatives to reduce health disparities, with public non-profit minority and Hispanic organizations in the US as well as the Healthy People 2010. (100)

CONCLUSION

As discussed, Hispanics have unique risks, disease prevalence and mortality compared to the general US population. These risk-disease relationships have not been elucidated carefully and completely as in the other ethnic groups. Lack of understanding is a serious impediment to health care of Hispanics who are the second largest US population group that is expected to increase rapidly in the next few decades. Hypothesis testing of the various risk disease associations and observation of disease mortality risk using sound scientific methods among large cohorts of patients is clearly required to understand the peculiar health risks among Hispanics and the various sub-groups.

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