DHR Proceedings

Special Edition: Junior Clinical Research (2022), Vol. 2 No. S2
https://doi.org/10.47488/dhrp.v2iS2.65

COMMENTARY

# The Relationship Between Obesity and Cardiovascular Disease

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Received 07/21/2022
Accepted for publication 08/03/2022
Published 08/03/2022

## Introduction

Do you feel overweight? Are you often finding it hard to lose weight with dieting, workouts, and medications? Feeling overly tired or short of breath? Well, you may find that you and the majority of people within the United States suffer from the same problems. Studies show that over 41.9% of 340 million Americans suffer from obesity (1). By definition, obesity is defined as abnormal or excessive fat accumulation that presents a risk to health (2). A common health risk seen within many obesity cases is cardiovascular disease. The most commonly known form of cardiovascular disease is the coronary artery disease (CAD). Cardiovascular disease affects the flow of blood circulation to the heart causing an overall decrease in blood flow, leaving people at high risks for heart attacks (3). Over 39.6 percent of the United States adult population suffers from obesity. However, 7.7 percent of this population is affected by severe forms of obesity that have led to extensive heart problems, such as cardiovascular diseases (4). Out of the 41.9% of the American population that suffers from obesity, Hispanics have a steady rate of 15.8 percent deaths due to cardiovascular disease diagnosis between male and female patients as of 2020 (5).

## Obesity Prevalence

There is a higher risk for Hispanics to suffer from obesity. Every 1 in 2 Hispanic people are obese and 1 in 13 suffer from severe obesity. Since March of 2020, obesity has risen more than 11.4%, as the increasing severity rises 5%. We are the second largest group in the world that struggles with obesity. About 45.8%, approximately 28 million, of Hispanics in the US struggle with obesity (6). Puerto Ricans and Mexican American have the highest prevalence with 36.6% and 34.4% respectively, followed by Mexicans 25.5% and Cubans with 25.8%. The lowest prevalence group was Dominicans with 21.5% (7).

## Obesity Causes

Obesity occurs when a person's weight is greater in comparison to their height. Obesity can be found and diagnosed in both children and adults. It can be caused by food consumption or addiction to food. One challenge in the Hispanic community is the absence of healthy food options. 29% of Hispanics lack exposure to healthy food and struggle to consume

it (8). Other causes of obesity can be the following: excess weight gain due to medication or illness, insufficient sleep that causes metabolic changes, and obesity. An example of excess weight gain could be Cushing's Disease, because of this disease it is more likely for someone to gain weight. Results of studies have shown that insufficient sleep can have a negative effect on metabolic rates. Although it is rare, future generations can inherit the obesity gene (9). A person diagnosed with a disabling health condition while having obesity can face serious challenges, such as weight loss/gain and changes in hunger, limiting the capability of a person to exercise, discomfort/pain, shortage of energy, and the inability to have assets such as money, transport, and support from people (10).

## Obesity Symptoms

There are seven main symptoms that determine the diagnosis of obesity, although symptoms may vary by each individual. The most obvious symptom is being above their average body weight. According to Centers for Disease Control and Prevention, adults with a Body Mass Index (BMI) of 30 to 39.9 are considered obese. If their BMI is higher than that, then they are considered extremely obese (11). Another symptom for obesity is sleep apnea, a condition in which a person experiences an irregularity within their breathing patterns while asleep, causing someone's breathing to stop inconsistently throughout the night. This condition causes many obese people to have trouble fully sleeping through the night, since they wake up often from breathing discomfort to catch their breath (12). Obesity can also cause skin problems, such as dry and scratchy skin or acne. According to myamericanurse.com, obese people have a lot of fat stored, increasing the transdermal water loss, causing their skin to get dry and scratchy. Acne, on the other hand, is the result of blocked sebaceous channels that lead to oily skin (13). Another symptom is gallstones. People with obesity are more likely to have gallstones because they have a higher level of cholesterol in their bile. Gallstones are severely painful, and if left untreated, can lead to life threatening issues (14). Furthermore, obesity can cause osteoarthritis in the joints, especially the knees. The more a person weighs, the more stress that is added to the joints which causes them to experience pain. Osteoarthritis quickly spreads depending on how much stress is added on the joints, worsening if no treatment is prescribed (15). The 6th symptom for obesity is varicose veins. The Bass Vein Center website explains that the pressure from the extra body fat squeezes the walls of the veins, damaging delicate valves that keep your blood flowing from your extremities to your heart. This would explain how being overweight can damage your veins and lead to serious complications for your physical health (16). Lastly is asthma, a common respiratory symptom and condition found within many obese people as a result of excess weight found around their chest. According to everydayhealthcenter.com, fat tissues also produce inflammatory substances that could impair lung function and lead to asthma (17).

## Cardiovascular Prevalence

Cardiovascular disease and obesity play a problematic role within the Hispanic community and the world in general. Over 39.6 percent out of 330 million of the United States adult population are considered obese. However, 7.7 percent of this population is affected by severe forms of obesity that lead to extensive heart problems such as cardiovascular diseases (4,18). Hispanics within Central America have a higher prevalence of cardiovascular disease, Central American men at 54.9% and Puerto Rican women at 41.0%. Large proportions of people within Central America (80% of men, 71% of women) had at least 1 health risk factor of developing cardiovascular disease. At least 18.5 percent of Hispanics who have lived in the United States 10 years or longer have reported that congenital heart disease and strokes were less prevalent within (4.2% and 2.0% in men; 2.4% and 1.2% in women, respectively) (19). This shows that even though risks are not as prevalent within the Hispanic community in the United States compared to the Hispanics of the Central American communities. Obesity is highly prevalent among Hispanics. Some studies show that more than 70% of males and females in some Hispanic groups are overweight and 40% are obese. The prevalence of cardiovascular disease among Hispanics was 70% if they had risk factors including obesity. Obesity is higher in Hispanic women. One study conducted in Hispanics, showed that the rate of heart attacks is much higher than in non-Hispanics, and particularly higher in Hispanic women (20).

## Cardiovascular Causes

Cardiovascular disease is a leading cause of mortality and morbidity in the Hispanic population (21). There are many causes of cardiovascular disease, such as occupational exposures, smoking, diet, and lifestyle (22). The first cause is occupational exposures. Hispanic workers, such as factory and field

https://doi.org/10.47488/dhrp.v2iS2.65

workers, report more exposure to organic solvents, metals, and pesticides. It is well known that working with metals and pesticides are risk factors for cardiovascular disease. The second cause is smoking. Smoking increases inflammation, thrombosis, and oxidation of low-density lipoprotein cholesterol. Clinical data support the hypothesis that cigarette smoke exposure increases oxidative stress as a potential mechanism for initiating cardiovascular disease. The third cause is diet. Low intake of healthy nutrients promotes cardiovascular disease. Consuming more than the recommended saturated fat, sodium, refined carbohydrates, and red meats can also be a risk of cardiovascular disease. Improvements in diets were largely attributable to increased consumption of whole grains, nuts, seeds, and legumes, as well as decreased consumption of sugar-sweetened beverages. The final cause is lifestyle. Sedentary behaviors are a main risk factor for cardiovascular disease. Sedentary behaviors are behaviors where the person is not active or not being productive. Therefore, reducing sedentary time should be targeted in the population while also increasing their physical activity levels. The solutions to lower cardiovascular disease are to stop smoking, maintain a proper diet, improve occupational exposures, and enact a better lifestyle. They will also require providing better health care access to the Hispanic population (22).

## Cardiovascular Symptoms

The symptoms of cardiovascular disease are often associated with an irregularity of the heart. Heart attacks, heart failures, or arrhythmias are all classifications of the symptoms an adult may experience (23). Typically, arrhythmias are known for causing the heart to beat at different paces, which can lead to improper blood pumping of the heart (24). Similarly, heart failure inefficiently pumps blood to organs, whereas, in heart attacks, the heart fails to receive oxygen due to blood flow not reaching certain areas of the heart (25). Tiredness, swelling of the limbs, chest pain, palpitations or a fluttery heart, indigestion, heartburn, and pain in the upper and lower half of your shoulders may be early signs of cardiovascular disease (23). Because cardiovascular disease is not limited to only one experience, these symptoms may or may not relate to a person's situation. Depending on the specific area that was affected, such as the blood vessels or the heart valves, symptoms may vary from person to person. Additionally, one may be more vulnerable to cardiovascular disease symptoms based on other conditions, such as an infection, a diseased heart, an arrhythmia, or a non-serious congenital heart defect (26). Foremost, it is important to determine how cardiovascular disease is present in your life as a means of understanding the specific symptoms one may be prone to. For instance, in the Hispanic population, women and men are 10% more likely to get cardiovascular disease without risk factors and are 70% more likely to develop cardiovascular disease with a previous underlying condition such as diabetes (27). However, Hispanic men are more disposed to cardiovascular disease compared to Hispanic women (27). The reason could be that most men are not well adjusted to deal with stressful events which can lead to cardiovascular disease (28). Around 30% of both Hispanic genders have hypertension primarily because of their diet. Eating flour tortillas, for example, is a common flatbread in the Hispanic population known for raising people's blood pressure. Since tortillas are usually present in most Hispanic meals, it can become a significant issue over time. When someone has high blood pressure, blood flow is limited, decreasing the oxygen that reaches the heart and leading to cardiovascular disease (29). Unfortunately, most Hispanic populations are known for neglecting their personal healthcare, so there is a greater possibility they will be diagnosed with cardiovascular disease throughout their life.

## Cardiovascular Treatment

For those that are diagnosed with cardiovascular disease and fear their wellbeing, there is no reason to fret. There are many different lifestyle treatments as well as medications that could help in the prevention and overall treatment of heart disease. To start off, there are two alternative forms of treatment that can be used for cardiovascular disease. The first option of treatments is to switch to a healthier lifestyle to lower cholesterol levels as well as blood pressure that can even lead to obesity. The best way to change up your life is by making decisions to aim for a healthier weight by losing about 3% to 5%, keeping up with physical activities that will regulate those factors, start with a healthy diet with fruits; vegetables and low saturated fats, sodium, sugars and alcohol, and maintain stress so that it can help maintain physical and mental health (30). Another route that could potentially be taken as an alternative route to treat your heart disease if making lifestyle changes may appear too hard is medication. Medications such as ACE inhibitors and beta blockers can help lower blood pressure as well as decrease how hard the heart may be working (30). In addition to this, other medications such metformin or nitrates can help regulate build up in the arteries, as well as a preventative for diabetes

along the way (30). All in all, there are two solutions that may be taken in order to take a step further in preventing cardiovascular disease from happening, especially if you are more prone to get it, or have already suffered from it. For the most part, making basic changes to the way you live may be considered the best option, while taking medications can also be a key factor for those that may have trouble. However, there are situations where sometimes treatment may not work, and therefore lead to other health problems. Tying back to the relationship between obesity and cardiovascular disease, it is seen that being obese may eventually lead you to developing heart disease, due to the fact that it can change cholesterol levels or even causing blood pressure to rise (31). For the majority of the Hispanic community, cases of obesity and heart disease are extremely prevalent. Due to the fact that such a high percentage of our population is prone to both obesity and cardiovascular disease, it is something we may need to be on the lookout for. One of the greatest problems that leads to this frequency in these numbers is lack of healthcare that is available for the Hispanic population. As well as that, it is seen that Hispanics are less likely to seek out care for their mental health which could lead to stress and therefore stress eating, gaining weight, or an increase in blood pressure (32).

## Obesity Treatment

There are many ways to treat and prevent obesity. There is nonpharmacological treatment, treatment without the use of medication, and pharmacotherapy, treatment with the use of medication. Nonpharmacological treatment includes physical activity, diets, and behavior therapy (33,34). When losing weight begins, it is recommended to start physical activity. Exercise keeps the body active and increases energy expenditure causing negative caloric balance. Negative caloric balance occurs when more calories are being burned than taken in (33). Walking for 30 to 40 minutes for at least three days out of the week is a good way to start. The patient can gradually increase their exercise regimen with 20 minutes of jogging. As the patient increases their endurance and begins to feel comfortable, they can increase their exercise to include running, swimming, and even cardio. As they increase the number of exercises, they can also increase the number of days and time they work out. Diets are also able to aid in the treatment of obesity. Low calorie diets and prepackaged foods will help with the calorie intake, as the meal is already made and avoids sugars and calories one may overlook while making their own meal (33,35). Calorie-restricting diets are not only good for losing weight, but also play a role in cardiovascular health (35). Behavior modification treatment targets the patient's habits explicitly. By using behavior modification treatment, the habits that caused the weight gain are analyzed. The goal of behavior modification is to change the patient's eating habits and encourage a healthier lifestyle. Pharmacotherapy is recommended and used on patients who are unable to lose enough weight with the treatments used in the non-pharmacological approach. There are other requirements that must be met to be able to use these drugs, like high BMI and an obesity-related condition (33). There are both long-term and short-term drugs that are used to treat obesity. Some of the short-term drugs that stimulate norepinephrine release are benzphetamine hydrochloride, phendimetrazine tartrate, phentermine hydrochloride or tartrate, and diethylpropion. Another short-term drug would be Mazindol; this drug targets NE reuptake. Long-term medications include sibutramine, which blocks norepinephrine and serotonin reuptake, and Orlistat, which blocks gastric and pancreatic lipases (34). These long-term medications can also help to maintain weight loss. The FDA approved all the mentioned medications.

## Conclusion

Evidently, over 39.6 percent of 330 million adults within the United States suffer from obesity and over 7.7 percent of this population suffer from severe forms of obesity that cause many underlying conditions such as cardiovascular disease (4,18). 70% of these obese Hispanic groups are more prevalent to developing cardiovascular disease as one of the major underlying conditions of obesity (20). Although obesity and cardiovascular disease are great concerns for our health, there are many ways to detect, treat, and control them, such as health and dietary plans, therapy both psychologically and physically therapeutic treatments, and for those that may want to take different routes there are pharmaceutically mediated drug treatments offered as well. Luckily, we have great doctors, who specialize in these types of treatment such as cardiologists and bariatricians, that are able to medically support Hispanics by promoting healthy lifestyle tips as well as using their scope of practice to treat patients; by doing so, there is hopes to lower the mortality rate that these conditions bring forth to the community. Therefore, being informed about the risk factors of obesity and cardiovascular disease in the Hispanic community is crucial. It is never too late to ask for help, and even more so to

educate oneself on these topics that could potentially save a life ahead of time.

## Acknowledgments

Dr. Monica Betancourt-Garcia, MD, Scientific Director; Melissa Eddie, MS, Program Manager; Xochitl Lopez, BS, Program Coordinator

## Funding

Funded by DHR Health Institute for Research & Development; DHR Health; Region One ESC GEARUP College Ready, Career Set! Region One ESC GEARUP College Now, Career Connected and Region One ESC PATHS

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